

December 2003



NATIONAL LONGITUDINAL
TRANSITION STUDY 2

GOING TO SCHOOL: INSTRUCTIONAL CONTEXTS, PROGRAMS, AND PARTICIPATION OF SECONDARY SCHOOL STUDENTS WITH DISABILITIES

**A Report from the National Longitudinal Transition Study-2
(NLTS2)**

Prepared for:

Office of Special Education Programs
U.S. Department of Education

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SRI International
333 Ravenswood Avenue Menlo Park, CA 94025



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Education Programs

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Prepared by:

Mary Wagner, Lynn Newman, Renée Cameto, Phyllis Levine, and Camille Marder

SRI Project P11182

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EXECUTIVE SUMMARY

The Individuals with Disabilities Education Act Amendments of 1997, the No Child Left Behind Act of 2001, and scores of state and local initiatives culminate nearly two decades of concerted effort to improve American education. The success of these ambitious initiatives will depend on changes in many domains, including teacher preparation and training, assessment policies, standards and expectations, and funding. However, the classroom is where “the rubber meets the road.” What happens in classrooms every school day is what students experience directly and it is the mechanism through which educational interventions are most likely to produce the desired changes in student achievements.

Yet at the national level, information on the classroom experiences of students with disabilities has been limited to data on where students are educated—whether classes are taken in general education or special education settings. Little is known about the actual instructional experiences of students with disabilities nationally. The Office of Special Education Programs of the U.S. Department of Education is working to fill this information gap for secondary school students through the National Longitudinal Transition Study-2 (NLTS2). NLTS2 is a 10-year study that is documenting the characteristics, experiences, and outcomes of a nationally representative sample of more than 11,000 youth who were ages 13 through 16 and were receiving special education services in grade 7 or above when the study began in 2001. NLTS2 findings generalize to youth with disabilities nationally and to youth in each of the 12 federal special education disability categories in use for students in the NLTS2 age range.

This report from NLTS2 considers the following questions for secondary school students with disabilities:

- What education-related histories do students with disabilities “bring to the table” in terms of their early experiences with services for their disabilities, school mobility, grade-level progression, and prior school disciplinary problems?
- What are the school and classroom contexts within which secondary school students with disabilities are educated? How do general, special, and vocational education classrooms differ?
- What is the pattern of course taking of students in secondary school, and in what settings are courses taken?
- What are the characteristics of classroom instruction provided to students with disabilities, and how do they differ in general, special, and vocational education classes?
- How do these factors differ for students with different disabilities and other characteristics?

These questions are addressed by using data collected during Wave 1 of NLTS2 from the following sources:

- **Parents or guardians** of NLTS2 study members are a key source of information on the characteristics of students, their educational histories, and their lives outside of school. Telephone interviews conducted with parents in the spring and summer of 2001 addressed these important topics; mail questionnaires were administered to parents who could not be reached by phone.
- **School staff best able to describe students' overall school programs** were surveyed by mail in the spring of the 2001-02 school year regarding the range of courses taken at the time by each student and the setting for each kind of course. Information also was obtained about instructional practices in both special education and vocational education classes.
- **Teachers of general education academic classes.** For students who were taking at least one general education academic class, teachers of the first such class in each student's school week were surveyed by mail about participants in that class, the instructional practices used with specific individual students with disabilities in the class, and how they worked with the class as a whole. Teachers also reported on the supports they received because the students with disabilities were in their classes and on their perceptions of the appropriateness of those students' placements in their classes. Perceptions of the academic and behavioral performance of individual students with disabilities in the class also were reported.
- **School staff knowledgeable about the characteristics of the schools attended by students with disabilities.** For each school attended by an NLTS2 study member, a school staff person who could report on the characteristics and policies of the school (often the principal) was surveyed about the school, its student body, school policies that affect students with disabilities; and, for schools that serve 12th-grade students, information on rates of graduation, college entrance examination participation, and college enrollment was obtained.

Highlights of the information NLTS2 obtained from these sources are presented below:

Students' Education-Related Histories

What students "bring to the table" in terms of prior experiences, interests, abilities, and limitations are key factors that help shape the nature of the educational process and how students progress through their school careers.

- Some youth with disabilities and their families have been dealing with disability-related service systems since before they entered school. About half of youth who had their disabilities identified at the ages to qualify for early intervention or preschool special education services participated in those programs.
- Yet many more youth first receive services for their disabilities at school entry or in the first elementary school years; the average age at which youth first receive special education services is just over 8.
- Almost one-fourth have attended five or more schools during their educational careers—several more than would be expected from normal grade-level progression.

- Youth with disabilities are much more likely than youth in the general population to repeat a grade in school—more than one-third are retained at grade level at least once, usually in elementary school.
- One-third of youth with disabilities are suspended or expelled during their school careers—a much higher rate than among students in the general population.

The Schools Attended by Students with Disabilities

Not surprisingly, the schools attended by secondary school students with disabilities are similar to those of the general student population in many ways.

- The vast majority attend regular public schools, where they constitute 16% of the student population, on average. Their schools are as likely to be in their own neighborhoods as is true for students in the general population.
- The racial/ethnic distribution of the student bodies in schools attended by students with disabilities is virtually the same as for the general population, as are average absenteeism and mobility rates.
- Their schools have a wide range of staff resources, including teachers who average about the same level of qualifications and experience as teachers of students in the general population. On average, almost 90% of teachers in schools attended by students with disabilities are reported to be fully credentialed for their primary teaching assignment, and the large majority have more than 3 years of teaching experience.

Students with disabilities attend schools that have a wide range of technology and programmatic resources available to help meet their needs.

- Internet-accessible computers are available to students in virtually all schools.
- Schools attended by students with disabilities include a variety of placement options. Comparisons of NLTS2 findings with those of the original National Longitudinal Transition Study (NLTS)¹ demonstrate that self-contained classrooms have become more common over time, as students with disabilities decreasingly attend special schools that serve only that population.
- Virtually all students with disabilities attend schools that support a band, chorus, theater group, or sports team, and large majorities go to schools with tutoring programs, summer school, supplemental instruction in reading and math, and academic and other kinds of student counseling. Most students with disabilities also go to schools that provide a variety of adolescent services, including substance abuse and pregnancy prevention education and school-to-work and conflict management programs.

¹ NLTS was designed and conducted for the Office of Special Education Programs between 1984 and 1993. It included a nationally representative sample of students who were ages 15 through 23 when the first data were collected in 1987. Many of its design features are mirrored in NLTS2 to permit comparisons between them. Comparisons between school data collected in NLTS and NLTS2 involve only the age group included in both studies.

- Virtually all students with disabilities go to schools that report arranging alternative placements and services for students with disabilities who have been suspended or expelled, and virtually all include students with disabilities in mandated standardized testing.

However, there also are some aspects of schools attended by students with disabilities that are potentially problematic.

- Their schools are significantly larger, on average, than schools attended by the general population of students, suggesting that school districts may be clustering students with disabilities where a larger student population may support a wider array of resources.
- Class sizes and caseloads of support personnel also are large, potentially hindering efforts to meet the individual learning needs of a diverse student population.
- Students with disabilities go to schools where disciplinary issues are apparent; their schools average 23 incidents of violence and 7 arrests at school or school events in a school year.
- Relatively few students with disabilities go to schools that have programs to treat substance abuse (18%), support teen parents (32%), or provide school-based health services (45%), programs that could be particularly important to students with disabilities.

Students' School Programs

As a group, secondary school students with disabilities take the full range of courses offered in their schools.

- Virtually all students with disabilities take academic classes, which average 60% of their coursework. Classes typically include language arts, mathematics, social studies, and science; about one in five students with disabilities take a foreign language.
- Comparisons between NLTS2 and NLTS show a dramatic increase in students with disabilities taking challenging courses that often are associated with preparation for postsecondary education, including science and foreign language.
- A vocational education course, usually one that is occupationally specific, is on the course schedules of almost two-thirds of students with disabilities, with higher participation among high school juniors and seniors. However, vocational course taking has declined markedly since NLTS, corresponding to the increase in academic course taking.
- Nonacademic courses, such as fine arts or physical education, also are on the course schedules of most students with disabilities, constituting about two courses of a typical seven-course schedule. Courses such as study skills or life skills are taken by about one-third of students, increasingly in special education classes since NLTS.
- Almost 9 of 10 secondary school students with disabilities participate in at least one general education class, including 70% who take one or more academic courses there, a marked increase since NLTS in taking general education academic courses.

- More than one-fourth of students with disabilities take all their courses in general education classes. This group includes the 5% of students with disabilities who discontinued special education services during the preceding 16 months.
- One in 10 students with disabilities take all their courses in special education classrooms or in individual or community-based settings.
- Two-thirds of students with disabilities are instructed in both general and special education classes. On average, general education courses are 60% of the courses students with disabilities take in a given semester, about 35% of courses are taken in special education classrooms, and the remaining courses occur in other settings.

Classroom Contexts

NLTS2 has collected information on the classroom experiences of secondary school students with disabilities that span a wide range of subject areas for both general education academic classes and special education classes, as well as for vocational education courses taught in both general and special education settings.

- More than 80% of students with disabilities who take general education academic classes are in classes where the majority of students perform at standard grade level; 16% are tracked into lower-performing classes.
- Virtually all students with disabilities in general education academic classes have teachers who are credentialed to teach the subject of the class, and these teachers average 14 years of experience, more than the average level of experience of teachers in their schools.
- General education academic classes tend to be relatively large, averaging 21 students per adult, including 5 students with disabilities. In contrast, special education classes average 6 students per adult, providing greater opportunity for individualization. A similar size difference is noted for vocational education courses; there are an average of 15 students per adult in general education vocational classes and one-third that many in vocational education courses in special education classrooms.

Instruction in General Education Academic Classes

Many of the teacher-driven activities in general education academic classes are experienced equally often by students with disabilities and by the class as a whole.

- Instructional groupings, materials used, instructional experiences outside the classroom, and discipline practices are largely the same for students with disabilities and for the class as a whole. For example, regardless of whether students in general education academic classes have disabilities, textbooks, workbooks, and worksheets are used often in classes of about 85% of students; computers are not used frequently for any purpose; and instructional experiences outside the classroom are not common.

- Whole-class instruction dominates general education academic classes for all students in them; about two-thirds of students are reported to receive whole-class instruction often, regardless of disability. Frequent small-group or individual instruction is not common; from one-fifth to about one-fourth of students receive these forms of instruction often, regardless of disability.

Nonetheless, there are important differences between the experiences of students with disabilities in general education academic classes and those of students in the class as a whole that bear on the question of their access to the general education curriculum.

- To help address the individual learning needs of students with disabilities, they are somewhat more likely than their general education academic classes as a whole to receive individual instruction from an adult other than the teacher. This increased individual instruction is facilitated by the fact that almost one in five are in classes in which a special education teacher also is present, and 12% have a classroom aide.
- The curriculum used to instruct almost two-thirds of students with disabilities who are in general education academic classes is modified to some degree, including 52% of students with disabilities whose teachers report making “some modifications” to the general education curriculum, 11% for whom substantial modifications are made, and 2% who receive an individualized curriculum.
- Students with disabilities consistently participate less actively than their classmates in their general education academic classes. The largest differences concern responding orally to questions and making presentations to the class. Whereas almost all the students in the class as a whole respond to teachers’ questions at least sometimes, one in five students with disabilities rarely or never respond orally to questions. Although about two-thirds of their classmates make presentations to the class sometimes or often, half of students with disabilities rarely or never make them. Students with disabilities also are less likely than their classmates to work independently or with a partner or group, perhaps in part because of the increased frequency with which they receive instruction from an adult other than the teacher.

Despite these differences in classroom participation, most students with disabilities have teachers who report that their placement in the class is “very appropriate.” Further, almost all students with disabilities are expected to keep up with the rest of the class, and three in four actually do. However, almost one-fourth of students with disabilities in general education academic classes are not meeting the performance expectations of their teachers.

To help them keep up in general education academic classes, virtually all students with disabilities are reported to receive some type of accommodation, support, or learning aid.

- Three-fourths of students with disabilities receive more time to take tests, and two-thirds receive more time to complete other assignments. Sixty percent have their progress monitored by a special education teacher.
- Accommodations or modifications that require changes to general education teachers’ practices are much less common. For example, about one-fourth or fewer of students with disabilities have slower-paced instruction, different assignments, or modified tests.

Teachers report using modified grading standards for approximately one-third of students with disabilities.

- Daily classwork is cited as “very important” by 70% of teachers in grading students with disabilities, followed by homework, test results, attendance, and special projects or activities (52% to 62%). Fewer teachers consider students’ class participation, attitude, and performance relative to a set standard very important.
- The importance teachers place on most grading factors does not differ for students with disabilities and their classmates, although they give somewhat less importance to test scores and performance relative to a set standard for students with disabilities.

The experiences of students with disabilities in general education classes differ somewhat, depending on the subject area of the classes. Mathematics classes stand out from classes in other subject areas in several ways that may make them particularly challenging for students with disabilities. It is in general education mathematics classes that students with disabilities are the least likely to have a modified curriculum and the most likely to receive whole-class instruction often, which may leave little room for individualization of instruction. Their mathematics teachers also are less likely than teachers of other academic classes to modify tests or grading standards and yet are the most likely to weigh test results heavily in determining grades.

In contrast, it is in their language arts classes that students with disabilities are the most likely to have slower-paced instruction, be tutored by an adult other than the teacher, use computers as an accommodation and for word processing, and use books on tape. Students in social studies classes are the most likely to have modified grading standards and modified tests.

Vocational Education Classes and Services

Participation in vocational education is the norm for the majority of students with disabilities, and the general education classroom is the most typical setting for vocational education; students with disabilities are more than twice as likely to take vocational education in general education classes as in special education settings, particularly occupationally specific vocational education.

- The majority of students with disabilities have access to the general education curriculum in their general education vocational classes. There is little modification to the teacher-driven aspects of the course—the curriculum, materials used, or classroom activities or instructional groupings—when students with disabilities are in general education vocational classes.
- Somewhat more modification is reported for aspects of the classroom experience in which student behavior or performance figures more prominently—grading criteria and discipline practices. The greatest amount of modification is reported for testing practices.

Not only are most aspects of the classroom experience the same for students with disabilities and their classmates in general education vocational classes, the vast majority of students with disabilities are expected to keep up with their classmates. Six of seven students with disabilities actually do, which may be related to the fact that in the placement of the large majority of students with disabilities in the general education vocational classroom is considered “very appropriate.” In fact, students with disabilities are more likely to keep up with their classmates in general education vocational classes than in academic classes.

School-sponsored work experience is part of the school program for about one-fourth of students with disabilities in a given semester. Other vocational services are accessed by many students with disabilities, although only career assessment is provided to at least half of students with disabilities who are currently in high school. Other vocational services, from Tech Prep programs to job coaching, are provided to much smaller percentages of students.

Supports Provided to General Education Teachers of Students with Disabilities

The vast majority of general education teachers receive some form of support for having students with disabilities in their classes. However, substantially fewer receive any particular kind of support.

- For example, only about 60% of students with disabilities in general education academic classes have teachers who receive any information about the needs of those students, and only about half have teachers who receive any input or consultation from a special educator or other staff about how to meet those needs.
- Compared with teachers of general education academic classes, vocational teachers more frequently report receiving information about individual students with disabilities in their classes and receiving consultation from a special educator or other staff. About six of seven students with disabilities in general education vocational classes have teachers who have been informed about their individual learning needs, and three-fourths have teachers who receive consultation on meeting those needs.
- Providing inservice training, a reduced student load, an aide or assistant, or special materials is less common than providing information or consultation. For example, 11% of students with disabilities in general education academic classes and 18% of such students in general education vocational classes have teachers who receive inservice training on meeting the needs of students with disabilities.

Special Education Classroom Experiences

To compare special education and general education classroom experiences, NLTS2 collected similar information about both settings.

Academic Subject Special Education Classes

Several aspects of special education academic classrooms suggest that they provide considerably greater individualization of instruction than those in general education.

- Almost half of students in special education academic classes often receive instruction in small groups, compared with about one in five students with disabilities in general education classes. Individual instruction both from the teacher and from another adult, also is more common in special than in general education academic classrooms.
- About one-third of students in special education academic classes have a specialized or individualized curriculum, which is a very rare occurrence in general education academic classes. About one-fourth of students in special education academic classes have a

substantially modified general education curriculum compared with about 1 in 10 students in general education academic classes.

- The environment in special education academic classes appears to be structured to encourage students' direct participation more than is true in general education classes. Students in special education classes are more likely to respond orally to questions and present to the class often than peers with disabilities in general education academic classes. Greater participation by students with hearing impairments may result from the much greater likelihood that students in special education classes have teachers who use manual as well as oral communication. Students in special education academic classes also are more likely often to work independently.
- The frequency of instructional activities that go on outside the classroom for students who take special education academic classes suggests that their teachers are able to provide wider opportunities for learning and applying academic subject matter in real-world settings; school- and community-based out-of-classroom instructional experiences and field trips all are more common for students in special than in general education academic classes.

Special and general education academic classes also differ in the factors teachers consider important in evaluating the performance of their students with disabilities.

- Students in special education academic classes are much more likely than their peers in general education classes to have their teachers consider their daily class work and the compilation of that work in a portfolio as very important. However, their homework is less likely to be considered very important.
- Attendance, class participation, and students' attitudes and behavior all are more likely to be considered very important for students in special education than in general education academic classes.

Although the special and general education academic classes differ markedly in several ways, other aspects of instruction in the two settings are similar.

- The use of computers for skills practice, Internet access, or applications such as word processing and working with spreadsheets is no more or less common in general than special education settings, as is true for the use of print materials other than textbooks.
- Students in the two settings are equally likely often to work with a peer partner or in a group and to be subject to tests or quizzes to assess their learning.
- General and special education academic teachers place equal importance on test results in assessing students' performance. They also weigh similarly the importance of students' performance relative to a set standard and to the performance of the rest of the class, and the importance of their work on special projects or activities when evaluating students' performance.

Special Education Study Skills Classes

Special education classes that focus on study skills have a different purpose than academic-content classes; hence, classroom practices also are significantly different in many respects.

- Students with disabilities in study skills classes have teachers who use individualized instruction more than whole-group or small-group instruction. Most of these classes are taught without a specific curriculum, so that classroom activities can be adapted to individual students' needs.
- Yet half of the students in these classes have teachers who use textbooks, worksheets, and workbooks often, and about one-third are frequently taught using other print materials. More students in study skills classes than in other types of classes use computers for word processing or creating spreadsheets as part of their independent work.
- Reflecting the individualized emphasis, the majority of students work independently more often than they do any other classroom activity.
- Although one of five students in study skills classes experience school-based instruction outside of their classrooms, they rarely experience community-based activities or field trips.

Life Skills Special Education Classes

It is in special education classes that teach life skills that the greatest specialization in instruction is found.

- Students in these classes frequently are taught in small groups or receive individualized instruction, and three-quarters of students are in classes that use a specialized curriculum.
- Although fewer students in these than in other kinds of classes frequently respond orally to questions, work independently, or use textbooks, their teachers still use these instructional activities and materials more often than other teaching methods. On the other hand, teachers of students in life skills classes use life skills materials far more than do teachers of other classes, as would be expected.
- Students in life skills classes also are more likely than their peers to have frequent instructional experiences outside the classroom.

Teachers in academic, study skills, and life skills special education classes base their student evaluations on daily class work, attitudes and behavior, class participation, attendance, and special projects. However, test results and homework play a greater role in evaluating students in subject-specific academic and study skills classes than students in life skills classes.

Disability Variations in School Programs and Classroom Experiences

As with most aspects of the lives of students with disabilities that are addressed in NLTS2, school programs and classroom experiences differ in many ways for students with different primary disabilities.

- Students with different primary disabilities have quite different patterns of course taking, and those courses involve different mixes of settings. For example, students with learning disabilities or speech or other health impairments virtually all take academic classes, and they are more likely than many groups to have those classes involve college prep subjects, including science and foreign language. Two-thirds or more of the courses they take are in general education classrooms.
- Students with emotional disturbances or hearing, visual, or orthopedic impairments have a very similar pattern of course taking, but they are less likely to receive instruction in general education classes (although the majority still do).
- Academic courses and general education settings are much less likely to figure prominently in the course schedules of students with mental retardation, autism, multiple disabilities, or deaf-blindness, although from 40% to 70% of these students take at least one general education class, usually a nonacademic class. However, they are more likely than many other groups to take vocational education courses, particularly those focused on prevocational skills, and the majority of their classes are in special education or community or other settings. They also are the most likely to have their special education experiences be reported for life skills rather than academic classes.

Although disability differences appear to be related to the types of settings in which students receive instruction, they seem to have only a small differential impact on the experiences of students with different primary disabilities in a given setting.

- For the most part, there are no disability differences in the frequency with which students use instructional materials in general education academic classes, nor does this use differ between students with disabilities and their classes as a whole. Whole-class instruction is the dominant mode for students in all categories, and instructional activities outside the classroom are relatively rare for all groups.
- Teachers of general education academic classes place the same importance on homework, daily class work, and students' behavior, attitudes, attendance, and class participation in grading students in all disability categories. Similarly, within a given kind of special education class (i.e., academic, study skills, or life skills), disability differences are few.²

There are important differences, however, in some classroom experiences across disability categories.

- Students with speech, hearing, or visual impairments tend to have experiences that are most like those of their classmates in general education academic classes. They are the

² Analyses of disability differences within each kind of special education class were conducted but are not reported in this document because small sample sizes in some kinds of classes for many disability categories result in very few significant differences between them.

most likely to have an unmodified curriculum and the least likely to receive individual instruction and several kinds of accommodations and learning supports. Their levels of participation in general education classes do not differ from those of the class as a whole on most of the dimensions investigated in NLTS2. In addition, students with hearing or visual impairments are among the least likely to have grading standards modified for them and to be granted additional time to complete assignments. Nonetheless, they are the most likely of all students with disabilities to be reported by teachers as keeping up with their classmates.

- In contrast, students with mental retardation, traumatic brain injuries, or multiple disabilities tend to differ the most from their classmates in general education academic classes. They are the most likely to receive slower-paced instruction, be granted additional time to take tests, and be given modified tests. They also are the most likely to receive individualized instruction and to have their progress monitored by a special education teacher. Students with mental retardation or multiple disabilities are the most likely of all students with disabilities in general education academic classes to be graded with modified criteria and among the most likely to be treated differently when it comes to classroom discipline. Students with mental retardation are the only group to experience differences from their classmates in how often they receive whole-class instruction, and they are the least likely of all students with disabilities to participate in classroom activities. They also are the most likely of all students with disabilities to have community-based experiences, such as field trips, and to receive peer tutoring. Reflecting these differences, more general education academic teachers of students with mental retardation, traumatic brain injuries, or multiple disabilities report that these students' placement in their classroom is not appropriate than do teachers of students in most other categories.
- Students with emotional disturbances present a somewhat different picture. Like students with mental retardation, traumatic brain injuries, or multiple disabilities, approximately one in seven have teachers who feel their placement in the class is not appropriate, yet 98% are expected to keep up with the rest of their class. They are not particularly likely to be provided accommodations or supports to help them meet those expectations, except behavior management programs and modified discipline standards, and they are the least likely of all youth with disabilities to succeed in keeping up with the class; only two-thirds do so.

Demographic Variations in School Programs and Classroom Experiences

Several aspects of the school programs and classroom experiences of students with disabilities do not differ between boys and girls or between students of different income or racial/ethnic backgrounds. For example, general education academic teachers place similar importance on the factors they use to evaluate students' performance in their classes, and vocational education teachers have similar perceptions of students' placement and performance, regardless of demographic differences between students. Teachers in special education classrooms are particularly likely to overlook demographic differences; no aspects of special education classrooms or instructional experiences differ significantly for students with different demographic characteristics. However, some differences are noted in the report, such as:

ES-12

This is an executive summary of Wagner, M., Newman, L., Cameto, R., Levine, P., & Marder, C. (2003). *Going to school: Instructional contexts, programs, and participation of secondary school students with disabilities. A report from the National Longitudinal Transition Study-2 (NLTS2)*. Menlo Park, CA: SRI International.

Gender

- **General education academic classroom experiences.** Boys are more likely than girls to be in classes that function at grade level, whereas girls are more likely to be in classes that perform below grade level. Perhaps this difference is related to the fact that girls with disabilities are more likely than boys to have teachers who report that their placement in general education academic classes is “very appropriate.”
- **General education vocational classroom experiences.** Boys with disabilities who take general education vocational courses are more likely than girls to be subject to the same discipline practices as the class as a whole. This difference may relate to the fact that boys with disabilities are much more likely than girls to have been suspended or expelled at some time in their school careers.

Household Income

- **Education-related histories.** In general, youth from less affluent households (with incomes of \$25,000 or less) first receive professional services for a disability later and first receive special education services at school later than youth from more affluent households (with incomes of more than \$50,000). Youth from lower-income households are much more likely than higher-income youth to be retained at grade level and to be suspended or expelled during their school careers.
- **General education academic classroom experiences.** Students from lower-income households are more likely to receive slower-paced instruction, be granted more time to take tests, and have tests read to them. They are less likely than peers from higher-income households to use classroom computers for word processing tasks and to work independently often.

Race/Ethnicity

- **Instructional settings.** General education courses are a smaller proportion and special education courses a larger proportion of the course schedules of African-American students with disabilities than of those of white students.
- **General education academic classroom experiences.** Across racial/ethnic groups, students are about equally likely to receive an unmodified curriculum and to experience various instructional groupings, and the materials they use in the classroom and the activities in which they participate outside of class also differ little. However, African-American students with disabilities are less likely than their white or Hispanic peers to use textbooks frequently, and minority students are more likely than white students to be given additional time to complete assignments.

Looking Ahead

These findings from NLTS2 provide a comprehensive view of the secondary school programs of students with disabilities and of their experiences in general education, special education, and vocational education classes. In doing so, NLTS2 helps inform important issues in special education policy and practice, such as the degree to which students with disabilities have access to the general education curriculum. Future waves of data collection for NLTS2 will realize the value of its longitudinal design by focusing analyses on the full range of courses and credits earned by students with disabilities through the lens of their postsecondary experiences.

1. ASSESSING THE CLASSROOM EXPERIENCES OF STUDENTS WITH DISABILITIES DURING SECONDARY SCHOOL

By Mary Wagner

The Individuals with Disabilities Education Act Amendments of 1997 (IDEA '97), the No Child Left Behind Act of 2001 (NCLB), and scores of state and local initiatives culminate nearly two decades of increasing emphasis on the improvement of American education. Schools and educators are now being held accountable for the adequate yearly progress of all students, including those with disabilities. The success of these ambitious initiatives will depend on changes in many domains, including teacher preparation and training, assessment policies, standards and expectations, and funding. However, the classroom is where “the rubber meets the road.” What happens in classrooms every school day is what students experience directly and is the mechanism through which educational interventions are most likely to produce the desired changes in student achievements. Indeed, the current focus on the use of scientifically valid instructional methods underscores the importance of high-quality educational experiences in the classroom.

Yet at the national level, information on the classroom experiences of students with disabilities has been limited to data on where students are educated—whether classes are taken in general education or special education settings (U.S. Department of Education, 2002). Little is known about the actual instructional experiences of students with disabilities nationally. Painting a clear picture of what goes on in classrooms is particularly challenging for secondary school students because their typical school day can involve up to six or seven classes, a broad mix of subject areas, and, for many, both general education and special education settings of various kinds (e.g., resource rooms, self-contained classrooms, individualized settings). But meeting that challenge is essential. The policies and practices that will help schools provide the high-quality education to all students for which they are being held accountable—educational programs that enable all students to achieve to their potential—must be grounded in a careful understanding of the complexities of the educational enterprise for students with disabilities as it plays out in real classrooms around the nation.

The Office of Special Education Programs of the U.S. Department of Education is working to provide the information needed to improve the education and outcomes of secondary school students with disabilities through the National Longitudinal Transition Study-2 (NLTS2). NLTS2 is a 10-year study that is documenting the characteristics, experiences, and outcomes of a nationally representative sample of more than 11,000 youth who were ages 13 through 16 and were receiving special education services in grade 7 or above when the study began. NLTS2 findings generalize to youth with disabilities nationally and to youth in each of the 12 federal special education disability categories in use for students in the NLTS2 age range.¹ This rich source of information will support a series of reports that will emerge over the life of NLTS2.

¹ Please see Appendix A for details about the NLTS2 design, sample, analysis approach, and measurement issues. Additional information about NLTS2 is available at www.nlts2.org.

Research Questions

This report considers the following questions for secondary-school-age students with disabilities:

- As background to understanding their current educational experiences, what education-related histories do students with disabilities “bring to the table” in terms of their early experiences with services for their disabilities, school mobility, grade-level progression, and prior school disciplinary problems?
- What are the school and classroom contexts within which secondary school students with disabilities are educated? How do general, special, and vocational education classrooms differ?
- What is the pattern of course taking of students with disabilities in secondary school, and in what settings are courses taken?
- What are the characteristics of classroom instruction provided to students with disabilities, and how do they differ in general, special, and vocational education classes?
- How do these factors differ for students with different disabilities and other characteristics?

Information Sources

These questions are addressed by using data collected from parents and school staff during Wave 1 of NLTS2.

Parents

Parents or guardians² of NLTS2 study members are a key source of information on the characteristics of students, their educational histories, and their lives outside of school. In addition, parents provide their own unique and valuable perspective on “how it’s going” with their adolescent children with disabilities, both in and outside of school. Telephone interviews conducted with parents in the spring and summer of 2001 addressed these important topics; mail questionnaires were administered to parents who could not be reached by phone. An 82% response rate resulted in interview/survey data for 9,230 students; they were ages 13 through 17 at the time.

School Staff

Given the focus of this report on students’ classroom experiences, it relies heavily on information provided by staff in the schools attended by NLTS2 study members. Mail surveys were conducted with school staff in the spring of the 2001-02 school year—students were ages 14 through 18 at the time. Three surveys were conducted, with each garnering about a 60% response rate.

² For simplicity, parents and guardians are referred to here as parents.

School staff knowledgeable about students' overall school programs and special and vocational education courses. School staff were asked to identify the staff person most knowledgeable about the overall school programs of specific individual students; these persons often were special educators. A multipurpose survey was then conducted with those school staff.³ One purpose was to obtain a snapshot of each student's school program in terms of the range of courses taken at the time and the setting for each of those courses. Information also was obtained on related and support services and programs provided to students, their transition planning experiences, and some aspects of their school performance (e.g., absenteeism, disciplinary actions, overall grades).⁴ In addition to this broad view of students' school programs, the survey collected information about instructional practices in both special education and vocational education classes.⁵ Respondents were asked to report on the characteristics of specific classes (e.g., size, subject) and how teachers worked with specific individual students in the class (e.g., curriculum used, frequency of using various instructional groupings and materials, grading criteria employed). For vocational education courses taken in general education classrooms, respondents were asked to report the extent to which the kinds of classroom practices used for students with disabilities differed from those used with the class as a whole.

Teachers of general education academic classes. For NLTS2 study members who were reported by school staff to be enrolled in at least one general education academic class, teachers of the first such class in each student's school week were surveyed.⁶ The first academic class in the week was selected so that information would be provided on a wide range of objectively selected classes taken by students with disabilities. As with special and vocational education courses addressed in the student's school program survey, general education academic teachers were asked to report background information on the class, the instructional practices used with specific individual students in the class, and how they worked with the class as a whole. These separate reports on the instructional experiences of specific students with disabilities and of the larger classes in which they participated permit a comparison that addresses the question of whether secondary school students with disabilities have access to the general education curriculum. Teachers also reported on the supports they received because the specific individual students with disabilities were in their classes and on their perceptions of the appropriateness of those students' placements in their classes and of students' performance in them.

School staff knowledgeable about the characteristics of the schools attended by students with disabilities. For each school attended by an NLTS2 study member, a school staff person who could report on the characteristics and policies of those schools (often the principal) was surveyed to provide a school-level context for the classroom-level information collected in other surveys. Broad information about the school (e.g., grade levels served, whether public or private), as well as information about the student body (e.g., size, demographic characteristics, number of students receiving special education services, absenteeism and mobility rates), was collected. School policies that affect students with disabilities (e.g., inclusion of students with disabilities in content standards and mandated standardized testing,

³ This survey is referred to as the student's school program survey.

⁴ Special topic reports from NLTS2 will provide information on services and transition planning. Students' school achievements are addressed in Wagner, Marder, Blackorby, et al. (2003).

⁵ Respondents to the survey were instructed to collaborate with teachers of these classes, if needed, to provide information on instructional practices and other classroom experiences.

⁶ This survey is referred to as the general education teacher survey.

social promotion policies) also were addressed. For schools that serve 12th-grade students, information on rates of graduation, college entrance examination participation, and college enrollment was obtained. School-level information is linked to each NLTS2 study member enrolled at a given school.

Technical Notes

Readers should remember the following issues when interpreting the findings in this report:

- **Findings are weighted.** NLTS2 was designed to provide a national picture of the characteristics, experiences, and achievements of youth with disabilities nationally in the NLTS2 age range. Therefore, all the statistics presented in this report are weighted estimates of the national population of students receiving special education in the NLTS2 age group, as well as each disability category individually. Each response for each sample member is weighted to represent the number of youth nationally that are in his or her disability category in the kind of school district (defined by region, student enrollment, and proportion of students in poverty) or special school from which he or she was selected.
- **Standard errors.** For each mean and percentage in this report, a standard error is presented that indicates the precision of the estimate. For example, a variable with a weighted estimated value of 50% and a standard error of 2 means that the value for the total population, if it had been measured, would, with 95% confidence, lie between 48% and 52% (i.e., within plus or minus 2 percentage points of 50%). Thus, smaller standard errors allow for greater confidence to be placed in the estimate, whereas larger ones require caution.
- **Small samples.** Although NLTS2 data are weighted to represent the population, the size of standard errors is influenced heavily by the actual number of youth in a given group (e.g., a disability category). Groups with very small samples have comparatively large standard errors (in fact, findings are not reported separately for groups that do not include at least 35 sample members). For example, because there are relatively few youth with deaf-blindness, estimates for that group have relatively large standard errors. Therefore, readers should be cautious in interpreting results for this group and others with small sample sizes and large standard errors.
- **Significant differences.** Only differences among groups that reach a level of statistical significance of at least .05 are mentioned in the text; significance levels generally are noted in the text. Appendix A outlines a method for using standard errors to calculate the significance of differences between groups of interest.

Organization of the Report

The chapters in this report generally correspond to the research questions posed. Chapter 2 provides background information on the education-related histories of secondary school students with disabilities. Chapters 3 and 4 provide a context within which to view students' classroom experiences by describing characteristics of schools attended by students with disabilities (Chapter 3) and their overall program of courses and instructional settings (Chapter 4). Chapter 5 compares characteristics of three kinds of classrooms frequented by many students with

disabilities: general education academic classes, vocational education classes, and special education classes. Chapters 6 through 8 describe the instructional experiences of students with disabilities in those three settings. The final chapter looks across the settings and identifies key comparative findings about the instructional experiences of students with disabilities. Appendix A provides details of the NLTS2 design, sample, measures, and analysis approaches, including definitions of the disability categories used throughout this report. Appendix B provides background information on the demographic characteristics of students with disabilities represented in NLTS2 and their families. Appendix C provides unweighted sample sizes for the analyses reported in the data tables.

The following chapters provide the first national picture of the classroom experiences of secondary school students with disabilities in a single school year. These findings will be augmented in the next few years of NLTS2 as youth complete their high school careers and a more complete view of their secondary school experiences is available.

2. THE EDUCATION-RELATED HISTORIES OF SECONDARY SCHOOL STUDENTS WITH DISABILITIES

By Mary Wagner

Engaging and learning in school are dynamic processes that involve students' interacting with curricula, classroom materials and activities, teachers, and other students. These interactions occur in a variety of contexts that are defined by the characteristics of schools and classrooms. But the interactions that are at the heart of school engagement and learning are a function of more than schools, settings, and instructional programs. What students "bring to the table" in terms of prior experiences, interests, abilities, and limitations are key factors that help shape the nature of the educational process and how students progress through their school careers. By the time they reach secondary school, all students have an extensive education-related history that can influence how they view, participate in, and relate to their school experiences and, reciprocally, how school staff view and relate to them. For students who receive special education services, the experiences associated with their disabilities and their corresponding programs and services are additional components of their education histories.

This chapter describes several key aspects of the education-related histories of secondary school students with disabilities,¹ as a context for understanding their current school programs and experiences:

- Early experiences with services for a disability
- School mobility
- Grade-level progression
- Disciplinary problems.

These aspects of students' backgrounds are described for students with disabilities as a whole and for those who differ in their primary disability category and selected demographic characteristics, where significant.

Early Experiences with Services for a Disability

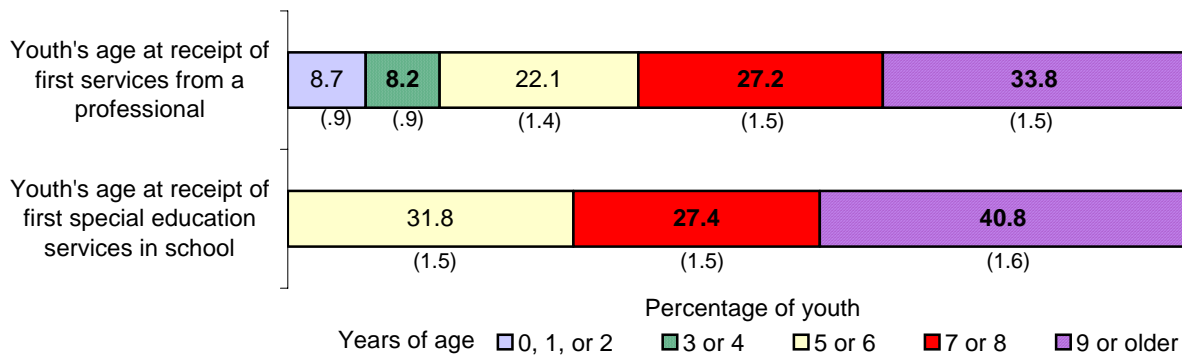
Recognizing that prompt intervention when a disability or developmental delay is identified can be extremely important in ameliorating its effects, the Individuals with Disabilities Education Act Amendments of 1997 authorize funds for states to provide early intervention services for infants and toddlers (Part C) and mandate that individualized education programs be developed for students with disabilities ages 3 through 21 (Part B). The point at which children and youth with disabilities first participate in the special education service system can reflect the nature and severity of their disability, as well as on characteristics of their families, schools, and communities and the service systems within them.

¹ Other characteristics of students that also may shape their school experiences, including demographic and disability-related factors, are summarized in Appendix B and reported in more detail in Wagner, Marder, Levine, et al. (2003). The relationships between youth achievements and demographics, disability-related characteristics, and school program factors are reported in Wagner, Marder, Blackorby, et al. (2003).

This section presents parents' reports of the ages at which youth first received professional services for a disability or delay and the ages at which they first received special education services specifically. Findings regarding participation in early intervention and preschool education also are presented for youth whose disabilities were identified at ages that made them eligible for those services.

On average, children do not receive disability-related services from a professional until they start school; the average age of children first receiving such services is just over 7. According to parents, one in five youth with disabilities first begin to receive professional services for a disability at the age of school entry (age 5 or 6; Exhibit 2-1), although 30% of youth are identified as having a disability before they are 5 years old. Approximately one-third do not receive professional services until they are at least 9 years old. The average age at which children begin receiving special education services is just over 8; the gap in age between first professional services for a disability and first receipt of special education services points up the role of professionals other than school personnel as the first service providers for many youth with disabilities. Almost one-third of youth with disabilities have been involved with special education services since kindergarten. In contrast, 41% do not begin to receive special education services until age 9 or older.

**Exhibit 2-1
YOUTH'S AGE AT FIRST RECEIPT OF PROFESSIONAL SERVICES FOR DISABILITY
AND SPECIAL EDUCATION SERVICES AT SCHOOL**



Source: NLTS2 Wave 1 parent interviews.
Standard errors are in parentheses.

Among youth whose disabilities are identified earlier than kindergarten, many receive services for them through early intervention programs or preschool special education. Of the 19% of youth with disabilities who are reported to have had disabilities identified before age 3, more than half (58%) participated in early intervention services for infants and toddlers with disabilities. Among the approximately 45% of youth whose disabilities were identified before age 6, 47% received special education services in their preschool years.

School Mobility

It is estimated that about 15% of students in this country change schools each year (U.S. General Accounting Office, 1994). Although some school changes result from the natural

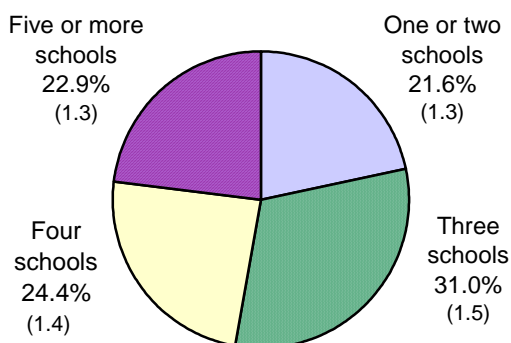
progression of students up through the grade levels (i.e., moving from elementary to middle and middle to high school), more frequent school changes are common for some students, particularly those from low-income households (Wright, 1999), a group that is overrepresented among students with disabilities (Marder, Levine, Wagner, & Cardoso, 2003).

Frequent school changes can have negative consequences for both students and schools. When students change schools, their instructional programs and relationships with adults and peers at school are disrupted. Research has demonstrated relationships between high rates of student mobility and poor school performance (Demie, 2002; Rumberger, 2002). Students who move more than three times in a 6-year period can fall one full academic year behind (Kerbow, 1996), and highly mobile students are more likely to be retained at a grade level than students who do not change schools frequently (Fowler-Finn, 2001). Negative impacts on social development and relationships also have been documented (Pribesh & Downey, 1999; Simpson & Fowler, 1994; Wood, Halfon, Scarlata, Newacheck, & Nessim, 1993). Students with disabilities who are highly mobile also have higher rates of absenteeism than more stable students, other differences between them held constant (Newman, Davies, & Marder, 2003). Higher rates of dropping out of school can result from this cluster of factors (Rumberger & Larson, 1998); the U.S. General Accounting Office (1994) reports that students who change schools more than three times before eighth grade are at least four times as likely to drop out of school as more stable students.

Schools also are challenged in their instructional programs when large proportions of students are new each year. Because academic records often do not accompany mobile students, students may not be appropriately placed in classes or programs (Biernat & Jax, 2000). With many new students, classroom instruction can become more review oriented and slower paced than when schools have a more stable student population (Stover, 2000). High mobility can make scheduling and staffing decisions difficult (Florida Division of Teaching and Learning, n.d.), and a large number of transient students who test poorly can lower aggregate school performance scores that are used for accountability purposes.

About one in five students with disabilities have attended one or two schools since kindergarten (Exhibit 2-2)—the expected number if students change schools only to progress from elementary to middle and middle to high school. However, about one-fourth have attended four schools, and 23% have gone to five or more schools.

Exhibit 2-2
NUMBER OF SCHOOLS ATTENDED
BY STUDENTS WITH DISABILITIES



Source: NLTS2 Wave 1 parent interviews. Standard errors are in parentheses.

Grade-Level Progression

Although the majority of students progress to the next higher grade level with each year of schooling, some students either skip a grade because their skills are more appropriate to a higher grade level or, more frequently, are retained at a grade level because they have not met the requisite skill or content expectations. Estimates

are that 15% to 19% of American students are retained each year (American Federation of Teachers, 1997). The intention in making low-performing students repeat a grade is to provide an opportunity for them to master material missed in their first exposure to it. Public policy is shifting against the practice of “social promotion” of underachieving students, supported by some research that identifies positive impacts of retention on students’ achievement and attitudes toward school (Alexander, Entwisle, & Dauber, 1994; Gottfredson, Fink, & Graham, 1994). However, other research on the effects of grade retention provides little consistent evidence that it benefits students academically (Holmes, 1989); in fact, grade retention is linked to higher rates of dropping out of school (Darling-Hammond, 1998; Roderick, Nagaoka, Bacon, & Easton, 2000; Shepherd & Smith, 1990) and poor social adjustment and employment outcomes after high school (Jimerson, 1999). NLTS2 analyses of the relationship between grade retention and academic performance confirms that students who have been retained are more likely to continue to receive lower grades than other students, independent of other differences between them (Blackorby, Chorost, Garza, & Guzman, 2003).

According to parents, very few youth with disabilities (3%) skip a grade level during their school careers (Exhibit 2-3), with about an equal likelihood that the grade skipped is in elementary or in middle school. It is much more common that youth with disabilities repeat at least one grade level; more than one-third (36%) do so. This is a much higher rate of grade retention than for same-age youth in the general population (18%, $p < .001$).² Most youth with disabilities who repeat a grade do so in elementary school.

Exhibit 2-3 PREVIOUS EDUCATION-RELATED EXPERIENCES OF STUDENTS WITH DISABILITIES		
	Percentage	Standard Error
Students whose parents report they have:		
Ever skipped a grade in school	2.6	.5
Skipped grade:		
Kindergarten through fifth	1.1	.3
Sixth through eighth	1.1	.3
Ninth through twelfth	.3	.2
Ever repeated a grade in school	35.9	1.4
Repeated grade:		
Kindergarten through fifth	28.0	1.4
Sixth through eighth	5.2	.7
Ninth through twelfth	3.2	.6
Ever suspended or expelled	32.7	1.5
Source: NLTS2 Wave 1 parent interviews.		

Disciplinary Problems

It is often the case that at some point during their school careers, students get into trouble at school that results in disciplinary action. Occasionally, the trouble is serious enough to result in a formal suspension or expulsion from school. Having disciplinary problems at school is highly related to the likelihood of arrests among students with disabilities (Marder, Wagner, & Sumi, 2003).

According to parents, one-third of students with disabilities are suspended or expelled at least once in their school careers (Exhibit 2-3), including 26% who are suspended, 1% who are expelled, and 6% who have both experiences. Students with disabilities are much more likely to be

suspended or expelled than same-age students in the general population, among whom 22% are reported by parents to have been suspended or expelled.³

² Calculated for 14- through 18-year-olds from the National Household Education Survey of 1999.

³ Calculated for 14- through 18-year-olds from the National Household Education Survey of 1999.

Disability Variations in Education-Related Histories

The kinds of education-related experiences described thus far vary dramatically among youth who differ in their primary disability classification (Exhibit 2-4). Youth with sensory or orthopedic impairments, autism, or multiple disabilities are by far the most likely to begin receiving services as young children, with their average age for first professional services ranging from 2 to 4. These youth begin their special education services at school entry, on average.

Exhibit 2-4
PREVIOUS EDUCATION-RELATED EXPERIENCES, BY DISABILITY CATEGORY

	Learning Disability	Speech/ Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Autism	Traumatic Brain Injury	Multiple Disabilities	Deaf-Blindness
Average age when first:												
Received professional services for disability	7.9 (.1)	7.1 (.2)	5.6 (.2)	8.1 (.2)	4.1 (.2)	3.4 (.3)	2.7 (.2)	7.1 (.2)	4.0 (.1)	7.2 (.4)	3.0 (.2)	2.3 (.3)
Received special education services	8.6 (.1)	7.8 (.1)	7.2 (.1)	9.0 (.1)	6.6 (.1)	6.8 (.2)	6.5 (.2)	8.5 (.1)	5.9 (.1)	8.1 (.3)	6.0 (.1)	6.2 (.2)
Percentage with disability identified by age 3 who received early intervention services	41.8 (8.7)	60.7 (6.7)	69.9 (4.4)	34.0 (8.4)	69.0 (3.8)	69.8 (4.4)	77.3 (2.8)	52.1 (5.9)	58.3 (3.7)	54.8 (9.7)	81.4 (2.6)	69.8 (5.5)
Percentage with disability identified before age 6 who received preschool special education services	36.5 (4.7)	47.5 (4.7)	66.3 (3.4)	29.9 (4.2)	69.5 (3.0)	59.5 (3.7)	73.3 (2.7)	35.9 (3.5)	71.2 (2.6)	56.6 (7.4)	80.9 (2.4)	78.4 (4.6)
Percentage who have attended:												
One or two schools	21.8 (2.0)	28.5 (2.2)	26.7 (2.3)	12.6 (1.7)	24.4 (2.5)	24.6 (3.0)	19.0 (2.2)	21.8 (2.-)	19.9 (2.2)	15.5 (3.3)	24.1 (2.3)	29.0 (4.7)
Five or more schools	21.0 (2.0)	12.9 (1.7)	19.6 (2.0)	40.2 (2.6)	19.5 (2.3)	17.6 (2.7)	20.2 (2.2)	24.9 (2.1)	29.3 (2.5)	25.3 (4.0)	25.8 (2.4)	25.7 (4.5)
Percentage whose parents report they have ever:												
Repeated a grade	34.7 (2.3)	33.3 (2.3)	45.3 (2.5)	37.7 (2.5)	29.7 (2.6)	24.4 (3.0)	26.8 (2.5)	36.4 (2.3)	22.4 (2.3)	31.9 (4.2)	29.8 (2.5)	34.5 (4.9)
Been suspended or expelled	27.2 (2.2)	16.8 (1.8)	32.8 (2.4)	72.9 (2.3)	18.2 (2.2)	12.5 (2.3)	13.1 (1.9)	41.4 (2.3)	17.4 (2.0)	30.3 (4.1)	18.0 (2.1)	14.3 (3.6)

Source: NLTS2 Wave 1 parent interviews.

Standard errors are in parentheses.

In contrast, youth with mental retardation first receive professional services at school entry and begin special education services at age 7, on average. Youth with speech or other health impairments or traumatic brain injuries tend to first receive services at age 7 and special education services at age 8. Those with learning disabilities or emotional disturbances are the oldest when they first receive professional (age 8, on average) and special education services (age 9, on average).

Youth with orthopedic impairments or multiple disabilities whose disabilities are identified before age 3 are the most likely to receive early intervention services (77% and 81%, respectively). Along with youth with hearing impairments, autism, or deaf-blindness whose disabilities are identified before age 6, they also are among the most likely to receive

preschool special education services (ranging from 70% to 81% across the five disability categories). In contrast, youth with learning disabilities or emotional disturbances whose disabilities are identified by the appropriate ages for early intervention or preschool special education services are among the least likely to receive them; approximately 42% of youth with learning disabilities and 34% of those with emotional disturbances receive early intervention services, and 36% and 30% of them participate in preschool special education.

Between about 20% and 29% of students across most disability categories have attended one or two schools—the number expected for normal grade level progression—and about one-fourth or fewer have gone to five or more schools. This contrasts with 40% of youth with emotional disturbances who have attended five or more schools ($p < .001$ comparing youth with emotional disturbances and autism, the category with the next highest rate of school mobility).

Few youth with disabilities in any category ever skip a grade in school; from 2% to 4% across categories do so. However, sizable percentages of youth in every category are held back a grade, ranging from 22% of youth with autism to 45% of youth with mental retardation ($p < .001$). Suspensions and expulsions are experienced by youth in every category, as well, although the extent of these disciplinary problems ranges more widely. Fewer than 15% of youth with visual or orthopedic impairments or deaf-blindness are reported by parents as ever having been suspended or expelled from school. However, between 27% and 33% of youth with learning disabilities, mental retardation, or traumatic brain injuries have had those experiences, as have 73% of youth with emotional disturbances.

Demographic Variations in Education-Related Histories

Several aspects of the education-related histories of youth with disabilities differ for those with different demographic characteristics.

Age. The number of schools attended increases as students age; 15% of 13- and 14-year-olds have gone to five or more schools, as have 25% of 17-year-olds ($p < .05$). Also, older youth with disabilities are more likely than younger students to be suspended or expelled from school (36% of 17-year-olds vs. 27% of 13- or 14-year-olds, $p < .05$), both logical finding, given the greater number of years in which to attend a variety of schools or run into trouble at school. Interestingly, however, older youth are not more likely to be retained at grade level (33% of 13- and 14-year-olds with disabilities have been retained, compared with 39% of 17-year-olds), reflecting the fact that most youth with disabilities who are held back a grade in school have experienced grade retention in elementary school.

Gender. Gender does not distinguish between youth with regard to most features of their previous education-related experiences, with the exception that boys with disabilities are much more likely than girls to have been suspended or expelled at some time in their school careers (38% vs. 22%, $p < .001$).

Household income. There are differences in several education-related experiences for youth with different levels of household income (Exhibit 2-5). In general, youth from less affluent households first receive services for a disability later than youth from more affluent households (7.7 years for youth from households with incomes of \$25,000 or less vs. 6.9 years

Exhibit 2-5
PREVIOUS EDUCATION-RELATED EXPERIENCES OF STUDENTS WITH DISABILITIES,
BY HOUSEHOLD INCOME AND RACE/ETHNICITY

	Income			Race/Ethnicity		
	\$25,000 or Less	\$25,001 to \$50,000	More than \$50,000	White	African American	Hispanic
Average age when first professional services for disability began	7.7 (.2)	7.4 (.2)	6.9 (.2)	7.1 (.1)	7.9 (.2)	7.7 (.3)
Average age when first received special education services at school at age:	8.5 (.1)	8.4 (.2)	8.0 (.2)	8.1 (.1)	8.9 (.2)	8.7 (.3)
Percentage whose parents report they have ever:						
Repeated a grade	42.8 (2.6)	35.6 (2.9)	28.7 (2.7)	34.0 (1.9)	39.9 (3.4)	41.0 (4.4)
Been suspended or expelled	40.2 (2.6)	34.2 (2.9)	25.5 (2.6)	29.9 (1.9)	46.2 (3.4)	27.6 (4.0)

Source: NLTS2 Wave 1 parent interviews.
Standard errors are in parentheses.

for those from households of more than \$50,000, $p < .01$). Similarly, lower-income youth tend not to receive special education services at school as early as upper-income youth (age 8.5 vs. 8.0 for the lowest- and highest-income groups, $p < .05$). However, there are no income-related differences in participation in early intervention services or preschool special education among youth whose disabilities are identified at ages that qualify them for such services.

Although, youth from households at different income levels do not differ with regard to school mobility, they do differ markedly in their experiences with grade retention and disciplinary actions. Youth from lower-income households are much more likely than higher-income youth to be retained at grade level (43% of those with incomes of \$25,000 or less vs. 29% for those with incomes of more than \$50,000, $p < .001$) and to be suspended or expelled during their school careers (40% vs. 26%, $p < .001$).

Race/ethnicity. Differences are noted for youth of different racial/ethnic backgrounds, consistent in direction with those found for household income. African American youth, who more often are from lower-income households than white students, begin to receive professional services for their disabilities later, on average, than white youth (age 7.9 vs. 7.1, $p < .001$) and to receive special education services later (age 8.9 vs. 8.1, $p < .001$). The average age for receipt of services for Hispanic youth falls between those of white and African American students. As with income-related findings, there are no significant differences in the rates at which students from different racial/ethnic backgrounds participate in early intervention or preschool special education or in their school mobility. However, African American youth with disabilities are much more likely than either white or Hispanic students to be suspended or expelled (46% vs. 30% and 28%, $p < .001$). Unlike income-related differences noted above, there are no differences between racial/ethnic groups in their experiences with grade retention.

Summary

This chapter has highlighted several aspects of what youth with disabilities bring to their secondary school careers in terms of prior education-related experiences. NLTS2 findings show that some youth with disabilities and their families have been dealing with disability-related service systems since before they entered school. About half of youth who have their disabilities identified at the ages to qualify for early intervention or preschool special education services participate in those programs, with program participation being most common for children with sensory or orthopedic impairments or multiple disabilities. Yet many more youth first receive services for their disabilities at school entry or in the first elementary school years; the average age at which youth first receive special education services is just over 8.

A large number of youth with disabilities experience the challenges of school mobility. Almost one-fourth have attended five or more schools during their educational careers—several more than would be expected from normal grade-level progression—with the associated disruption in instructional programs and relationships. Youth with disabilities also are much more likely than youth in the general population to receive the message of academic failure that is inherent in having to repeat a grade in school—more than one-third are retained at grade level at least once, usually in elementary school. Grade retention is particularly common for youth with mental retardation. One-third of youth with disabilities also receive school suspensions or expulsions—a much higher rate of these disciplinary actions than among students in the general population. High rates of school mobility and suspensions or expulsions are particularly pronounced for youth with emotional disturbances.

Having provided some understanding of the past education-related experiences that youth with disabilities bring to their secondary school years, the report now turns to a description of the schools that are the educational context during those years.

3. THE SCHOOLS ATTENDED BY SECONDARY SCHOOL STUDENTS WITH DISABILITIES

By Mary Wagner and Phyllis Levine

Students' experiences at school are shaped in important ways by their own instructional programs and extracurricular involvement and what they bring to them. However, the schools in which those experiences occur also can influence students' learning, engagement, performance, and satisfaction. For example, there is a growing movement in support of smaller high schools (e.g., Coalition of Essential Schools, 2003) because they are believed to provide a context that is more conducive to authentic instruction, positive student-adult and student-student relationships, and effective preparation for postschool success. Similarly, increases in standards for teacher quality embedded in the No Child Left Behind Act of 2001 (NCLB) recognize that adequate staff resources in schools are a key ingredient in improving student achievement. Aspects of the school context can be important for all students, but perhaps particularly for students with disabilities, who may be challenged in their ability to engage in their instructional programs and/or in positive relationships at school. Thus, an awareness of the characteristics of schools attended by students with disabilities is an important element of understanding the school programs they are provided and the outcomes they achieve.¹

This chapter provides a backdrop for subsequent analyses of students' school programs by describing several key features of the school contexts in which secondary school students² with disabilities are educated:

- The types of schools they attend
- School and class size
- Characteristics of the student bodies in those schools
- Resources available in schools
- Policies that affect students with disabilities
- School climate.

These characteristics of schools³ are described for secondary school students with disabilities as a group and for middle and high school students where they differ.⁴

¹ The outcomes of secondary school students with disabilities in the domains of school engagement, academic performance, social adjustment, and independence are presented in Wagner, Marder, Blackorby, et al., 2003.

² "Secondary school students" refers to those in grades 7 through 12, and "secondary schools" refers to schools that serve those grade levels.

³ This chapter reports the characteristics of schools attended by a nationally representative sample of students with disabilities; those schools do not constitute a nationally representative sample of schools. Percentages reported are percentages of students who attend schools with particular characteristics, not the percentage of schools with those characteristics.

⁴ Unlike most other analyses in this report, school characteristics are not described separately for students who differ in their primary disability category or selected demographic characteristics because, for the most part, the school contexts for students who differ on these factors are quite similar.

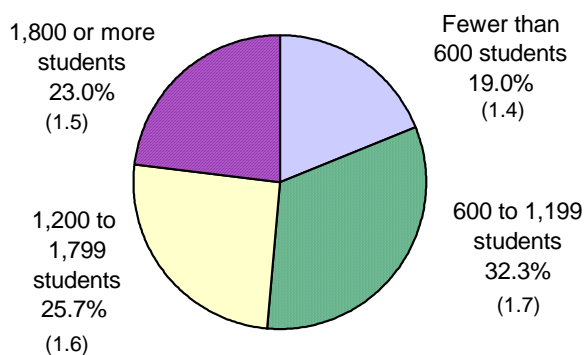
Type of School Attended

Almost all secondary school students with disabilities (98%) attend public schools,⁵ a higher rate of attendance at public schools than same-age students in the general population (92%, $p < .001$).⁶ About as many students with disabilities (72%) as students in the general population (75%) attend schools in their neighborhoods. Overall, 93% of students with disabilities attend regular schools that serve a wide variety of students, and about 3% attend special schools that serve only students with disabilities. The other 3% of students attend charter, magnet, or alternative schools. Among 14- to 18-year-old students with disabilities, almost 14% attend middle or junior high schools and 76% attend high schools. Multilevel schools (e.g., kindergarten through 12th grade) are attended by about 10% of students with disabilities. This distribution differs significantly from that of the general population in the same age range, among whom fewer attend middle schools (9%, $p < .001$) and high schools (71%, $p < .01$) and more attend multilevel schools (20%, $p < .001$). The relatively small proportion of students with disabilities attending middle schools means that the findings in this chapter represent largely the characteristics of high schools.

School and Class Size

Secondary school students with disabilities attend schools with an average enrollment of 1,310 students, although about one in five go to schools with fewer than 600 students and 23% attend schools with 1,800 or more students (Exhibit 3-1). There is a clear pattern of lower student enrollments in middle schools than in high schools. The average enrollment in schools attended by

Exhibit 3-1
STUDENT ENROLLMENT IN SCHOOLS ATTENDED BY STUDENTS WITH DISABILITIES



Average enrollment = 1,310.
Source: NLTS2 Wave 1 school characteristics survey.
Standard errors are in parentheses.

7th- and 8th-grade students with disabilities is 863, compared with average enrollments of 1,288 to 1,534 for 9th through 12th graders ($p < .001$).

Students with disabilities generally attend larger schools than students in the general population, whose middle schools average 605 students and whose high schools average 751 students (Hoffman, 2002). This difference may result in part from some school districts' clustering students with disabilities in larger schools within the district. A larger student body can have the critical mass of students with particular learning needs to justify having specialized staff or other resources to address them. Further, the size of schools

⁵ NLTS2 students were chosen from rosters of students receiving special education from or through public school districts. Districts were instructed to include all students for whom they were responsible, regardless of where they went to school or the type of school attended (e.g., a residential school in another state). Despite these instructions, it is possible that districts underreported students served in non-public-school placements, thereby increasing the proportion of students reported to be attending public schools.

⁶ Calculated for 14- through 18-year-olds from the National Household Education Survey of 1999.

attended by students with disabilities has increased by more than 25% since 1987, a higher rate of growth than experienced in schools attended by the general student population (Wagner, Newman, & Cameto, forthcoming).

Average class sizes also are larger in schools attended by secondary school students with disabilities than in schools overall. General education academic classes in schools attended by students with disabilities average almost 27 students, compared with averages of 22 to almost 25 across academic subjects in schools nationally ($p < .001$; Council of Chief State School Officers, 2003). Special education classes are smaller; resource rooms average 11 students, and self-contained special education classes average 10 students. Vocational education classes in schools attended by students with disabilities have 22 students, on average.

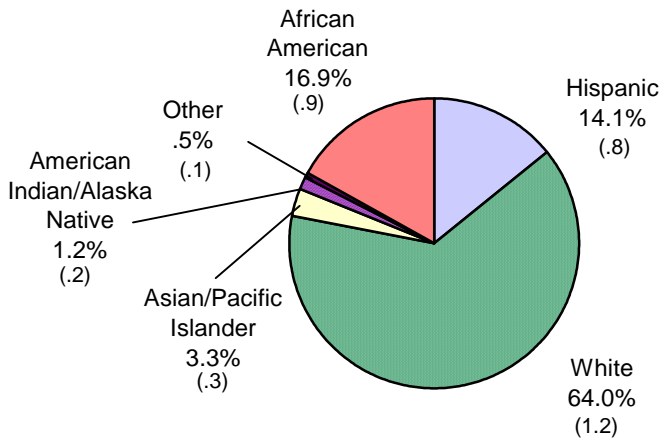
The larger size of both schools attended by students with disabilities and the classes in them could be cause for concern. Attending large schools can have adverse effects for racial and ethnic minorities and for students living in low-income households (Haller, Monk, & Tien, 1993; Howley & Bickel, 2000; Roza, 2001; Wasley, 2002), groups that are disproportionately represented among students with disabilities (Marder, Levine, & Wagner, 2003; Marder, Levine, Wagner, et al., 2003). Smaller school size has been linked to improved student and staff attitudes, social behavior, extracurricular participation, attendance, graduation rates, parent involvement, and student attitudes (Cotton, 2001; Haller, et al., 1993). Smaller class sizes also are associated with positive student outcomes (Finn, 1998; Greenwald, Hedges, & Laine, 1996; Mosteller, 1995; National Center for Education Statistics, 2000; Pritchard, 1998). This association has been found to be true particularly for disadvantaged and minority students (Finn, 1998; Grissmer, Flanagan, & Williamson, 1998; Hanushek, 1998; Krueger, 1998; Mosteller, 1995). Many teachers and parents believe that small class sizes also improve the outcomes of special education students (Folger, 1989; Johnston, 1989; Nye, Boyd-Zaharias, Fulton, & Wallenhorst, 1992), and a review of the literature supports that association (McCrea, 1996).

Student Body Characteristics

As America's population has become more diverse, so has the student population, with important implications. The characteristics of a school's inhabitants are often critical but overlooked factors in understanding the dynamics of schools and the experiences of students in them. This section examines several key characteristics of the student bodies of schools attended by students with disabilities, including racial/ethnic distribution, prevalence of English language learners, and economic status. The prevalence of students with disabilities being served in the school also is reported, including the proportion of students with "504 plans," those receiving special education, and those with each of the primary disability category designations. None of these characteristics differ for students at middle and high school grade levels.

Racial/ethnic background. The diversity in the American population is mirrored in schools attended by students with disabilities. As a whole, they attend schools where 64% of the student population are white (Exhibit 3-2), 17% are African American, and 14% are Hispanic, just as in the general population. However, these averages mask considerable variation among schools. About 17% of secondary school students with disabilities attend schools where one-fourth or fewer of the student body are white, and almost half (48%) are in schools where more than three-fourths of their classmates are white.

Exhibit 3-2
AVERAGE RACIAL/ETHNIC DISTRIBUTION IN SCHOOLS
ATTENDED BY STUDENTS WITH DISABILITIES



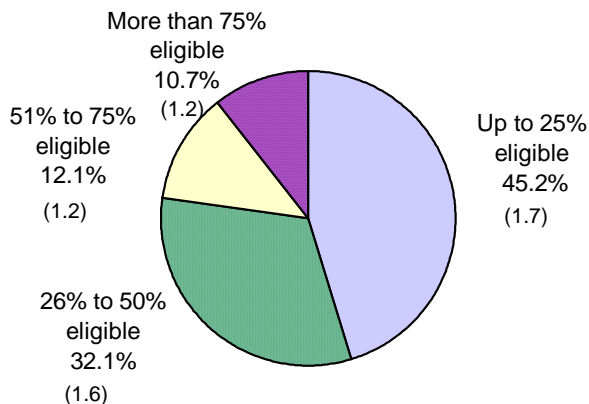
Source: NLTS2 Wave 1 school characteristics survey.
 Standard errors are in parentheses.

Language diversity. School staff report that an average of 3% of the student bodies in schools attended by secondary school students with disabilities are English language learner (ELL) students. Almost half of students with disabilities (46%) attend schools with no ELL students at all, and 8% attend schools where more than 10% of the student population are identified as ELL or English as a second language (ESL).

Student poverty. Many students in schools attended by students with disabilities participate in the National School Lunch Program, through which students from households with incomes below 185% of the federal

poverty level are eligible for reduced-price lunches and those from households with incomes below 130% of poverty are eligible for free lunches. In the 2000-01 school year, 57% of students in the general population received free or reduced-price lunches on a typical school day (Food Research and Action Center, 2002; Hoffman, 2002), primarily at the elementary school level. About 1 in 10 high school students with disabilities (11%) are in schools where more than 75% of students participate in this program (Exhibit 3-3). On the other hand, almost half of students with disabilities (45%) go to schools where one-fourth or fewer of students are eligible for free or reduced-priced lunches.

Exhibit 3-3
PERCENTAGE OF STUDENTS ELIGIBLE FOR FREE OR
REDUCED-PRICE LUNCHES IN SCHOOLS ATTENDED BY
STUDENTS WITH DISABILITIES



Source: NLTS2 Wave 1 school characteristics survey.
 Standard errors are in parentheses.

Student mobility. As noted in Chapter 2, research has demonstrated relationships between high rates of student mobility and poor school performance and frequent behavioral problems, independent of characteristics such as poverty, race, and family structure (Rumberger, 2002; Rumberger & Larson, 1998; Simpson & Fowler, 1994; Swanson & Schneider, 1999). High rates of mobility at the school level mean that sizable percentages of students are experiencing these kinds of negative consequences. Students with disabilities attend schools with an average mobility rate of 11%, similar to the national average of 15% (U.S. General Accounting Office, 1994).

More than one-third (39%) of students with disabilities go to schools with mobility rates of 5% or less, whereas 13% of students attend schools with mobility rates of more than 20%.

Students with disabilities in the schools. There has been a steady increase over the past 25 years in the number of students receiving special education services (U.S. Department of Education, 2002). Larger numbers of students with disabilities in a school can present a wide range of instructional and service challenges to schools.

NLTS2 findings show that secondary school students with disabilities attend schools where an average of 16% of students have individualized education programs and receive special education services. Almost one in four students with disabilities (23%) go to schools where they are less than 10% of the student population, whereas 10% go to schools where students with disabilities are 25% or more of the student body. In addition to students who receive special education services, an average of another 1% of the student bodies in the schools are reported to receive accommodations for a disability under section 504 of the Rehabilitation Act of 1973.

School Resources

Although NLTS2 does not collect information on the budgets or financial resources of schools,⁷ staff of schools attended by elementary and middle school students with disabilities were asked to report on five aspects of their schools' resources:

- The size and characteristics of their staffs
- The presence of programs that support the learning and development of students
- The availability of computer technology
- Special education placement options
- Supports for teachers.

Staff

The quality of teachers clearly is important to student performance. In fact, some research has shown that teacher quality is the most important factor in student achievement (Rivkin, Hanushek, & Kain, 1998). Two proxies for teacher quality are credentials and experience. Associations have been found between both of these and student outcomes (Darling-Hammond, 2000; Goldhaber & Brewer, 1997; Monk & King, 1994). Unfortunately, inexperienced teachers and teachers who teach out-of-field are not uncommon (Henke, Choy, Chen, Geis, & Abt, 1997; Ingersoll, 1999; Lewis et al., 1999; Seastrom, Gruber, Henke, McGrath, & Cohen, 2002), particularly when fully qualified teachers are in short supply. Having underprepared teachers is particularly likely in schools that serve students with low academic performance (National Center for Education Statistics, 2002).

Secondary school students with disabilities attend schools where an average of 88% of teachers are reported to be fully credentialed for their primary teaching assignment. This is similar to the rate found for the general population of students; between 13% and 22% of teachers

⁷ Information on expenditures related to special education services is reported by the Special Education Expenditure Project (SEEP), available at <http://csef.air.org>.

of English, social science, mathematics, or science in fifth through ninth grades nationally did not have a major, minor, or certification to teach in their subject area in 1999-2000 (Seastrom et al.,

Exhibit 3-4 NONTeaching Staff in Schools Attended By Students with Disabilities		
	Number or Percentage	Standard Error
All nonteaching professional staff		
Average number in the school	28	1.0
Average students per staff member	58	1.4
Related services staff		
Speech therapists/pathologists		
Percentage ^a	89.6	1.5
Average number ^b	1.5	.3
Nursing/medical personnel		
Percentage ^a	89.4	1.4
Average number ^b	1.6	.3
School psychologists/diagnostic personnel		
Percentage ^a	87.7	1.5
Average number ^b	1.5	.3
Social workers		
Percentage ^a	53.6	2.3
Average number ^b	1.1	.3
Guidance counselors		
Percentage ^a	98.6	.5
Average number ^b	4.1	.3
Other related services personnel		
Percentage ^a	63.1	2.3
Average number ^b	2.0	.4
Other staff		
Administrators		
Percentage ^a	99.9	.1
Average number ^b	4.3	.1
Librarians/other media personnel		
Percentage ^a	98.1	.6
Average number ^b	2.4	.1
Reading specialists		
Percentage ^a	45.7	2.3
Average number ^b	1.2	.3
Instructional aides		
Percentage ^a	97.2	.7
Average number ^b	10.1	.6
Itinerant or special-subject staff		
Percentage ^a	56.6	2.3
Average number ^b	1.5	.1

Source: NLTS2 Wave 1 school characteristics survey.
^a Percentage of students going to schools with kind of staff.
^b Average number of kind of staff in schools attended by students with disabilities.

2002). About 17% of teachers in schools attended by students with disabilities have less than 3 years teaching experience, and 12% are in their first year of teaching. However, there is some variation in these aspects of teacher preparation. For example, 16% of students with disabilities go to schools where 5% or fewer of teachers have less than 3 years teaching experience, but a similar percentage go to schools where more than one-fourth have that level of experience.

In addition to teachers, a variety of professional staff may provide important services to support student learning. Guidance counselors, library and media staff, and administrators support the needs of all students. Having students with disabilities in a school also can occasion the need for related services professionals, such as speech or physical therapists. Respondents to the school characteristics survey were asked to report the number of these various kinds of staff that worked in their school (Exhibit 3-4).

Overall, students with disabilities attend schools with an average of 28 nonteaching staff, resulting in a ratio of all students to nonteaching staff of 58 to 1. Virtually all secondary school students with disabilities go to schools that have guidance counselors (99%), whose average caseload is 352 students. A large majority of students with disabilities (88% to 90%) also attend schools with speech therapists and/or pathologists, nursing or medical staff, and school psychologists or diagnostic personnel. School psychologists have an average caseload of 231 students. More than half of students with disabilities (54%) attend schools that also have a social worker, and 63% go to

schools with other related services personnel. On average, schools that have a given type of nonteaching staff member have one or two of these staff, although schools have an average of four guidance counselors.

Virtually all students with disabilities attend schools with administrators (an average of 4), librarians or other media personnel (an average of 2), and instructional aides (an average of 10). Reading specialists are somewhat less common but are in the schools of almost half of students (46%), more commonly in middle schools (59% of middle school students with disabilities have reading specialists in their schools, compared with 42% of high school juniors or seniors, $p < .05$). More than half of students (57%) attend schools that use itinerant or special-subject staff.

Despite the fact that, on average, high school students with disabilities attend schools that are much larger than those attended by middle school students, high schools do not have more of most kinds of nonteaching staff than middle schools. Exceptions are that, on average, the schools attended by high school students with disabilities have more administrators (4 vs. 2, $p < .001$), instructional aides (11 vs. 7, $p < .01$), and guidance counselors (4 or 5 vs. 2, $p < .001$). Having a larger number of guidance counselors to handle the larger enrollment of high schools results in similar average caseloads of those staff in middle and high schools (ranging from 344 to 371 across grade levels).

Programs to Support Student Learning and Development

In response to the considerable diversity of students' interests and learning styles, schools provide a wide variety of programs and activities to help students engage and perform successfully in school. Some programs have an academic bent, such as after-school or weekend tutoring programs, whereas others encourage the nonacademic interests and abilities of students, such as organized sports teams and performing groups. Some programs may be especially important to the needs of students with disabilities, such as diagnostic services to identify learning problems and intervention strategies for them. Other programs are intended to benefit the entire school, rather than participating students, such as schoolwide reform activities. The presence of a broad range of programs, services, and activities at school that appeal to students' interests and support improved performance may be particularly important for students with disabilities, many of whom struggle academically. Academic supports may provide the additional instructional attention students need, and nonacademic programs may provide opportunities for success in a variety of settings that encourage students to engage in school.

Academic support programs. The large majority of secondary school students with disabilities attend schools with some kind of academic support program (Exhibit 3-5). College and career awareness programs are the most common of the academic programs investigated in NLTS2; 88% of students with disabilities go to schools that have such programs. To support students' academic performance, schools attended by about 82% of students with disabilities offer tutoring programs, homework clubs, or mentoring programs or summer school, and those attended by almost two-thirds of students provide supplemental reading or math instruction. About three-fourths (76%) go to schools that have diagnostic and prescriptive programs to identify learning problems, similar to the 74% who attend schools with gifted and talented programs.

Most academic support programs are about equally likely to be provided in schools attended by middle and high school students with disabilities, with the exception of college and career awareness programs, which are more common in high schools than in middle schools (92% of

juniors or seniors go to schools with these programs vs. 68% of students in seventh or eighth grade, $p < .001$).

Exhibit 3-5 SUPPORT PROGRAMS IN SCHOOLS ATTENDED BY STUDENTS WITH DISABILITIES		
	Percentage ^a	Standard Error
Academic programs		
College and career awareness and preparation program	87.6	1.4
Tutoring, homework club, mentoring program	82.8	1.6
Summer school	82.2	1.6
Diagnostic and prescriptive program to identify learning problems	76.3	1.8
Gifted and talented program	74.3	1.8
Supplemental instruction in reading/language arts	65.8	2.0
Supplemental instruction in math	64.1	2.0
Peer support program for students with disabilities	40.2	2.1
Enrichment/recreation programs		
Band, chorus, other performing opportunities	94.9	.9
Clubs/activities outside of class	85.7	1.4
Organized school sports program	94.9	.9
Weekend program for students	31.1	1.9
Other programs/services		
Counseling or pupil services	90.2	1.2
School-to-work activities	74.2	1.8
Substance abuse education	72.2	1.9
Reproductive health and pregnancy prevention education	62.7	2.0
Conflict resolution/management program	55.4	2.1
School-based health clinic	44.9	2.1
Dropout prevention program or services	41.5	2.0
Services for out-of-school youth (e.g., GED program)	39.4	2.0
Teen parenting program	31.5	1.9
Title I	30.4	1.9
Substance abuse treatment services	18.5	1.6
Childcare for children of parenting teens	17.4	1.6
Schoolwide initiatives		
Class size reduction initiative	24.8	1.8
Schoolwide reform project	21.9	1.7
Obey-Porter grant to support schoolwide reform	2.3	.6
Source: NLTS2 Wave 1 school characteristics survey		
^a Percentage of students attending schools with program.		

Enrichment programs. Virtually all students with disabilities attend schools with some type of enrichment program, particularly organized sports and performing opportunities. Although these activities are about equally common in schools attended by middle and high school students with disabilities, other enrichment activities are not. Clubs and other extracurricular groups are offered in schools attended by 76% of middle school students with disabilities, compared with 90% of high school freshmen with disabilities ($p < .05$). Similarly, weekend programs are offered in schools attended by 20% of middle school students and more than 30% of high school students with disabilities ($p < .05$).

Other programs and services. Counseling or pupil services programs are ubiquitous and equally common across grade levels. In addition, the interests and needs of adolescents are reflected in the kinds of programs offered in their schools. Almost three-fourths of students with disabilities (74%) go to schools that offer school-to-work activities, and 42% have dropout prevention programs. Overall, 72% of youth go to schools that offer substance abuse education, and 63% have reproductive health and pregnancy prevention education in their schools. However, substance abuse treatment and health services are less common (18% and 45%, respectively). More than half of students with disabilities (55%) are enrolled in schools that offer programs in conflict resolution or violence prevention.

With the exception of school health clinics, all of these adolescent services are more common in high schools than in middle schools. For example, substance abuse education is offered in

schools attended by about three-fourths of high school students with disabilities but in those attended by only 58% of seventh and eighth graders ($p < .05$), and dropout prevention programs are more than twice as common in schools attended by juniors and seniors as in those attended by middle school students (46% vs. 21%, $p < .01$).

Computer Technology

Being familiar with and competent in the use of computer technology has become essential for students as they transition into adulthood. Fortunately, nearly all students with disabilities attend schools with computers that connect to the Internet and that are available for students' use in a library, media center, or computer lab (Exhibit 3-6), and almost all are in schools where computers are available in at least some general, special, and vocational education classes.

Exhibit 3-6 COMPUTER TECHNOLOGY IN SCHOOLS ATTENDED BY STUDENTS WITH DISABILITIES		
	Percentage ^a	Standard Error
Computers available to students in:		
A library/media center		
Available at all	99.9	.1
With Internet access	99.9	.1
General education classes		
None	2.5	.7
Some	39.7	2.1
All	57.8	2.1
Computers have Internet access	97.3	.7
Special education classes		
None	3.1	.7
Some	28.5	1.9
All	68.5	1.9
Computers have Internet access	95.1	.9
Vocational education classes		
None	1.6	.6
Some	36.8	2.2
All	61.6	2.2
Computers have Internet access	98.5	.6
Students can use computers:		
During class	97.5	.6
During lunch	75.5	1.8
Before and after school	87.6	1.4
During evenings	14.0	1.4
On weekends	3.7	.8
During school vacations	1.8	.6
Source: NLTS2 Wave 1 school characteristics survey.		
^a Percentage of students attending schools with computers available in locations and times indicated.		

However, only 58% of students with disabilities go to schools where all general education classes have them, and 68% and 62% attend schools that have computers in all special education and vocational education classrooms, respectively. Although the prevalence of computers in general education and special education classes is similar in middle and high schools, somewhat surprisingly, middle school students are more likely than high school students to have computers available in all their vocational education classes (81% for middle school students vs. 60% for juniors and seniors, $p < .01$). Virtually all computers that are available connect to the Internet. Almost all students with disabilities have access to such computers during class, and most can use school computers before and after school (88%) or during lunch (76%).

Special Education Placement Options

The best placement for students with disabilities has been the subject of considerable controversy for some time. IDEA '97 mandates that students be educated in the least restrictive environment and requires justification when students are not educated in the

regular classroom with nondisabled students. This section explores the prevalence of various placement options for special education students.

NLTS2 examined the prevalence of five placement options in students' schools: part-time resource rooms, general education/inclusion programs with services or supports in the general education classroom, self-contained special education classes, individual instruction, and classes co-taught by general education and special education teachers (Exhibit 3-7). Both general education inclusion programs and special education resource rooms are available in schools attended by the large majority of students with disabilities (96% and 93%, respectively). Individual instruction and classes that are co-taught by general education and special education teachers are less common but still are available in schools attended by about 60% of students with disabilities. Only individualized instruction differs across grade levels, being more common in schools attended by high school students than middle school students with disabilities (60% vs. 46%, $p < .05$).

Exhibit 3-7
PLACEMENT OPTIONS IN SCHOOLS ATTENDED BY STUDENTS WITH DISABILITIES

	Percentage ^a	Average Class Size
General education/inclusion program with services and supports	95.8 (.8)	26.6 (.2)
Part-time resource room	93.2 (1.1)	11.4 (.2)
Self-contained special education classes	86.7 (1.4)	10.3 (.2)
Classes co-taught by general and special education teachers	60.4 (2.1)	NA
Individual instruction	59.4 (2.1)	NA

Source: NLTS2 Wave 1 school characteristics survey.
^a Percentage of students attending schools with placement option.
 NA = Not available.
 Standard errors are in parentheses.

Comparisons between NLTS2 and the original National Longitudinal Transition Study (NLTS)⁸ indicate that students with disabilities now are 27 percentage points more likely to go to schools that have self-contained classrooms as a placement option than in the mid-1980s. This increase may reflect, in part, a significant decrease in students with disabilities attending special schools that serve that population; as they move to regular secondary schools, those schools may have established self-contained special education classrooms to serve them (Wagner, Newman, & Cameto, forthcoming).

Supports for General Education Teachers

Research has found that for students with disabilities to be successful in general education classes, general education teachers need support (Eraclides, 2001; Harris, Graham, & Deshler, 1998; Maheady, 1997; McLeskey & Waldron, 2002). NLTS2 investigated the extent to which general education teachers receive six types of support in schools that have general education/inclusion placement options for special education students: consultation by special education or other staff; teacher aides, instructional assistants, or aides for individual students; special materials or equipment to use with special education students; inservice training regarding the needs of special education students; co-teaching/team teaching with a special education teacher; and smaller student loads or class sizes.

Consultation by special education or other staff is the most common type of support; 97% of students attend schools where this type of support is made available to general education teachers who have students with disabilities in their classes (Exhibit 3-8). Teacher aides, instructional assistants, or aides for individual students; special materials to use with special education

⁸ NLTS was designed and conducted for the Office of Special Education Programs between 1984 and 1993. It included a nationally representative sample of students who were ages 15 through 23 when the first data were collected in 1987. Many of its design features are mirrored in NLTS2 to permit comparisons between them.

**Exhibit 3-8
SUPPORTS FOR GENERAL EDUCATION
TEACHERS IN SCHOOLS ATTENDED BY
STUDENTS WITH DISABILITIES**

	Percentage ^a	Standard Error
Consultation by special education staff or other staff	96.8	.7
Teacher aides, instructional assistants, or aides for individual students	84.4	1.5
Special equipment or materials to use with special education students	79.2	1.7
Inservice training on needs of special education students	71.2	1.9
Co-teaching/team teaching with a special education teacher	60.1	2.1
Smaller student load or class size	31.8	2.0
Other	1.9	.6

Source: NLTS2 Wave 1 school characteristics survey.

^a Percentage of students attending schools with type of support for teachers.

NA = Not available.

students; and inservice training regarding the needs of special education students also are quite common. They are available to general education teachers in the schools of 71% to 84% of students. About 60% of students with disabilities go to schools where teachers who have students with disabilities in general education classes have the option of co-teaching or team teaching with a special education teacher. Fewer than one-third of students with disabilities go to schools where general education teachers have a reduced student load or class size as a result of having students with disabilities in their classes. Inservice training, smaller classes or student caseloads, and co-teaching or team teaching all are more common in schools attended by high school than middle school students (e.g., inservice training on the needs of students with disabilities is

provided in schools of 58% of middle school students and more than 70% of high school students, $p < .01$).

Comparisons between NLTS2 and NLTS reveal substantial increases in the likelihood that students with disabilities attend schools with most of these kinds of teacher supports. The largest increase, 56 percentage points, has occurred in provision of teacher aides or instructional assistants. Increases of 28, 27, and 22 percentage points are noted for provision of inservice training on the needs of students with disabilities, special equipment or materials to use with them, and a smaller class size or student load, respectively (Wagner, Newman, & Cameto, forthcoming).

School Policies

Clearly articulated and effective policies are an essential element of all successful organizations, including schools. Policies can communicate a school's mission and values to both internal and external audiences. They also provide procedural guidance for addressing recurring issues systematically and support decisions regarding such issues as resource allocation, eligibility for programs, and staff management.

Students with disabilities present a particular challenge for schools, which must consider whether and how policies regarding the general student population (e.g., grade-level promotion, discipline) apply to the diversity of needs and circumstances of students with disabilities. In addition, there are policies that specifically address the issues of students with disabilities, such as eligibility assessments and testing accommodations. Despite the fact that policies that affect students with disabilities are spelled out in legislation, regulations, and decisions at the federal, state, and local levels, historically there have been significant variations in policy implementation

that create differences in the ways they are experienced by students, parents, teachers, service providers, and administrators.

NLTS2 has generated information from schools attended by secondary school students with disabilities that identifies variations at the school level in the implementation of several policies that affect students with disabilities⁹:

- Schoolwide initiatives.
- Participation of students with disabilities in mandated standardized testing.
- Social promotion.
- Alternative placements and services for students with disabilities who have been suspended or expelled.

Schoolwide Initiatives

Schoolwide reform projects (e.g., Comer Schools, Accelerated Schools) are being implemented in schools attended by 22% of secondary school students with disabilities, and 25% go to schools with class size reduction initiatives. Two percent of students with disabilities attend schools that have received an Obey-Porter grant—a grant from the federal Comprehensive School Reform Demonstration Program—to support implementation of a schoolwide reform model.

Standardized Testing

In response to calls to improve educational results, states' use of standardized tests to measure students' skills and learning increased steadily through the 1990s. NCLB has elevated the importance of these tests further, as part of a national strategy to improve American education. Although the impetus for testing is widespread throughout the country, the implementation of state testing programs varies considerably on a variety of dimensions, including the grade levels that are tested, their content, whether tests are state-developed or published instruments, and how test results are used and disseminated.

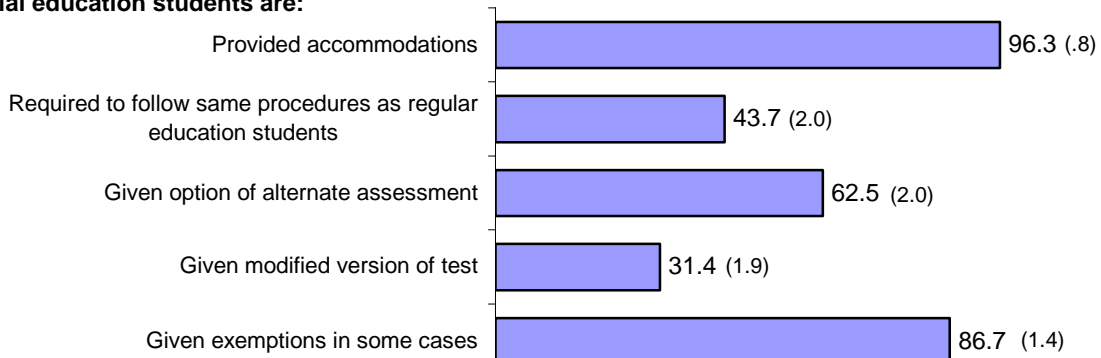
Historically, states have struggled to include students with disabilities in state tests. A decade ago, few states included students with disabilities in statewide tests at all. Since that time, states have been pushed to be accountable for all students, including those with disabilities, because “participation in large-scale assessments is now recognized...as a critical element of equal opportunity and access to education. Low expectations and lack of information on which to make programmatic decisions plague the programs of students with disabilities who do not participate in state and district assessments” (National Center on Educational Outcomes, 2002b, p. 1). Recognizing the importance of including students with disabilities in large-scale assessments, the Individuals with Disabilities Education Act Amendments of 1997 (IDEA '97) mandate that states include students with disabilities in statewide tests, with appropriate accommodations, and develop alternate assessments. The question remains, however, how these mandates are being implemented at the school level. To address this question, respondents to the school characteristics survey were asked to report on their “practices regarding mandated standardized tests for students with disabilities.”

⁹ Detailed information on special-education-related policies of states, school districts, and schools is reported by the study of the State and Local Implementation and Impact of IDEA (SLIIDEA), available at <http://www.abt.sliidea.org>.

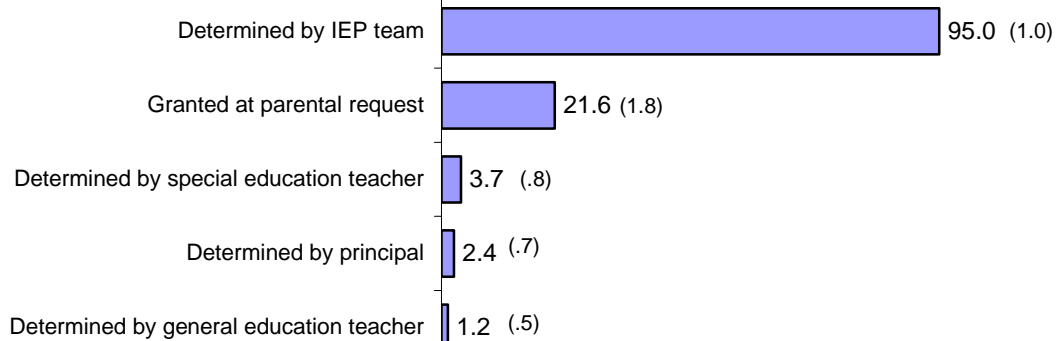
Participation in testing. Only 1% of students with disabilities are reported to go to schools that have no mandated standardized testing. Virtually all students with disabilities who attend schools with such tests are subject to school policies that call for them to be included in mandated standardized tests; fewer than one-half of 1% go to schools where students with disabilities are not included in testing as a matter of policy. Overall, 44% of students with disabilities go to schools where they are required to follow the same procedures and meet the same standards as students in the general population (Exhibit 3-9), almost one-third (31%) are in schools that permit a modified version of the standardized test to be used, and 62% are in schools that allow an alternate assessment to be used for some students with disabilities.

**Exhibit 3-9
POLICIES REGARDING PARTICIPATION IN, SCORING OF, AND EXEMPTIONS FROM
STANDARDIZED TESTING OF STUDENTS WITH DISABILITIES**

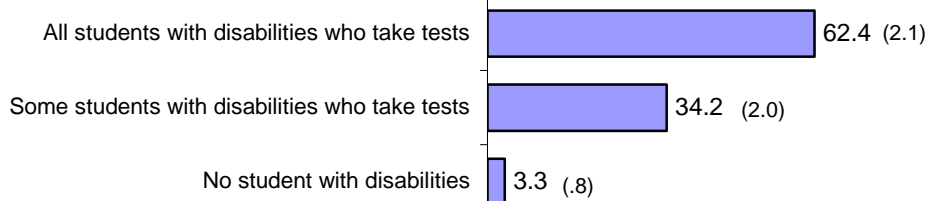
**When standardized tests are mandated,
special education students are:**



Exemptions to standardized tests are:



Standardized test scores are reported for:



Source: NLT2 Wave 1 school characteristics survey.
Standard errors are in parentheses.

Percentage attending schools with testing policy

Although as a matter of policy, schools are encouraged to include all students in mandated statewide testing, 87% of secondary school students with disabilities attend schools where exemptions are allowed under certain circumstances. A key issue in exemptions is the mechanism used to grant them; NLTS2 findings show that multiple methods are used to grant exemptions. Almost all students with disabilities (95%) attend schools where exemption decisions are made by the IEP team. Parents' requests trigger exemptions from tests in schools attended by 22% of students. Teachers and principals make exemption decisions in schools attended by 4% or fewer of students with disabilities.

Accommodations. In addition to mandating participation, IDEA '97 requires the provision of appropriate accommodations to support students' participation in statewide tests, and all states now have written guidelines to indicate the accommodations they allow (National Center on Educational Outcomes, 2002a). Accommodations are intended to remove any obstacle that is unrelated to a student's understanding of the content of the tests, so that his or her true capabilities can be measured, and can include alterations to setting, timing/scheduling, presentation, or response mode.

Consistent with the ubiquitous nature of state guidelines specifying accommodations, the vast majority of students with disabilities (96%) attend schools that have policies explicitly providing testing accommodations to students with disabilities who need them to participate in testing.

Use of test results. Not only is participation in mandated statewide tests important for accountability for student performance, it also is necessary to include the test results of students with disabilities in reports to schools, communities, and policy audiences in order to provide a comprehensive picture of a school's or district's success. Inclusion of test results of at least some students with disabilities in schoolwide reports is the policy in the large majority of schools. Overall, 62% of students with disabilities attend schools where standardized test scores of all students with disabilities are included in school and district averages. For about one-third of students, schools include the scores of some students with disabilities, and 3% of students with disabilities attend schools that do not include their scores at all.

Practices regarding standardized testing do not differ for students at middle and high school grade levels.

Social Promotion

Social promotion has been part of the debate surrounding American public education for many years, with two primary views being articulated. One position holds that promotion to the next grade level implies that a student has mastered the academic skills and content of the prior grade and is prepared for the increased demands in the next grade level; students who have not achieved that mastery should repeat the grade so that they have the opportunity to learn the skills necessary as a foundation for future success. An alternative perspective holds that, although mastery of academic skills is important, social development is part of the educational process. When students are retained a grade, they are separated from their age peers and may suffer a loss in motivation and self-esteem, which, in turn, may erode a student's ability to succeed in school (Holmes, 1989; Thompson, 1999).

During the 1970s and 1980s, social promotion was viewed favorably by many and was commonly practiced. During the 1990s, reports of high school graduates without basic academic skills and the standards-based reform movement led to a less favorable view of social promotion.

“The pendulum today is clearly swinging toward not allowing for any conditional promotion and mandating retention for all low-performing students...” (Smink, 2001, p. 2). Several states (e.g., Georgia, North Carolina, and Texas) and some large school districts (e.g., Chicago, Dallas, and Philadelphia) have explicit policies that mandate retention at grade level on the basis of poor scores on a single standardized test.

The issue of social promotion is particularly complicated for students with disabilities, some of whom may not master content and skills at the same rate as other students. Indeed, 36% of secondary school students with disabilities have been retained at some point in their educational careers; it is unknown whether they were retained before receiving special education services or after they began to receive them. The retention rate for students with disabilities is higher than that for the general population (18%, $p < .001$).¹⁰

Given this higher rate of grade retention among students with disabilities relative to the general population, one might expect that schools would be more likely to prohibit the social promotion of students with disabilities than of the general student population. In fact, the opposite is the case. Overall, 50% of students with disabilities attend schools that prohibit the promotion of students with disabilities who are performing poorly. Somewhat more students with disabilities (56%, $p < .05$) go to schools that prohibit promotion of poorly performing students in the general population. However, the policies of secondary schools attended by students with disabilities may not be pertinent to their own grade retention experience if it occurred during elementary school.

Discipline Policy: Alternative Placements and Services

Determining appropriate responses when students commit serious violations of school rules continues to challenge schools. Concerns over school safety have increased, contributing to widespread adoption of “zero-tolerance” policies for certain offenses, but application of discipline policies for students with disabilities who break school rules is more complicated. In general, IDEA '97 stipulates that if a problematic infraction or behavior is linked to a student’s disability, suspensions cannot exceed 10 days without a meeting of the IEP team to consider service or placement alternatives. Further, in contrast to students in the general population, schools are obligated to provide a free appropriate public education to students with disabilities, despite suspension status (Hartwig & Ruesch, 2000). NLTS2 data show that the vast majority of students with disabilities (95%) attend schools that arrange alternative services or placements for students with disabilities who are expelled or suspended from school.

School Climate

School climate refers broadly to the social atmosphere of a school, or its “learning environment.” Although school climate can be thought of as encapsulating a variety of aspects of a school, it most often includes attention to a school’s relationships (among staff, among students, between staff and students, and between staff and families), its expectations and standards for performance, and the orderliness of the environment (North Central Regional Educational Laboratory, 1996). A more positive climate at school has been linked to higher student achievement in the research literature (see, for example, Bulach, Malone, & Castleman, 1995; Stickard & Mayberry, 1986).

¹⁰ Calculated for 14- to 18-year-olds from the National Household Education Survey of 1999.

Three aspects of the climate of the schools attended by secondary school students with disabilities are considered:

- An emphasis on improving academic performance.
- Student engagement—students demonstrate engagement in school through regular attendance.
- The maintenance of an orderly and safe environment is maintained.

Emphasis on academic performance. The last several years have witnessed an increased emphasis on the accountability of schools for the performance of students. NCLB requires schools to establish clear standards for what students should know and to test them yearly to determine whether they are learning the required information and skills. In some states, rewards and sanctions for schools are associated with the performance of their students on mandated standardized tests. This accountability emphasis can raise the stakes associated with student testing and its results, potentially influencing the priorities of schools and their general climate.

The majority of students with disabilities (54%) go to schools where school staff respondents report “a great deal” of pressure to improve test scores for all students. Another 38% go to schools where respondents report “a fair amount” of pressure to improve test scores. Feeling no pressure at all is rare (8% attend such schools).

Pressure can be felt by students, too, sometimes in response to the graduation requirements imposed by their schools. Virtually all students with disabilities who go to schools that include 12th-grade students are subject to specific graduation requirements (Exhibit 3-10). On average, students with disabilities go to schools that require a total of 24 semesters of academic courses to graduate with a regular high school diploma, or an average of three academic classes each semester over 4 years in high school. Fourteen states have graduation requirements that exceed this average number of academic credits (National Center for Education Statistics, 2001).

Exhibit 3-10 GRADUATION REQUIREMENTS IN SCHOOLS THAT SERVE 12TH-GRADE STUDENTS		
	Number or Percentage	Standard Error
Percentage who go to schools with specific graduation requirements	97.9	.7
For high school graduation, average number of semesters required in:		
English or language arts	7.3	.1
Mathematics	5.2	.1
Science	4.8	.1
Social studies	6.0	.1
Foreign language	1.0	.1
Source: NLTS2 Wave 1 school characteristics survey.		

Students also may feel academic pressure if large proportions of students in their school take college entrance examinations, graduate from high school, and go on to college after high school. In schools that have 12th-grade students and are attended by students with disabilities, school staff report that 92% of those 12th graders graduate from high school with a regular diploma in a given school year (Exhibit 3-11), as do 55% of 12th graders with disabilities. This graduation rate for students with disabilities is quite similar to the 57% national high school graduation rate for students with disabilities reported by states (U.S. Department of Education, 2002). In

addition to these high school graduates, about 10% of 12th graders with disabilities are reported to leave high school with a special diploma or certificate of completion.

**Exhibit 3-11
HIGH SCHOOL COMPLETION AND
POSTSECONDARY EDUCATION ATTENDANCE
RATES IN SCHOOLS THAT SERVE
12TH-GRADE STUDENTS**

	Percentage	Standard Error
Average percentage of 12th graders in the student body who graduate with a regular diploma among:		
The general student population	92.5	
Students with disabilities	55.4	
Average percentage of 12th grade students with disabilities in the student body who graduate with a special diploma or certificate of completion		
	9.6	
Students who go to schools where the following percentages of 12th graders take college entrance examinations:		
Fewer than 50%	33.9	2.2
50% to 75%	40.5	2.3
76% to 90%	19.6	1.9
More than 90%	6.1	1.1
Students who go to schools where the following percentages of 12th graders go or to 2- or 4-year college after high school:		
Fewer than 50%	27.4	2.1
50% to 75%	39.3	2.3
76% to 90%	28.5	2.1
More than 90%	4.8	1.0
Source: NLTS2 Wave 1 school characteristics survey.		

The emphasis on college enrollment in high schools attended by students with disabilities varies widely. Among students with disabilities who go to schools that serve 12th graders, about one-fourth go to high schools where more than three-fourths of seniors take college entrance examinations, and about one-third go to schools where the college attendance rate is higher than 75%. In contrast, about one-third of students with disabilities go to high schools where fewer than 50% of 12th graders take college entrance exams, and about one-fourth go to schools where fewer than 50% of graduates attend college.

Student engagement. Absenteeism from school can be problematic for both students and teachers. Students miss exposure to instructional materials and activities, and frequent or prolonged absences could jeopardize their ability to keep up in their classes. Having students absent from school also requires that teachers repeat information and schedule make-up activities for absent students.

Nationwide, an average of 6% of students were absent on a typical day in 1994, the last year in which national data were collected (National Center for Education Statistics, 1996). Nationally, 14% of teachers have affirmed that absenteeism is a serious problem in their school (Editorial Projects in Education, 1997), and some policy-makers are responding. For example, Georgia's Education Coordinating Council has decided that the state's schools will be held accountable for improving the attendance of their students, as well as their academic performance (Jacobson, 2002).

Secondary school students with disabilities attend schools where an average of about 7% of students are absent on a given day (Exhibit 3-12). Although about one-fourth of students attend schools where fewer than 5% are absent, more than one-third (35%) go to schools with absenteeism of 8% or more. Absenteeism is about 1 percentage point higher in high schools than in middle schools ($p < .05$). This grade-level difference is consistent with that in the general population (National Center for Education Statistics, 1996).

**Exhibit 3-12
ABSENTEEISM IN SCHOOLS ATTENDED
BY STUDENTS WITH DISABILITIES**

	Percentage	Standard Error
Average proportion of students absent in a typical day	7.0	.2
Students attending schools with typical absence rate of:		
Less than 5%	26.2	1.8
5% to 7.99%	38.7	2.0
8% or more	35.1	2.0

Source: NLTS2 Wave 1 school characteristics survey.

An orderly and safe environment. The orderliness of the school environment, including the clarity of rules and the consistency with which they are enforced, is a key aspect of the overall climate of a school (North Central Regional Educational Laboratory, 1996). This section documents the orderliness of the environment at school by considering the extent to which the rules of the school are violated to such a degree that students are suspended or expelled from school, involved in violent incidents, or arrested.

Students with disabilities attend schools that average about 5 expulsions, 230 in-school suspensions, and 139 out-of-school suspensions in a school year (Exhibit 3-13). Although about one-third (35%) of students attend schools where no expulsions occur, many fewer students attend schools with no in-school or out-of-school suspensions (15% and 3%, respectively). In fact, 43% of students with disabilities go to schools with 175 or more in-school suspensions, and 29% go to schools with that level of out-of-school suspensions in the designated school year.

Schools attended by secondary school students with disabilities average 23 incidents of violence during a school year and 7 arrests at school or at school events. Relatively few students attend schools that escape these kinds of events entirely (14% go to schools with no violent incidents and 29% to schools with no arrests). These aspects of school orderliness are not markedly different for students with disabilities attending schools at middle vs. high school grade levels when figures are adjusted for the differences in the size of their schools.

Summary

This review of the schools attended by 14- to 18-year-old students with disabilities shows that, not surprisingly, their school contexts are the same as those of the general student population in many ways. The vast majority attend regular public schools, where they constitute 16% of the student population. Their schools are as likely to be in their own neighborhoods as is true for students in the general population. The racial/ethnic distribution of the schools attended by students with disabilities is virtually the same as for the general population, as are absenteeism and mobility rates. Their schools have a wide range of staff resources, including teachers that average about the same level of qualifications and experience as those of students in the general population. There also are a variety of programmatic resources to meet students' needs, and Internet-accessible computers are available to students in virtually all schools.

**Exhibit 3-13
ORDERLINESS AND SAFETY OF THE ENVIRONMENT
IN SCHOOLS ATTENDED BY SECONDARY SCHOOL
STUDENTS WITH DISABILITIES**

	Number or Percentage	Standard Error
Average number of expulsions in a school year	5	.3
Students attending schools with number of expulsions:		
None	34.6	2.1
1 or 2	24.8	1.9
3 to 10	28.2	2.0
11 or more	12.3	1.4
Average number of in-school suspensions in a school year	230	1.2
Students attending schools with number of in-school suspensions:		
None	15.0	1.6
1 to 24	14.0	1.6
25 to 74	12.1	1.5
75 to 174	15.8	1.6
175 or more	43.0	2.2
Average number of out-of-school suspensions in a school year	139	6.4
Students attending schools with number of out-of-school suspensions:		
None	2.8	.7
1 to 24	18.6	1.7
25 to 74	25.1	1.9
75 to 174	24.4	1.9
175 or more	29.1	2.0
Average number of incidents of violence in a school year	23	1.4
Students attending schools with number of incidents of violence:		
None	13.5	1.5
1 or 2	10.9	1.4
3 to 10	27.5	2.0
11 to 24	17.8	1.7
25 or more	30.3	2.1
Average number of arrests at school or school events in a school year	7	.6
Students attending schools with number of arrests at school or school events:		
None	28.9	2.1
1 or 2	17.8	1.7
3 to 10	35.7	2.2
11 to 24	9.2	1.3
25 or more	7.4	.6

Source: NLTS2 Wave 1 school characteristics survey.

The schools attended by students with disabilities include a variety of placement options to meet their needs, with self-contained classrooms being much more common now than in the mid-1980s. Reflecting national policy embodied in IDEA '97, virtually all schools report arranging alternative placements and services for students with disabilities who have been suspended or expelled, and virtually all include students with disabilities in mandated standardized testing.

However, there also are some aspects of schools attended by students with disabilities that are potentially problematic. Their schools are significantly larger, on average, than schools attended by the general population of students, suggesting that school districts may be clustering students with disabilities in schools where a larger student population may garner a wider array of resources. Class sizes and caseloads of support personnel also are large, potentially hindering efforts to meet the individual learning needs of a diverse student population. Further, many students with disabilities go to schools where disciplinary issues are apparent, including those that involve incidents of violence and arrests at school or school events.

This chapter has characterized the variation in schools attended by secondary school students with disabilities, as background for understanding the instructional programs they experience. Another component of that background, the characteristics of classrooms in which students with disabilities receive instruction, is presented in the next chapter.

4. AN OVERVIEW OF THE SCHOOL PROGRAMS OF SECONDARY SCHOOL STUDENTS WITH DISABILITIES

By Mary Wagner

Although this report focuses on the classroom experiences of secondary school students with disabilities, those experiences take place in the larger context of students' overall school programs. It is helpful to have a broad outline of that larger context in order to understand variations in classroom experiences. This chapter provides that overview first by describing the grade levels of the students whose programs are outlined in this report and the extent to which they continue to receive special education services. The variety of courses taken by students with disabilities in middle and high school and the instructional settings for those courses are then described. Findings are presented for students with disabilities as a whole and for those who differ in grade level, primary disability category, and selected demographic characteristics, where significant.

Grade Level

In the 2001-02 school year, the large majority of students represented in NLTS2 were at high school grade levels (Exhibit 4-1); only about one in eight students were in seventh or eighth grade, and 2% were not assigned to a grade level. These figures are consistent with findings presented in Chapter 3 that 14% of youth go to middle schools and 76% go to high schools (the remainder attend multilevel schools).

**Exhibit 4-1
GRADE LEVELS OF STUDENTS
WITH DISABILITIES IN THE 2001-02
SCHOOL YEAR**

	Percentage	Standard Error
Seventh or eighth grade	12.4	1.3
Ninth grade	21.9	1.7
Tenth grade	24.5	1.8
Eleventh grade	23.2	1.7
Twelfth grade	15.4	1.5
Ungraded program	2.4	.6

Source: NLTS2 Wave 1 student's school program survey.

Receipt of Special Education Services

Data reported by state agencies to the U.S. Department of Education indicate that in a given school year, 3.5% of students who receive special education services and are age 14 or older discontinue those services and return to general education (U.S. Department of Education, 2002). NLTS2 data suggest a similar rate for the NLTS2 age group of 14- through 18-year-olds; more than 5% are reported by their schools to discontinue special education services in approximately a 16-month period, including almost 1% who receive disability-related accommodations under section

504 of the Vocational Rehabilitation Act (Exhibit 4-2). The slight difference in rates may result from the somewhat longer time frame covered by NLTS2 or from the fact that the age group for state-reported data includes students who remain in school past the age of 18, students who would be unlikely to discontinue special education services at that age.

When parents of students who no longer had an IEP were asked why they were not receiving special education services, 85% reported that students no longer needed or no longer qualified for services or had met their IEP goals. Parents' or youth's refusal of special education services was the reason the majority of other students no longer received them.

**Exhibit 4-2
SPECIAL EDUCATION PARTICIPATION
STATUS OF STUDENTS WITH DISABILITIES**

	Percentage	Standard Error
Students with disabilities who in a 16-month period:		
Continue their individualized education program (IEP) for special education services	94.7	.9
Discontinue special education services but have a 504 plan for accommodations	.7	.3
Discontinue special education services and do not have a 504 plan for accommodations	4.6	.9

Source: NLTS2 Wave 1 student's school program survey.

Students' Course Taking

The education reform movement, with its emphasis on increasing academic standards and performance, has contributed to the fact that, between 1984 and 1998, 13 states raised the number of academic credits¹ required to receive a high school diploma (National Center for Education Statistics, 2001). By 1998, 26 states required students to earn at least four credits in language arts and three credits in social studies. In addition to those requirements, 14 states required students to earn 3 credits each in science and mathematics, and an additional 12 states required students to earn at least two credits in those subjects (National Center for Education Statistics, 2001).

In 1998, 76% of American high school graduates had earned at least four credits in language arts, three in social studies, and two each in science and mathematics. This is a dramatic increase in students in the general population earning this number and combination of academic credits; in 1982, only 32% of high school graduates had done so (National Center for Education Statistics, 2001).

NLTS2 findings demonstrate that the course-taking pattern of students with disabilities mirrors the heavy academic emphasis of students in the general population (Exhibit 4-3). Virtually all secondary school students with disabilities and all students in the general population take at least one academic subject in a given semester, with the vast majority of students with disabilities taking language arts (95%) and mathematics (92%). Social studies and science also are taken by most students with disabilities (88% and 83%). Rates of students with disabilities taking math and science are somewhat higher than those of students in the general population, whereas their rates of taking language arts or social studies are somewhat lower. A foreign language is taken less often than other kinds of academic courses by both students with disabilities and students in the general population, but it still is in the course schedule of approximately one in five students with disabilities (21%) and half of students in the general population. Differences between students with disabilities and the general population may result from the fact that NLTS2 includes a relatively small proportion of middle school students; only high school students are included in figures for the general population.

Among students with disabilities, academic courses are 59% of the kinds of courses students with disabilities take in a given semester, on average.

¹ Credits are measured in Carnegie units. The original source of the unit, the Carnegie Foundation, describes the unit, developed in 1906, as "a measure of the amount of time a student has studied a subject. For example, a total of 120 hours in one subject—meeting 4 or 5 times a week for 40 to 60 minutes, for 36 to 40 weeks each year—earns the student one 'unit' of high school credit. Fourteen units were deemed to constitute the minimum amount of preparation that may be interpreted as 'four years of academic or high school preparation'" (Carnegie Foundation, n.d.).

**Exhibit 4-3
ACADEMIC COURSES TAKEN IN A SEMESTER
BY STUDENTS WITH DISABILITIES AND
STUDENTS IN THE GENERAL POPULATION**

	Students with Disabilities	General Student Population ²
Percentage taking:		
Any academics	98.6 (.5)	100.0
Language arts	95.2 (.9)	100.0
Mathematics	92.5 (1.1)	87.5
Science	83.1 (1.5)	78.8
Social studies	88.0 (1.3)	94.5
Foreign language	21.1 (1.7)	50.0
Average percentage of courses that are academic	59.3 (.7)	NA

Sources: NLTS2 Wave 1 student's school program survey and the 1998 NAEP High School Transcript Study (National Center for Education Statistics, 2001).

Standard errors are in parentheses.

Many students with disabilities also take vocational education courses³ (61%; Exhibit 4-4), with occupationally specific vocational education being taken much more often than prevocational courses. More than half of students with disabilities (52%) take occupationally specific vocational courses in a given semester, whereas 34% take prevocational courses ($p < .001$). Vocational education courses are about 13% of the courses students with disabilities take in a given semester, or about one course in a student's course schedule.

Students with disabilities are less likely than students in the general population to take vocational education. In addition, they are less likely than students in the general population to take occupationally specific vocational education (52% vs. 64%) but more likely to take prevocational education (34% vs. 15%).

Other traditionally nonacademic courses are included among the courses taken by 89% of secondary school students with disabilities, with physical education being the most common of these courses (72%). This is a higher rate of taking physical education than occurs among students in the general population (58%; National Center for Education Statistics, 2001). About half of students with disabilities and students in the general population take a fine arts course, and more than a third of students with disabilities take life skills or study skills. These courses make up 27% of the kinds of courses taken in a given semester by the typical student with disabilities.

This pattern of course taking by students with disabilities differs markedly from the courses taken by students in the original National Longitudinal Transition Study (NLTS),⁴ which first

² The percentage of students in the general population who take a given kind of course in a single semester is estimated from the mean number of credits earned by high school graduates over 4 years. For example, students in the general population earn an average of 3.5 credits in mathematics (National Center for Education Statistics, 2001), the equivalent of taking 3.5 1-year courses over 4 years. Dividing the total credits earned by 4 years results in a probability of 87.5% that students will be taking mathematics at a given point in high school. Standard errors are not available from this calculation.

³ Although "career and technical education" is becoming a more common term for vocational education, "vocational education" is used here because it is the term used in questionnaires requesting information from school staff about the courses taken by students with disabilities.

⁴ NLTS was designed and conducted for the U. S. Office of Special Education Programs between 1984 and 1993. It included a nationally representative sample of students who were ages 15 through 23 when the first data were collected in 1987. Many of its design features are mirrored in NLTS2 to permit comparisons between them. Comparisons between school data collected in NLTS and NLTS2 involve only the age group included in both studies—those 14 to 18 years old.

**Exhibit 4-4
NONACADEMIC COURSES TAKEN IN A
SEMESTER BY STUDENTS WITH DISABILITIES
AND STUDENTS IN THE GENERAL POPULATION**

	Students with Disabilities	General Student Population ⁵
Percentage taking:		
Any vocational education	61.3 (2.0)	79.5
Prevocational education	34.2 (1.9)	15.0
Occupationally specific vocational education	52.2 (2.0)	64.2
Average percentage of courses that are vocational education	13.3 (.5)	NA
Percentage taking:		
Any other nonacademics	89.4 (1.3)	NA
Physical education	71.7 (1.8)	58.2
Fine arts	48.7 (2.0)	47.2
Study skills	36.5 (1.9)	NA
Life skills/social skills	35.4 (1.9)	NA
Average percentage of courses that are other nonacademics	27.4 (.6)	NA

Source: NLTS2 Wave 1 student's school program survey and the 1998 NAEP High School Transcript Study (National Center for Education Statistics, 2001).

Standard errors are in parentheses.

collected course-taking information on students with disabilities in 1987. When comparisons are made for the age group of students with disabilities that was common to the two studies—students who were 14 to 18—sizable increases over time in taking several kinds of academic courses are apparent. The largest increases are noted for students with disabilities taking science and foreign language courses (21 and 15 percentage points, respectively, $p < .001$). These changes bode well for greater participation in postsecondary education because taking such courses has been demonstrated to increase substantially the odds of going on to a 2-year or 4-year college in the early years after high school (Wagner, Blackorby, Cameto, & Newman, 1993). Increases in academic course taking correspond to a 7-percentage-point decline in taking vocational education courses ($p < .01$).

The course-taking pattern of students with disabilities varies across the middle and high school grades⁶ for some kinds of courses (Exhibit 4-5). There are no differences in the rates at which students with disabilities at different grade levels take language arts or foreign language

courses. However, somewhat fewer juniors and seniors than students in middle school or the early high school grades take mathematics (85% vs. 97% to 99%, $p < .001$). An even greater difference is seen regarding science course taking; only about two-thirds of seniors take science courses, compared with 90% or more of students with disabilities at other grade levels ($p < .001$). Most states require that students take 2 years of science to graduate, a requirement that many students with disabilities may have fulfilled before their senior year.

⁵ See footnote 2.

⁶ For convenience, grades 7 and 8 are referred to as middle school grade levels, and grades 9 and above are referred to as high school grade levels.

**Exhibit 4-5
COURSES TAKEN BY STUDENTS WITH DISABILITIES,
BY STUDENT'S GRADE LEVEL**

	7th or 8th Grade	9th Grade	10th Grade	11th or 12th Grade
Percentage taking course in specified setting				
Academics				
Mathematics	99.3 (.9)	98.0 (1.3)	97.0 (1.4)	85.1 (2.5)
Science	98.3 (1.4)	91.9 (2.5)	90.0 (2.4)	69.4 (3.2)
Social studies	97.4 (1.8)	85.8 (3.2)	88.0 (2.7)	88.2 (2.2)
Vocational education	58.3 (1.5)	60.2 (1.3)	62.3 (1.4)	58.5 (1.3)
Any vocational education	54.8 (2.1)	54.2 (2.1)	57.2 (.4)	68.0 (.5)
Occupationally specific vocational education	51.1 (5.6)	44.8 (4.4)	46.7 (4.0)	58.5 (3.4)
Average percentage of courses that are vocational education	10.1 (1.1)	10.5 (1.0)	11.7 (.9)	16.3 (1.0)
Other nonacademics				
Any nonacademics	95.6 (4.1)	95.9 (1.8)	88.1 (2/6)	84.1 (2.5)
Fine arts	77.3 (4.7)	39.9 (4.3)	47.7 (4.0)	44.0 (3.4)
Physical education	89.6 (3.4)	86.2 (3.1)	68.8 (3.7)	59.4 (3.4)
Average percentage of courses that are other nonacademics	31.6 (1.3)	29.3 (1.1)	26.1 (1.1)	25.2 (1.0)

Source: NLTS2 Wave 1 student's school program survey.
Standard errors are in parentheses.

By fulfilling other course requirements, students with disabilities in the later high school years apparently have time for vocational training. Vocational education is taken significantly more often by juniors and seniors (68%) than by students at any other grade level (54% to 57%, $p < .05$). This difference is accounted for entirely by a higher rate of taking occupationally specific vocational education among juniors and seniors.

In contrast, taking other nonacademic courses is much less common in the upper high school grades than earlier. For example, physical education is in the course schedules of 90% of middle school students with disabilities and 86% of freshmen, but is taken by only 69% of sophomores and 59% of juniors and seniors with disabilities ($p < .001$ comparing sophomores through seniors with younger students). The rate of taking fine arts by freshmen is about half that of middle school students (40% vs. 77%, $p < .001$) and remains relatively low through high school.

Instructional Settings

The courses students with disabilities include in their school programs help determine the combination of instructional settings they experience in a school day because some kinds of courses are much more likely to be taught in general education classes, whereas special education settings are more common for others. For example, secondary school students with disabilities are about equally likely to take language arts and mathematics in general education and special education classrooms (Exhibit 4-6). However, science is much more likely to be taken in general education classes (66% vs. 37%, $p < .001$), as are social studies (64% vs. 39%, $p < .001$) and foreign language courses (85% vs. 14%, $p < .001$).

Similar differences are apparent among vocational education classes. Whereas prevocational education is about equally likely to be taken in general education or special education classes, occupationally specific vocational education is much more likely to be the purview of general than of special education (73% vs. 28%, $p < .001$).

Exhibit 4-6
COURSES TAKEN BY STUDENTS WITH DISABILITIES, BY INSTRUCTIONAL SETTING

Percentage taking course(s) in setting ^a	General Education	Special Education	Individual Instruction	Community/ Other Setting
Academics				
Any academics	69.2 (1.9)	58.2 (2.0)	1.3 (.5)	2.0 (.6)
Language arts	48.9 (2.1)	54.4 (2.1)	1.1 (.4)	1.4 (.5)
Mathematics	52.7 (2.1)	50.6 (2.1)	1.1 (.4)	1.1 (.4)
Science	66.1 (2.2)	37.1 (2.2)	.9 (.4)	.2 (.2)
Social studies	63.9 (2.1)	38.9 (2.2)	1.1 (.5)	1.0 (.4)
Foreign language	85.1 (3.3)	13.5 (3.2)	.7 (.8)	.9 (.9)
Vocational education				
Any vocational education	70.6 (2.3)	34.8 (2.4)	.7 (.4)	7.3 (1.0)
Occupationally specific vocational education	73.4 (2.5)	27.9 (2.5)	.8 (.5)	6.0 (1.3)
Prevocational education	53.1 (3.3)	46.5 (3.3)	.7 (.5)	7.7 (1.7)
Other nonacademics				
Any nonacademics	74.9 (1.8)	41.2 (2.0)	1.0 (.4)	3.7 (.8)
Fine arts	87.0 (1.9)	12.4 (1.9)	.3 (.3)	1.4 (.7)
Physical education	87.9 (1.5)	12.3 (1.6)	.4 (.3)	.7 (.4)
Life skills/social skills	35.7 (3.0)	60.6 (3.1)	1.7 (.8)	8.9 (1.8)
Study skills	21.0 (2.8)	79.1 (2.8)	.8 (.6)	1.2 (.7)

Source: NLTS2 Wave 1 student's school program survey.

^a Includes only students with disabilities taking the kind of course specified.

Standard errors are in parentheses.

Among other nonacademic classes, general education classes are much more likely than special education classes to be the setting for fine arts (87% vs. 12%, $p < .001$) and physical education (88% vs. 12%, $p < .001$), whereas the reverse is true for life skills (36% general education vs. 61% special education, $p < .001$) and study skills (21% vs. 79%, $p < .001$). Individual and community or other settings are not common for any kind of course, although between 6% and 9% of students with disabilities take vocational education or life skills instruction in community or other settings.

Comparisons between NLTS and NLTS2 show little overall change in students with disabilities participating at all in general education classes, but there is a 9-percentage point increase in taking academic courses in general education classes. This increase in general education academic class participation is accompanied by a 21-percentage-point decline in

students with disabilities taking any courses in special education classrooms ($p < .001$), including an 11-percentage-point drop in students taking academic special education courses ($p < .001$). In contrast, students who take nonacademic courses other than vocational education (e.g., study skills, art) are increasingly likely to have them in special education classes (a 27-percentage-point increase, $p < .001$).

Exhibit 4-7
INSTRUCTIONAL SETTINGS IN SCHOOL PROGRAMS OF STUDENTS WITH DISABILITIES

	Percentage	Standard Error
General education		
Taking the following percentages of courses in general education classes:		
None	12.4	1.3
.1% to 33%	20.6	1.6
33.1% to 66%	20.5	1.6
66.1% to 99.9%	19.3	1.6
100%	27.2	1.8
Average proportion of courses in general education classes	60.2	1.4
Special education		
Taking the following percentages of courses in special education classes:		
None	30.2	1.9
.1% to 33%	27.5	1.8
33.1% to 66%	23.2	1.7
66.1% to 99.9%	9.9	1.2
100%	9.2	1.2
Average proportion of courses in special education classes	36.6	1.4
Other settings		
Taking the following percentages of courses in other settings		
None	91.8	1.1
.1% to 33%	5.4	.9
33.1% to 66%	1.0	.4
66.1% to 99.9%	.3	.2
100%	1.5	.5
Average proportion of courses in other settings	3.2	.6

Source: NLTS2 Wave 1 student's school program survey.

Looking at students' overall school programs in 2001, it is clear that most students with disabilities take classes in both general and special education settings (Exhibit 4-7). Although more than one-fourth of students with disabilities (27%) take classes only in general education settings and 9% take classes only in special education settings, nearly two-thirds of students with disabilities take courses in both settings. In fact, on average, general education courses make up 60% of the kinds of courses students with disabilities take, and special education courses comprise 37%.

There are few grade-level differences in instructional settings. However, the involvement of students with disabilities in general education courses is somewhat lower for students in the later high school years (87% take at least one general education course) than in middle school or ninth grade (95% and 93%, respectively, $p < .05$). Involvement in settings other than general or special education classes is commensurately higher among juniors and seniors (11% take at least one course in such settings) than among freshmen and sophomores (5%, $p < .05$). Courses in other settings also are a larger percentage of courses taken by upperclassmen (5%) than younger students (1% or 2%, $p < .05$), although

they constitute a small percentage of the types of courses taken at any grade level.

Disability Variations in Students' School Programs

Many of the aspects of students' school programs discussed thus far differ markedly among students who have different primary disability classifications.

Discontinuation of special education services. The rate at which students with disabilities discontinue special education services in approximately a 16-month period varies widely. No students with multiple disabilities discontinue special education services, and no more than 1% of students with mental retardation, autism, or deaf-blindness do so. Discontinuation rates are between 2% and 6% of students with learning disabilities; emotional disturbances; traumatic brain injuries; or hearing, visual, orthopedic, or other health impairments. Students with speech impairments stand out in sharp contrast to these other categories—22% of them discontinue special education services in about a 16-month period. The percentage of students who no longer have an IEP but have 504-plan accommodations for a disability ranges from no students with multiple disabilities to 2% of those with visual impairments.

Academic course taking. Students with different primary disability classifications have quite different patterns of secondary school course taking (Exhibit 4-8). For most disability categories, 95% or more of students take one or more academic classes. Only among students with autism, multiple disabilities, or deaf-blindness does enrollment in academic courses fall lower (87% to 92%, $p < .05$ to $p < .001$ compared with students with learning disabilities, for example). Students in those three categories are generally the least likely to take each of the individual types of academic classes, and, along with students with mental retardation, they have the lowest concentration of academic course taking (half or fewer of the courses they take are academic, compared with 60% or more for students in most other categories; $p < .001$ compared with students with learning disabilities).

Exhibit 4-8
ACADEMIC COURSE TAKING, BY DISABILITY CATEGORY

	Learning Dis-ability	Speech/ Language Impair-ment	Mental Retar-dation	Emo-tional Distur-bance	Hearing Impair-ment	Visual Impair-ment	Ortho-pedic Impair-ment	Other Health Impair-ment	Autism	Trau-matic Brain Injury	Multiple Disabili-ties	Deaf-Blind-ness
Percentage taking:												
Any academics	99.6 (.4)	99.4 (.5)	95.7 (1.3)	98.6 (.9)	99.8 (.4)	95.8 (1.9)	94.7 (1.5)	98.4 (.8)	92.2 (1.8)	97.8 (1.7)	87.1 (2.5)	91.1 (3.6)
Language arts	95.4 (1.3)	97.8 (1.0)	93.5 (1.6)	96.1 (1.5)	99.1 (0.7)	94.7 (2.1)	91.2 (1.9)	97.5 (1.0)	89.2 (2.1)	95.3 (2.5)	84.5 (2.7)	89.1 (3.9)
Mathematics	92.7 (1.6)	94.7 (1.5)	92.3 (1.7)	93.1 (2.0)	95.8 (1.6)	91.1 (2.7)	88.8 (2.1)	93.4 (1.5)	89.5 (2.1)	92.7 (3.1)	81.6 (2.9)	84.9 (4.5)
Science	84.8 (2.3)	87.3 (2.2)	73.8 (2.9)	84.3 (3.0)	85.6 (2.8)	81.1 (3.8)	78.5 (2.8)	88.1 (2.0)	66.9 (3.2)	76.7 (5.0)	66.1 (3.6)	71.2 (5.7)
Social studies	90.2 (1.9)	90.4 (1.9)	74.7 (2.9)	93.2 (2.0)	88.1 (2.5)	88.8 (3.0)	82.8 (2.6)	91.1 (1.8)	69.1 (3.1)	86.0 (4.1)	69.1 (3.5)	74.4 (5.5)
Foreign language	24.3 (2.7)	31.0 (3.0)	8.7 (1.8)	15.3 (2.9)	27.1 (3.4)	35.5 (4.5)	24.5 (2.9)	19.7 (2.5)	12.4 (2.2)	16.9 (4.3)	8.9 (2.1)	10.1 (3.8)
Average percentage of courses that are academic	61.6 (1.0)	64.0 (1.1)	48.6 (1.2)	59.8 (1.4)	60.9 (2.0)	60.6 (2.0)	57.5 (1.5)	60.9 (1.1)	45.9 (1.4)	57.2 (2.4)	41.7 (1.6)	49.9 (2.8)

Source: NLTS2 Wave 1 student's school program survey.
Standard errors are in parentheses.

Students in each category are most likely to take language arts and math and least likely to take a foreign language. Foreign language enrollment also is the most variable across categories, with a 27-percentage-point difference between the category of students most likely to take such a course (36% of students with visual impairments) and those least likely to do so (9% of students with mental retardation or multiple disabilities, $p < .001$).

Vocational education course taking. There is greater variation across disability categories in enrollment in any vocational education class (Exhibit 4-9), ranging from about half of students with speech impairments to 80% of students with multiple disabilities ($p < .001$). Generally, students who have lower concentrations of academic courses have higher enrollments in vocational courses. Occupationally specific vocational education is much more common than prevocational education for students in several categories. For example, half of students with learning disabilities take occupationally specific classes, but only 30% take prevocational education ($p < .001$). A similar pattern is evident for students with speech, hearing, visual, orthopedic, or other health impairments, emotional disturbances, or traumatic brain injuries.

This contrasts sharply with the pattern for students with mental retardation, who are about equally likely to take the two kinds of vocational education, as are students with autism, multiple disabilities, and deaf-blindness. These students also take among the highest percentage of vocational courses.

Exhibit 4-9
VOCATIONAL EDUCATION COURSE TAKING, BY DISABILITY CATEGORY

	Learning Disability	Speech/ Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Autism	Traumatic Brain Injury	Multiple Disabilities	Deaf-Blindness
Percentage taking:												
Any vocational education	58.6 (3.1)	51.1 (3.3)	77.8 (2.7)	60.0 (3.9)	61.5 (3.8)	52.8 (4.7)	59.7 (3.3)	58.8 (3.0)	76.9 (2.8)	63.7 (5.6)	79.2 (3.0)	66.1 (6.0)
Prevocational education	29.7 (2.8)	26.0 (2.9)	59.3 (3.2)	31.1 (3.7)	32.6 (3.6)	31.4 (4.3)	34.8 (3.2)	28.9 (2.8)	60.7 (3.2)	40.8 (5.7)	63.5 (3.6)	47.2 (6.3)
Occupationally specific vocational education	50.5 (3.1)	44.2 (3.2)	62.1 (3.1)	51.2 (4.0)	55.1 (3.8)	44.1 (4.6)	49.9 (3.4)	52.0 (3.1)	61.1 (3.2)	58.4 (5.7)	63.5 (3.6)	50.3 (6.3)
Average percentage of courses that are vocational education												
	12.6 (.8)	10.4 (.8)	18.0 (.9)	12.0 (1.0)	12.7 (.9)	10.5 (1.1)	12.8 (.8)	13.2 (1.0)	18.8 (.9)	14.1 (1.5)	18.8 (1.0)	14.2 (1.5)

Source: NLTS2 Wave 1 student's school program survey.

Standard errors are in parentheses.

Other nonacademic course taking. A large majority of students in all disability categories take nonacademic courses other than vocational education (Exhibit 4-10), ranging from 87% of students with orthopedic or other health impairments to 96% of students with autism or multiple disabilities ($p < .01$). Physical education is the most commonly taken nonacademic course for all disability categories. However, two patterns emerge regarding other nonacademic courses. For students with learning disabilities and speech, hearing, visual, orthopedic, or other health impairments, the second most commonly taken nonacademic course is fine arts, significantly

Exhibit 4-10
OTHER NONACADEMIC COURSE TAKING, BY DISABILITY CATEGORY

	Learning Disability	Speech/Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Autism	Traumatic Brain Injury	Multiple Disabilities	Deaf-Blindness
Percentage taking:												
Any other nonacademics	88.9 (1.9)	87.8 (2.1)	93.1 (1.6)	87.8 (2.6)	89.9 (2.3)	87.7 (3.1)	87.4 (2.2)	87.4 (2.1)	95.6 (1.4)	89.0 (3.6)	96.5 (1.4)	91.9 (3.4)
Fine arts	47.7 (3.1)	52.8 (3.2)	50.7 (3.2)	44.8 (3.9)	54.5 (3.8)	59.8 (4.6)	53.8 (3.3)	51.6 (3.1)	62.6 (3.2)	46.1 (5.8)	62.9 (3.6)	60.9 (6.1)
Physical education	70.4 (2.8)	72.4 (2.9)	77.6 (2.7)	71.4 (3.6)	75.9 (3.3)	66.7 (4.4)	63.9 (3.2)	70.9 (2.8)	74.4 (2.9)	69.8 (5.3)	83.2 (2.8)	72.9 (5.6)
Life skills/social skills	26.2 (2.7)	22.4 (2.7)	72.6 (2.9)	45.5 (3.9)	26.2 (3.4)	40.5 (4.6)	39.9 (3.3)	26.4 (2.7)	70.9 (3.0)	44.7 (5.8)	74.8 (3.2)	65.7 (5.9)
Study skills	36.8 (3.0)	31.7 (3.0)	34.4 (3.1)	40.0 (3.9)	33.8 (3.6)	30.6 (4.3)	34.6 (3.2)	35.6 (3.0)	34.5 (3.1)	42.4 (5.7)	38.6 (3.6)	26.7 (5.5)
Average percentage of all courses that are other nonacademics	25.9 (.8)	25.6 (.9)	33.4 (1.0)	28.2 (1.1)	26.4 (1.0)	28.8 (1.6)	29.7 (1.2)	25.9 (.8)	35.3 (1.1)	38.6 (1.8)	39.5 (1.3)	35.9 (2.7)

Source: NLTS2 Wave 1 student's school program survey.
Standard errors are in parentheses.

outranking enrollment in study skills or life skills courses (e.g., 48% of students with learning disabilities take fine arts courses, compared with 37% taking study skills and 26% taking life skills courses, $p < .05$ and $p < .001$). For other categories, students either are equally likely to take fine arts or study or life skills (e.g., 45%, 46%, and 40% for students with emotional disturbances) or are more likely to take a skills course than fine arts (e.g., 73% of students with mental retardation take life skills, compared with 51% taking fine arts, $p < .001$). Concentrations of other nonacademic courses range from about one-fourth of courses taken by students with learning disabilities or speech impairments, for example, to more than one-third of courses taken by students with autism, traumatic brain injuries, multiple disabilities, or deaf-blindness ($p < .001$).

Instructional settings. Participation in various instructional settings varies more widely across disability categories than does course taking (Exhibit 4-11). There is a 55-percentage-point difference across categories in the extent to which students with disabilities participate in any general education classes (40% to 95%, $p < .001$) and a 45-percentage-point difference in participation in special education settings (50% to 95%, $p < .001$). Many fewer students in any category participate in community or other instructional settings, but the difference across categories is still sizable (2% to 20%, $p < .001$).

Students who are least likely to take academic courses also are least likely to take any general education courses; 40% of students with deaf-blindness, 56% of students with multiple disabilities, and 62% of those with autism take any general education course, compared with more than three-fourths of students in 7 of the 12 categories ($p < .001$ for all comparisons). They, along with students with mental retardation, also have the smallest proportion of their courses spent in general education classrooms (fewer than one-third, compared with more than half for most other categories, $p < .001$).

Exhibit 4-11
INSTRUCTIONAL SETTINGS, BY DISABILITY CATEGORY

	Learning Disability	Speech/Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Autism	Traumatic Brain Injury	Multiple Disabilities	Deaf-Blindness
Percentage with any general education classes	94.0 (1.5)	95.4 (1.4)	69.3 (3.0)	78.5 (3.3)	77.8 (3.2)	73.4 (4.1)	83.6 (2.5)	90.4 (1.8)	62.4 (3.2)	80.3 (4.6)	55.7 (3.7)	40.2 (6.2)
Average percentage of courses that are taken in general education classes	67.7 (1.9)	75.7 (2.0)	31.1 (2.0)	50.4 (3.0)	59.8 (3.0)	62.8 (4.0)	57.9 (2.6)	66.9 (2.1)	32.5 (2.4)	48.2 (4.1)	23.5 (2.1)	25.6 (4.7)
Percentage with any special education classes	65.8 (2.9)	50.1 (3.3)	91.7 (1.8)	74.0 (3.5)	66.9 (3.6)	51.7 (4.7)	67.9 (3.2)	62.5 (3.0)	86.1 (2.3)	78.8 (4.7)	95.0 (1.6)	86.8 (4.3)
Average percentage of courses that are taken in special education classes	29.6 (1.8)	23.5 (2.0)	64.9 (2.0)	44.3 (2.9)	39.3 (3.0)	33.9 (3.8)	38.5 (2.5)	28.8 (1.9)	61.8 (2.3)	47.7 (4.0)	70.8 (2.2)	70.0 (4.7)
Percentage with any courses in community or other settings	6.6 (1.5)	2.5 (1.0)	13.7 (2.2)	10.2 (2.4)	3.7 (1.5)	10.9 (2.9)	9.6 (2.0)	8.4 (1.7)	18.9 (2.6)	12.6 (3.9)	19.8 (3.0)	13.0 (4.2)
Average percentage of courses that are taken in other settings	2.7 (.8)	.8 (.4)	4.0 (.8)	5.3 (1.6)	.9 (.4)	3.3 (1.3)	3.6 (1.0)	4.3 (1.1)	5.6 (.9)	4.1 (1.6)	5.6 (1.1)	4.5 (1.8)

Source: NLTS2 Wave 1 student's school program survey.
Standard errors are in parentheses.

Predictably, those spending less time in general education classrooms spend more time in special education and other settings. Eighty-six percent to 95% of students with mental retardation, autism, multiple disabilities, or deaf-blindness take at least some of their classes in special education classrooms, typically the majority of their classes (62% to 71% of courses are taken there). These figures compare with about two-thirds or fewer of students with learning disabilities or speech, hearing, visual, orthopedic, or other health impairments taking special education classes ($p < .001$) and taking from 24% to 39% of their courses in those classes ($p < .001$).

There is a less clear distinction regarding instruction in community or other settings. For example, students with visual or orthopedic impairments are as likely to participate in other settings as students with deaf-blindness or traumatic brain injuries, although rates of participation of students with speech or hearing impairments are much lower (2% and 4%, $p < .05$ to $p < .001$).

Demographic Variations in Students' School Programs

There are no differences in participation in various courses or instructional settings for students who differ by gender and only a few differences by household income or racial/ethnic background (Exhibit 4-12). Students from households with incomes of more than \$50,000 per year are more likely to take foreign language courses than are less affluent students (27% vs. 16% and 18%, $p < .05$), and their courses are more likely to concentrate in general education settings (an average of 66% of their courses vs. 53%, $p < .01$). Conversely, the most affluent youth are less likely than the lowest-income students to take any special education courses (63% vs. 78%, $p < .001$), and they tend to have fewer of them (31% of courses vs. 44%, $p < .001$).

Exhibit 4-12
COURSE TAKING AND INSTRUCTIONAL SETTINGS OF STUDENTS WITH DISABILITIES,
BY HOUSEHOLD INCOME AND RACE/ETHNICITY

	Income			Race/Ethnicity		
	\$25,000 or Less	\$25,001 to \$50,000	More than \$50,000	White	African American	Hispanic
Academics						
Percentage taking a foreign language	17.6 (2.8)	16.2 (3.0)	27.2 (3.5)	18.6 (2.0)	15.9 (3.3)	40.0 (5.9)
Average percentage of courses that are academic	57.4 (1.3)	60.0 (1.5)	60.8 (1.4)	59.5 (.9)	56.3 (1.5)	63.0 (2.0)
General education						
Average percentage of courses that are taken in general education classes	53.2 (2.6)	59.5 (2.8)	66.5 (2.7)	63.9 (1.7)	50.1 (3.1)	58.7 (4.3)
Special education						
Percentage taking any courses	78.2 (3.0)	68.4 (3.8)	63.2 (3.8)	65.3 (2.4)	80.7 (3.5)	73.2 (5.3)
Average percentage of courses that are taken in special education classes	44.0 (2.5)	35.2 (2.7)	30.8 (2.5)	32.3 (1.6)	47.0 (3.0)	39.8 (4.2)

Source: NLTS2 Wave 1 student's school program survey.
Standard errors are in parentheses.

Racial/ethnic differences include a much higher rate of foreign language course taking among Hispanic students with disabilities (40%) than among others (19% and 16%, $p < .001$). This difference may result in part because English as a second language (ESL) classes generally are classified as foreign language courses (National Center for Education Statistics, 2001). Academic courses also are a larger percentage of the courses Hispanic students take (63%) than they are of courses taken by African-American students with disabilities (56%, $p < .01$). The other significant differences are between white and African-American students with disabilities. On average, white students take a higher proportion of their courses in general education classrooms than African-American students (64% vs. 50%, $p < .001$). Consistent with this pattern, white students are less likely than African-American students to take any special education courses (65% vs. 81%, $p < .001$), and those courses tend to be a smaller percentage of their course load (32% vs. 47%, $p < .001$). These differences between African-American and white students may result in part from the particularly high prevalence of African-American students in the category of mental retardation (please see Appendix B), the category of students who take relatively fewer courses in general education and more courses in special education classes.

Summary

In 1986, then Assistant Secretary for the Office of Special Education and Rehabilitative Services, Madeleine Will, declared the effective education of students with disabilities “a shared responsibility” of the general and special education systems (Will, 1986). That declaration was a challenge to both systems, which had not shared students to a great extent, let alone shared a sense of responsibility for their outcomes. The ensuing “inclusion movement” sought to have more students with disabilities placed in general education classes. Policy initiatives since then, including those embedded in the Individuals with Disabilities Education Act Amendments of

1997, have extended the notion of inclusion to encompass the participation of students with disabilities in the kinds of courses and curricula accessed by the general student population.

NLTS2 findings suggest that much progress has been made in encouraging students with disabilities to take challenging academic courses and in expanding their participation in general education classes. Virtually all students with disabilities take academic classes, which constitute 60% of their coursework, on average. In fact, comparisons of NLTS2 findings with those of the original NLTS show a dramatic increase in students with disabilities taking challenging courses often associated with preparation for postsecondary education (Wagner, Newman, & Cameto, forthcoming).

A vocational education course, usually one that is occupationally specific, is on the course schedules of almost two-thirds of students with disabilities, with higher participation among high school juniors and seniors. However, vocational course taking has declined markedly over time, corresponding to the increase in academic course taking (Wagner, Newman, & Cameto, forthcoming). Although this decline may be the inevitable outgrowth of a desirable increase in the emphasis on academics, it may not be entirely beneficial for all students with disabilities. Research has shown that vocational course taking, particularly a concentration of courses in a specific occupational area, increases the likelihood of high school completion (Wagner, 1991) and benefits the postschool employment and earnings of students with disabilities (Wagner, Blackorby, Cameto, & Newman, 1993). NLTS2 findings show that achieving competitive employment is a stated transition goal of the majority of students with disabilities.

Nonacademic courses, such as fine arts or physical education, also are on the course schedules of most students with disabilities, constituting about two courses of a typical seven-course schedule. However, courses such as study skills or life skills are taken by only about one-third of students, increasingly in special education classes.

Corresponding to the progress shown by students with disabilities in taking challenging academic courses, there has been a significant increase in students participating in general education classes—the typical setting for many academic courses. Almost 9 of 10 secondary school students with disabilities participate in at least one general education class, including 70% who take one or more academic courses there, a rate that has increased over time. In fact, 27% of students with disabilities now take all their courses in general education classes. The prominent role of general education classes in the course load of students with disabilities underscores the reality that general and special education have developed a shared responsibility for their success.

However, taking challenging academic courses and participating in general education classrooms characterize the secondary school experiences of some students with disabilities much more than others. Academic and general education course taking is the norm for the large majority of students with speech, visual, hearing, orthopedic, or other health impairments. These students are correspondingly less likely to take vocational education or skills-oriented nonacademic courses than other groups. They contrast markedly with students with mental retardation, autism, multiple disabilities, or deaf-blindness, who spend much more of their time in special education settings and take a larger proportion of vocational education and other nonacademic courses, including life skills or study skills.

Participation in academic and general education courses is not equal among students from households with different income levels or among those of different racial/ethnic backgrounds. General education courses are a larger proportion of the courses taken by white students and those from more affluent households. Conversely, special education courses are more prevalent in the course schedules of lower-income youth and students from diverse racial/ethnic backgrounds.

This chapter has shown that students with disabilities differ in the extent to which their overall school programs include courses in general, special, and vocational education settings. NLTS2 analyses now move from this overview of students' school programs to a focus on the classroom experiences of students with disabilities in each of those settings.

5. THE CLASSROOM CONTEXTS OF SECONDARY SCHOOL STUDENTS WITH DISABILITIES

By Mary Wagner, Camille Marder, Renée Cameto, and Phyllis Levine

Chapter 4 demonstrated that secondary school students with disabilities take a wide range of academic, vocational, and other nonacademic courses, and the majority experience both general and special education classroom settings. Experiences in those classrooms can differ greatly, of course, because of such factors as the content of the courses taught (e.g., mathematics vs. prevocational education) and the grade level of the course (e.g., middle school vs. high school). Other factors that also help define differences in classroom experiences involve the characteristics of the adult and student participants in those classes.

This chapter describes the following aspects of the classroom contexts within which students with disabilities take courses:

- Subject area, including setting of vocational education courses
- Performance level of general education academic courses
- Student and adult classroom participants
- Communication method
- Characteristics of general education teachers.

When data permit, comparisons are made between general education academic, special education, and vocational education classes.

Subject Area

NLTS2 sought information on the experiences of students with disabilities in a wide variety of courses and settings. To get a representative picture of the range of students' general education academic classroom experiences (if students take such classes), NLTS2 surveyed the teacher of the first general education academic class each student took in the week. Similarly, to learn about a broad range of special education classes, respondents to the student's school program survey were asked to select a special education class for the student about whom the survey was conducted. If that staff person taught the student in a nonvocational special education class, he or she was instructed to report about that class. If the respondent was not a student's special education teacher, the respondent was instructed to select the student's first nonvocational special education class in the week and obtain classroom information for that class from its teacher. Respondents were not asked to report the subject area of vocational education classes. However, they were asked to indicate whether the vocational education course about which they were reporting was a general education or special education course.

The general education academic classroom experiences that are described here about equally represent experiences in language arts (28%), mathematics (24%), science (22%), and social studies courses (22%; Exhibit 5-1). Few foreign language or other academic courses are represented (4% and 1%), and this subject area distribution does not differ by grade level.

**Exhibit 5-1
FOCUS OF CLASSES TAKEN BY
STUDENTS WITH DISABILITIES**

	Percentage	Standard Error
Students with disabilities whose general education academic class is:		
Language arts	27.5	2.4
Mathematics	23.7	2.3
Science	21.6	2.2
Social studies	22.3	2.2
Foreign language	3.9	1.0
Other	.9	.5
Students whose special education class focuses on:		
Academic subject	60.8	2.4
Study skills	24.3	2.1
Life skills	8.3	1.4
Basic academic skills	6.7	1.2
Vocational education classes		
Students whose vocational education course is taken in a:		
General education class	70.6	2.3
Special education class	34.8	2.4
Sources: NLTSS2 Wave 1 student's school program and general education teacher surveys.		

For the majority of students (61%), experiences in special education classes¹ are reported for courses that deal with academic subjects, such as language arts or math. About one-quarter of students (24%) have experiences reported for special education classes that primarily provide help with homework, study skills, or test taking. Significantly fewer students have experiences reported for special education classes that focus on basic academic (7%) or life skills, such as independent functioning (8%). (These figures should not be interpreted as the percentage of students with disabilities who take such classes, but rather as the distribution of the kinds of general and special education classes that are described in Chapters 6 and 8.)

Having special education classroom experiences reported for an academic subject class is particularly likely for middle school students² (78% vs. 56% to 62% across high school grade levels, $p < .05$). In contrast, high school students, particularly freshmen, are more likely than middle school students to

have classroom experiences reported for a study skills class (32% of freshmen vs. 11% of middle school students, $p < .01$).

Vocational education students with disabilities are about twice as likely to take those courses in a general education class as in a special education class (71% vs. 35%, $p < .001$). Middle school students with disabilities who take vocational courses are particularly likely to take them in general education classes (88% vs. 66% for juniors or seniors).

Disability Variations in Subject Area

There are no significant differences across disability categories in the kinds of general education academic classes represented in this report. Therefore, any differences between categories in general education academic classroom characteristics or experiences are likely to reflect disability differences, not different mixes of courses being described.

However, the kinds of special education courses that are described do differ across categories (Exhibit 5-2). Students with all kinds of disabilities are present in each type of special education class, but the emphasis differs widely across disability categories. For example, between 60% and 68% of students with learning disabilities, emotional disturbances, traumatic brain injuries,

¹ Readers should note that special education classes described in this chapter do not include vocational education classes taught in special education settings; those are described as part of vocational education classes.

² For convenience, grades 7 and 8 are referred to as middle school grade levels and grades 9 and above as high school grade levels.

Exhibit 5-2
SPECIAL EDUCATION SUBJECT AREA FOCUS, BY DISABILITY CATEGORY

	Learning Dis-ability	Speech/ Language Impair-ment	Mental Retar-dation	Emotional Distur-bance	Hearing Impair-ment	Visual Impair-ment	Ortho-pedic Impair-ment	Other Health Impair-ment	Autism	Trau-matic Brain Injury	Multiple Disabili-ties	Deaf-Blind-ness
Percentage in a special education class focused on:												
Academic subject	62.9 (3.8)	61.9 (4.7)	53.5 (3.4)	67.7 (4.5)	64.0 (5.4)	39.2 (8.0)	53.6 (4.4)	60.4 (3.8)	34.3 (3.6)	61.0 (7.2)	35.9 (4.0)	33.0 (9.3)
Life skills	1.7 (1.0)	4.0 (1.9)	27.5 (3.1)	8.3 (2.7)	2.3 (1.7)	15.3 (5.9)	17.9 (3.4)	6.1 (1.9)	42.9 (3.8)	15.9 (5.4)	41.4 (4.1)	36.6 (9.5)
Basic academic skills	5.0 (1.7)	6.6 (2.4)	15.6 (2.5)	1.5 (1.2)	4.3 (2.3)	10.7 (5.1)	6.0 (2.1)	3.8 (1.5)	10.9 (2.4)	12.0 (4.8)	18.3 (3.2)	7.6 (5.2)
Study skills	30.4 (3.6)	27.5 (4.3)	3.5 (1.3)	22.5 (4.1)	29.4 (5.1)	34.7 (7.8)	22.4 (3.7)	29.7 (3.5)	11.8 (2.5)	11.1 (4.6)	4.4 (1.7)	22.7 (8.3)

Source: NLTS2 Wave 1 student's school program survey.
Standard errors are in parentheses.

or speech, hearing, or other health impairments have experiences reported for special education classes that teach an academic subject. In addition, 28% or more of students with learning disabilities, or speech, hearing, visual, or other health impairments are in classes that provide help with homework, testing, or study skills.

In contrast, about one-third of students with autism, multiple disabilities, or deaf-blindness have experiences reported for subject-specific academic classes ($p < .01$ or $p < .001$ compared with students with learning disabilities). Instead, a significantly larger proportion of these students (37% to 43%), as well as students with mental retardation (28%), have experiences reported for classes that focus on acquiring functional life skills ($p < .001$ compared with students with learning disabilities). Larger proportions of students with mental retardation, autism, or multiple disabilities (11% to 18%) than other kinds of disabilities are in special education classes that focus on basic academic skills ($p < .05$ and $p < .001$ compared with students with learning disabilities). Therefore, differences across disability categories in special education classroom experiences will reflect these differences in the kinds of special education courses being described.

Similarly, differences across disability categories in vocational education classroom experiences will reflect variations in the likelihood that students in different disability categories take their vocational education courses in general or special education classes (Exhibit 5-3). The percentage of vocational education students with disabilities who take those courses in general education classrooms ranges from 28% to 85% across disability categories ($p < .001$). General education classrooms are by far the most common setting for vocational education students with learning disabilities, emotional disturbances, or speech, hearing, orthopedic, or other health impairments. From 60% to 85% of vocational education students in these categories take one or more vocational courses in general education classrooms. In contrast, vocational education students with mental retardation, autism, or multiple disabilities are much more likely to take their courses in special education classes; from 65% to 83% do so. Students with visual impairments or traumatic brain injuries who take vocational education are about equally likely to take those courses in general or special education settings. Settings other than general and

Exhibit 5-3

INSTRUCTIONAL SETTING OF VOCATIONAL EDUCATION CLASSES, BY DISABILITY CATEGORY

	Learning Dis-ability	Speech/ Language Impair-ment	Mental Retar-dation	Emo-tional Distur-bance	Hearing Impair-ment	Visual Impair-ment	Ortho-pedic Impair-ment	Other Health Impair-ment	Autism	Trau-matic Brain Injury	Multiple Disabili-ties
Percentage of vocational education students with disabilities taking course in:											
General education classes	80.9 (3.2)	84.6 (3.2)	43.7 (3.7)	62.3 (5.0)	61.3 (4.8)	52.6 (5.9)	60.2 (4.5)	75.7 (3.5)	30.9 (3.6)	63.6 (7.4)	27.5 (3.8)
Special education classes	24.2 (3.5)	24.0 (3.8)	65.4 (3.5)	38.6 (5.1)	43.3 (4.9)	52.7 (5.9)	41.2 (4.5)	30.4 (3.8)	76.4 (3.3)	46.5 (7.7)	75.0 (3.7)
Community or other settings	7.0 (2.1)	2.9 (1.5)	22.9 (2.4)	9.8 (3.1)	1.9 (1.3)	7.1 (3.1)	10.0 (2.7)	8.0 (2.2)	19.1 (3.0)	11.7 (5.0)	17.0 (3.2)

Source: NLTS2 Wave 1 student's school program survey.

Note: There are too few students with deaf-blindness in vocational education classes to report separately.

Standard errors are in parentheses.

special education classrooms are particularly common for students with mental retardation, autism, or multiple disabilities (17% to 23% of those students take vocational education in such settings).

Demographic Variations in Subject Area

There are no differences in the subject areas of general education academic classes among students with disabilities who differ in demographic characteristics. However, among students in special education classes, the experiences of white students with disabilities are more likely to be reported for study skills classes (28%) than those of African-American students (18%, $p < .05$). Similarly, a study skills class is more likely to be the kind of special education classroom experience reported for wealthier students with disabilities (34% of students from households with incomes greater than \$50,000) than lower-income students (17% of students from households with incomes of \$25,000 or less, $p < .001$). Among vocational education students with disabilities, African-American students are the least likely to be in general education classrooms for vocational education—41% compared with 58% of white students ($p < .05$). Hispanic and white students with disabilities do not differ in the likelihood of taking vocational courses in general or special education classrooms. Gender differences are apparent, however; boys who take vocational education are more likely than girls who do so to have those courses be in general education classes (74% vs. 63%, $p < .05$).

Performance Level

The preceding section demonstrated the range of academic courses students with disabilities take in general education classes. NLTS2 also is interested in understanding the performance level of those courses—whether they are courses whose students generally function at grade level, or whether students with disabilities are tracked into lower-performing general education academic classes.

The majority of students with disabilities (82%) who take general education academic classes are in classes in which the majority of students perform at grade level (Exhibit 5-4); 16% are in

Exhibit 5-4
PERFORMANCE LEVEL OF GENERAL EDUCATION ACADEMIC CLASSES OF STUDENTS WITH DISABILITIES, BY SUBJECT AREA AND GRADE LEVEL

	All Academic Classes	Subject Area				Grade Level			
		Language Arts	Mathematics	Science	Social Studies	7th or 8th Grade	9th Grade	10th Grade	11th or 12th Grade
Percentage of students in classes:									
At standard grade level	81.6 (2.0)	81.3 (4.0)	74.1 (5.2)	83.0 (4.2)	88.9 (3.4)	90.8 (4.1)	78.0 (4.7)	77.8 (4.3)	83.4 (3.4)
Below standard grade level	16.1 (2.1)	16.6 (3.8)	25.1 (5.1)	15.1 (4.0)	7.4 (2.8)	.5 (1.0)	1.2 (1.2)	3.0 (1.8)	3.3 (1.6)
Advanced placement/honors	2.3 (.8)	2.1 (1.4)	.8 (1.0)	1.9 (1.5)	3.7 (2.0)	8.7 (4.0)	20.8 (4.6)	19.2 (4.1)	13.3 (3.1)

Source: NLTS2 Wave 1 general education teacher survey.

Note: There are too few students with deaf-blindness in general education academic classes to report separately.

Standard errors are in parentheses.

classes that teachers describe as below standard grade level, and 2% are in advanced placement or honors classes. The percentages of students receiving special education who are in general education academic classes at grade level range from 74% in mathematics classes to 89% in social studies/humanities classes ($p < .05$). Regardless of subject area, most students who are not in classes at grade level are in classes below grade level; percentages range from 25% of students in mathematics classes to 7% of students in social studies/humanities classes ($p < .05$). The percentage of students with disabilities in classes at grade level is highest for students in 7th and 8th grades (91%), then declines to 78% in 9th and 10th grades ($p < .05$), but rises again to 83% for juniors and seniors.

There are some notable differences in general education academic class performance level across disability categories (Exhibit 5-5). The percentage of students with disabilities who are in general education academic classes that are performing at grade level ranges from 70% of

Exhibit 5-5
PERFORMANCE LEVEL OF GENERAL EDUCATION ACADEMIC CLASSES, BY DISABILITY CATEGORY

	Learning Disability	Speech/Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Autism	Traumatic Brain Injury	Multiple Disabilities
Percentage of students with disabilities in general education academic classes that are:											
At standard grade level	82.9 (2.7)	78.6 (3.0)	76.5 (6.4)	81.7 (4.6)	82.8 (3.7)	69.6 (5.9)	81.2 (3.2)	76.5 (3.1)	74.0 (5.6)	71.3 (7.2)	77.4 (7.8)
Below grade level	15.7 (2.7)	14.6 (2.6)	23.3 (6.4)	13.2 (4.0)	10.3 (3.0)	10.6 (3.9)	13.2 (2.8)	19.1 (2.9)	14.5 (4.5)	27.4 (7.1)	20.5 (7.6)
Advanced placement/honors courses	1.4 (.9)	6.8 (1.9)	.2 (.7)	5.1 (2.6)	6.9 (2.5)	19.8 (5.1)	5.7 (1.9)	4.4 (1.5)	11.5 (4.1)	1.4 (1.9)	2.1 (2.7)

Source: NLTS2 Wave 1 general education teacher survey.

Note: There are too few students with deaf-blindness in general education academic classes to report separately.

Standard errors are in parentheses.

students with visual impairments to 83% of students with learning disabilities or hearing impairments ($p < .05$). Youth with hearing impairments are the least likely to be in classes that are functioning below grade level (10%); students with mental retardation, traumatic brain injuries, or multiple disabilities are more than twice as likely to be in such classes (20% to 27%, $p < .05$). Very small percentages of students in most categories are in advanced placement or honors classes, but 12% of students with autism and 20% of students with visual impairments are in such classes ($p < .001$ comparing youth with learning disabilities and visual impairments).

There are few differences in class performance level by students' demographic characteristics. One is that boys are more likely than girls to be in classes that are performing at grade level (85% vs. 76%, $p < .05$), and girls are more likely to be in classes that are below the standard grade level (22% vs. 13%, $p < .05$).

Classroom Participants

Students

Research suggests the important influence of class size on the effectiveness of the instruction and learning that go on in a classroom. Smaller class sizes have been associated with positive student outcomes (Finn, 1998; Greenwald et al., Mosteller, 1995; National Center for Education Statistics, 2000; 1996; Pritchard, 1998), particularly for disadvantaged and minority students (Grissmer et al, 1998; Hanushek, 1998; Krueger, 1998; Mosteller, 1995). Many teachers and parents believe that small class sizes also improve the outcomes of special education students (Folger, 1989; Johnston, 1989; McCrea, 1996; Nye et al., 1992), particularly if they create an environment that promotes students' engagement and inclusion or allow teachers to tailor instruction more effectively to the diverse needs of learners (Achilles & Finn, 2000; Finn, Gerber, Achilles, & Boyd-Zaharias, 2001; Harris & Graham, 1996; Slavin, 1990).

On average, the general education academic classes of students with disabilities include 24 students (Exhibit 5-6), as is typical of academic classes nationally (National Center for Education Statistics, 2003). Their classes are somewhat smaller than the typical class in their schools, which is 27 students, as reported in Chapter 3. Classes contain an average of 19 general education students and 5 students who receive special education services.

Exhibit 5-6
SIZE OF CLASSES OF STUDENTS WITH DISABILITIES, BY TYPE OF CLASS

	General Education Academic Class	Special Education Class	Vocational Education Class		
			Any Vocational Education Class	General Education Vocational Class	Special Education Vocational Class
Average number of:					
All students	24 (.4)	10 (.2)	20 (.9)	22 (.8)	12 (.6)
General education students	19 (.4)	0	14 (.6)	18 (.5)	2 (.6)
Special education students	5 (.2)	10 (.2)	6 (.3)	4 (.2)	10 (.5)

Sources: NLTS2 Wave 1 general education teacher and student's school program surveys.
Standard errors are in parentheses.

Special education classes are much smaller than general education academic classes, averaging 10 students ($p < .001$). Small classes generally are needed for students to receive the kinds of personal attention and individualized instruction that may be required for them to achieve their IEP goals. Research suggests that lower student-teacher ratios help meet student needs because they make specific types of instruction, assessment, presentation, communication, and individualization more feasible than do larger groups (Achilles, Finn, & Bain, 1998; Achilles & Finn, 2000; Finn et al., 1990; Gersten & Dimino, 2001; Thurlow, Ysseldyke, & Wotruba, 1989). However, the size of special education classes varies with its subject focus. Academic subject classes average almost 11 students, and classes that teach basic academic skills average 10 students; classes that focus on developing study skills have 8 students, on average ($p < .001$ and $p < .05$ compared with academic subject and basic academic classes, respectively).

Vocational education classes fall between general education and special education classes in size, averaging 20 students—14 general education students and 6 students who receive special education services. However, the size differences noted between general education academic classes and special education classes also are apparent for vocational education courses. Overall, vocational education courses in general education classes average 22 students, compared with 12 students in special education vocational classes ($p < .001$).

Adults

Regardless of type, classes include one or more teachers, who are the instructional leaders of the class. Teachers may also be supported by one or more classroom aides. When classes include students with disabilities, they also may include instructional assistants who are assigned to individual students or specialists to meet the needs of those students. The presence of these adults in the classroom varies by the type of class (Exhibit 5-7).

As expected, almost all students with disabilities who are in general education academic classes have general education teachers, and in most cases (77%) they are the only teacher in the class. Approximately one-fifth of students with disabilities are in general education academic classes that have both general education and special education teachers present. Similarly, virtually all students who take special education classes have a special education teacher, but only 6% of students in special education classes also have a general education teacher in class. Because vocational education students with disabilities are more likely to take those courses in general than special education classes, they also are more likely to have a general education than a special education teacher (72% vs. 32%).

Having adults in the classroom other than a teacher is least likely in general education academic classes. For example, 12% of students with disabilities who take such classes have classroom aides in them, compared with more than one-fourth of students who take vocational education and more than half of students who take courses in special education classrooms ($p < .001$ for both comparisons). Among special education classes, students who are in classes that focus on basic academic or life skills are more likely to have adults other than the teacher in the classroom than students in other kinds of special education classes. For example, 76% of students in classes that teach life skills or basic academics have classroom aides, compared with 48% of students in academic subject special education classes and 45% of those in classes that focus on study skills ($p < .001$). Within vocational education classes, a typical general education

**Exhibit 5-7
ADULTS IN CLASSES OF STUDENTS WITH
DISABILITIES, BY TYPE OF CLASS**

	General Education Academic Class	Special Education Class	Vocational Education Class
Percentage in classes with			
General education teacher	97.7 (.8)	6.0 (1.2)	72.0 (2.4)
Special education teacher	22.3 (2.3)	97.8 (.7)	31.7 (2.5)
Classroom aide(s)	12.3 (1.8)	51.5 (2.5)	27.4 (2.4)
1-to-1 instructional assistants	4.3 (1.1)	10.1 (1.5)	8.3 (1.5)
Specialists	1.9 (.7)	4.2 (1.0)	5.5 (1.2)
Adult volunteers	.2 (.2)	1.2 (.5)	3.6 (1.0)
Average students per adult	21.2 (.4)	6.5 (.2)	11.5 (.7)

Sources: NLTS2 Wave 1 general education teacher and student's school program surveys.
Standard errors are in parentheses.

vocational class does not include adults other than the general education teacher, whereas a special education vocational classroom typically includes at least one aide, assistant, specialist, or adult volunteer assisting in the classroom.

These staffing arrangements result in an average of 21 students per adult in general education academic classes—almost twice as many as in vocational education classes (12; $p < .001$) and more than three times as many as in special education classes (6, $p < .001$). However, the average number of students per adult ranges within special education classes from 5 in classes that focus on basic academic or life skills to 6 in those that teach study skills and 7 in special education academic subject classes.

Within vocational education, those in general education classes also have more students per adult (15) than students in special education classes (5, $p < .001$).

There are no differences in classroom participants across grade levels for general education academic or special education classes. However, vocational education classes are larger for middle school students with disabilities (an average of 23) than for seniors (an average of 18, $p < .05$), consistent with the lower likelihood of older students being in general education vocational classes, as reported in Chapter 4. The average number of students per teacher also is higher in vocational classes of middle school students (14) than seniors (11, $p < .05$).

Disability Variations in Classroom Participants

General education academic classes have the highest average number of students per adult and special education classes have the lowest, regardless of disability category (Exhibit 5-8). Students with disabilities who take general education academic classes are in classes that average between 18 and 23 students per adult, and students in most categories are in classes in which 20% or more of the students in class receive special education services. Vocational education classes average 4 to 17 students per adult, and special education classes average between 2 and 6 students per adult.

Among special education classes, the categories of students who are most likely to have their experiences reported for life skills classes (e.g., multiple disabilities and autism) also are the categories with the fewest students per adult. Similarly, among vocational education classes, the lowest numbers of students per adult are in categories that are most likely to have their vocational education courses be in special education classes (e.g., mental retardation, autism, and

Exhibit 5-8
CLASSROOM PARTICIPANTS, BY TYPE OF CLASS AND DISABILITY CATEGORY

	Learning Disability	Speech/Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Autism	Traumatic Brain Injury	Multiple Disabilities
Average students per adult in:											
General education academic classes	21.2 (.6)	22.2 (.6)	20.9 (1.3)	21.5 (.9)	22.8 (.8)	22.3 (1.0)	22.5 (.7)	20.1 (.6)	22.2 (1.0)	18.2 (1.5)	18.0 (1.4)
Special education classes	6.1 (.5)	5.5 (.5)	3.8 (.4)	4.6 (.5)	4.3 (.6)	3.4 (.9)	3.9 (.5)	4.9 (.4)	2.9 (.4)	4.5 (.6)	2.4 (.4)
Vocational education classes	17.3 (1.0)	15.9 (1.2)	6.7 (1.2)	11.1 (1.5)	15.6 (1.5)	10.0 (2.1)	8.1 (1.4)	13.4 (1.4)	4.3 (1.0)	9.4 (2.1)	3.5 (1.4)
Average percentage of students in general education academic classes who receive special education services	22.0 (1.2)	20.8 (1.3)	23.3 (2.7)	20.6 (2.0)	15.3 (1.4)	15.3 (2.2)	17.3 (1.4)	21.6 (1.3)	16.9 (2.1)	26.5 (3.2)	29.1 (4.1)

Sources: NLT2 Wave 1 general education teacher and student's school program surveys.

Note: There are too few students with deaf-blindness in general education academic classes to report separately. Standard errors are in parentheses.

multiple disabilities). In fact, regardless of the type of class, students with multiple disabilities are in classes with the fewest students per adult (18 students in general education academic classes, 2 in special education classes, and 4 in vocational education classes). In contrast, students with learning disabilities or speech impairments tend to have among the largest numbers of students per adult across types of classes.

Students with hearing or visual impairments who take general education academic classes have somewhat smaller percentages of students who receive special education in them—on average, 15% ($p < .01$ and $p < .001$ compared with students with learning disabilities). In contrast, students with traumatic brain injuries or multiple disabilities tend to have a higher proportion of students with disabilities in their classes (26% and 29%, $p < .01$ compared with students with hearing or visual impairments).

Demographic Variations in Classroom Participants

In most respects, the participants in classes of students with disabilities do not differ markedly for students with different demographic characteristics. An exception is that, compared with white students, Hispanic students tend to be in general education academic classes with a smaller proportion of students who receive special education services. On average, 23% of students in the general education classes of white students with disabilities receive special education; the comparable percentage for Hispanic students with disabilities is 18% ($p < .05$).

Communication Method

Speech is the teacher's sole communication mode for 97% of students with disabilities who take general education academic classes; the remainder are in classes where sign language is used in conjunction with speech. Eighty-three percent of students who take special education classes also have teachers who solely use speech in those classes, as is the case for students with

disabilities who take vocational education courses. Thus, in both kinds of classes, 17% of students have teachers who use a combination of manual and voice communication. Among special education classes, multiple communication methods are more common in classes that focus on basic academic or life skills (28%) than classes with an academic focus (14%, $p < .05$) or those focused on study skills (15%, $p < .05$).

Not surprisingly, the use of sign language in the classroom varies across disability categories. For example, in special education classes, students with hearing impairments, multiple disabilities, or deaf-blindness are significantly more likely to have sign language used in their classes along with voice (29% to 38%) than other students (e.g., 16% for students with learning disabilities, $p < .05$).

General Education Academic Teacher Characteristics

When the educational process is working effectively, teachers are crucial partners in learning for students. Their characteristics and experience can influence in important ways the dynamics of the educational interchange with students. NLTS2 asked general education academic class teachers who had students with disabilities in their courses to describe several aspects of their background, including their racial/ethnic group, teaching credential, and teaching experience.³

The teachers of the general education academic classes of students with disabilities are much less racially and ethnically diverse than the students themselves. Whereas 62% of secondary students with disabilities are white (Marder, Levine, Wagner, & Cardoso, 2003), almost 90% of students with disabilities who take general education academic classes have teachers who are white (Exhibit 5-9). This racial/ethnic discrepancy is somewhat larger than that for students in the general population nationally; 66% of them are white, as are 85% of their teachers (National Center for Education Statistics, 2002). A racial/ethnic disparity between teachers and students has been shown to relate to lower teacher perceptions of students' performance (Dee, 2001), particularly between white teachers and African-American students (Oates, 2003), although it has not been demonstrated to limit what students objectively learn (Ehrenbert, Goldhaber, & Brewer, 1995).

Two proxies for teacher quality—credentials and experience—have been found to be associated with positive student outcomes (Darling-Hammond, 2000; Goldhaber & Brewer, 1997; Monk & King, 1994). Having teachers who have concentrated coursework in the subject they teach and who have more experience is related to higher student academic performance, particularly at the high school level (Rice, 2003).

Most students with disabilities have general education academic teachers who have credentials in their subject area or who have substantial teaching experience. Ninety-six percent of students with disabilities who take general education academic classes have teachers who hold credentials to teach those classes. This is a higher rate than the average for their schools reported

³ Items related to teachers' characteristics were included in the general education academic teacher survey because it was clear that the respondent had direct classroom contact with NLTS2 students. In contrast, the student's school program survey did not include items on respondent characteristics because there was no assurance that school staff respondents had direct classroom contact with sample members. Therefore, the characteristics of respondents to the student's school program survey would not necessarily be expected to be related to students' classroom experiences or performance.

**Exhibit 5-9
CHARACTERISTICS OF GENERAL
EDUCATION ACADEMIC TEACHERS OF
STUDENTS WITH DISABILITIES**

	Number or Percentage	Standard Error
Percentage whose teacher is:		
White	87.8	1.8
African American	5.3	1.2
Hispanic	4.0	1.1
Other racial/ethnic background	2.9	.9
Percentage of students with teachers who are credentialed to teach their class	96.1	1.0
Average number of years teaching	14.1	.6
Percentage whose teacher has been teaching:		
4 years or less	23.4	2.3
5 to 9 years	20.4	2.2
10 to 19 years	24.5	2.3
20 years or more	31.6	2.5
Average number of years teaching students with disabilities	10.2	.5
Percentage whose teacher has been teaching students with disabilities:		
4 years or less	32.7	2.5
5 to 9 years	23.1	2.3
10 to 19 years	27.0	2.4
20 years or more	17.2	2.0
Percentage whose teachers agree/disagree that they are adequately trained to teach students with disabilities		
Strongly agree	15.4	1.9
Agree	53.1	2.7
Disagree/strongly disagree	31.5	2.5

Source: NLTS2 Wave 1 general education teacher survey.

in Chapter 3 (88%), suggesting that perhaps students with disabilities who take general education academic classes are assigned to classes with more qualified teachers. Teachers have an average of 14 years of teaching experience, although their experience ranges widely. For example, almost one-fourth of students with disabilities in general education academic classes have teachers with less than 5 years experience, whereas almost one-third have teachers who have been teaching for at least 20 years.

Teachers tend to have somewhat less experience teaching students who receive special education services, although they average 10 years of experience with this population. Although one-third of students have teachers with less than 5 years experience teaching students with disabilities, twice as many students have general education teachers who report feeling adequately trained to teach students with special needs; 15% strongly agree and 53% agree with the statement “I have adequate training for teaching students with disabilities.” These perceptions of adequacy exist despite the fact that only about one-third of teachers have had at least 8 hours of professional development related to working with

students with disabilities in the preceding 3 years.

There are no differences in teachers’ race/ethnicity, total years of teaching, or years of teaching special education students across the various subject areas of general education academic classes. However, there are differences in the percentages of teachers who hold credentials to teach the class. Whereas 99% of students with disabilities in general education language arts or social studies/humanities classes have teachers who hold credentials to teach their classes, 93% of students in mathematics or science classes have teachers who hold such credentials ($p < .05$).

Racial/ethnic background is the only teacher characteristic considered in this chapter that differs across disability categories. Proportions of students whose teachers are white range from 81% (students with emotional disturbances) to 92% (students with other health impairments or mental retardation, $p < .05$). This variation appears to be unrelated to the differences across categories in the racial/ethnic distribution of students with disabilities themselves. The two disability categories with the highest proportions of African American students are mental

retardation and emotional disturbance (Marder, Levine, & Wagner, 2003), which have the lowest and highest percentages of teachers who are white.

Nonetheless, African-American and Hispanic students with disabilities are less likely than white students to have white teachers; 95% of white students with disabilities have white teachers, compared with 75% of African-American students and 72% of Hispanic students ($p < .001$). African-American students with disabilities also have teachers with less experience teaching students with disabilities, on average, than white students (8.2 vs. 10.7 years, $p < .05$). Income differences are apparent regarding teachers' perceptions of being adequately trained to teach students with special needs; lower-income students are more likely than those in the middle or highest income categories to have teachers who strongly agree that they are adequately trained (26% vs. 10% and 13%, $p < .05$).

Summary

NLTS2 has collected information on the classroom experiences of secondary school students with disabilities that span a wide range of subject areas for both general education academic classes and special education classes, as well as for vocational education courses taught in both general and special education settings. This information gives a good picture of the variation in classroom contexts and experiences of students with disabilities in middle and high school.

Findings reported in Chapter 3 showed that virtually all students with disabilities take at least one academic course in a given semester, and more than two-thirds of students take those courses in general education classes. This chapter has shown that more than 8 in 10 students with disabilities who take general education academic classes are in classes that perform at standard grade level. Although 16% of students with disabilities who take general education academic classes are tracked into classes that perform below grade level, 2% are in honors or advanced placement classes, including 12% of students with autism and 20% of students with visual impairments, affirming the wide range of abilities among students who receive special education services.

Virtually all students with disabilities in general education academic classes have teachers who are credentialed to teach the subject of the class, and these teachers average 14 years of experience, more than the average level of experience of teachers in their schools, suggesting that perhaps schools assign students with disabilities who take general education academic classes to particularly experienced teachers. However, those classes tend to be relatively large, averaging 21 students per adult, including 5 students with disabilities. In contrast, special education classes average 6 students per adult. This difference in size between general and special education classes also is noted for vocational education courses; although they average about 12 students per adult, there are an average of 15 students per adult in general educational classes and one-third that many in special education vocational classrooms.

Differences between disability categories in classroom context have much to do with the types of classes for which their classroom experiences have been reported in surveys. For example, students with multiple disabilities or autism are much more likely than those with learning disabilities or speech impairments to have their special education classroom experiences reported for life skills classes and to have their vocational education classroom experiences reported for special education vocational courses. Consistent with this difference, students with

multiple disabilities or autism tend to be in classes that have a smaller number of students per adult.

Demographic differences are not dramatic, particularly related to general education academic classes. However, some are apparent. Within general education academic classes, a gender difference is apparent in the performance level of classes; boys are more likely than girls to be in classes that function at grade level, whereas girls are more likely to be in classes that perform below grade level. Racial/ethnic differences also are noted. African-American and Hispanic students with disabilities are less likely than white students to have white teachers, and African-American students with disabilities also tend to have teachers who have less experience working with students with disabilities than do white students, although their teachers still average 8 years of experience.

With this depiction of the characteristics of general, special, and vocational education classrooms attended by secondary school students with disabilities as background, the subsequent chapters highlight the instructional experiences within them.

6. INSTRUCTION OF SECONDARY SCHOOL STUDENTS WITH DISABILITIES IN GENERAL EDUCATION ACADEMIC CLASSES

By Lynn Newman, Camille Marder, and Mary Wagner

Underlying the Individuals with Disabilities Education Act Amendments of 1997 (IDEA '97) is the principle that students should receive their education in the least restrictive environment. The law requires “That to the maximum extent appropriate children with disabilities, including children in public or private institutions or other care facilities, are educated with children who are nondisabled” [20 U.S.C. 1412(1)(5)]. For many students with disabilities, the least restrictive environment is a general education classroom.

Including students with disabilities in general education classrooms has been shown to benefit both students with disabilities (Baker, Wang, & Walberg, 1994; Waldron, 1997) and general education students (Stainback & Stainback, 1996; Staub & Peck, 1994; Waldron, 1997). NLTS2 analyses demonstrate that the degree to which students with disabilities take courses in general education classrooms is related to both their academic performance and their social adjustment at school, independent of other differences between students. Taking more courses in general education classrooms is associated with having reading and math abilities that are closer to grade level (Blackorby et al., 2003) and a lower likelihood of being subject to disciplinary action at school (Marder, Wagner et al., 2003), independent of other differences between students. However, students with disabilities who take more courses in general education classes also tend to receive lower grades, other things being equal.

Nonetheless, the discussion surrounding the nature of the free appropriate public education assured students with disabilities has advanced beyond consideration of *where* students are educated to an emphasis on *how* they are educated. IDEA '97 intends not just that students with disabilities be included in general education settings, but that they have access to a challenging curriculum there. Access to the general education curriculum means more than simply being present in a general education classroom; it means that students’ “educational programs are based on high expectations that acknowledge each student’s potential and ultimate contribution to society...” and that “students with disabilities be provided with the supports necessary to allow them to benefit from instruction” (Nolet & McLaughlin, 2000, pp. 2, 9).

Despite this emphasis on assessing the implementation of the law against a standard that is defined by what goes on in classrooms, no information has been available nationally that portrays the classroom experiences of students with disabilities. NLTS2 helps fill that gap in the knowledge base. This chapter focuses on secondary school students with disabilities when they receive instruction in general education academic classes—their experiences in these classrooms and how they compare with those of their classmates—in terms of:

- Classroom instructional practices.
- Students’ participation in classroom activities.
- Factors considered important in determining students’ grades.
- Supports provided to general education teachers with students with disabilities in their classes.

- Supports and accommodations provided to students.
- Teachers' perceptions and expectations of students' performance.

General education academic class experiences are described on these dimensions for youth with disabilities as a group who are in such classes; as mentioned in Chapter 4, they are 69% of secondary school students with disabilities. Findings also are presented for those who differ in their primary disability category. As noted in Chapter 4, the proportion of students who take any general education academic classes ranges from 28% to 83% across disability categories. Thus, findings for students with disabilities as a whole represent a much larger portion of students in some categories than others.¹ Classroom experiences also are reported for students who take classes in different academic subject areas and who are at different grade levels, as well as for those who differ in their gender, household income, and race/ethnicity where such differences are significant.

Instructional Practices in General Education Academic Classes

For students with disabilities, a crucial question is, “To what extent are they accessing the general education curriculum in their general education academic classes?” This section addresses that important question by describing the classroom instructional experiences of students with disabilities in general education academic classes and comparing them with the experiences of their classmates.² Comparisons are made regarding:

- Curriculum
- Instructional groupings
- Instructional materials
- Instructional activities outside of class
- Discipline practices.

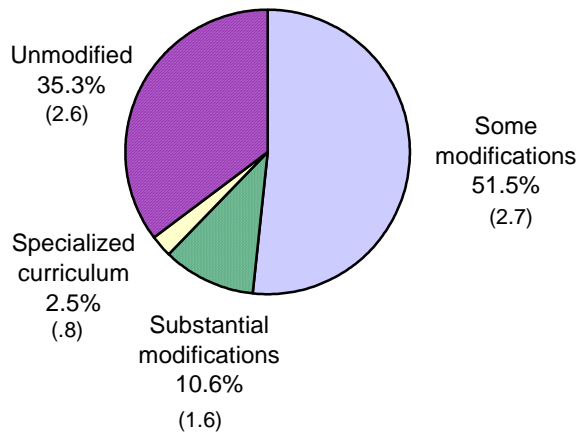
Access to the General Education Curriculum

General education academic teachers often feel they need to modify the curriculum of their courses to accommodate the individual learning needs of the students with disabilities in their classes. Teachers were asked to indicate the extent of such modifications made to the general education curriculum for students with disabilities in their classes. Overall, about one-third of secondary school students with disabilities receive the standard, general education grade-level curriculum used for other students in their academic classes (Exhibit 6-1). These students apparently have full access to the general education curriculum experienced by other students in

¹ Readers should be aware that the small number of students in some disability categories who take general education academic classes results in relatively large standard errors for those groups. In turn, this means that even relatively large differences between some groups may not attain statistical significance. Findings for students with deaf-blindness are not reported separately at all because very few take general education academic classes.

² As noted in Chapter 5, a typical general education academic class includes 19 general education students and 5 students who receive special education services. Thus, the comparisons made in this section should not be construed as between students with disabilities and nondisabled students. Rather, teachers reported on the classroom experiences of specific students with disabilities and compared them with those of the other students in class, including any other students with disabilities in the class.

Exhibit 6-1
EXTENT OF CURRICULUM MODIFICATION
FOR STUDENTS WITH DISABILITIES IN
GENERAL EDUCATION ACADEMIC CLASSES



Source: NLTS2 Wave 1 general education teacher survey.
 Standard errors are in parentheses.

their classes. However, more than half of students with disabilities (52%) have teachers who report making some modifications to the general education curriculum. For another 11%, substantial modifications are made to the general education curriculum they receive, and 2% receive a specialized curriculum, such as a parallel or individualized curriculum.

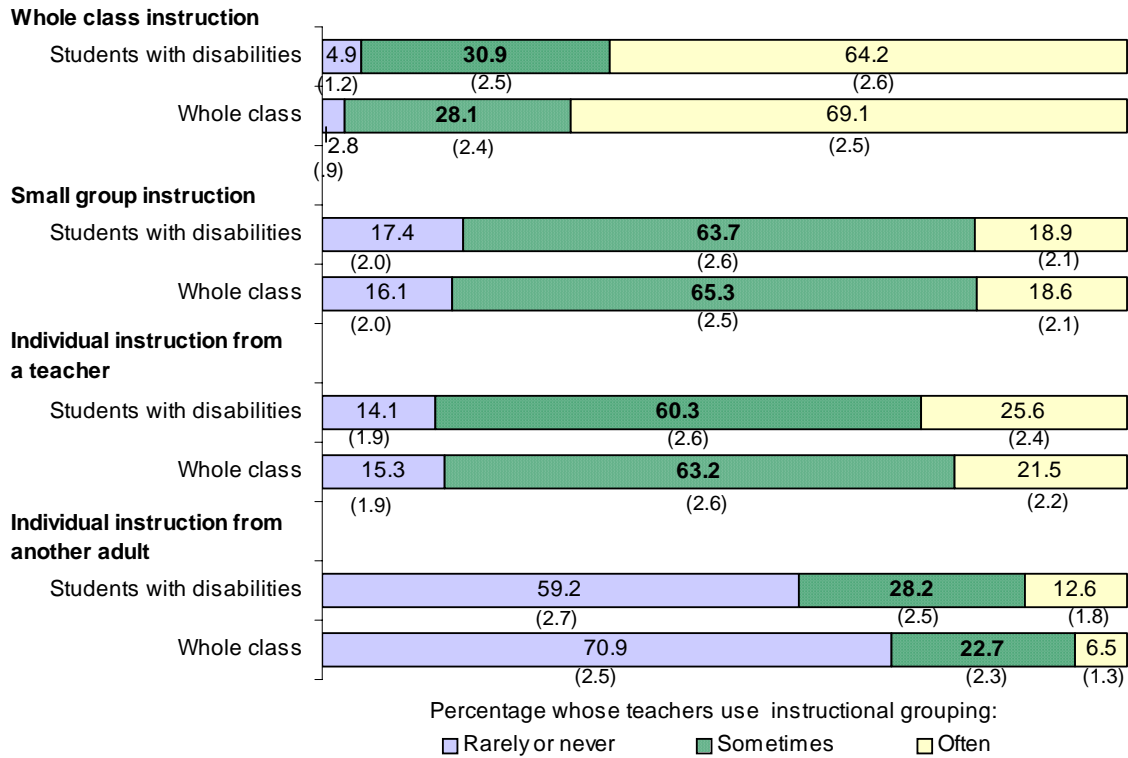
Instructional Groupings

As noted in Chapter 5, the general education academic classes of students with disabilities have an average of 21 students per adult. Considerable research suggests that lower student-teacher ratios help teachers meet student needs by facilitating effective instruction, communication, and

individualization (Achilles & Finn, 2000; Achilles, et al., 1998; Gersten & Dimino, 2001; Thurlow et al., 1989). Instructional strategies, such as using small-group or individual instruction, can be used to help reduce the student-teacher ratio for some classroom instruction. To assess the extent to which such instructional groupings are employed in general education academic classes, teachers were asked to report the frequency with which they used the following instructional groupings with the student with a disability about whom they were reporting and with their class as a whole: whole-class instruction, small-group instruction, individual instruction from the general education teacher, and individual instruction from an adult other than the teacher.

Students with disabilities for the most part experience the various instructional groupings with similar frequency as the class as a whole (Exhibit 6-2). For example, both groups experience whole-class instruction more frequently than other groupings; 64% of students with disabilities experience whole-class instruction often, and 69% are in classes in which students as a whole do as well. Nineteen percent of both groups often experience small-group instruction. Only in the amount of individual instruction received from an adult other than the teacher do students with disabilities differ from their class peers. They are more than twice as likely as the class as a whole to receive instruction often from an adult other than the general education teacher (e.g., a special education teacher or a personal aide; 13% vs. 6%, $p < .01$).

Exhibit 6-2
INSTRUCTIONAL GROUPINGS OF STUDENTS WITH DISABILITIES AND STUDENTS
IN GENERAL EDUCATION ACADEMIC CLASSES AS A WHOLE



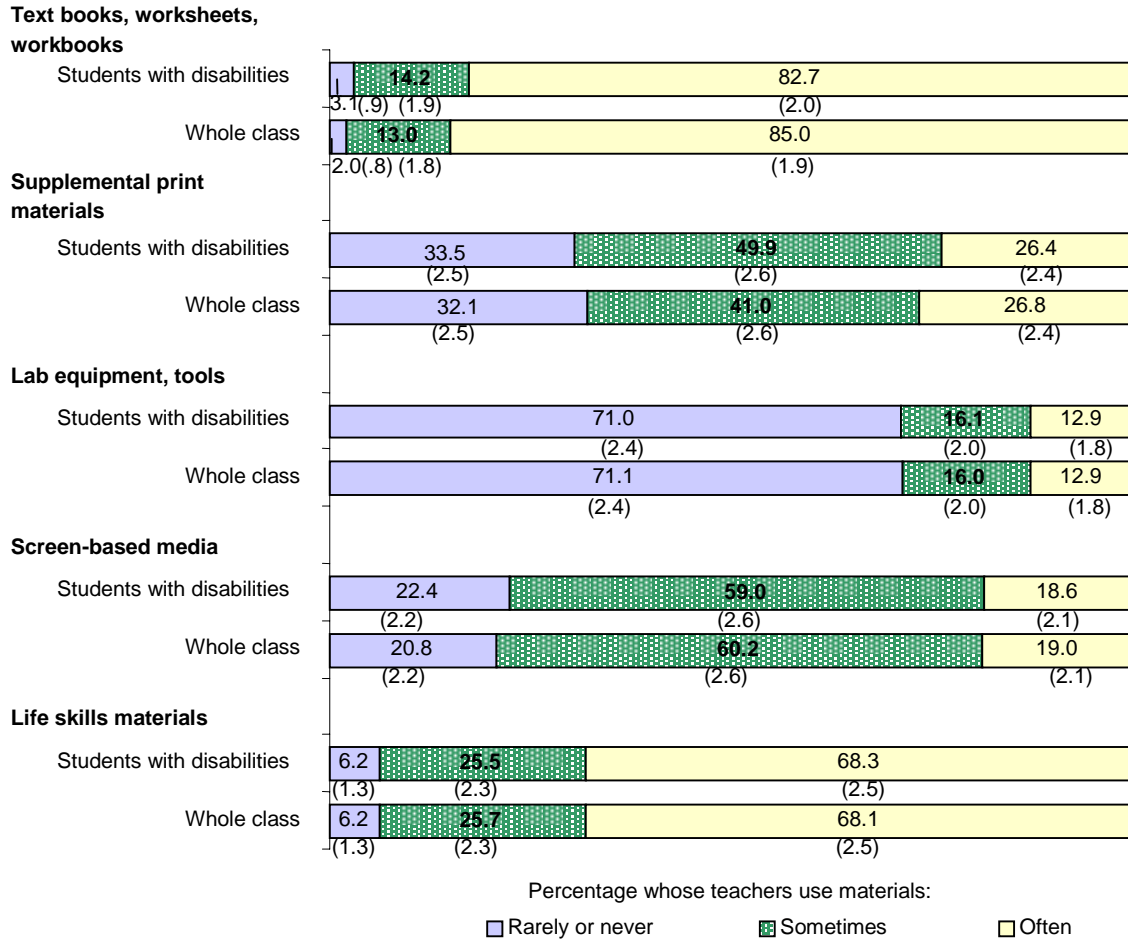
Source: NLTS2 Wave 1 general education teacher surveys.
Standard errors are in parentheses.

Instructional Materials

Teachers of general education academic classes were asked to report the frequency with which they use a range of materials in their instruction of students with disabilities and with the class as a whole. Not surprisingly, textbooks, worksheets, and workbooks are the most frequently used instructional materials (Exhibit 6-3); 83% of students with disabilities attend classes where these types of materials are reportedly used often. Students with disabilities and students in the class as a whole are similar in their frequency of each type of instructional material.

Computers can be an important educational resource that can support instruction in multiple ways, including for academic drills, word processing or spreadsheet activities, and accessing the Internet. Although, as reported in Chapter 3, 58% of students with disabilities attend schools that report having computers in all academic classes, and 98% have computers in at least some academic classes, many teachers of general education academic classes report that students never

Exhibit 6-3
INSTRUCTIONAL MATERIALS USED WITH STUDENTS WITH DISABILITIES
AND STUDENTS IN GENERAL EDUCATION ACADEMIC CLASSES AS A WHOLE



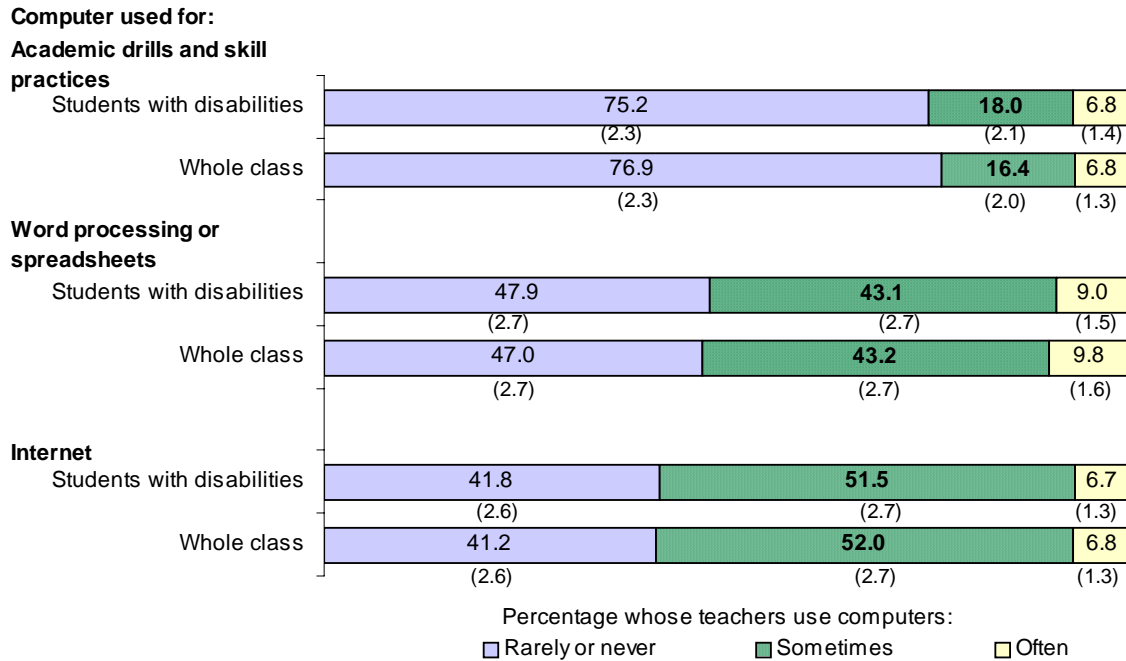
Source: NLTS2 Wave 1 general education teacher survey.
Standard errors are in parentheses.

or rarely use computers in their classes, with no difference in frequency of use by students with disabilities and the class as a whole. Fewer than 10% of students with disabilities use computers often in these classes for any purpose (Exhibit 6-4). Students are the least likely to use computers for academic drills, with three-quarters rarely or never using computers in this way; almost half rarely or never use classroom computers for word processing or accessing the Internet.

Instructional Activities outside the Classroom

Instruction does not occur only within the confines of a classroom; teachers can offer students opportunities to extend their learning through the use of libraries, computer labs, or other types of resources at the school, as well as through field trips off campus and through

**Exhibit 6-4
COMPUTER USE BY STUDENTS WITH DISABILITIES AND STUDENTS
IN GENERAL EDUCATION ACADEMIC CLASSES AS A WHOLE**



Source: NLTS2 Wave 1 general education teacher surveys.
Standard errors are in parentheses.

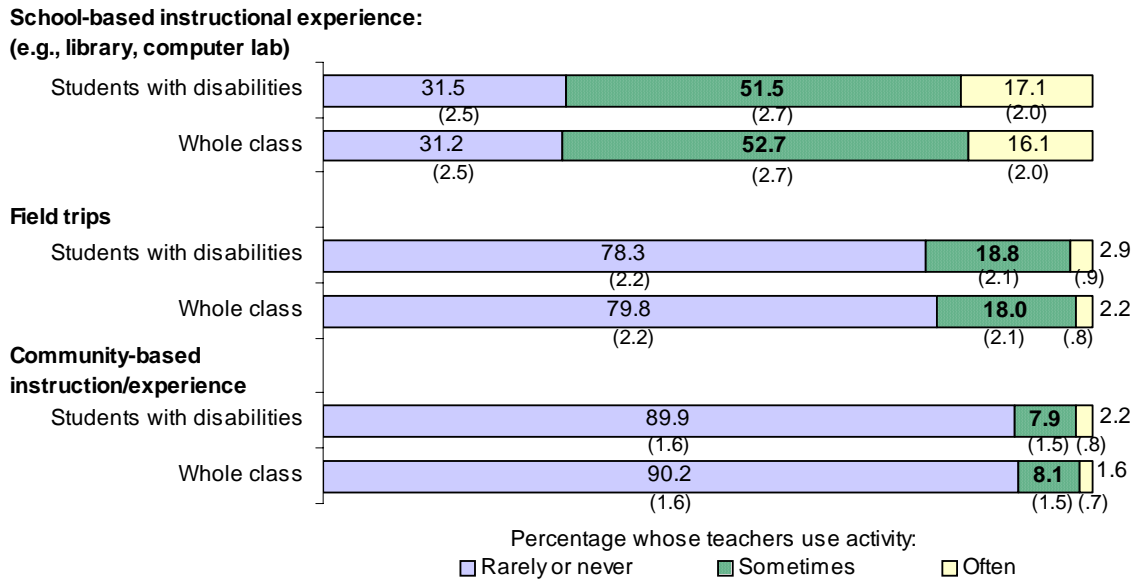
community-based instruction or experience, such as service-learning projects. However, these types of experiences occur infrequently as part of general education academic classes that include students with disabilities (Exhibit 6-5).

About one in six students with disabilities who attend general education academic classes often have school-based instructional experiences outside the classroom, and 3% or fewer often go on field trips or have community-based instructional experiences. In fact, any excursions outside of the school are rare for secondary school students with disabilities, with 90% never or rarely having community-based experiences and four out of five students never or rarely going on field trips. However, such experiences are no more common for other students; similar to many other aspects of the class, students with disabilities do not differ from their classroom peers in their participation in activities outside the classroom.

Discipline Practices

An important element in effective instruction is maintaining an orderly classroom environment that is conducive to learning. Doing so can involve disciplining students whose behavior is considered disruptive to an orderly environment. To ascertain teachers' disciplinary practices for students with disabilities, teachers were asked to indicate the extent to which the discipline procedures used when a student with disabilities becomes disorderly in class are similar to those applied to the class as a whole. The large majority of students with disabilities (84%) experience discipline practices that are similar to those used for students in general education academic classes as a whole.

Exhibit 6-5
INSTRUCTIONAL ACTIVITIES OUTSIDE THE CLASSROOM FOR STUDENTS WITH DISABILITIES
AND STUDENTS IN GENERAL EDUCATION ACADEMIC CLASSES AS A WHOLE



Source: NLTS2 Wave 1 general education teacher survey.
Standard errors are in parentheses.

Variations in Instructional Practices

The preceding findings depict the extent to which the instructional practices experienced by students with disabilities in general education academic classes are similar to or differ from those experienced by their classmates. However, in some respects, instructional practices differ for students in different kinds of classes and at different grade levels, as well as for students who differ in disability and demographic characteristics, as described below.

Subject Area Variations in Instructional Practices

Teachers vary their instructional practices with the subject matter they are teaching (Exhibit 6-6). What goes on in math classes particularly stands out in several ways from other kinds of classes. Students with disabilities are most likely to receive an unmodified general education curriculum in their math classes (43%) and least likely to do so in their science classes (27%, $p < .05$). Students also are more likely to receive whole-class instruction often in math classes than in other classes, particularly science classes (79% vs. 53%, $p < .001$) and less likely to receive small-group instruction (75% at least sometimes in math vs. 88% in science classes, $p < .05$).

**Exhibit 6-6
SELECTED INSTRUCTIONAL PRACTICES IN GENERAL
EDUCATION ACADEMIC CLASSES OF STUDENTS WITH
DISABILITIES, BY SUBJECT AREA**

	Language Arts	Mathe- matics	Science	Social Studies
Percentage of students with:				
General education curriculum without modification	37.7 (4.9)	42.6 (5.8)	27.0 (5.0)	33.1 (5.1)
Instructional groupings:				
Whole-class instruction				
Used often	57.6 (5.1)	79.2 (4.8)	52.6 (5.7)	64.8 (5.2)
Used sometimes	34.7 (4.9)	13.6 (4.1)	46.2 (5.7)	32.2 (5.2)
Small group instruction				
Used often	19.9 (4.1)	15.7 (4.3)	19.2 (4.5)	18.2 (4.2)
Used sometimes	65.4 (4.9)	59.2 (5.8)	69.0 (5.2)	65.1 (5.2)
Materials				
Computers for academic drills				
Used often	6.9 (2.6)	14.2 (4.1)	2.3 (1.7)	2.4 (1.7)
Used sometimes	14.7 (3.7)	17.1 (4.4)	23.3 (4.8)	17.4 (4.2)
Computers for word processing				
Used often	18.1 (4.0)	3.6 (2.2)	6.5 (2.8)	6.7 (2.7)
Used sometimes	60.3 (5.0)	18.6 (4.6)	46.9 (5.7)	45.6 (5.4)
Computers for Internet				
Used often	6.9 (2.6)	4.8 (2.5)	9.8 (3.3)	5.6 (2.5)
Used sometimes	64.8 (4.9)	20.6 (4.8)	63.0 (5.4)	55.7 (5.4)
Supplemental print materials				
Used often	23.2 (4.3)	11.2 (3.7)	15.7 (4.1)	53.2 (5.4)
Used sometimes	40.3 (5.0)	44.7 (5.8)	44.6 (5.6)	32.5 (5.7)
Lab equipment				
Used often	.2 (.5)	4.6 (2.5)	51.9 (5.6)	.8 (1.0)
Used sometimes	5.8 (2.4)	13.1 (4.0)	44.1 (5.6)	2.6 (1.8)
Life skills materials				
Used often	4.8 (2.2)	4.2 (2.4)	11.2 (3.6)	3.8 (2.1)
Used sometimes	17.4 (3.9)	36.1 (5.7)	29.8 (5.1)	21.8 (4.5)

Source: NLTS2 Wave 1 general education teacher survey.

Note: Only instructional practices that differ significantly across subject areas are included in the exhibit.

Standard errors are in parentheses.

Use of materials also differs by subject area. Students with disabilities in math classes are more likely to use computers often for academic drills (14% vs. 2% of students with disabilities in science or social studies classes, $p < .01$) and less likely to use them for word processing (22% do so at least sometimes vs. 52% to 78% of students in other kinds of classes, $p < .001$). Along with science classes, students with disabilities are most likely to use life skills materials in math classes; 40% or more use them at least sometimes in math and science classes, compared with 22% and 26% in language arts and social studies classes ($p < .05$). Although computers are not used frequently in any class for accessing the Internet, more than 60% of students in other classes do so at least sometimes, compared with one-fourth of students with disabilities in mathematics classes.

Not surprisingly, students in language arts classes often use computers for word processing more than students in other classes (18% vs. 4% to 7% of students in other classes, $p < .05$). Social studies teachers more frequently provide supplemental print materials and use screen-based media, such as TV and videos, in their classes, whereas, not surprisingly, science teachers most frequently supply lab equipment, machinery, or tools, with more than half of the science students using this type of equipment often.

**Exhibit 6-7
SELECTED INSTRUCTIONAL PRACTICES IN GENERAL
EDUCATION ACADEMIC CLASSES OF STUDENTS WITH
DISABILITIES, BY GRADE LEVEL**

	7th or 8th Grade	9th Grade	10th Grade	11th or 12th Grade
Percentage of students with:				
Instructional groupings:				
Small-group instruction				
Used often	18.5 (5.5)	18.4 (4.5)	14.8 (3.7)	21.7 (3.8)
Used sometimes	71.5 (6.4)	66.7 (5.5)	62.1 (5.1)	60.4 (4.5)
Individual instruction from an adult other than the teacher				
Used often	10.5 (4.4)	19.6 (4.6)	9.1 (3.0)	11.2 (2.9)
Used sometimes	41.2 (7.1)	29.5 (5.3)	30.8 (4.9)	21.5 (3.8)
Use of materials				
Textbooks, worksheets, workbooks, etc.				
Used often	67.9 (6.8)	86.7 (3.9)	82.4 (4.0)	85.4 (3.3)
Used sometimes	26.4 (6.4)	11.1 (3.6)	14.3 (3.7)	11.7 (3.0)
Computers used for academic drills				
Used often	6.5 (3.6)	7.7 (3.0)	6.0 (2.5)	6.0 (2.2)
Used sometimes	33.9 (6.9)	16.7 (4.2)	13.2 (3.6)	16.8 (3.5)
Experiences outside the classroom				
Field trips				
Used often	8.5 (4.0)	1.5 (1.4)	2.2 (1.5)	2.7 (1.5)
Used sometimes	40.9 (7.1)	12.2 (3.8)	12.0 (3.4)	18.4 (3.6)
School-based instructional activities				
Used often	29.8 (6.5)	15.3 (4.2)	13.2 (3.5)	15.9 (3.4)
Used sometimes	50.4 (7.1)	48.0 (5.8)	52.4 (5.2)	53.2 (4.6)

Source: NLTS2 Wave 1 general education teacher survey.

Note: Only instructional practices that differ significantly across grade levels are included in the exhibit.

Standard errors are in parentheses.

**Grade-Level Variations in
Instructional Practices**

Grade-level variations in instructional practices generally involve those between middle and high school students³ (Exhibit 6-7). For example, middle school students with disabilities are more likely to receive small-group instruction at least sometimes (90% vs. 77% of those in the 10th grade, $p < .05$) and are more likely to receive individual instruction from an adult other than the teacher (52% of middle school students receive such instruction at least sometimes, compared with one-third or fewer of juniors and seniors, $p < .05$).

Students' use of material differs by grade level, as well. Middle school students are less likely to use textbooks often (68% vs. 87% of 9th graders, $p < .05$) and more likely to use computers for drills and skills practice (40% use computers this way at least sometimes, compared with 19% of 10th graders, $p < .05$). In addition, middle school students are more likely to go on field trips, with about half doing so at least sometimes, compared with one-fifth or fewer of high school students ($p < .001$), and are more likely to have school-based instructional activities outside of class (30% do so often vs. 13% of 10th graders, $p < .05$).

The instructional practices experienced by students with disabilities and their classmates are similar, regardless of their grade level.

³ For convenience, grades 7 and 8 are referred to as middle school grade levels, and grades 9 and above are referred to as high school grade levels.

Disability Variations in Instructional Practices

The nature of a student's disability can play a role in the choices teachers make regarding the instructional practices they use in general education academic classrooms.

Curriculum. Students with speech or sensory impairments are the most likely to have access to an unmodified general education curriculum (from 42% to 50%; Exhibit 6-8), whereas those with multiple disabilities, traumatic brain injuries, or mental retardation are the least likely to have such access (from 14% to 29%, $p < .05$ comparing students with mental retardation and those with hearing impairments). Students with mental retardation, autism, or multiple disabilities are the most likely to have a substantially modified or a specialized curriculum (20% to 33%). In contrast, 10% or fewer of students with speech, hearing, visual, or orthopedic impairments do so ($p < .05$ comparing students with autism and those with hearing impairments).

Exhibit 6-8
EXTENT OF CURRICULUM MODIFICATION FOR STUDENTS WITH DISABILITIES IN
GENERAL EDUCATION ACADEMIC CLASSES, BY DISABILITY CATEGORY

	Learning Disability	Speech/Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Autism	Traumatic Brain Injury	Multiple Disabilities
Percentage using general education curriculum:											
Without modification	34.9 (3.5)	50.2 (3.7)	29.0 (6.8)	37.5 (5.8)	46.2 (4.8)	41.7 (6.3)	39.8 (4.1)	31.2 (3.4)	33.4 (6.0)	26.5 (7.1)	14.1 (6.5)
With some modification	51.7 (3.6)	43.0 (3.7)	51.5 (7.5)	52.6 (5.9)	49.1 (4.8)	50.5 (6.4)	52.7 (4.1)	54.5 (3.6)	47.1 (6.3)	58.6 (7.9)	53.1 (9.3)
With substantial modification	10.8 (2.3)	5.8 (1.7)	14.9 (5.3)	7.7 (3.2)	3.6 (1.8)	4.1 (2.5)	6.4 (2.0)	13.2 (2.5)	11.5 (4.1)	11.0 (5.0)	22.4 (7.8)
Percentage with specialized curriculum	2.5 (1.1)	.9 (.7)	4.6 (3.1)	2.2 (1.7)	1.1 (1.0)	3.7 (2.4)	1.1 (.9)	1.1 (.8)	8.0 (3.4)	3.9 (3.1)	10.4 (5.7)

Source: NLTS2 Wave 1 general education teacher survey.
Standard errors are in parentheses.

Instructional groupings. The types of groupings in which students receive their education differ somewhat by disability category (Exhibit 6-9). Teachers are least likely to use whole-class instruction often for students with mental retardation and most likely to do so for students with visual impairments (53% vs. 73% $p < .05$). In contrast, they are least likely to use small-group instruction often for students with autism (11%) and most likely to use it with students with mental retardation or traumatic brain injuries (30% and 28%, $p < .05$). Students differ most in their receipt of individual instruction from an adult other than the general education teacher. For example, about one-third of those with speech or visual impairments receive this type of instruction at least sometimes, whereas 62% of those with multiple disabilities do so ($p < .01$). More than half of students with orthopedic impairments or traumatic brain injuries also receive this kind of instruction at least sometimes.

Exhibit 6-9
SELECTED INSTRUCTIONAL PRACTICES IN GENERAL EDUCATION ACADEMIC CLASSES
OF STUDENTS WITH DISABILITIES, BY DISABILITY CATEGORY

	Learning Disability	Speech/Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Autism	Traumatic Brain Injury	Multiple Disabilities
Percentage of students with:											
Instructional grouping											
Whole-class instruction											
Used often	64.6 (3.5)	65.7 (3.6)	53.2 (7.5)	67.6 (5.5)	69.7 (4.5)	73.4 (5.7)	61.7 (4.0)	65.6 (3.5)	63.3 (6.2)	65.9 (7.7)	59.9 (9.2)
Used sometimes	30.9 (3.4)	31.1 (3.5)	35.1 (7.2)	26.9 (5.2)	29.1 (4.4)	23.2 (5.5)	33.4 (3.9)	31.6 (3.4)	27.1 (5.7)	32.3 (7.6)	34.4 (8.9)
Small-group instruction											
Used often	16.4 (2.7)	22.5 (3.1)	29.7 (6.9)	21.2 (4.8)	23.4 (4.2)	21.9 (5.3)	24.4 (3.6)	25.9 (3.2)	11.3 (4.1)	27.7 (7.2)	26.7 (8.2)
Used sometimes	66.5 (3.5)	59.4 (3.7)	53.4 (7.5)	56.7 (5.8)	59.9 (4.8)	64.1 (6.2)	62.0 (4.0)	59.5 (3.6)	62.8 (6.2)	59.6 (7.9)	59.7 (9.1)
Individual instruction from an adult other than the teacher											
Used often	11.5 (2.4)	7.9 (2.0)	19.6 (6.0)	13.8 (4.1)	18.4 (3.8)	10.2 (3.9)	21.0 (3.4)	12.5 (2.4)	18.4 (5.0)	23.0 (6.8)	33.0 (8.7)
Used sometimes	28.9 (3.4)	27.0 (3.3)	27.1 (6.8)	25.5 (5.1)	25.6 (4.3)	20.8 (5.2)	29.5 (3.8)	27.2 (3.3)	24.9 (5.6)	33.9 (7.7)	28.9 (3.4)
Use of materials											
Lab equipment											
Used often	12.7 (2.4)	9.3 (2.2)	12.7 (5.0)	14.0 (4.2)	19.7 (3.9)	8.7 (3.6)	7.8 (2.2)	16.8 (2.7)	14.4 (4.5)	19.7 (6.4)	16.7 (7.0)
Used sometimes	15.9 (2.7)	18.9 (3.0)	17.2 (5.7)	16.3 (4.4)	10.5 (3.0)	11.2 (4.1)	14.6 (3.0)	16.5 (2.7)	11.6 (4.1)	6.5 (3.9)	19.1 (7.4)
Instructional activities outside the classroom											
Field trips											
Used often	2.4 (1.1)	2.2 (1.1)	12.2 (5.1)	1.5 (1.5)	.9 (.9)	.8 (1.2)	1.8 (1.1)	1.2 (.8)	4.7 (2.7)	.4 (1.0)	10.4 (5.7)
Used sometimes	18.4 (2.9)	19.6 (3.0)	21.6 (6.4)	16.6 (4.5)	21.0 (4.0)	16.4 (4.8)	21.5 (3.4)	20.2 (2.9)	30.0 (5.8)	29.3 (7.4)	23.2 (7.9)
Community-based instruction											
Used often	1.5 (.9)	.8 (.7)	11.2 (4.8)	1.2 (1.3)	.8 (.9)	1.5 (1.6)	4.0 (1.6)	2.0 (1.0)	4.2 (2.5)	3.2 (2.8)	2.9 (3.1)
Used sometimes	7.0 (1.9)	11.4 (2.4)	10.1 (4.6)	7.2 (3.1)	10.9 (3.1)	10.9 (4.1)	12.6 (2.8)	12.3 (2.4)	5.0 (2.8)	19.3 (6.4)	10.0 (5.6)

Source: NLTS2 Wave 1 general education teacher survey.

Note: Only instructional practices that differ significantly across disability categories are included in the exhibit.

Standard errors are in parentheses.

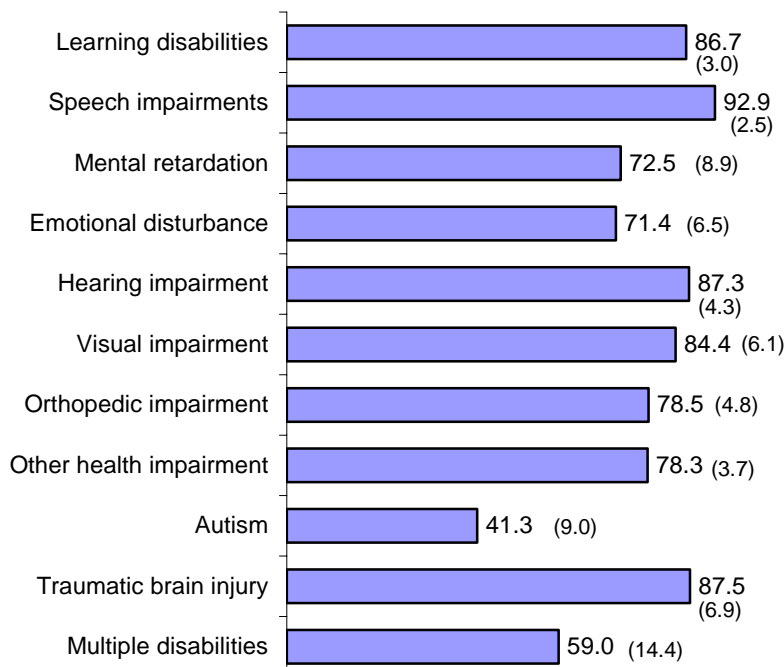
Students with disabilities' experiences with most types of instructional groupings do not differ from those of the class as a whole, regardless of disability category. An exception is that those with mental retardation are less likely than the class as a whole to receive whole-class instruction often (12% vs. 1%, $p < .05$). In addition, students in several disability categories are more likely than their class as a whole to receive individual instruction often from an adult other than the general education teacher. For example 18% of students with hearing impairments do so but only 4% are in classes in which the class as a whole does as well ($p < .001$). Differences also are noted for students with orthopedic impairments (21% vs. 2%, $p < .01$), autism (18% vs.

3%, $p < .01$), other health impairments (12% vs. 6%, $p < .05$), and multiple disabilities (33% vs. 11%, $p < .05$).

Materials. Students' use of print materials or computers does not differ by disability category. An exception is the use of lab equipment or tools. Almost 20% of those with hearing impairments often use lab equipment, machinery, or tools, compared with 9% of those with visual or speech impairments ($p < .05$ and $p < .01$) and 8% of those with orthopedic impairments ($p < .01$). Students with disabilities' use of materials is similar to the use by students in the class as a whole across all disability categories.

Experiences outside the classroom. Participation in school-based instructional experiences, such as going to the library or computer lab, does not differ by disability category. However, students with mental retardation are the most likely to participate in other types of activities outside the classroom, such as field trips and community-based instruction. More than 12% of students with mental retardation often go on field trips, and 11% have frequent community-based instructional experiences, whereas those with sensory impairments or traumatic brain injuries are the least likely to go on field trips often (1%, $p < .05$), and those with hearing or speech impairments are the least likely to experience frequent community-based instruction ($p < .05$). , Regardless of disability category, the experiences outside the classroom of students with disabilities do not differ from the experiences of students in their classes as a whole.

Exhibit 6-10
STUDENTS WITH DISABILITIES BEING SUBJECT TO THE SAME DISCIPLINE PRACTICE AS STUDENTS IN GENERAL EDUCATION ACADEMIC CLASSES, BY DISABILITY CATEGORY



Percentage for whom discipline is different from other students'

Source: NLTS2 Wave 1 general education teacher survey.

Standard errors are in parentheses.

Discipline. The extent to which teachers use the same disciplinary practices for students with disabilities as for students in the class as a whole ranges from 93% of those with speech impairments to 41% of those with autism ($p < .001$, Exhibit 6-10). If students need to be disciplined, those with autism or multiple disabilities are the least likely to receive the same type of discipline as the class as a whole (41% and 59%, respectively). Those with mental retardation, emotional disturbances, or orthopedic or other health impairments also are less likely than students with other types of disabilities to be disciplined in the same way as their classmates (71% to 78%, $p < .05$ to $p < .001$ compared with students with speech impairments, for example).

Demographic Variations in Instructional Practices

Some kinds of instructional practices used with students with disabilities in general education academic classes differ for students with different household incomes and racial/ethnic group membership. Across household income categories and racial/ethnic groups, students are about equally likely to receive an unmodified curriculum and to experience various instructional groupings, and the materials they use in the classroom and the activities in which they participate outside of class also differ little. An exception is that students whose families earn more than \$50,000 annually are more likely than students from households with incomes of \$25,000 or less to use classroom computers for word processing tasks often (14% vs. 6%, $p < .05$). Also, African-American students with disabilities are less likely than their white or Hispanic peers to use textbooks at least sometimes (89% vs. 98% and 99%, $p < .05$ and $p < .01$). The type of discipline students with disabilities receive does not differ by family socioeconomic status or racial/ethnic group membership.

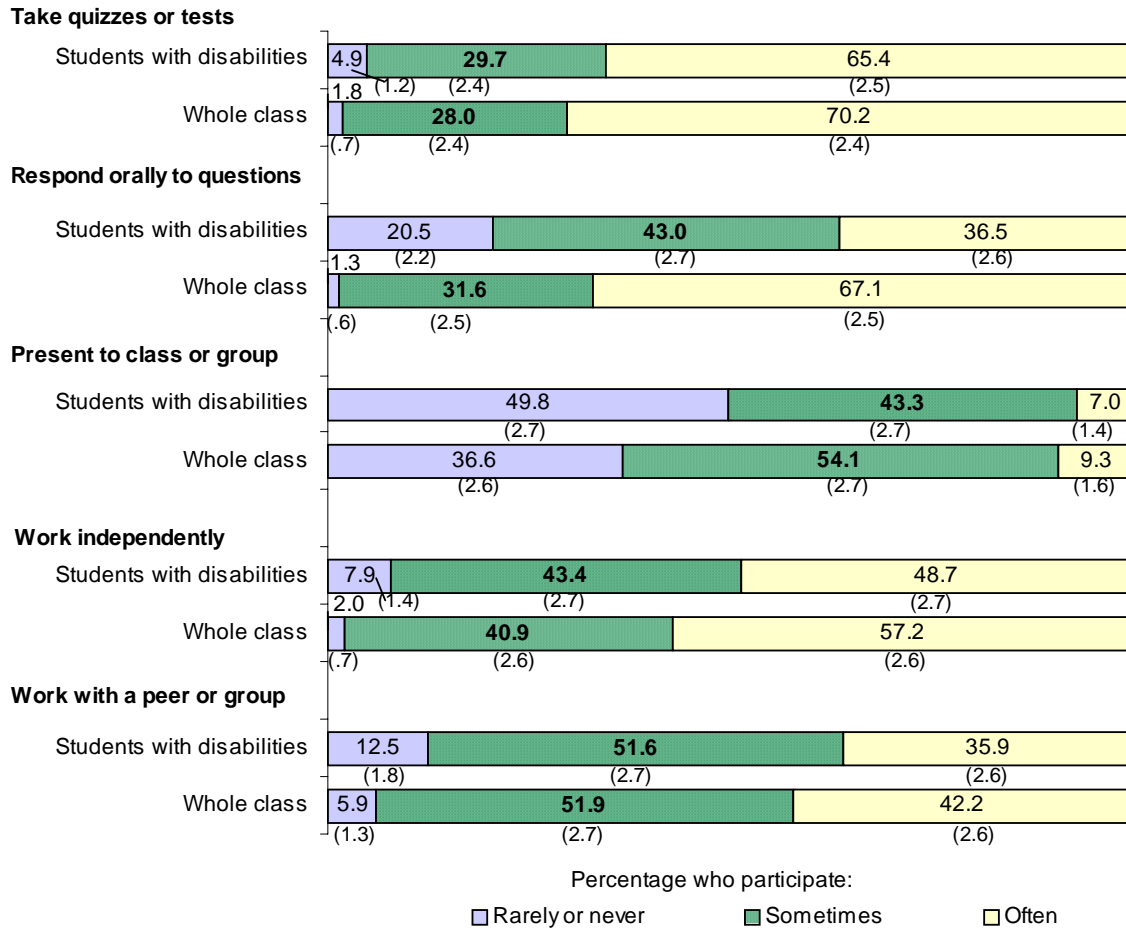
Students' Participation in Classroom Activities

Thus far, the comparison of the classroom experiences of students with disabilities with those of students in general education academic classes as a whole has focused primarily on teacher-directed aspects of the class, such as types of groupings or materials used. Yet, students should not be considered passive recipients of education but instead are active participants in the learning process. This section focuses on students' participation in their general education academic classes, as evidenced by the frequency with which they are reported by teachers to take tests or quizzes, respond orally to questions, present to the class or a group, work independently, and work with a peer partner or group.

The classroom participation of students with disabilities in these activities differs markedly from the level of participation of students in their class as a whole (Exhibit 6-12). Except for taking tests and quizzes, students with disabilities consistently participate less actively than students in their class as a whole. For example, 36% of students with disabilities are reported by teachers to respond orally to questions often, compared with 67% whose whole class does so ($p < .001$). Students with disabilities also are less likely to work independently (49% vs. 57% for the class as a whole, $p < .05$). Half of students with disabilities rarely or never present to the class, compared with about one-third (37%) whose whole class does so ($p < .001$), and 12% rarely or never work with a peer partner or group, compared with 6% for the whole class ($p < .001$).

The classroom participation of students with disabilities does not vary across grade levels. However, differences in participation in classes that focus on different subjects and for students who differ in their primary disability and demographic characteristics are noted.

**Exhibit 6-11
PARTICIPATION OF STUDENTS WITH DISABILITIES AND STUDENTS
IN GENERAL EDUCATION ACADEMIC CLASSES AS A WHOLE**



Source: NLT2 Wave 1 general education teacher surveys.
Standard errors are in parentheses.

Subject Area Variations in Students' Classroom Participation

Although the frequency with which students with disabilities and students in their general education academic classes as a whole take tests or quizzes does not differ by the subject area of their classes, several other aspects of students' in-class participation do (Exhibit 6-12). As with the instructional practices discussed previously, math classes differ from other classes in several ways. Students with disabilities are less likely to work with a peer partner or group in math class than other kinds of classes (77% do so at least sometimes vs. 90% to 94% of their classmates, $p < .05$ and $p < .01$), and they are less likely to present to the class or a group in math class than in language arts class (48% vs. 78%, $p < .001$). There are no differences across types of class in students' responding orally to questions or working independently at least sometimes.

The subject area differences noted above generally are experienced equally by both students with disabilities and the students in general education academic classes as a whole. Students

**Exhibit 6-12
PARTICIPATION OF STUDENTS WITH DISABILITIES AND
STUDENTS IN GENERAL EDUCATION ACADEMIC CLASSES
AS A WHOLE, BY SUBJECT AREA**

	Language Arts	Mathe- matics	Science	Social Studies
Percentage who at least sometimes:				
Respond orally to questions				
Student with disability	83.8 (3.8)	77.6 (4.9)	78.4 (4.6)	74.2 (4.8)
Whole class	98.8 (1.1)	99.7 (.6)	98.9 (1.2)	97.2 (1.8)
Present to class				
Student with disability	77.5 (4.3)	47.6 (5.9)	62.5 (5.4)	61.1 (5.3)
Whole class	63.4 (4.9)	63.6 (5.6)	49.8 (5.7)	47.8 (5.5)
Work independently				
Student with disability	93.8 (2.5)	91.2 (3.0)	88.4 (3.6)	91.8 (3.0)
Whole class	98.6 (1.2)	99.4 (.9)	95.7 (2.3)	97.7 (1.6)
Work with a peer or group				
Student with disability	89.6 (3.1)	77.1 (5.0)	93.7 (2.7)	89.7 (3.3)
Whole class	95.9 (2.0)	88.5 (3.8)	99.3 (.9)	93.4 (2.7)

Source: NLTS2 Wave 1 general education teacher survey.

Note: Only aspects of classroom participation that differ significantly across subject area are included in the exhibit.

Standard errors are in parentheses.

with disabilities in all types of classes respond orally to questions significantly less than their classroom peers. However, only in math class is there a significant difference between students with disabilities and their classmates in the likelihood that they work independently at least sometimes (91% vs. 99%, $p < .01$). The gap between students with disabilities and the others in their class in working at least sometimes with a peer or group reaches statistical significance only for science classes (94% vs. 99%, $p < .05$). Students with disabilities are actually significantly more likely to present in front of their language arts class at least sometimes than are their classmates (78% vs. 63%, $p < .05$).

Disability Variations in Students' Classroom Participation

Students with mental retardation are among the least likely to participate in their general education classes (Exhibit 6-13). For example, two-thirds reportedly respond orally to questions at least sometimes, and about one-third at least sometimes present in front of the class, compared with 88% and 60% of those with visual impairments ($p < .01$). Similarly, 77% of those with mental retardation work independently at least sometimes, compared with 94% of those with sensory impairments ($p < .05$). Only in working with a peer partner or group do those in other disability categories participate as infrequently as students with mental retardation; specifically, students with emotional disturbances or autism also are much less likely than students in most other categories to work with a peer or group (about 80% do so at least sometimes, $p < .05$ compared with students with sensory impairments).

With the exception of taking quizzes and tests, students in all disability categories are less likely to participate in class than are their classroom peers.

Exhibit 6-13
PARTICIPATION OF STUDENTS WITH DISABILITIES AND STUDENTS
IN GENERAL EDUCATION ACADEMIC CLASSES AS A WHOLE, BY DISABILITY CATEGORY

	Learning Dis-ability	Speech/ Language Impair-ment	Mental Retar-dation	Emo-tional Distur-bance	Hearing Impair-ment	Visual Impair-ment	Ortho-pedic Impair-ment	Other Health Impair-ment	Autism	Trau-matic Brain Injury	Multiple Disabili-ties
Percentage who at least sometimes:											
Take quizzes or tests											
Student with disability	96.2 (1.4)	98.5 (.9)	85.0 (5.4)	93.1 (3.0)	96.7 (1.7)	99.4 (1.0)	98.5 (1.0)	95.9 (1.4)	96.3 (2.4)	95.3 (3.4)	84.9 (6.8)
Whole class	98.0 (1.0)	99.1 (.7)	99.1 (.5)	98.2 (1.6)	98.9 (1.0)	99.6 (.8)	98.7 (.9)	98.1 (1.0)	98.7 (1.4)	99.2 (1.4)	95.5 (3.8)
Respond orally to questions											
Student with disability	79.5 (3.0)	79.2 (3.0)	66.6 (7.1)	86.0 (4.1)	80.4 (3.9)	87.9 (4.2)	85.0 (2.9)	82.6 (2.8)	82.1 (5.0)	78.3 (6.6)	79.3 (7.5)
Whole class	98.6 (.9)	98.6 (.9)	100.0	99.1 (1.1)	96.3 (1.8)	99.0 (1.3)	98.4 (1.0)	98.9 (.8)	98.6 (1.5)	96.8 (2.8)	99.5 (1.3)
Present to class or small group											
Student with disability	50.7 (3.7)	60.3 (3.6)	35.6 (7.2)	48.9 (6.0)	55.8 (4.8)	60.3 (6.3)	54.6 (4.1)	55.7 (3.6)	48.7 (6.4)	51.0 (8.0)	54.5 (9.3)
Whole class	61.7 (3.6)	71.2 (3.4)	67.4 (7.1)	65.6 (5.6)	65.9 (4.6)	70.1 (5.9)	66.7 (3.9)	66.4 (3.4)	67.8 (5.9)	69.2 (7.4)	63.7 (8.9)
Work independently											
Student with disability	94.2 (1.7)	94.0 (1.8)	77.5 (6.3)	88.2 (3.9)	93.7 (2.4)	93.8 (3.1)	93.1 (2.1)	90.5 (2.1)	90.2 (3.8)	91.3 (4.5)	87.1 (6.2)
Whole class	97.6 (1.1)	99.8 (.3)	99.9 (.5)	98.2 (1.6)	99.1 (.9)	99.2 (1.1)	98.8 (.9)	99.0 (.7)	100.0	99.2 (1.4)	100.0
Work with a peer or group											
Student with disability	88.9 (2.3)	89.9 (2.2)	81.5 (5.9)	79.5 (4.8)	92.3 (2.6)	91.7 (3.5)	89.9 (2.5)	88.8 (2.3)	80.8 (5.0)	85.8 (5.6)	88.4 (5.9)
Whole class	94.0 (1.7)	95.4 (1.5)	95.5 (3.1)	92.0 (3.2)	96.5 (1.8)	97.7 (1.9)	96.8 (1.5)	94.9 (1.6)	94.8 (2.8)	97.3 (2.6)	93.0 (4.7)

Source: NLTS2 Wave 1 general education teacher survey.

Note: Only aspects of classroom participation that differ significantly across disability categories are included in the exhibit.

Standard errors are in parentheses.

Demographic Variations in Students' Classroom Participation

The classroom participation of students with disabilities does not differ by family socioeconomic status or racial/ethnic group membership. The one exception is that students with disabilities from families with lower incomes differ from the class as a whole in that they are less likely to work independently. Fewer than 90% of students with disabilities from families with incomes of \$25,000 or less work independently at least sometimes, compared with 99% whose whole class does so ($p < .01$). Students with disabilities from families with middle or higher income levels do not differ from their classmates in their level of working independently.

Factors Considered Important in Determining Students' Grades

The preceding discussion has described the experiences of students with disabilities in general education academic classes and the extent to which they differ from the experiences of the other students in those classes as a whole. Evident differences in classroom experiences, particularly regarding students' classroom participation, raise the question of how teachers evaluate students in light of such differences. Do teachers give the same weight to the same aspects of students' performance when they determine grades or other performance indicators for students with disabilities and for the students in the class as a whole? To address this question, general education academic teachers who had an NLTS2 student with disabilities in their class were asked to rate the importance they place on 10 factors in determining that student's grades, factors that include work products (e.g., homework, tests), behaviors (e.g., attendance, participation), and performance against particular "yardsticks" (i.e., relative to the rest of the class or to a set standard). Teachers ranked each factor as "very important," "somewhat important," or "not important" for the specific student and for the class as a whole.

Importance Placed on Factors

General education academic teachers are most likely to consider daily class work as very important in determining grades of students with disabilities (Exhibit 6-14); approximately 70% of students with disabilities in general education classes have teachers who consider daily class work very important in grading them. Homework, test results, and special projects or activities are cited as very important by teachers of between 52% and 62% of students with disabilities. In addition to factors reflecting schoolwork, students' behaviors also are important to many teachers. More than half of students with disabilities (55%) have teachers who indicate that attendance is very important to the student's grades, 46% have teachers who indicate that class participation is very important, and 36% have teachers who indicate that attitude or behavior is a very important factor in grading. Teachers are more likely to place importance on students' performance relative to a set standard (45%) than on their performance relative to the rest of the class (14%, $p < .001$).

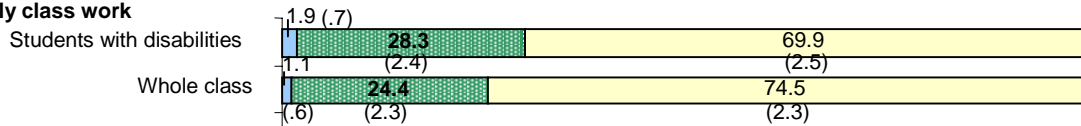
In general, teachers assign about the same importance to each factor for grading students with disabilities and students in the class as a whole. Only two factors differ significantly: test results and the performance of students relative to a set standard. In both cases, teachers are less likely to indicate that the factor is very important for grading students with disabilities than for grading the class as a whole. Specifically, 57% of students with disabilities have teachers who consider test results to be a very important factor in grading them, compared with 68% whose teachers place similar importance on test results in grading other students in the class ($p < .001$). Similarly, 45% of students with disabilities have teachers who consider these students' performance relative to a set standard to be a very important factor in grading them, compared with 54% whose teachers consider that factor of similar importance in grading the class as a whole ($p < .05$).

Although grading criteria do not vary by grade level or for students with different demographic characteristics, subject area and disability differences are noted.

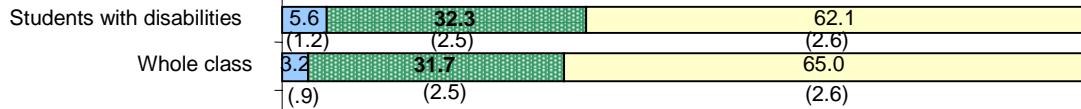
Exhibit 6-14
IMPORTANCE OF FACTORS IN GRADING STUDENTS WITH DISABILITIES AND STUDENTS IN
GENERAL EDUCATION ACADEMIC CLASSES AS A WHOLE

STUDENT WORK

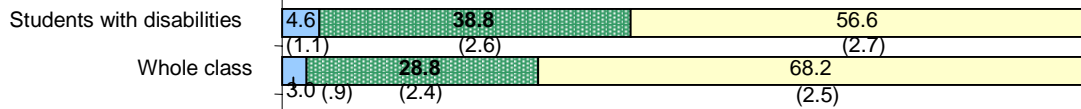
Daily class work



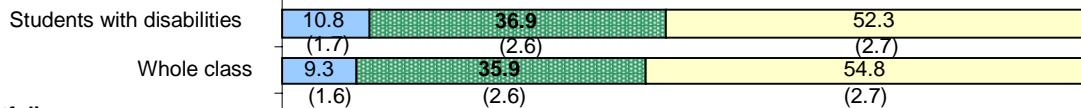
Homework



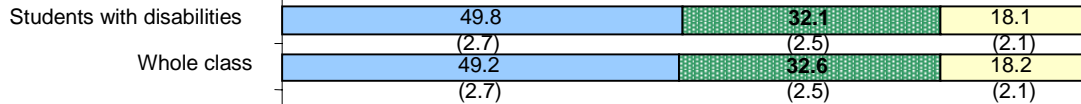
Test results



Special projects/activities

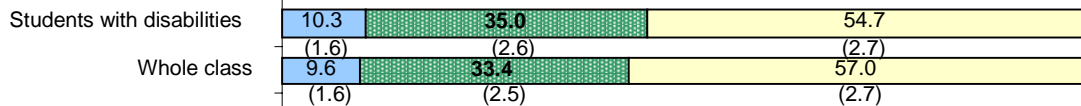


Portfolio

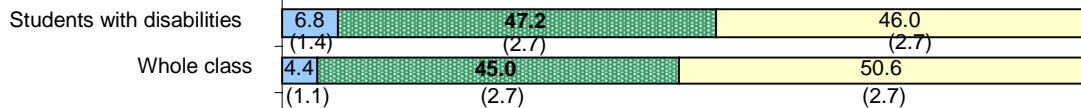


STUDENT BEHAVIORS

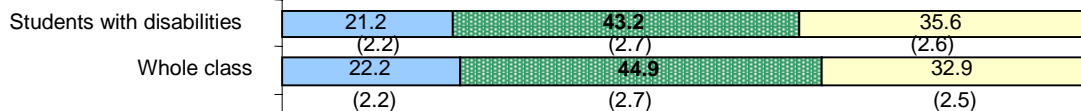
Attendance



Class participation

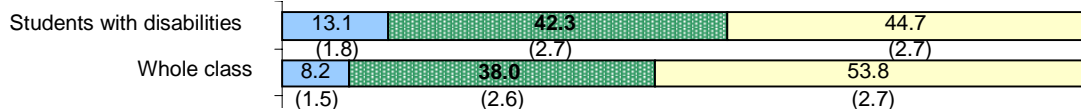


Attitude/behavior

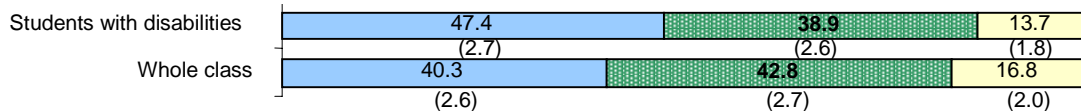


STANDARDS

Performance relative to a set standard



Performance relative to the rest of the class



Source: NLTS2 Wave 1 general education teacher survey. Standard errors are in parentheses.

Percentage whose teacher considers factor to be:
■ Not very or not at all important
■ Somewhat important
■ Very important

**Exhibit 6-15
SELECTED FACTORS CONSIDERED VERY IMPORTANT
IN DETERMINING GRADES FOR STUDENTS WITH
DISABILITIES AND STUDENTS IN GENERAL EDUCATION
ACADEMIC CLASSES AS A WHOLE, BY SUBJECT AREA**

	Language Arts	Mathe- matics	Science	Social Studies
Percentage whose teachers report factor to be "very important":				
Test results				
Student with disability	51.0 (5.1)	78.1 (4.9)	45.4 (5.6)	48.7 (5.4)
Whole class	62.6 (4.9)	87.3 (3.9)	58.4 (5.5)	63.6 (5.2)
Homework				
Student with disability	63.1 (4.9)	75.3 (5.1)	48.1 (5.6)	60.2 (5.3)
Whole class	65.0 (4.9)	77.2 (5.0)	53.3 (5.6)	62.6 (5.2)
Special projects or activities				
Student with disability	64.9 (4.9)	32.7 (5.6)	56.8 (5.6)	50.6 (5.4)
Whole class	67.2 (4.8)	32.7 (5.5)	63.2 (5.4)	52.7 (5.4)
Portfolio				
Student with disability	30.6 (4.8)	11.4 (3.7)	14.7 (4.0)	12.1 (3.6)
Whole class	30.7 (4.7)	11.0 (3.7)	14.4 (4.0)	13.1 (3.7)
Performance relative to a set standard				
Student with disability	47.5 (5.1)	56.7 (5.9)	31.4 (5.2)	39.9 (5.3)
Whole class	55.7 (5.1)	64.5 (5.7)	45.8 (5.6)	45.0 (5.4)

Source: NLTS2 Wave 1 general education teacher survey.

Note: Only factors that differ significantly across subject areas are included in the exhibit.

Standard errors are in parentheses.

Subject Area Variations in Grading Factors

General education academic teachers in different subject areas differ in the importance they place on some factors when grading students with disabilities. Mathematics teachers stand out as the most likely to place emphasis on test results, homework, and student performance relative to a fixed standard (Exhibit 6-15). For example, more than three-fourths of students with disabilities in general education mathematics classes have teachers who rate test results as very important to their grades, compared with between 45% and 51% in classes in the other three subject areas ($p < .001$). Similarly 75% of students in mathematics classes have teachers who rate homework as very important, compared with 60% of students in social studies classes ($p < .05$) and 48% of students in science classes ($p < .001$). In contrast, mathematics teachers are least likely to rate special projects as

very important in grading students with disabilities. Whereas between half and two-thirds of students with disabilities in language arts, science, or social studies classes have teachers who rate special projects or activities as very important in grading them, only about one-third of their counterparts in mathematics classes have teachers who place such high importance on special projects or activities ($p < .05$ to $p < .001$).

In general, teachers of all subject areas have the same grading criteria for students with disabilities and the class as a whole. An exception to this pattern is that social studies teachers are less likely to place importance on test results in grading students with disabilities than in grading students in the class as a whole. Whereas about half of students with disabilities in general education social studies classes have teachers who indicate that test results are very important in grading them, 64% have teachers who indicate that test results are very important in grading other students in those classes ($p < .05$).

Disability Variations in Grading Factors

General education academic teachers also place differing importance on several factors when grading students with different types of disabilities (Exhibit 6-16). For example, between 52% and 64% of most groups of students have teachers who indicate that test results are very important in grading them; however, several groups of students fall outside this range. At one end of the continuum are students with hearing impairments, 72% of whom have teachers who place high importance on test results. Students with hearing impairments also are the most likely to have teachers who indicate that special projects or activities and performance relative to a set standard are very important to their grades (66% and 54% of students, respectively). At the other end of the continuum, 37% of students with mental retardation have teachers who indicate that test scores are very important to their grades, and 36% have teachers who indicate that their performance relative to a set standard is very important ($p < .05$ compared with students with hearing impairments).

Exhibit 6-16
SELECTED FACTORS CONSIDERED VERY IMPORTANT DETERMINING GRADES OF STUDENTS WITH DISABILITIES AND STUDENTS IN GENERAL EDUCATION ACADEMIC CLASSES AS A WHOLE, BY DISABILITY CATEGORY

	Learning Disability	Speech/Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Autism	Traumatic Brain Injury	Multiple Disabilities
Percentage whose teachers report factor to be "very important"											
Test results											
Student with disability	57.1 (3.7)	63.8 (3.6)	36.9 (7.3)	60.6 (5.8)	71.6 (4.4)	67.4 (6.1)	59.8 (4.1)	59.8 (3.5)	57.7 (6.3)	51.9 (7.9)	41.6 (9.1)
Whole class	68.3 (3.4)	72.1 (3.3)	60.3 (7.4)	71.4 (5.4)	73.9 (4.2)	73.8 (5.6)	69.4 (3.8)	66.8 (3.4)	69.0 (5.9)	60.4 (7.8)	49.6 (9.2)
Special projects or activities											
Student with disability	51.0 (3.7)	56.3 (3.7)	51.4 (7.6)	55.8 (5.9)	66.0 (4.6)	63.6 (6.2)	54.9 (4.1)	56.3 (3.6)	52.2 (6.4)	57.5 (7.9)	51.6 (9.4)
Whole class	52.7 (3.7)	60.2 (3.6)	58.9 (7.4)	57.7 (5.9)	66.2 (4.6)	70.6 (5.9)	58.2 (4.1)	61.0 (3.5)	60.9 (6.3)	59.9 (7.8)	58.1 (9.2)
Performance relative to the rest of class											
Student with disability	45.1 (3.7)	45.8 (3.7)	36.1 (7.3)	47.0 (5.9)	53.7 (4.9)	47.9 (6.5)	52.0 (4.1)	42.1 (3.6)	46.0 (6.4)	37.0 (7.8)	49.2 (9.3)
Whole class	53.6 (3.7)	55.4 (3.7)	57.5 (7.5)	51.7 (5.8)	60.1 (4.8)	53.1 (6.4)	59.1 (4.0)	50.7 (3.6)	57.8 (6.3)	43.9 (8.0)	53.9 (9.2)

Source: NLTS2 Wave 1 general education teacher survey.

Note: Only factors that differ significantly across disability categories are included in the exhibit.

Standard errors are in parentheses.

Although earlier findings showed that, overall, teachers place less importance on test results and performance relative to a set standard in grading students with disabilities than students in the class as a whole, these differences are statistically significant only for students with mental retardation. About 60% of these students have teachers who indicate that these factors are very important in grading the whole class, but approximately 37% have teachers who indicate that these factors are very important in grading students with mental retardation ($p < .05$).

Supports and Information Provided to Teachers

Preceding sections of this chapter discussed the instructional practices and grading criteria used in the general education classes of students with disabilities and the fact that these differ relatively little for students with disabilities and their classmates. But even when teachers significantly modify instruction or grading practices, having students with differing needs in a classroom can be challenging for teachers. Indeed, teachers are more likely to succeed in more fully including students with disabilities in their classes if they have a variety of supports (Eraclides, 2001; Harris, Graham, & Deshler, 1998; Maheady, 1997; McLeskey & Waldron, 2002).

Exhibit 6-17		
SUPPORTS AND INFORMATION PROVIDED TO GENERAL EDUCATION ACADEMIC TEACHERS OF STUDENTS WITH DISABILITIES		
	Percentage	Standard Error
Students whose teachers report receiving:		
Any type of support	94.6	1.2
Information about student needs or abilities	61.3	2.7
Consultation services by special education or other staff	50.6	2.8
Smaller student load or class size	13.6	1.9
Teacher aides, instructional assistants, or aides for individual students	13.4	1.9
Inservice training on needs of students with disabilities	10.9	1.7
Special materials or equipment to use with students with disabilities	4.8	1.2
Other support	1.9	.8
Source: NLTS2 Wave 1 general education teacher survey.		

Despite the acknowledged importance of teacher supports in providing students with disabilities access to the general education curriculum, 16% of students with disabilities have general education academic classroom teachers who indicate that they do not need any type of support to teach students with disabilities in their classes effectively. However, almost all students (95%) have teachers who receive some type of support for teaching students with disabilities (Exhibit 6-17). The most common types of support received are information about students' needs or abilities (61% of students with disabilities have teachers who report receiving it) and consultation services by special education or other staff (51%). Fewer than 15% of students have teachers whose support includes smaller class sizes, aides or

assistants, or inservice training on the needs of students with disabilities; only 5% have teachers who receive special materials or equipment to use with students with disabilities.

There are no differences in teacher supports or information across the various subject areas or grade levels. However, several differences are noted for students who differ in their primary disability category and selected demographic characteristics.

Disability Variations in Teacher Supports and Information

The likelihood of some kinds of supports and information being provided to general education academic teachers varies across disability categories (Exhibit 6-18). For example, between 87% and 99% of students across the disability categories have general education academic teachers who receive some type of support ($p < .05$). For most categories, the most common types of support are information about students' needs or abilities and consultation services. Least common for teachers of most groups of students are special materials or equipment to use with students with disabilities.

Exhibit 6-18
**SUPPORTS AND INFORMATION PROVIDED TO GENERAL EDUCATION ACADEMIC
TEACHERS, BY DISABILITY CATEGORY**

	Learning Dis- ability	Speech/ Language Impair- ment	Mental Retar- dation	Emotional Distur- bance	Hearing Impair- ment	Visual Impair- ment	Ortho- pedic Impair- ment	Other Health Impair- ment	Autism	Trauma- tic Brain Injury	Multiple Disabili- ties
Percentage whose teachers report receiving:											
Any type of support	96.0 (1.4)	90.5 (2.2)	87.2 (5.2)	91.7 (3.3)	91.5 (2.7)	90.6 (3.8)	95.3 (1.8)	95.3 (1.5)	96.7 (2.3)	91.4 (4.6)	99.3 (1.5)
Information about student's needs/abilities	62.3 (3.6)	41.5 (3.8)	59.8 (7.4)	60.6 (5.9)	66.5 (4.8)	68.2 (6.3)	61.2 (4.2)	65.6 (3.5)	77.6 (5.3)	68.8 (7.7)	59.4 (9.2)
Consultation services by special education or other staff	50.2 (3.8)	30.0 (3.6)	65.4 (7.2)	54.5 (6.0)	49.1 (5.1)	42.8 (6.7)	43.4 (4.3)	51.1 (3.7)	61.3 (6.2)	50.0 (8.3)	45.1 (9.3)
Smaller student load or class size	14.2 (2.6)	9.1 (2.2)	20.0 (6.0)	7.5 (3.2)	8.9 (2.9)	4.2 (2.7)	6.8 (2.2)	14.9 (2.6)	10.4 (3.9)	23.3 (7.0)	9.8 (5.5)
Teacher aides, instructional assistants, or aides for individual students	11.3 (2.4)	10.3 (2.4)	23.2 (6.4)	16.7 (4.5)	27.7 (4.5)	17.2 (5.1)	30.3 (4.0)	14.7 (2.6)	29.1 (5.8)	21.3 (6.8)	43.9 (9.3)
Inservice training on needs of students with disabilities	11.1 (2.4)	7.8 (2.1)	14.3 (5.3)	6.9 (3.1)	15.1 (3.6)	6.4 (3.3)	7.2 (2.2)	11.7 (2.4)	15.0 (4.6)	19.0 (6.5)	16.8 (7.0)
Special materials or equipment to use with students with disabilities	4.6 (1.6)	2.9 (1.3)	7.8 (4.0)	2.2 (1.8)	12.2 (3.3)	28.5 (6.1)	13.3 (2.9)	2.3 (1.1)	3.6 (2.4)	4.8 (3.5)	18.9 (7.2)

Source: NLTS2 Wave 1 general education teacher survey.
Standard errors are in parentheses.

Despite the relative consistency of the rankings, teachers' likelihood of receiving a particular type of support varies considerably with the type of disability of their students. For example, between 59% and 69% of students with most types of disabilities have teachers who report receiving information about their students' needs or abilities. However, 42% of students with speech impairments and 78% of students with autism have teachers who report receiving such information ($p < .05$). Consultation services by special education or other staff are most commonly received by teachers of students with autism (61% of students have teachers who receive them) or mental retardation (65%). Teacher aides or instructional assistants for individual students are most common for teachers of students with multiple disabilities, 44% of whom have teachers who have aides or assistants. These students also are among the most likely to have teachers who receive special materials or equipment to use with their students (19%). However, the students whose teachers are especially likely to receive this type of support are students with visual impairments; almost 30% have teachers who receive special materials or equipment. Teachers of students with mental retardation or traumatic brain injuries are the most likely to have smaller student loads or class sizes (20% and 23%, respectively).

Demographic Variations in Teacher Supports and Information

There are few differences in the likelihood of teachers' receiving supports or information by students' demographic characteristics. However, white students are more likely than Hispanic students to be in classes with teachers who indicate they have smaller student loads or class sizes

because there are students with disabilities in their classes. Sixteen percent of white students, compared with 2% of Hispanic students, have teachers who indicate that they receive this type of support ($p < .05$). The percentage of African-American students whose teachers indicate they have smaller student loads or class sizes falls between those of white students and Hispanic students (9%).

Exhibit 6-19
ACCOMMODATIONS AND MODIFICATIONS PROVIDED TO STUDENTS WITH DISABILITIES IN GENERAL EDUCATION ACADEMIC CLASSES

	Percentage	Standard Error
Student receives:		
Some type of accommodation or support	93.4	1.3
Additional time to complete assignments	65.8	2.1
Slower-paced instruction	24.1	2.6
Shorter or different assignments	19.7	2.1
More time in taking tests	75.0	2.3
Tests read to student	27.8	2.4
Modified tests	25.7	2.3
Alternative tests or assessments	16.3	2.0
Modified grading standards	30.2	2.3
Modifications to physical aspects of the classroom	5.6	1.2

Source: NLTS2 Wave 1 general education teacher survey.

^a This includes receipt of any of the accommodations and other learning supports reported in Exhibits 6-19 through 6-21. Students may receive more than one kind of accommodation, support, or learning aid.

Accommodations, Supports, and Technology Aids Provided to Students with Disabilities

Not only is it important for teachers to have a variety of supports to help them give students with disabilities maximum access to the general education curriculum, many students also need a variety of accommodations and supports. As mentioned in Chapter 3, virtually all students with disabilities attend schools that report having a policy of providing students with disabilities with accommodations, supports, and/or learning aids to enhance their school performance. In fact, more than 90% of students with disabilities in general education academic classes receive some type of accommodation, support, or other learning aid (Exhibit 6-19).

Types of Accommodations, Supports, and Technology Aids Provided to Students with Disabilities

Teachers report that approximately two-thirds of students with disabilities are given additional time to complete assignments, although other types of modifications to instruction and assignments are much less common. One-fourth of students with disabilities receive slower-paced instruction, and one-fifth are given shorter or different assignments than the rest of the class.

Additional time also is the most common modification to testing; teachers report giving more time on tests to three-fourths of students with disabilities. Approximately one-fourth of students have tests read to them or are given modified tests, and 16% are given alternative tests or assessments. Almost one-third of students with disabilities (30%) have teachers who modify grading criteria for students with disabilities. Physical adaptations are made for few students (6%).

**Exhibit 6-20
LEARNING SUPPORTS PROVIDED TO STUDENTS
WITH DISABILITIES IN GENERAL EDUCATION
ACADEMIC CLASSES**

	Percentage	Standard Error
Student receives:		
Monitoring of progress by special education teacher	60.3	2.6
More frequent feedback	35.2	2.5
Learning strategies/study skills assistance	23.0	2.3
A teacher's aide, instructional assistant, or other personal aide	19.1	2.1
A peer tutor	17.8	2.0
Tutoring by an adult	11.3	1.7
A reader or interpreter	6.9	1.4
A behavior management program	7.7	1.4
Self-advocacy training	3.1	.9

Source: NLTS2 Wave 1 general education teacher survey.

Many students with disabilities who are in general education classes also receive other types of supports or assistance to enhance their class participation and performance (Exhibit 6-20). Instructional support is most often provided through monitoring of students' progress by special education teachers; 60% of students with disabilities receive this support. Approximately one in five receive help with learning strategies or study skills, and a similar proportion receive help from teacher aides, instructional assistants, or personal aides. Slightly fewer receive assistance from peer tutors, and 11% receive tutoring from an adult. Fewer than 10% receive support from readers or interpreters, participate in behavior management programs, or receive self-advocacy training.

**Exhibit 6-21
TECHNOLOGY AIDS PROVIDED TO STUDENTS
WITH DISABILITIES IN GENERAL EDUCATION
ACADEMIC CLASSES**

	Percentage	Standard Error
Student uses:		
A calculator for activities not allowed other students	12.3	1.8
Books on tape	7.7	1.4
A computer for activities not allowed other students	5.9	1.3
Large-print/Braille books or large-print computer	1.1	.6
Computer software designed for students with disabilities	1.3	.6
Computer hardware adapted for special needs	.8	.5
Communication aids	.4	.3

Source: NLTS2 Wave 1 general education teacher survey.

NLTS2 asked teachers whether students with disabilities in their general education academic classes use a variety of technology aids. For aids, such as computers or calculators, teachers were asked whether the student with disabilities used them when other students were not permitted to use them. The only one of these aids used by more than 10% of students with disabilities is a calculator (12%; Exhibit 6-21). Books on tape are used by approximately 8% of students with disabilities, and computers by approximately 6% for activities in which other students are not allowed to use them. Other types of learning aids are used by fewer than 2% of students with disabilities in general education academic classes.

Variations in Accommodations, Supports, and Technology Aids Provided to Students with Disabilities

Students with disabilities who take general education academic classes in different subject areas and at different grade levels differ in the likelihood that they receive some kinds of accommodations, support, and technology aids, as do students who differ in their primary disability category and demographic characteristics.

Subject Area Variations in Accommodations, Supports, and Learning Aids Provided

The likelihood that students with disabilities receive several accommodations, supports, and technology aids differs across class subject areas (Exhibit 6-22), with students in mathematics classes generally being least likely and students in social sciences classes most likely to receive

Exhibit 6-22
SELECTED ACCOMMODATIONS, SUPPORTS, AND TECHNOLOGY AIDS PROVIDED TO STUDENTS WITH DISABILITIES IN GENERAL EDUCATION ACADEMIC CLASSES, BY SUBJECT AREA

	Language Arts	Mathematics	Science	Social Studies/ Humanities
Percentage receiving:				
Slower-paced instruction	32.4 (4.8)	20.1 (4.7)	17.4 (4.2)	24.3 (4.7)
Modified tests	23.5 (4.3)	16.7 (4.4)	27.1 (5.0)	33.5 (5.1)
Alternative tests or assessments	15.1 (4.0)	7.1 (3.1)	16.0 (3.7)	25.5 (4.8)
Modified grading standards	29.5 (4.7)	19.5 (4.7)	35.2 (5.3)	40.8 (5.4)
Tutoring by an adult	13.4 (3.5)	12.2 (3.9)	4.6 (2.3)	10.0 (3.3)
Percentage using:				
A calculator for activities not allowed other students	5.4 (2.3)	25.2 (5.1)	12.6 (3.7)	7.9 (2.9)
Books on tape	20.6 (4.1)	2.7 (1.9)	3.3 (2.0)	3.1 (1.9)
A computer for activities not allowed other students	10.4 (3.1)	1.3 (1.3)	5.2 (2.5)	6.3 (2.6)

Source: NLTS2 Wave 1 general education teacher survey.
 Note: Only accommodations, modifications, or supports that differ significantly across subject areas are included in the exhibit.
 Standard errors are in parentheses.

specific types of accommodations. For example, grading standards are modified for 20% of students with disabilities in general education mathematics classes but for 41% in social studies classes ($p < .05$). The percentages of students with disabilities who are given modified tests or alternative tests or assessments follow similar patterns, with 17% and 7%, respectively, receiving those accommodations in mathematics classes and 34% and 26% receiving them in social studies classes ($p < .01$). In contrast, students with disabilities are most likely to receive slower-paced instruction in their general education language arts classes (32%) and least likely to receive it in their general education science classes (17%, $p < .05$).

The only type of educational support that differs across the various subject areas is tutoring by an adult. Students with disabilities in general education science classes are least likely to receive tutoring by an adult (5%), whereas students with disabilities in language arts classes are most likely to receive it (13%, $p < .05$).

Given their particular appropriateness for specific subject areas, it is not surprising that the use of various technology aids differs across the subject areas. For example, books on tape are fairly common only in language arts classes; 21% of students with disabilities in these classes use them. In contrast, use of calculators by students with disabilities when other students are not allowed to use them is the most common in mathematics classes; one-fourth use them there, compared with 13% or fewer students in other classes ($p < .05$). Although many students with disabilities are allowed to use calculators in mathematics classes, almost no students (1%) are allowed to use computers as a learning aid there when other students are not allowed to use them. Only in language arts classes do more than a few students with disabilities (10%) use computers

as a learning aid when other students in the class do not use them ($p < .01$ compared with students in math classes).

Grade-Level Variations in Accommodations, Supports, and Learning Aids Provided

The likelihood that students with disabilities receive technology aids in general education academic classes does not vary across grade levels. However, there is a steady decline at each successive grade level in the percentage of students who receive some kinds of accommodations and instructional supports (Exhibit 6-23). For example, the percentages of students with disabilities in general education academic classes who have slower-paced instruction or have tests read to them decline from approximately 40% in the middle school grades to approximately 20% in the 11th and 12th grades ($p < .05$), and the percentages of students with teacher aides, instructional assistants, or personal aides or with peer tutors decline from approximately 30% to approximately 12% across those grade levels ($p < .05$).

Exhibit 6-23 SELECTED ACCOMMODATIONS AND SUPPORTS PROVIDED TO STUDENTS WITH DISABILITIES IN GENERAL EDUCATION ACADEMIC CLASSES, BY GRADE LEVEL				
	7th or 8th Grade	9th Grade	10th Grade	11th or 12th Grade
Percentage receiving:				
Slower-paced instruction	39.4 (7.0)	25.8 (5.0)	22.8 (4.4)	18.4 (3.6)
Tests read to student	40.7 (7.0)	29.7 (5.2)	27.7 (4.6)	22.1 (3.8)
A teacher aide, instructional assistant, or other personal aide	32.2 (6.7)	24.9 (4.9)	19.2 (4.1)	11.2 (2.9)
A peer tutor	29.9 (6.5)	22.0 (4.7)	14.8 (3.7)	12.5 (3.0)

Source: NLTS2 Wave 1 general education teacher survey.
 Note: Only accommodations, modifications, or supports that differ significantly across grade levels are included in the exhibit.
 Standard errors are in parentheses.

Disability Variations in Accommodations, Supports, and Learning Aids Provided

At least 92% of students in most disability categories receive some type of accommodation, support, or learning aid (Exhibit 6-24); the exception is students with speech impairments, 75% of whom receive some type of support. This lower likelihood for students with speech impairments may relate to the fact that 22% of them no longer have an IEP for special education services or a 504 plan for accommodations for a disability, as reported in Chapter 4.

Many types of accommodations and supports are most likely to be provided to students with mental retardation,

traumatic brain injuries, or multiple disabilities, and are least likely to be provided to students with speech, hearing, or visual impairments. For example, grading standards are modified for 16% of students with hearing impairments and 19% of students with speech or visual impairments, but they are modified for 42% of students with multiple disabilities and 54% of students with mental retardation ($p < .01$ and $p < .001$). Similarly, from 45% to 55% of students with speech, visual, or hearing impairments are given additional time to complete assignments, compared with about three-fourths of students with traumatic brain injuries, mental retardation, or multiple disabilities who are given this accommodation ($p < .001$). And whereas 7% and 10% of students with hearing or speech impairments, respectively, are given alternative tests or assessments, about one-fourth of students with traumatic brain injuries or multiple disabilities and 31% of students with mental retardation are given alternative tests or assessments.

Exhibit 6-24
ACCOMMODATIONS AND MODIFICATIONS PROVIDED TO STUDENTS WITH DISABILITIES IN
GENERAL EDUCATION ACADEMIC CLASSES, BY DISABILITY CATEGORY

	Learning Disability (1.7)	Speech/ Language Impairment (3.2)	Mental Retardation (1.8)	Emotional Disturbance (3.1)	Hearing Impairment (2.6)	Visual Impairment (3.0)	Orthopedic Impairment (2.1)	Other Health Impairment (1.6)	Autism (3.3)	Traumatic Brain Injury (2.5)	Multiple Disabilities (1.4)
Percentage receiving:											
Any accommodation or support ^a	94.0	75.3	98.5	92.9	92.5	94.4	93.2	94.6	92.6	97.5	99.4
Additional time to complete assignments	67.4 (3.4)	46.8 (3.7)	77.0 (6.2)	57.3 (5.9)	45.1 (4.8)	54.6 (6.4)	65.8 (4.0)	65.4 (3.4)	66.9 (6.0)	74.0 (7.1)	77.2 (7.8)
Slower-paced instruction	24.9 (3.2)	16.4 (2.8)	35.5 (7.0)	15.0 (4.3)	16.0 (3.6)	13.4 (4.4)	20.9 (3.4)	24.8 (3.1)	18.1 (4.9)	29.2 (7.4)	41.6 (9.1)
Shorter or different assignments	18.7 (2.8)	13.4 (2.5)	42.2 (7.3)	11.7 (3.9)	8.0 (2.6)	14.0 (4.5)	23.7 (3.5)	23.7 (3.1)	29.1 (5.8)	23.1 (6.8)	42.3 (9.1)
More time in taking tests	76.3 (3.1)	59.6 (3.7)	77.6 (6.1)	72.0 (5.4)	61.9 (4.7)	59.8 (6.3)	75.9 (3.6)	75.1 (3.1)	74.7 (5.5)	88.9 (5.1)	89.0 (5.8)
Tests read to student	26.9 (3.2)	20.8 (3.0)	51.1 (7.3)	19.3 (4.7)	20.1 (3.9)	34.2 (6.1)	26.9 (3.7)	28.6 (3.3)	27.4 (5.6)	36.2 (7.8)	53.5 (9.2)
Modified tests	24.8 (3.2)	22.2 (3.1)	41.6 (7.2)	19.6 (4.8)	15.5 (3.5)	27.4 (5.7)	27.3 (3.7)	29.7 (3.3)	33.7 (6.0)	40.8 (8.0)	32.2 (8.6)
Alternative tests or assessments	16.0 (2.7)	9.7 (2.2)	31.0 (6.8)	11.1 (3.8)	7.2 (2.5)	16.7 (4.8)	17.3 (3.2)	16.2 (2.7)	23.0 (5.3)	24.1 (6.9)	25.3 (8.0)
Modified grading standards	30.1 (3.3)	18.6 (2.9)	54.5 (7.3)	20.8 (4.9)	16.1 (3.6)	19.1 (5.1)	26.5 (3.7)	30.5 (3.3)	36.6 (6.1)	27.1 (7.2)	42.2 (9.1)
Physical adaptations to the classroom	3.8 (1.4)	5.0 (1.6)	1.3 (1.7)	10.2 (3.6)	33.0 (4.6)	33.9 (6.1)	41.0 (4.1)	9.7 (1.2)	18.3 (4.9)	11.4 (5.1)	19.6 (7.3)

Source: NLTS2 Wave 1 general education teacher survey.

^a This includes students who receive any of the accommodations, supports, or technology aids in Exhibits 6-24 through 6-26. Standard errors are in parentheses.

One exception to this pattern concerns physical adaptations, which are most often made for students with orthopedic impairments (41%), yet they also are made for approximately 33% of students with hearing or visual impairments, almost 20% of students with autism or multiple disabilities, and approximately 10% of students with emotional disturbances, other health impairments, or traumatic brain injuries. Students with visual impairments (34%), mental retardation (51%), or multiple disabilities (54%) are the most likely to have tests read to them.

In addition to accommodations and modifications, the provision of other kinds of learning supports also varies considerably for students with different types of disabilities (Exhibit 6-25). Again, students with multiple disabilities are among the most likely and students with speech impairments the least likely to receive most types of additional supports. For example, 78% of students with multiple disabilities in general education academic classes have their progress monitored by special education teachers and half have aides or instructional assistants in their classrooms, compared with 38% and 13% of students with speech impairments, respectively ($p < .001$).

Exhibit 6-25
LEARNING SUPPORTS PROVIDED TO STUDENTS WITH DISABILITIES IN GENERAL EDUCATION
ACADEMIC CLASSES, BY DISABILITY CATEGORY

	Learning Disability	Speech/ Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Autism	Traumatic Brain Injury	Multiple Disabilities
Percentage receiving:											
Monitoring of progress by special education teacher	62.7 (3.5)	38.4 (3.6)	69.6 (6.8)	48.9 (6.0)	54.3 (4.8)	45.3 (6.4)	56.3 (4.1)	58.4 (3.6)	61.8 (6.2)	64.3 (7.8)	77.6 (7.7)
More frequent feedback	36.5 (3.5)	22.7 (3.1)	35.3 (7.0)	34.1 (5.7)	25.4 (4.2)	22.6 (5.4)	23.3 (3.5)	36.3 (3.5)	39.5 (6.2)	30.1 (7.4)	39.6 (9.0)
Learning strategies/study skills assistance	23.4 (3.1)	17.7 (2.9)	27.8 (6.6)	20.9 (4.9)	18.2 (3.7)	8.6 (3.6)	20.5 (3.4)	20.4 (2.9)	27.7 (5.7)	27.6 (7.2)	37.4 (8.9)
A teacher aide, instructional assistant, or other personal aide	17.7 (2.8)	12.9 (2.5)	31.6 (6.8)	17.2 (4.5)	19.9 (3.9)	23.3 (5.4)	38.7 (4.1)	20.8 (2.9)	33.5 (6.0)	28.0 (7.3)	51.3 (9.2)
A peer tutor	17.6 (2.8)	10.5 (2.3)	31.1 (6.8)	15.1 (4.3)	16.5 (3.6)	14.3 (4.5)	16.3 (3.1)	15.1 (2.6)	10.9 (3.9)	25.3 (7.0)	25.6 (8.1)
Tutoring by an adult	10.7 (2.3)	8.2 (2.1)	8.8 (4.2)	15.2 (4.3)	13.7 (3.3)	9.1 (3.7)	11.7 (2.7)	15.9 (2.6)	17.5 (4.8)	22.1 (6.7)	20.2 (7.4)
A reader or interpreter	5.7 (1.7)	7.1 (1.9)	14.0 (5.1)	5.6 (2.8)	23.1 (4.1)	24.2 (5.5)	14.3 (2.9)	8.1 (2.0)	8.9 (3.6)	11.2 (5.1)	20.8 (7.5)
A behavior management program	5.9 (1.7)	1.8 (1.0)	8.3 (4.1)	22.6 (5.0)	1.8 (1.3)	.4 (.8)	4.2 (1.7)	11.4 (2.3)	13.3 (4.3)	5.1 (3.6)	5.8 (4.3)
Self-advocacy training	2.4 (1.1)	3.8 (1.4)	6.7 (3.7)	3.5 (2.2)	3.6 (1.8)	4.6 (2.7)	5.9 (2.0)	4.2 (1.4)	6.1 (3.0)	9.5 (4.7)	7.9 (5.0)

Source: NLTS2 Wave 1 general education teacher survey.
Standard errors are in parentheses.

Students with mental retardation, autism, or traumatic brain injuries also are among the most likely to receive a number of supports; however, students with hearing or visual impairments are most likely to receive assistance from readers or interpreters (approximately 24%), and students with emotional disturbances are most likely to receive assistance through behavior management programs (23%).

It is not surprising that technology aids are more frequently used by students with the kinds of disabilities for which the aids are particularly relevant (Exhibit 6-26). For example, books on tape are used by approximately 20% of students with visual impairments or multiple disabilities and by 13% of students with mental retardation. However, as would be expected, large-print or Braille materials are much more likely to be used by students with visual impairments than by any others (57% vs. 5% or fewer, $p < .001$). Students with visual impairments also are the most likely to use computer software designed for students with disabilities (12%). Students with orthopedic impairments most often are allowed to use a computer when others are not (16%).

Exhibit 6-26
SELECTED TECHNOLOGY AIDS PROVIDED TO STUDENTS WITH DISABILITIES IN GENERAL EDUCATION ACADEMIC CLASSES, BY DISABILITY CATEGORY

	Learning Disability	Speech/Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Autism	Traumatic Brain Injury	Multiple Disabilities
Percentage using:											
Books on tape	7.6 (1.9)	6.3 (1.8)	12.8 (4.9)	6.6 (3.0)	6.9 (2.5)	22.6 (5.4)	7.4 (2.2)	3.5 (1.3)	5.3 (2.8)	5.7 (3.8)	19.2 (7.3)
A computer for activities not allowed other students	5.6 (1.7)	4.2 (1.5)	11.9 (4.8)	3.7 (2.3)	4.0 (1.9)	8.3 (3.6)	15.9 (3.0)	5.8 (1.7)	10.6 (3.9)	9.8 (4.8)	9.4 (5.4)
Computer software designed for students with disabilities	1.2 (.8)	1.1 (.8)	2.1 (2.1)	1.0 (1.2)	.6 (.7)	12.1 (4.2)	4.9 (1.8)	.4 (.5)	3.3 (2.3)	2.5 (2.5)	5.6 (4.3)
Communication aids	.0	.9 (.7)	1.1 (1.5)	.0	7.1 (2.5)	8.5 (3.6)	5.9 (2.0)	.7 (.6)	4.8 (2.7)	2.0 (2.3)	12.2 (6.1)
Large-print/Braille books or large-print computer	.9 (.7)	1.5 (.9)	.0	.4 (.8)	.4 (.6)	57.1 (6.4)	7.1 (2.1)	.5 (.5)	.3 (.7)	1.6 (2.0)	5.2 (4.1)

Source: NLTS2 Wave 1 general education teacher survey.

Note: Only technology aids whose use differs significantly across disability categories are included in the exhibit. Standard errors are in parentheses.

Demographic Variations in Accommodations, Supports, and Technology Aids Provided

There are very few differences in the provision of the specific types of accommodations, supports, or learning aids for students who differ in various demographic characteristics. An exception is that students from low-income families are more likely than students from more affluent families to receive slower-paced instruction, to be granted more time to take tests, and to have tests read to them (Exhibit 6-27). One-third of students whose family incomes are \$25,000

	\$25,000 or Less	\$25,001 to \$50,000	More than \$50,000
Percentage of students receiving:			
Slower-paced instruction	32.6 (5.2)	22.7 (4.7)	18.0 (3.7)
More time in taking tests	81.0 (4.3)	72.0 (5.0)	68.7 (4.5)
Tests read to student	36.0 (5.3)	23.1 (4.7)	22.2 (4.0)

Source: NLTS2 Wave 1 general education teacher survey.
 Note: Only technology aids whose use differs significantly across income categories are included in the exhibit. Standard errors are in parentheses.

or less are instructed at a slower pace, compared with 18% of students whose family incomes are more than \$50,000 ($p < .05$). Similarly, 81% of lower-income youth are granted more time to take tests, compared with 69% of youth from more affluent families ($p < .05$).

Only one type of accommodation distinguishes students with different racial/ethnic backgrounds. Minority students are more likely than white students to be given additional time to complete assignments; 61% of white students, 74% of African-American students, and 78% of Hispanic students are given this accommodation ($p < .05$).

Teachers' Perceptions and Expectations of Students with Disabilities in Their General Education Academic Classes

Thus far, this chapter has described key aspects of the instruction that goes on in general education academic classes that include students with disabilities and the kinds of supports provided to both teachers and students to help them participate effectively in their shared educational endeavors. But, to what extent do teachers feel that the placement of these students in their classes is appropriate? What are teachers' expectations for students' performance? And to what extent do students meet these expectations? This section addresses these questions.

About two-thirds of students with disabilities who take general education academic classes have teachers who consider their placement in those classes to be "very appropriate" (Exhibit 6-28). Most of the rest are considered to have "somewhat appropriate" placements; however, the participation of 8% of students with disabilities in general education academic classes is considered "not very appropriate" or "not at all appropriate."

Exhibit 6-28 TEACHERS' PERCEPTIONS OF STUDENTS WITH DISABILITIES IN GENERAL EDUCATION ACADEMIC CLASSES		
	Percentage	Standard Error
Students whose teachers report their placement in the general education academic class is:		
Very appropriate	66.1	2.5
Somewhat appropriate	25.6	2.3
Not very or not at all appropriate	8.3	1.5
Students who:		
Are expected to keep up with the rest of the class	97.4	1.0
Do keep up with the rest of the class	74.4	2.4
Source: NLTS2 Wave 1 general education teacher survey.		

Despite variations in the perceived appropriateness of their placements, virtually all students with disabilities (97%) in general education academic classes are expected to keep up with others in their class, although only approximately three-fourths are reported to do so. This gap between teachers' expectations and students' performance may result in part from the fact that the reading and math abilities of students with disabilities who spend the majority of their time in general education classes are more than 2 years behind their grade level, on average (Blackorby et al., 2003).

There are no differences in teachers' perceptions of students' placement, in teachers' expectations for students to keep up, or in students' ability to do so by subject area or grade level. However, differences for students with different primary disabilities are apparent (Exhibit 6-29).

The majority of students in most disability categories are considered by their teachers to have "very appropriate" placements in general education academic classes. The exception is students with mental retardation, only 45% of whom are considered very appropriately placed in such classes. However, there still are notable differences in levels of perceived appropriateness across categories. The vast majority of students with visual or hearing impairments have teachers who believe that these students' placements in their general education academic classes are appropriate; only 3% and 4%, respectively, have teachers who believe otherwise. In contrast, between 13% and 16% of students with mental retardation, emotional disturbances, traumatic brain injuries, or multiple disabilities have teachers who believe they are not appropriately placed ($p < .05$ comparing students with hearing impairments).

Exhibit 6-29
TEACHERS' PERCEPTIONS OF STUDENTS WITH DISABILITIES IN GENERAL EDUCATION
ACADEMIC CLASSES, BY DISABILITY CATEGORY

	Learning Disability	Speech/ Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Autism	Traumatic Brain Injury	Multiple Disabilities
Percentage whose teachers report their placement in the general education academic class is:											
Very appropriate	69.0 (3.4)	70.7 (3.4)	45.3 (7.5)	58.8 (5.9)	75.9 (4.1)	80.1 (5.1)	69.8 (3.8)	64.1 (3.5)	62.6 (6.2)	60.6 (7.8)	52.6 (9.3)
Not at all/not very appropriate	6.8 (1.8)	7.5 (1.9)	16.3 (5.6)	13.8 (4.1)	3.5 (1.8)	2.6 (2.0)	6.3 (2.0)	8.5 (2.0)	8.7 (3.5)	15.1 (5.7)	13.3 (6.3)
Percentage who:											
Are expected to keep up with other students in the class	98.9 (.9)	98.2 (1.1)	84.1 (6.1)	97.9 (1.9)	96.3 (2.0)	96.8 (2.4)	95.8 (1.8)	98.1 (1.1)	89.4 (4.2)	93.3 (4.4)	93.0 (5.2)
Do keep up with other students in the class	77.5 (3.1)	78.7 (3.0)	54.2 (7.6)	64.9 (5.8)	86.9 (3.3)	86.5 (4.5)	78.1 (3.4)	68.4 (3.3)	76.5 (5.4)	75.0 (7.0)	71.0 (8.4)

Source: NLTS2 Wave 1 general education teacher survey.
Standard errors are in parentheses.

Between 89% and 99% of students in all disability categories except mental retardation have teachers who expect them to keep up with others in their general education classes. Fewer actually do keep up; however, there is a wide range—from 54% of students with mental retardation to 87% of students with hearing impairments. Gaps between the percentages of students who are expected to keep up and the percentages who actually do range from 9 percentage points for students with hearing impairments and 10 percentage points for students with visual impairments to 30 percentage points for students with mental retardation or other health impairments and 33% for students with emotional disturbances ($p < .05$).

Few differences in teachers' perceptions of students with disabilities in their general education academic classes are apparent for students who differ in demographic characteristics. One exception is that girls with disabilities are more likely than boys to have teachers who report that their placement is very appropriate (74% vs. 62%, $p < .05$).

Summary

As shown in Chapter 5, the general education academic classroom context of most students with disabilities is similar to that of the class as a whole. However, the curriculum used in instructing almost two-thirds of students with disabilities who are in general education academic classes is modified at least somewhat. Most other teacher-directed aspects of the class, such as instructional groupings, materials used, instructional experiences outside the classroom, and discipline practices, are largely the same for students with disabilities and students in the general education academic class as a whole. Students with disabilities are as likely as their classmates to receive whole-class and small-group instruction; to receive individual attention from their teachers; to use textbooks, lab equipment, or computers; and to go to the library or computer lab or on field trips. In addition, they are somewhat more likely than the class as a whole to receive individual instruction from an adult other than the teacher. Yet the fact that students with

disabilities are no more likely than their classmates to receive individual instruction from their teacher raises a question as to whether their individual learning needs are being met in their general education academic classrooms.

The similarity of experiences of students with disabilities and their peers in general education academic classes with regard to teacher-directed aspects of the class contrasts sharply with the differences between the groups in their participation in those classes. Students with disabilities consistently do not participate in their general education academic classes at the same level as their classmates. The largest gaps concern responding orally to questions and making presentations to the class. Whereas almost all students with disabilities are in classes in which students as a whole respond to questions at least sometimes, one in five students with disabilities rarely or never respond orally to questions. Whereas about two-thirds of students with disabilities are in classes where students as a whole make presentations to the class sometimes or often, half of students with disabilities rarely or never make them. Students with disabilities also are less likely to work independently or with a partner or group than are their classmates.

Despite these differences in students' behaviors in class, most students with disabilities have teachers who report that their placement in the class is "very appropriate." Further, almost all students are expected to keep up with the rest of the class, and three in four actually do. However, it is worrisome that almost one-fourth of students with disabilities in general education academic classes are not meeting the performance expectations of their teachers.

To help them keep up, almost all students with disabilities are reported to receive some type of accommodation, support, or learning aid. The most common accommodations are additional time to complete assignments and tests. Less common are slower-paced instruction, assignments that are shorter or different from those of the rest of the class, having tests modified or read to students, and physical adaptations to the classroom. The only type of support received by more than half of students with disabilities in general education academic classes is monitoring of progress by a special education teacher. Relatively few students with disabilities in general education academic classes use learning aids such as calculators, books on tape, or computers.

Daily class work is most frequently the factor cited as "very important" by teachers in grading students with disabilities, followed by homework, test results, attendance, and special projects. Students' class participation, attitude, and performance relative to a set standard are considered very important by fewer teachers. The importance teachers place on most factors does not differ for students with disabilities and their classmates, although they tend to give less importance to test scores and performance relative to a set standard for students with disabilities. In addition, although they may place about the same importance on most factors, teachers report using modified grading standards for approximately one-third of students with disabilities.

The experiences of students with disabilities in general education classes differ somewhat depending on the subject area of the classes. Mathematics classes stand out from classes in other subject areas in several ways that may make them particularly challenging for students with disabilities. It is in mathematics classes that they are the least likely to have a modified curriculum or modified tests, yet their mathematics teachers are more likely than teachers in other academic classes to place great importance on test results in determining grades for students with disabilities. Students with disabilities also are least likely to have modified grading standards in their mathematics classes relative to other kinds of academic classes. Tough grading standards that rely heavily on tests, which are not likely to be modified, could present

obstacles to academic success for some students with disabilities, who, on average, are more than 2 years behind grade level in their tested mathematics abilities. Further, students with disabilities are more likely to receive whole-class instruction in their math classes than in other academic classes and to use computers for academic drills, activities that would appear to leave little room for individualized instruction.

In contrast, it is in their language arts classes that students with disabilities are the most likely to have slower-paced instruction, be tutored by an adult other than the teacher, use computers as an accommodation and for word processing, or use books on tape. Students in social studies classes are the most likely to have modified grading standards and modified tests.

Many of the classroom experiences presented in this chapter are consistent across grade levels. However, the extent of curriculum modifications and the use of accommodations tend to decline over the grade levels—students with disabilities are increasingly expected to handle the general education curriculum without accommodations. Further, compared with their high school peers, middle school students with disabilities tend to be in classes where there is more small-group and individual instruction from an adult other than the teacher, opportunities for tailored instructional approaches that are less available to older students. Academic classes of middle school students also are more likely than those of high school students to include field trips or school-based instructional activities outside the classroom, which might engage students or appeal to individual interests.

The picture of general education classroom experiences that is painted for students with disabilities as a whole is mirrored for students with learning disabilities, because they constitute such a large percentage of the whole group. However, students with some other types of disabilities differ from the general pattern. For example, students with hearing or visual impairments tend to have experiences that are most like those of their general education academic class as a whole. They are the most likely to have an unmodified curriculum and the least likely to receive individual instruction and several kinds of accommodations and learning supports. Further, their levels of participation in general education classes do not differ from those of the class as a whole on the dimensions investigated in NLTS2, except that they are less likely to respond to questions in class frequently. In addition, students with hearing or visual impairments are among the least likely to have grading standards modified for them and to be granted additional time to complete assignments. Nonetheless, they are the most likely of all students with disabilities to be reported by teachers as keeping up with their classmates.

In contrast, students with mental retardation, traumatic brain injuries, or multiple disabilities tend to differ the most from their classmates in general education academic classes. They are the most likely to receive slower-paced instruction, be granted additional time to take tests, and be given modified tests. They also are the most likely to receive individualized instruction and to have their progress monitored by a special education teacher. In addition, students with mental retardation or multiple disabilities are the most likely of all students with disabilities in general education academic classes to be graded with modified criteria and among the most likely to be treated differently when it comes to classroom discipline. Students with mental retardation are the only group to experience differences from their classmates in how often they receive whole-class instruction. They also are the most likely of all students with disabilities to have community-based experiences, such as field trips, and to receive peer tutoring. In class, they are the least likely of all students with disabilities to participate. Reflecting these differences,

between one in eight and one in six students with mental retardation, traumatic brain injuries, or multiple disabilities have teachers who report that these students' placement in their classrooms is not appropriate, a higher rate of this perception than for students in most other categories.

Students with emotional disturbances present a somewhat different picture. Like students with mental retardation, traumatic brain injuries, or multiple disabilities, approximately one in seven of their teachers feel their placement in the class is not appropriate, yet almost all are expected to keep up with the rest of their class. They are not particularly likely to be provided accommodations or supports, except behavior management programs and modified discipline standards, and they are the least likely of all students with disabilities to keep up with the class: only two-thirds do so.

In summary, when the question "Are secondary school students with disabilities given access to the general education curriculum?" is posed, NLTS2 findings suggest that the answer is yes, in many ways but not others and for many students but not others.

The following chapter addresses many of the same classroom experiences that are described here for general education academic classrooms as they apply to general education vocational classes taken by secondary school students with disabilities.

7. VOCATIONAL EDUCATION COURSES AND SERVICES

By Renée Cameto and Mary Wagner

Employment is an expectation for adults in American society. Indeed, youth begin to enter the workforce in early adolescence, and the majority of youth are employed during their high school years (National Research Council, 1998; Rothstein & Herz, 2000). This is the norm for youth with disabilities as well as youth in the general population. NLTS2 data show that about 60% of youth with disabilities hold jobs at some time in a 1-year period during high school (Marder, Cardoso, & Wagner, 2003) and gain valuable experience in the world of work. Further, 53% of students with disabilities have competitive employment as a goal for the period immediately following high school, and 40% have a goal of postsecondary vocational training.

For youth with disabilities to be fully enfranchised within today's adult workforce, schools must help them develop the knowledge and skills they need to meet these goals. There is widespread recognition that schools have a critical responsibility in providing education and training for workforce preparation. Legislation, including the Individuals with Disabilities Education Act (1990) and subsequent amendments (1997), the Carl D. Perkins Vocational and Technical Education Act Amendment of 1998, and the Workforce Investment Act of 1998, has influenced school programs and interagency collaborations to promote youth workforce development.

Vocational education plays an important role in the secondary education of students with disabilities. As noted in Chapter 4, about 60% of students with disabilities take a vocational education course in a given semester, with occupationally specific vocational education being taken by about half of students with disabilities and prevocational education by about one-third of them. General education classes are the setting for the large majority of vocational students with disabilities; 71% take vocational education in a general education classroom in a given semester. With the prominent role of general education in the vocational course taking of students with disabilities, it is important to ask the extent to which they have access to the general education curriculum in their general education vocational classes, as was asked in the preceding chapter regarding general education academic classes.

To address that question, this chapter describes the classroom experiences of students with disabilities in general education vocational classes in terms of:

- Curriculum.
- Instructional groupings.
- Instructional materials.
- Classroom activities.
- Discipline practices.
- Testing.
- Factors used in determining students' progress or performance.
- Supports provided to general education vocational teachers who have students with disabilities in their classes.
- Teachers' perceptions of and expectations for student performance.

Information on students' vocational education classes was provided by school staff respondents to the NLTS2 student's school program survey, who were identified as the people best able to describe the overall school programs of individual NLTS2 students. Respondents were asked to report whether specific individual students with disabilities were taking vocational education that semester (spring 2002); if so, whether the vocational course was in a general or special education class; and the characteristics of that class (this latter classroom information was reported in Chapter 5). In addition, if vocational courses were taken in general education settings, school staff respondents were asked to obtain from the general education vocational teacher information about how much the experiences of the student with a disability in the class were the same as or differed from the class as a whole.¹ In addition, information on the kinds of supports offered to general education vocational teachers who had students with disabilities in their classrooms was obtained. Such supports can be important in making the inclusion of students with disabilities in general education classrooms a success. Finally, one view of whether inclusion is successful is obtained from the teacher's perception of the appropriateness of the placement of the specific individual student with a disability in the class and whether that student keeps up with other students in the class.

In addition to this information, and regardless of whether students were taking vocational education courses at the time, respondents were asked to report whether students were taking part in a school-sponsored work experience program during that semester and, finally, whether students had received a variety of vocational services since starting high school. Information on participation in these programs and services follows a description of students' general education vocational classroom experiences. Findings are presented for students with disabilities as a whole and for those who differ in grade level, primary disability category, and selected demographic characteristics, where significant.

Instructional Practices in General Education Vocational Classrooms

Although academic classes normally are the context for issues regarding access to the general education curriculum, such access in vocational education courses also may be important if students with disabilities are to develop marketable skills for future employment. On all dimensions investigated in NLTS2, the majority of students with disabilities have experiences like those of their classmates in general education vocational classes (Exhibit 7-1).² In fact, more than 85% of students with disabilities have the same experiences as students in their classes as a whole with regard to curriculum, instructional materials used, and the classroom activities and instructional groupings in which they participate. About three-fourths of students with disabilities are subject to the same discipline practices and grading criteria as their classmates.

¹ The experiences of specific individual students with disabilities are compared with those of the students in their general education vocational class as a whole. As noted in Chapter 5, those classes include 18 general education students and 4 students with disabilities, on average. Therefore, the comparison is not between students with disabilities and nondisabled students, but between individual students with disabilities and all other students in the class.

² School staff respondents were asked to report whether the experiences of individual students with disabilities are "the same" as those of students in the general education vocational classes as a whole, "somewhat different" from the class as a whole, or "very different" from the experiences of the class as a whole. No more than 4% of students with disabilities were reported to have experiences that are "very different" from those of the class as a whole. Therefore, only the extent to which experiences of students with disabilities and the class as a whole are the same is reported in this chapter.

**Exhibit 7-1
SIMILARITY OF INSTRUCTIONAL EXPERIENCES
OF STUDENTS WITH DISABILITIES AND
STUDENTS IN GENERAL EDUCATION
VOCATIONAL CLASSES AS A WHOLE**

	Percentage	Standard Error
Students with disabilities have the same experience as classmates in general education vocational classes as a whole regarding:		
Curriculum	86.1	2.3
Instructional groupings	86.3	2.3
Instructional materials	91.7	1.9
Class activities	91.9	1.8
Testing methods	58.1	3.4
Discipline	77.5	2.8
Grading criteria	72.8	3.0

Source: NLTS2 Wave 1 student's school program survey.

Fewer (58%) are involved in the same testing procedures as the class as a whole ($p < .01$ and $p < .001$ compared with having similar discipline practices and grading criteria).

Disability variations in classroom experiences³. Although there are no differences across grade levels in these types of classroom experiences, differences between disability categories are apparent. Students with speech impairments are the most likely to have experiences in their general education vocational classes that are the same as those of students in those classes as a whole (Exhibit 7-2); about 95% have access to the same curriculum, instructional materials and groupings, and class activities as their classmates. About 85% or more of

students with learning disabilities, emotional disturbances, or hearing or other health impairments also have the same experiences as students in the class as a whole on these dimensions. About 75% to 85% of these groups are held to similar criteria for grading, and 53% to 65% are expected to use similar testing methods.

**Exhibit 7-2
SIMILARITY OF INSTRUCTIONAL EXPERIENCES OF STUDENTS WITH DISABILITIES
AND STUDENTS IN GENERAL EDUCATION VOCATIONAL CLASSES AS A WHOLE,
BY DISABILITY CATEGORY**

	Learning Dis- ability	Speech/ Language Impair- ment	Mental Retar- dation	Emo- tional Distur- bance	Hearing Impair- ment	Visual Impair- ment	Ortho- pedic Impair- ment	Other Health Impair- ment	Autism	Trau- matic Brain Injury	Multiple Disabili- ties
Percentage reported to have the same experience as students in the class as a whole regarding:											
Curriculum	83.3 (3.0)	95.6 (2.3)	62.0 (5.8)	93.1 (3.6)	89.9 (4.4)	91.3 (6.2)	80.9 (4.8)	87.2 (3.3)	73.2 (8.3)	90.0 (6.7)	66.0 (8.1)
Instructional groupings	89.5 (2.9)	93.2 (2.6)	60.0 (5.9)	86.2 (4.9)	86.9 (4.9)	85.8 (7.7)	89.3 (3.9)	86.0 (3.5)	61.7 (9.1)	87.4 (7.4)	74.1 (7.4)
Instructional materials	94.5 (2.1)	94.2 (2.4)	74.4 (5.2)	93.8 (3.4)	89.9 (4.4)	41.0 (10.9)	87.3 (4.1)	89.2 (3.1)	73.8 (8.3)	68.0 (10.4)	73.8 (7.5)
Class activities	94.8 (2.1)	95.6 (2.1)	70.0 (5.5)	94.4 (3.3)	94.0 (3.4)	89.0 (7.0)	78.2 (5.1)	90.1 (3.0)	67.7 (8.7)	89.6 (6.7)	75.6 (7.3)
Testing methods	61.9 (4.5)	64.1 (5.0)	27.5 (5.5)	61.1 (6.9)	64.6 (6.9)	63.9 (10.7)	52.9 (6.1)	52.6 (5.1)	39.8 (9.2)	51.5 (11.2)	40.6 (8.5)
Discipline	97.0 (1.8)	99.1 (1.1)	92.0 (3.7)	90.0 (4.7)	100.0	98.0 (3.5)	92.9 (4.0)	97.1 (1.8)	59.7 (10.6)	87.4 (9.0)	88.6 (6.5)
Grading criteria	75.4 (4.0)	84.8 (3.7)	41.1 (6.0)	80.5 (5.6)	75.1 (6.3)	88.8 (7.0)	72.6 (5.5)	76.5 (4.3)	41.0 (9.2)	55.4 (11.0)	55.4 (8.4)

Source: NLTS2 Wave 1 student's school program survey.
Standard errors are in parentheses.

³ There are too few students with deaf-blindness who take vocational education in general education classrooms to report findings for them separately.

Students with mental retardation, autism, or multiple disabilities are the least likely to have their experiences in a general education vocational classroom be the same as those of students in the class as a whole. Students with visual impairments are provided different instructional materials and teaching methods, but other instructional experiences tend to be the same as the class as a whole. There is little variation across disability categories when considering discipline in the general education vocational classroom, with the exception that 60% of students with autism are subject to the same discipline as general education students, compared with 87% or more of students in other categories ($p < .01$ to $p < .001$).

Demographic variations in classroom experiences. Most of the aspects of general education vocational classroom experiences investigated in NLTS2 do not differ for students with different demographic characteristics. An exception is that boys with disabilities who take general education vocational courses are more likely than girls to be subject to the same discipline practices as the class as a whole (82% vs. 66%, $p < .05$). In addition, exposure to the general education curriculum, without modification, is more likely among students with disabilities from households with incomes of more than \$50,000 than among those from households with incomes of \$25,000 or less (93% vs. 80%, $p < .05$). Consistent with this income-related difference, white students with disabilities are more likely to have an unmodified general education curriculum (90%) than African-American students (75%, $p < .05$). White students with disabilities also are more likely than their African-American counterparts to be subject to the same testing methods as students in their general education vocational class as a whole (64% vs. 47%, $p < .05$). The rates of Hispanic students having curricula and testing methods that are the same as those the class as a whole mirror those of African-American students (76% and 47%), but the differences from white students do not attain statistical significance with the smaller number of Hispanic students.

Supports and Information Provided to General Education Vocational Teachers

General education teachers often are challenged to accommodate the individual learning needs of students with disabilities in their classes. Teachers of general education vocational classes were asked to describe the types of supports they are provided when students receiving special education services are enrolled in their classes.

A large majority of students with disabilities (88%) have teachers who are informed about the needs of their students when they enroll in the class (Exhibit 7-3). About three-fourths of students have teachers who receive consultation from a special educator. Overall, fewer than 20% of students have general education vocational teachers who receive inservice training on the needs of students with disabilities as a result of having such students in their classes. Other types of supports or special arrangements are even less likely to occur. Fewer than 10% of students have teachers who have a smaller class load or an aide assigned to the class, team teach with a special educator, or are provided special materials or equipment to work with students with disabilities. There are no differences across grade levels in information or supports provided to teachers.

**Exhibit 7-3
INFORMATION AND SUPPORTS PROVIDED
TO GENERAL EDUCATION VOCATIONAL
TEACHERS OF STUDENTS WITH DISABILITIES**

	Percentage	Standard Error
Students whose teachers report receiving:		
Information on student needs or abilities	88.5	2.4
Consultation by special education or other staff	73.0	3.3
Inservice training on the needs of students with disabilities	17.7	2.8
Smaller class load	8.9	2.1
Teacher aides, instructional assistants, or aides for individual students	9.1	2.1
Co-teaching with special education staff	8.2	2.0
Special materials or equipment to use with students with disabilities	6.1	1.8

Source: NLTS2 Wave 1 student's school program survey.

Disability variations in information and supports provided to teachers.

Reflecting the diverse array of learning needs of students with disabilities in general education vocational classes, there is considerable variation in the supports provided to teachers when those students are in their classes.

Although information about the needs of individual students with disabilities is provided to the teachers of the large majority of students in all disability categories, teachers are provided information about 80% or fewer of students with autism, emotional disturbances, or speech or other health impairments. In contrast, more than 90% of students with learning disabilities, visual impairments, or multiple disabilities have teachers who receive

information about individual students' needs (Exhibit 7-4). Inservice training is more often provided to teachers when students with hearing or visual impairments are enrolled (40% vs. fewer than 20% in most other categories, $p < .01$ comparing students with hearing impairments

**Exhibit 7-4
INFORMATION AND SUPPORTS PROVIDED TO GENERAL EDUCATION
VOCATIONAL TEACHERS, BY DISABILITY CATEGORY**

	Learning Dis- ability	Speech/ Language Impair- ment	Mental Retar- dation	Emo- tional Distur- bance	Hearing Impair- ment	Visual Impair- ment	Ortho- pedic Impair- ment	Other Health Impair- ment	Autism	Trau- matic Brain Injury	Multiple Disabili- ties
Percentage whose teachers received:											
Information on student needs or abilities	91.2 (3.0)	79.5 (5.0)	86.8 (4.1)	78.6 (6.6)	84.0 (5.7)	91.4 (6.8)	88.8 (4.1)	78.2 (4.4)	73.8 (8.0)	86.5 (8.1)	94.0 (4.3)
Consultation by special education or other staff	71.0 (4.8)	74.3 (5.4)	79.4 (5.0)	79.8 (6.4)	82.5 (5.9)	82.6 (9.2)	78.8 (4.8)	70.2 (4.9)	74.9 (7.9)	75.4 (10.2)	69.9 (8.2)
Inservice training on the needs of students with disabilities	17.3 (4.0)	19.7 (4.9)	17.8 (4.7)	16.6 (5.9)	40.4 (7.6)	40.2 (11.9)	16.2 (4.8)	15.1 (3.8)	25.1 (7.9)	11.3 (7.5)	17.6 (6.8)
Smaller class load	6.9 (2.7)	9.6 (3.7)	17.9 (4.7)	14.8 (5.7)	1.4 (1.8)	4.0 (2.4)	10.0 (3.9)	7.2 (2.8)	10.9 (5.7)	2.7 (3.9)	17.6 (6.8)
Teacher aides, instructional assistants, or aides for individual students	6.8 (2.7)	8.6 (3.5)	15.8 (4.5)	9.6 (4.7)	11.7 (5.0)	19.8 (9.7)	30.2 (6.0)	10.1 (3.2)	41.9 (9.0)	11.4 (7.6)	40.8 (8.8)
Co-teaching with a special educator	7.0 (2.7)	9.4 (3.6)	13.5 (4.2)	10.4 (4.9)	5.1 (3.4)	6.7 (6.1)	9.6 (3.9)	7.0 (2.7)	9.0 (5.2)	11.1 (7.5)	17.6 (6.8)
Special materials or equipment to use with students with disabilities	5.3 (2.4)	5.6 (2.9)	5.3 (2.7)	5.2 (3.5)	13.8 (5.3)	61.4 (11.8)	22.4 (5.5)	8.5 (3.0)	6.9 (4.6)	10.1 (7.2)	14.8 (6.4)

Source: NLTS2 Wave 1 student's school program survey. Standard errors are in parentheses.

and learning disabilities). Smaller classes are most common for teachers who have students with mental retardation or multiple disabilities in their general education vocational classes (18% vs. 7% for students with learning disabilities, $p < .05$). Aides are more likely to be used when students with orthopedic impairments, autism, or multiple disabilities are in a general education vocational class (e.g., 41% of students with multiple disabilities vs. 7% of those with learning disabilities have teachers with this form of support, $p < .001$). Special materials are at least twice as likely to be provided to teachers of students with visual impairments as to those of students in any other category (61% vs. 22% or fewer, $p < .01$ or $p < .001$).

Demographic variations in information and supports provided to teachers. The few differences in classroom experiences for students who differ in demographic characteristics involve students from households with different levels of income. Specifically, students with disabilities from households with incomes of \$25,000 or less are more likely than those from households with incomes greater than \$50,000 to have teachers who receive inservice training because those students are enrolled in their general education vocational classes (23% vs. 9%, $p < .05$). Also, students from middle-income households (those with incomes from \$25,001 to \$50,000) are more likely to have teachers who receive consultation from a special educator when students with disabilities are in their classes (88% vs. 71% of lower-income students and 61% of upper-income students, $p < .05$ and $p < .01$) and are more likely than upper-income students to have a reduced class size (16% vs. 3%, $p < .05$).

Teachers' Perceptions and Expectations of Students with Disabilities in General Education Vocational Classes

To gain one perspective on whether the effort to include students with disabilities in general education vocational classes is succeeding for teachers and students with disabilities in those classes, school staff were asked to report teachers' perceptions of whether the placement of specific individual students with disabilities in their general education vocational classes is appropriate. They also were asked to indicate whether those students are expected to keep up with other students in the class and whether they generally do so.

School staff report that being in general education vocational classes is "very appropriate" for the vast majority of students with disabilities (86%, Exhibit 7-5). Thirteen percent of students with disabilities have general education vocational teachers who report that their placement in class is "somewhat appropriate;" only 1% have teachers who consider their placement "not very appropriate" or "not at all appropriate." Virtually all students in general education vocational classes (95%) are expected to keep up with other students in the class, and the majority (87%) do so. There are no differences in these perceptions across grade levels or for students with different demographic characteristics.

However, as with other aspects of students' vocational education experiences, teachers' perceptions of the students with disabilities in their general education vocational classes differ by disability category. The placement of 90% or more of students with learning disabilities, speech or visual impairments, or traumatic brain injuries is reported to be "very appropriate," as is placement of at least 80% of students with autism or with hearing, orthopedic, or other health impairments. About three-fourths of students with emotional disturbances are reported to be very appropriately placed in general education vocational classes, as are 63% of those with mental retardation and 58% of those with multiple disabilities.

Exhibit 7-5
**TEACHERS' PERCEPTIONS OF STUDENTS WITH DISABILITIES IN GENERAL
EDUCATION VOCATIONAL CLASSES, BY DISABILITY CATEGORY**

	All Youth	Learning Disability	Speech/Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Autism	Traumatic Brain Injury	Multiple Disabilities
Percentage whose teacher reports their placement in the general education vocational class is:												
Very appropriate	85.5 (2.4)	89.8 (2.8)	91.4 (2.9)	63.1 (5.8)	74.3 (6.2)	81.9 (5.5)	90.0 (6.5)	83.5 (4.5)	85.2 (3.5)	79.8 (7.4)	95.8 (4.4)	58.4 (8.3)
Somewhat appropriate	13.4 (2.3)	10.0 (2.8)	7.9 (2.8)	32.8 (5.6)	20.1 (5.7)	17.4 (5.4)	5.1 (4.8)	14.3 (4.3)	13.4 (3.4)	19.0 (7.2)	2.6 (3.5)	40.4 (8.2)
Not very or not at all appropriate	1.1 (.7)	.2 (.4)	0.7 (.9)	4.1 (2.4)	5.6 (3.3)	0.7 (1.2)	5.0 (4.8)	2.2 (1.8)	1.4 (1.2)	1.1 (1.9)	1.5 (2.8)	1.1 (1.7)
Percentage of students:												
Expected to keep up	94.7 (1.5)	97.5 (1.4)	99.5 (.7)	71.8 (5.4)	95.2 (3.0)	98.0 (2.0)	94.4 (5.0)	89.8 (3.7)	97.1 (1.7)	79.0 (7.4)	88.2 (7.2)	80.7 (6.6)
Who do keep up	86.9 (2.3)	90.4 (2.8)	95.4 (2.2)	70.6 (5.5)	75.7 (6.1)	88.8 (4.5)	91.5 (6.0)	84.7 (4.4)	83.8 (3.7)	80.7 (7.2)	85.3 (7.9)	78.0 (7.0)

Source: NLTS2 Wave 1 student's school program survey.
Standard errors are in parentheses.

Ninety percent or more of general education vocational students in most disability categories are expected to keep up with other students in those classes. Exceptions are categories of students whose placements also are less likely to be considered appropriate—students with mental retardation, autism, or multiple disabilities; between 72% and 81% of those students are expected to keep up in class.

The large majority of students with disabilities in every category are reported to be successful in keeping up with other students in their general education vocational classes (71% to 95%, $p < .001$). Those who are somewhat less likely to keep up are again those whose placement is less likely to be considered appropriate by their teachers—students with mental retardation, emotional disturbances, autism, or multiple disabilities (71% to 81%).

Participation in School-Sponsored Work Experience Programs and Vocational Services

In addition to vocational education classes, many high schools offer work experience programs and other career or vocational services to support students both with and without disabilities in preparing for the working world. This section reports the participation of students with disabilities in school-sponsored work experience programs in a given semester. In addition, it reports the rates at which they have received a variety of vocational services since starting high school (middle school students with disabilities are not included in this discussion). Findings are presented for students with disabilities whether or not they are taking vocational education courses in either general or special education classes.

**Exhibit 7-6
WORK EXPERIENCE AND VOCATIONAL SERVICES
PROVIDED TO HIGH SCHOOL STUDENTS WITH
DISABILITIES, BY GRADE LEVEL**

	All Students	Grade Level		
		9th Grade	10th Grade	11th or 12th Grade
Percentage currently participating in:				
Any school-sponsored work experience	24.7 (1.8)	12.9 (3.1)	17.3 (3.2)	37.5 (3.4)
On-campus work experience	16.6 (1.6)	10.9 (2.9)	14.1 (2.9)	21.0 (3.0)
Off-campus work experience	13.3 (1.5)	3.1 (1.7)	7.8 (2.3)	24.6 (3.1)
Percentage receiving since starting high school:				
Career skills assessment	50.6 (2.3)	32.7 (4.5)	48.9 (4.3)	61.4 (3.5)
Career counseling	44.4 (2.3)	23.0 (4.0)	43.9 (4.2)	58.1 (3.6)
Job readiness training	36.4 (2.2)	19.8 (3.8)	32.1 (4.0)	46.4 (3.6)
Job search instruction	35.9 (2.2)	14.5 (3.4)	31.6 (4.0)	50.5 (3.6)
Job shadowing	19.2 (1.8)	9.1 (2.8)	14.4 (3.0)	26.9 (3.2)
Tech Prep program	11.7 (1.5)	9.1 (2.8)	8.9 (2.4)	15.5 (2.6)
Job placement support	9.5 (1.4)	1.0 (1.0)	7.1 (2.2)	15.4 (2.6)
Job coaching	7.7 (1.2)	1.2 (1.0)	4.7 (1.8)	12.6 (2.4)
Internship/apprenticeship	2.3 (.7)	.3 (.5)	1.1 (.9)	4.1 (1.4)
Entrepreneurship program	1.0 (.5)	.4 (.6)	1.0 (.8)	1.4 (.8)

Source: NLTS2 Wave 1 student's school program survey.
Standard errors are in parentheses.

School-Sponsored Work Experience Programs

Work experience programs offer students the opportunity to gain valuable on-the-job experience in the work world. Research has shown that paid work experience is more likely to result in paid employment after high school (Phelps & Hanley-Maxwell, 1997). Opportunities for work experience sponsored by the school may be for credit or pay, or both, and may occur on campus (for example, assisting in the school office) or in the community.

School-sponsored work experience is a program in which about one-fourth of students with disabilities participate (Exhibit 7-6). However, it is much more likely to be part of the school programs of high school juniors and seniors than students in earlier grades (38% vs. 13% and 17%, $p < .001$). Between 11% and 21% of students with disabilities participate in on-campus work experience ($p < .05$), with the higher percentage occurring in the last 2 years of

high school. Only a very small percentage of students participate in off-campus work experience before the 11th grade, but 25% do so as juniors or seniors ($p < .001$).

Career and Vocational Services

School staff were asked to report the extent to which specific individual students with disabilities receive 10 types of vocational or career services during high school, listed in Exhibit 7-7. Vocational skills assessment is the only service provided to at least half of students with disabilities; 44% of students receive career counseling, and about one-third take part in job readiness training or job search instruction. Other types of services are more specialized and relate to training of specific skills (job shadowing, coaching) or to participation in a special program (Tech Prep, internships) and have lower rates of participation. About one in five students with disabilities take part in job-shadowing experiences, and 12% take part in Tech Prep

Exhibit 7-7
WORK EXPERIENCE AND VOCATIONAL SERVICES PROVIDED TO HIGH SCHOOL STUDENTS WITH DISABILITIES, BY DISABILITY CATEGORY

	Learning Disability	Speech/Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Autism	Traumatic Brain Injury	Multiple Disabilities
Percentage currently participating in:											
Any school-based work experience	20.6 (2.6)	18.5 (2.7)	48.4 (3.3)	17.1 (3.1)	21.0 (3.3)	29.3 (4.6)	23.4 (3.0)	23.3 (2.8)	50.2 (3.4)	28.5 (5.6)	53.8 (3.8)
On-campus work experience	12.3 (2.2)	12.6 (2.4)	39.5 (3.3)	9.0 (2.4)	16.4 (3.1)	23.6 (4.3)	15.7 (2.5)	15.9 (2.4)	41.0 (3.4)	22.8 (5.2)	48.6 (3.9)
Off-campus work experience	12.0 (2.1)	8.7 (2.0)	23.0 (2.9)	11.4 (2.7)	8.8 (2.3)	10.8 (3.2)	10.9 (2.2)	11.9 (2.2)	28.5 (3.1)	12.5 (4.2)	19.1 (3.1)
Percentage receiving since starting high school:											
Career skills assessment	50.9 (3.5)	52.2 (3.9)	43.5 (3.7)	58.3 (4.5)	56.0 (4.4)	48.4 (5.6)	44.6 (4.0)	54.5 (3.5)	32.8 (3.7)	39.0 (6.6)	36.0 (4.2)
Career counseling	48.0 (3.5)	41.7 (3.9)	31.3 (3.5)	45.9 (4.6)	46.3 (4.4)	48.1 (5.6)	33.3 (3.8)	43.9 (3.5)	20.3 (3.2)	33.7 (6.4)	23.6 (3.8)
Job readiness training	33.4 (3.3)	26.9 (3.5)	54.3 (3.7)	35.6 (4.4)	32.2 (4.1)	29.4 (5.1)	35.2 (3.8)	34.0 (3.3)	50.6 (3.9)	35.1 (6.4)	50.2 (4.4)
Job search instruction	35.1 (3.4)	29.6 (3.6)	43.2 (3.7)	38.7 (4.5)	29.7 (4.1)	24.1 (4.8)	30.7 (3.7)	34.5 (3.4)	22.5 (3.3)	31.9 (6.3)	30.6 (4.1)
Job shadowing	19.1 (2.8)	14.6 (2.8)	25.4 (3.2)	14.4 (3.2)	23.1 (3.7)	22.0 (4.6)	18.9 (3.1)	16.6 (2.6)	27.0 (3.5)	19.6 (5.3)	22.4 (3.7)
Job skills training	12.2 (2.3)	10.9 (2.4)	22.3 (3.1)	16.9 (3.4)	11.9 (2.9)	12.8 (3.7)	16.2 (2.9)	11.9 (2.3)	27.5 (3.5)	8.3 (3.7)	30.1 (4.1)
Job placement support	9.1 (2.0)	6.9 (2.0)	9.0 (2.1)	14.3 (3.2)	8.3 (2.4)	5.7 (2.6)	6.0 (1.9)	8.2 (1.9)	7.8 (12.1)	13.1 (4.5)	7.8 (2.4)
Job coaching	5.2 (1.6)	5.2 (1.7)	18.5 (2.9)	8.0 (2.5)	9.7 (2.6)	6.1 (2.7)	9.7 (2.4)	7.5 (1.9)	21.9 (3.2)	8.2 (3.7)	20.3 (3.6)
Tech Prep program	13.5 (2.4)	11.1 (2.5)	3.9 (1.4)	12.5 (3.0)	8.8 (2.5)	12.3 (3.7)	9.6 (2.3)	13.3 (2.4)	5.2 (1.7)	9.8 (4.0)	2.6 (1.4)
Internship/apprenticeship	1.4 (.8)	4.3 (1.6)	5.0 (1.6)	1.9 (1.2)	3.5 (1.6)	4.4 (2.3)	3.3 (1.4)	4.9 (1.5)	1.4 (.9)	7.2 (3.5)	3.7 (1.7)
Entrepreneurship program	1.2 (.8)	2.2 (1.1)	0.1 (.2)	0.6 (.7)	1.2 (1.0)	1.1 (1.2)	0.4 (.5)	1.0 (.7)	0.0 (.0)	0.7 (1.1)	2.0 (1.2)

Source: NLTS2 Wave 1 student's school program survey.
Standard errors are in parentheses.

programs. Other services are provided to 10% or fewer of students with disabilities in their high school years.

As with classroom-based vocational instruction, the receipt of each type of vocational service is higher for students at each successive grade level. For example, by the time students with disabilities are juniors or seniors, half or more (50% to 61%), have received career skills assessments, career counseling, or job search instruction, compared with 14% to 33% of high school freshmen ($p < .001$ for each service). Similarly, 13% and 27% of students in 11th and 12th grades have taken part in job coaching or job shadowing, respectively, compared with 1% and 9% of freshmen ($p < .001$).

Disability Variations in Participation in School-Sponsored Work Experience Programs and Vocational Services

The extent to which students with disabilities participate in vocational programs and services other than vocational education classes varies across disability categories (Exhibit 7-7). For example, participation in school-sponsored work experience programs ranges from 17% to 29% for students in most categories, but about half of students with mental retardation, autism, and multiple disabilities participate (48% to 54%, $p < .001$ compared with students with learning disabilities). The greater participation of students with mental retardation and autism in work experience holds for job placements both on the school campus and in the community. Students with multiple disabilities are more likely than most students to have work experience placements on the school campus but do not work off campus any more than students in other disability categories.

Differences in the types of other career and vocational services provided to students with different disabilities also are pronounced. For example, assessment of career skills and career counseling are more often provided to students with learning disabilities, emotional disturbances, or speech, hearing, visual, or other health impairments (48% to 58% for assessment and 42% to 48% for counseling) than to students in many other disability categories; for example, about one-third and one-fourth of students with multiple disabilities receive these services ($p < .01$ and $p < .001$). In contrast, half or more of students with mental retardation, autism, or multiple disabilities receive job readiness training, compared with about one-third or fewer of students in other disability categories ($p < .01$ comparing students with multiple and learning disabilities). Job coaching also is more often provided to students with mental retardation, autism, and multiple disabilities than to students in other disability categories.

There are no differences in participation in work experience programs or in receipt of career or vocational services for students with disabilities with different demographic characteristics.

Summary

Participation in vocational education is the norm for the majority of students with disabilities; about 60% of them take some kind of vocational education in a given semester, including about half who take occupationally specific vocational education and one-third who take prevocational education; some students take both types of courses. The general education classroom is the most typical setting for vocational education; students with disabilities are more than twice as likely to take vocational education in general education than in special education settings, particularly occupationally specific vocational education.

NLTS2 findings suggest that in their general education vocational classes, the majority of students with disabilities have access to the general education curriculum. For the majority of students with disabilities, there is little modification to the teacher-driven aspects of the course—the curriculum, materials used, or classroom activities or instructional groupings—when they are in general education vocational classes. Somewhat more modification is reported for aspects of the classroom experience in which student behavior or performance figures more prominently—grading criteria and discipline practices. However, the greatest amount of modification is reported for testing practices, perhaps reflecting the fact that modifications or accommodations in testing are common in the IEPs of students with disabilities. Not only are most aspects of the general education vocational classroom experience the same for the majority of students with

disabilities as for the class as a whole, the vast majority of students with disabilities are expected to keep up with their classmates. Fortunately, most do, resulting in the observation that the placement of the large majority of students with disabilities in the general education vocational classroom is “very appropriate.”

General education vocational teachers are given a variety of supports to help them succeed in including students with disabilities in their classes. The majority of students with disabilities have teachers who are informed and receive some consultation from special educators about the students’ special learning needs. However, other supports, such as inservice training, a reduced student load, an aide or assistant, or special materials, are less common. Appropriately, the kinds of supports that general education teachers receive vary widely by disability category, often reflecting the needs of the particular students in their classes.

School-sponsored work experience is part of the school program for about one-fourth of students with disabilities in a given semester. Other vocational services are accessed by many students with disabilities, although only career assessment is provided to at least half of students with disabilities who are currently in high school. Other vocational services, from Tech Prep programs to job coaching, are provided to much smaller percentages of students, however all programs and services are more common among high school juniors and seniors with disabilities than younger students.

As with most other aspects of their educations, vocational course taking and the receipt of vocational services differ with the disability of the student. Two patterns emerge. Students with mental retardation, autism, or multiple disabilities are the most likely to be enrolled in vocational education in a special education or other setting. However, when they are in general education vocational classrooms, their experiences are less like those of students in the class as a whole on most of the dimensions addressed in NLTS2. They also are the most likely to participate in work experience and to receive such vocational services as job readiness training and job coaching.

Students with learning disabilities or visual, hearing, orthopedic, or other health impairments (and, to a lesser extent, students with emotional disturbances) have a much different set of experiences with vocational education and career programs and services. Fewer of them participate in those activities than the first group of students described. When they do take vocational education courses, it is usually in general education classrooms, where they are the most likely to be considered appropriately placed, to have classroom experiences that are the same as those of other students, to be expected to keep up with students in the class as a whole, and to be successful in doing so. The vocational services they receive are most likely to be career assessments, rather than those services typical of the group of students described in the preceding paragraph.

With few exceptions, classroom experiences and participation in work experience and other vocational services do not differ by gender, ethnicity, or income.

This chapter has examined the general education vocational classroom experiences and the participation in work experience programs and vocational services of secondary students with disabilities. The experiences of these students are shaped in part by the stage of their school careers and by the nature of their disabilities. However, other factors, such as graduation requirements and the historical role of vocational education as an elective, also may influence the kinds of experiences reported in this chapter.

8. SECONDARY SCHOOL STUDENTS' EXPERIENCES IN SPECIAL EDUCATION CLASSROOMS

By Phyllis Levine and Mary Wagner

Although the emphasis of much special education legislation and policy is on increasing the access of students with disabilities to general education classrooms and curricula, special education classes constitute more than one-third of those taken by secondary school students with disabilities in a given semester, as noted in Chapter 4. Seventy percent of secondary school students with disabilities take at least one class in a special education setting in a given semester. Thus, what happens in special education classrooms has much to do with students' overall school experience and what they learn from it.

Chapter 4 outlined the kinds of courses students with disabilities tend to take in special education classes. This chapter focuses on what goes on in those special education courses, other than courses involving vocational or prevocational education (these are described in Chapter 7). Classes will be referred to in this chapter as special education classes, but readers should be aware that they do not include vocational education classes taught in special education settings.

The chapter examines the classroom experiences of secondary school students with disabilities in special education classes in an effort to address the question "What is special about special education?" (Cook & Schirmer, 2003). The first section describes the instructional practices in special education classrooms, including the extent to which the curriculum has been modified from curricula used for the corresponding subject in general education classrooms, instructional groupings and materials used, and the extent to which classroom activities are supplemented by instructional activities outside the classroom. A second section describes several aspects of students' participation in classroom activities. Finally, the factors that teachers consider to be important in evaluating the overall performance of students in their classes are discussed.

Information reported in this chapter was provided by school staff respondents to the NLTS2 student's school program survey, who were identified as the people best able to describe the school programs of individual NLTS2 students. If a respondent was a special educator who taught a given student in a nonvocational special education class, he or she was asked to provide information about that class. If he or she did not teach a given student, the respondent was directed to obtain information about the first nonvocational special education class the student had in the week.

Information about special education classroom experiences are presented with an emphasis on the differences between classes that focus on an academic subject (i.e., math, science, language arts) and two kinds of classes that focus on skills: study skills classes, in which students receive help with homework and learn successful studying and test-taking strategies, and classes that focus on functional life skills that lead to independent living, including basic academic skills, such as beginning reading or counting.¹ As noted in Chapter 5, for 61% of students who take special education classes, the classes described in this chapter are academic subject classes; they are study skills classes for 24% of students and life skills classes for 15% of students.

¹ For convenience, these kinds of classes will be referred to as life skills classes.

Classroom experiences also are presented for students who differ in their primary disability classification and demographic characteristics, where significant.

Instructional Practices in Special Education Classes

This section describes special education classes in terms of:

- Curriculum
- Instructional groupings
- Instructional materials
- Instructional activities outside of class.

Curriculum

The curriculum students with disabilities experience in special education classes often is one of the unique aspects of their program. Although 4% of students with disabilities receive an unmodified general education curriculum in their special education classes (Exhibit 8-1), the other 96% of students with disabilities who take special education classes have a curriculum with some degree of modification or specialization, or they have no curriculum at all (e.g., in a class that focuses on homework help). Special education students are about equally likely to have a curriculum that is reported to have “some modification” (29%) or a specialized or individualized curriculum (32%). About one in six students with disabilities (18%) have a substantially modified curriculum in their special education class, and a similar percentage (17%) have no curriculum at all.

	All Special Education Classes	Academic Subject Classes	Study Skills Classes	Life Skills Classes
Percentage in classes using a general education curriculum:				
Without modification	3.7 (.9)	3.2 (1.1)	7.1 (2.8)	.4 (.6)
With some modification	29.2 (2.3)	40.0 (3.2)	17.7 (4.2)	2.4 (1.5)
With substantial modification	18.3 (1.9)	25.4 (2.8)	.6 (.9)	18.5 (3.8)
Percentage with:				
A specialized or individualized curriculum	31.5 (2.3)	31.1 (3.0)	6.5 (2.7)	74.1 (4.3)
No curriculum (e.g., a class focused on homework help)	17.3 (1.9)	.3 (.4)	68.1 (5.1)	4.5 (2.2)

Source: NLTS2 Wave 1 student's school program survey.
Standard errors are in parentheses.

The curriculum used in special education classes varies widely across subject areas. For example, the absence of a curriculum is apparent largely in study skills classes. About two-thirds of students in such classes have no curriculum, focusing instead on homework or other hands-on assistance. In contrast, a specialized curriculum is used for almost three-fourths of students in life skills classes. The general education curriculum is used primarily in academic subject classes; it is modified somewhat for 40% of students in those classes and substantially for 25% of them. The use of a general education curriculum without modification is rare, regard-less of the type of special education class.

Instructional Groupings

Findings presented in Chapter 5 demonstrate that special education classes tend to have a low student-adult ratio, which may provide opportunities for individualizing instructional content or practices. In addition, teachers may use a variety of instructional groupings to respond to individual learning needs. This section addresses the use of whole-class, small-group, and individual instruction in special education classes. Research has demonstrated the effectiveness with students with disabilities of both small-group instruction (Elbaum, Vaughn, Hughes, & Moody, 1999; Lou et al., 1996; Rashotte, MacPhee, & Torgesen, 2001) and individualized instruction (Elbaum, Vaughn, Hughes, & Moody, 2000; Wasik & Slavin, 1993), although much of the research on individualized instruction has been conducted with younger students. To assess the extent to which these groupings are used in special education classes for secondary school students, school staff respondents reported whether specific individual students take part in the various instructional groupings “often,” “sometimes,” or “rarely or never.”

Exhibit 8-2
INSTRUCTIONAL GROUPINGS IN SPECIAL EDUCATION CLASSES, BY SUBJECT AREA

	All Special Education Classes	Academic Classes	Study Skills Classes	Life Skills Classes
Percentage with frequency of teachers using:				
Whole-class instruction				
Often	39.4 (2.4)	49.9 (3.3)	17.6 (4.3)	29.0 (4.5)
Sometimes	41.2 (2.5)	42.1 (3.2)	36.7 (5.5)	44.3 (4.9)
Small-group instruction				
Often	44.1 (2.5)	45.6 (3.2)	37.8 (5.5)	48.4 (4.9)
Sometimes	50.8 (2.5)	50.8 (3.3)	52.8 (5.6)	46.7 (4.9)
Individual instruction from classroom teacher				
Often	41.6 (2.4)	35.2 (3.1)	55.5 (5.5)	46.2 (4.9)
Sometimes	51.6 (2.5)	56.4 (1.8)	38.6 (5.4)	51.7 (4.9)
Individual instruction from an adult other than the teacher				
Often	19.5 (2.0)	14.7 (2.3)	30.4 (4.6)	24.5 (4.9)
Sometimes	33.1 (2.4)	30.7 (3.0)	49.1 (5.0)	28.5 (5.1)

Source: NLTS2 Wave 1 student's school program survey. Standard errors are in parentheses.

Students in special education classes experience a mix of instructional groupings (Exhibit 8-2). Similar proportions receive frequent instruction in whole-class (39%) or small-group formats (44%) or individually from the teacher (42%); individual instruction from an adult other than the teacher is less common (20% receive such instruction often; $p < .001$). Almost all students in special education classes are instructed in small groups or individually by the teacher at least sometimes. In contrast, 19% of students do not receive whole-class instruction and 47% do not receive individual instruction from an adult other than the teacher even sometimes.

Frequent whole-class instruction is most common in classes with an academic subject focus, where half of students experience it often ($p < .001$ compared with other kinds of classes). Frequent small-group instruction is about equally likely to be used across the kinds of classes (38% to 48%

receive it often). More than half (56%) of students in classes that focus on study skills receive frequent individual instruction from their teachers, and 30% receive frequent individual help from another adult, a significantly higher likelihood of frequent individual instruction of both kinds than experienced by students in academic special education classes (35% and 15%, $p < .01$).

Instructional Materials

The diverse learning needs of students with disabilities and the range of purposes served by the kinds of special education classes they take dictate that a variety of materials and equipment are used in those classes. School staff were asked to rate the frequency with which students used the range of instructional materials indicated in Exhibit 8-3.

Only textbooks, workbooks, or worksheets are reported to be used often for a majority of students in special education classes. Two-thirds of students in such classes have teachers who are reported to use them often, including three-fourths of students in academic special education classes. In study skills classes, 58% of students have teachers who use them often, as do 48% of students in life skills classes ($p < .01$ and $p < .001$). Other print materials are used often for about 27% of students in special education classes, with use being about equally frequent in academic and life skills classes (30% and 31%) and less frequent in study skills classes (17%, $p < .05$).

	All Special Education Classes	Academic Classes	Study Skills Classes	Life Skills Classes
Percentage with frequency of teachers using:				
Textbooks, worksheets, workbooks				
Often	67.0 (2.3)	74.9 (2.8)	58.1 (5.5)	48.4 (5.0)
Sometimes	24.8 (2.1)	20.4 (2.6)	32.3 (5.2)	31.4 (4.6)
Supplemental print materials (e.g., maps, newspapers)				
Often	27.1 (2.2)	29.5 (3.0)	17.2 (4.2)	31.2 (4.6)
Sometimes	49.6 (2.5)	51.6 (3.3)	47.9 (5.6)	46.5 (4.9)
Lab equipment/tools				
Often	4.7 (1.1)	5.7 (1.5)	2.9 (1.9)	3.9 (1.9)
Sometimes	18.0 (4.7)	19.0 (2.6)	15.1 (4.0)	18.7 (4.9)
Screen-based media				
Often	7.4 (1.3)	6.8 (1.6)	5.1 (2.5)	11.6 (3.2)
Sometimes	55.4 (2.5)	62.7 (3.2)	36.0 (5.4)	58.1 (4.9)
Life skills materials (e.g., token economy items)				
Often	12.5 (1.6)	9.1 (1.9)	1.5 (1.4)	43.9 (4.9)
Sometimes	22.8 (2.1)	23.2 (2.8)	12.0 (3.6)	37.1 (4.8)

Source: NLTS2 Wave 1 student's school program survey. Standard errors are in parentheses.

As would be expected, students in life skills classes are the most likely to use life skills materials, such as token economy items or items that encourage development of various self-care skills (44%). Few students in academic or study skills use these materials (9% and 2%, $p < .001$ compared with students in life skills classes). Screen-based media are equally likely to be used in academic and life skills classes; 70% of students in those classes are exposed to them at least sometimes, compared with 41% in study skills classes ($p < .001$). Lab equipment is used infrequently, regardless of the type of special education class.

Computers are not used often for any purpose in any kind of class (Exhibit 8-4); from 8% to 14% of students with disabilities are in special education classes where they use computers often for skills practice, word processing or other applications, or to access the Internet. Skills practice is a particularly uncommon use of computers; 42% of students are in special education classes in which they reportedly are used at least

**Exhibit 8-4
COMPUTER USE IN SPECIAL EDUCATION CLASSES,
BY SUBJECT AREA**

	All Special Education Classes	Academic Classes	Study Skills Classes	Life Skills Classes
Percentage with frequency of teachers using:				
Computers for word processing, spreadsheets, etc.				
Often	14.4 (1.7)	11.8 (2.1)	24.2 (4.7)	7.9 (2.7)
Sometimes	45.8 (2.5)	44.4 (3.2)	56.1 (5.5)	37.3 (4.8)
Computers for Internet access				
Often	9.8 (1.5)	7.5 (1.7)	17.7 (4.2)	5.4 (2.3)
Sometimes	54.8 (2.5)	53.8 (3.2)	61.6 (5.4)	47.2 (5.0)
Computers for skills practice				
Often	7.5 (1.3)	6.3 (1.6)	8.6 (3.1)	10.8 (3.1)
Sometimes	35.0 (2.4)	36.1 (3.1)	26.6 (4.9)	44.0 (4.9)

Source: NLTS2 Wave 1 student's school program survey.
Standard errors are in parentheses.

sometimes for that purpose, although more than half of students are in life skills classes where they are used for skills practice at least sometimes (55% vs. 35% for students in study skills classes, $p < .01$). Computers are more likely to be used often for Internet access or for writing or other similar tasks in study skills classes (18% and 24%, respectively, compared with 8% and 12% for students in academic classes, and 5% and 8% for students in life skills classes).

**Instructional Activities
outside the Classroom**

Classroom instruction can be augmented effectively with instructional activities that occur outside the classroom, such as working on a project in the school media center, taking a field trip, or

doing a service-learning project in the community. NLTS2 findings show that none of these kinds of instructional activities that take place outside the classroom are frequent activities for the majority of students in special education classrooms (Exhibit 8-5).

Although out-of-classroom instructional activities that take place in the school are experienced at least sometimes by 70% of students with disabilities in special education classes, only 27% of them have such experiences often. Activities that take place in the community (e.g., riding a bus, visiting a grocery store) are experienced often by 16% of students in special education classes, and 9% often go on field trips, although about one-third and one-half of students, respectively, experience them at least sometimes ($p < .001$ compared with school-based experiences).

As with in-class activities, the frequency with which students engage in these experiences reflects the nature of their classes. Students in academic subject or study skills classes would naturally be less likely to leave the classroom than students in life skills classes that are specifically geared to developing skills that will increase their long-term independence (e.g., handling money, reading signs, renting an apartment). Students in life skills classes would be expected to have more hands-on experiences that may be simulated in different school settings or provided as real-life experiences in the community. In fact, compared with their peers in classes that focus on an academic subject or study skills, significantly larger proportions of students in life skills classes frequently engage in activities outside the classroom both in the school (43% vs. 26% and 20%, respectively, $p < .001$) and in the community (33% vs. 14% and 11%, $p < .001$), and take field trips (21% vs. 8% and 4%, $p < .001$).

**Exhibit 8-5
INSTRUCTIONAL ACTIVITIES OUTSIDE SPECIAL
EDUCATION CLASSROOMS, BY SUBJECT AREA**

	All Special Education Classes	Academic Classes	Study Skills Classes	Life Skills Classes
Percentage with frequency of:				
School-based experiences (e.g., library)				
Often	26.9 (2.2)	25.6 (2.8)	20.0 (4.5)	42.8 (4.9)
Sometimes	42.7 (2.5)	44.5 (3.2)	39.0 (5.5)	42.8 (4.9)
Community-based exper- iences (e.g., riding a bus)				
Often	15.9 (1.8)	13.7 (2.3)	11.0 (3.6)	33.2 (4.7)
Sometimes	21.6 (2.1)	21.9 (2.7)	13.4 (3.9)	35.0 (4.7)
Field trips				
Often	9.2 (1.4)	7.7 (1.7)	4.4 (2.3)	21.4 (4.1)
Sometimes	40.3 (2.5)	38.8 (3.2)	35.1 (5.4)	54.8 (5.0)

Source: NLTS2 Wave 1 student's school program survey.
Standard errors are in parentheses.

**Disability Variations in
Instructional Practices**

There are no systematic differences in instructional practices used in special education classes across grade levels or for students with different demographic characteristics. However, students in different disability categories² have different experiences in special education classrooms. In many respects, differences in instructional practices across disability categories reflect differences in the likelihood that students in those categories take the various kinds of special education courses. As reported in Chapter 5, students in different disability categories have markedly different levels of enrollment in the various kinds of special education classes (please see Exhibit 5-2). For

example, the majority of students with learning disabilities, emotional disturbances, traumatic brain injuries, or speech, hearing, or other health impairments have experiences reported for special education classes that teach an academic subject. In contrast, only about one-third of students with autism or multiple disabilities have experiences reported for such classes. Larger proportions of these students are in life skills classes. NLTS2 analyses not reported here suggest that subject area differences tend to overshadow differences between students with different disabilities within a given subject area classroom.

Curriculum. Few students in any category are in special education classes with an unmodified general education curriculum (Exhibit 8-6), although students with speech impairments are more likely to have an unmodified curriculum (8%) than students in several other categories (e.g., those with mental retardation or autism, $p < .05$). Students who are more likely to have a general education curriculum with only some modification generally are those who also are more likely to have their experiences reported for academic subject classes, including students with learning disabilities, speech impairments, and emotional disturbances; about one-third of these students have access to a general education curriculum with some modifications. Disability categories with higher percentages of students who are in special education classes with no curriculum generally are those categories of students more likely to have their experiences reported for study skills classes—students with learning disabilities, emotional disturbances, or speech, hearing, visual, orthopedic, or other health impairments (16% to 24%). Similarly, students who are more likely to have a specialized or individualized

² There are too few students with deaf-blindness in a particular instructional setting to report findings for them separately in this chapter.

Exhibit 8-6
EXTENT OF CURRICULUM MODIFICATION IN SPECIAL EDUCATION CLASSES,
BY DISABILITY CATEGORY

	Learning Disability	Speech/ Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Autism	Traumatic Brain Injury	Multiple Disabilities
Percentage using general education curriculum:											
Without modification	3.4 (1.4)	8.1 (2.6)	1.9 (.9)	6.9 (2.5)	5.9 (2.6)	6.9 (4.1)	2.6 (1.4)	5.2 (1.7)	1.8 (1.0)	1.0 (1.5)	2.2 (1.2)
With some modification	34.8 (3.7)	32.3 (4.5)	9.2 (2.0)	34.7 (4.6)	27.4 (5.0)	16.5 (6.0)	16.1 (3.2)	27.1 (3.5)	9.9 (2.3)	24.9 (6.4)	9.0 (2.4)
With substantial modification	17.0 (2.9)	14.3 (3.4)	24.2 (2.9)	17.5 (3.7)	16.2 (4.)	12.3 (5.3)	21.5 (3.6)	18.2 (3.0)	14.6 (2.7)	28.2 (6.6)	19.1 (3.3)
Percentage with:											
A specialized/individualized curriculum	23.3 (3.3)	27.2 (4.3)	62.0 (3.3)	24.0 (4.12)	33.0 (5.3)	40.1 (8.0)	44.0 (4.4)	28.2 (3.5)	63.9 (3.7)	40.8 (7.3)	64.9 (4.0)
No curriculum	21.5 (3.2)	18.2 (3.7)	2.6 (1.1)	16.9 (3.6)	17.6 (4.3)	24.2 (7.0)	15.8 (3.2)	21.3 (3.2)	9.9 (2.3)	5.1 (3.2)	4.8 (1.8)

Source: NLTS2 Wave 1 student's school program survey.

Standard errors are in parentheses.

curriculum, e.g., those with mental retardation, autism, or multiple disabilities (62% to 64%), also are students who are among the most likely to have experiences reported for life skills classes.

Instructional groupings. The extent to which students with disabilities are exposed to whole-class, small-group, and individual instruction in special education classes differs across disability categories (Exhibit 8-7). Although the majority of students in all categories experience whole-class instruction at least sometimes (64% to 83%, $p < .001$), many more students with learning disabilities or emotional disturbances experience whole-class instruction often (42% and 41%) than do students with autism or multiple disabilities (22% and 25%, $p < .01$ comparing students with emotional disturbances and multiple disabilities). These differences reflect in part the differences in the likelihood that these groups of students take an academic subject special education class.

Receipt of small-group instruction is less closely tied to the type of class taken. Forty-five percent or more of students with learning disabilities, mental retardation, or multiple disabilities receive small-group instruction often, but only 29% of those with visual impairments do so ($p < .05$ compared with students with learning disabilities). Students with visual impairments or autism are particularly likely to receive individual instruction from their special education teacher (55% and 54%), whereas students with learning disabilities or speech, orthopedic, or other health impairments are least likely to (36% to 39%, $p < .05$ comparing students with speech and visual impairments). Students with autism also are the most likely to receive frequent instruction from an adult other than the teacher (38% vs. 17% of students with learning disabilities, $p < .001$).

Exhibit 8-7
INSTRUCTIONAL GROUPINGS IN SPECIAL EDUCATION CLASSES, BY DISABILITY CATEGORY

	Learning Disability	Speech/Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Autism	Traumatic Brain Injury	Multiple Disabilities
Percentage with frequency of:											
Whole-class instruction											
Often	41.8 (3.9)	38.1 (4.7)	34.6 (3.3)	40.7 (4.8)	29.5 (5.2)	26.8 (7.3)	36.4 (4.2)	34.7 (3.7)	22.5 (3.2)	30.7 (6.7)	24.6 (3.6)
Sometimes	40.9 (3.9)	39.9 (4.7)	42.7 (3.4)	40.1 (4.8)	37.2 (5.5)	40.7 (8.1)	37.6 (4.3)	45.6 (3.9)	39.5 (3.8)	47.1 (7.3)	39.9 (4.1)
Small-group instruction											
Often	45.0 (3.9)	40.6 (4.7)	48.8 (3.4)	39.8 (4.8)	38.1 (5.5)	28.7 (7.4)	36.9 (4.2)	31.6 (3.6)	39.1 (3.7)	40.8 (7.2)	46.6 (4.2)
Sometimes	52.1 (3.9)	51.6 (4.8)	47.2 (3.4)	50.2 (4.9)	44.1 (5.7)	54.3 (8.2)	47.4 (4.4)	54.4 (3.9)	45.6 (3.8)	55.3 (7.3)	43.8 (4.1)
Individual instruction from a teacher											
Often	38.9 (3.8)	37.0 (4.6)	50.0 (3.4)	44.4 (4.8)	44.8 (5.6)	55.3 (8.1)	35.5 (4.2)	38.6 (3.8)	53.6 (3.8)	41.6 (7.2)	46.4 (4.2)
Sometimes	54.3 (3.9)	51.1 (4.8)	46.2 (3.4)	46.0 (4.9)	47.7 (5.6)	38.3 (7.9)	50.2 (4.4)	55.4 (3.9)	40.9 (3.8)	50.2 (7.3)	47.5 (4.2)
Individual instruction from an adult other than the teacher											
Often	17.0 (3.0)	15.1 (3.5)	26.8 (3.1)	18.5 (3.8)	22.3 (4.7)	23.1 (6.9)	25.9 (3.9)	17.8 (3.0)	38.3 (3.8)	26.2 (6.5)	36.4 (4.1)
Sometimes	29.4 (3.6)	33.1 (4.6)	40.7 (3.4)	34.7 (4.7)	31.2 (5.2)	46.2 (8.2)	40.2 (4.3)	43.5 (3.9)	35.0 (3.7)	34.9 (7.0)	43.9 (4.2)

Source: NLTS2 Wave 1 student's school program survey.
Standard errors are in parentheses.

Instructional materials. Again, the frequency of use of instructional materials by students with different types of disabilities reflects in part the variations across categories in the kinds of classes about which their experiences are reported (Exhibit 8-8). For example, students with learning disabilities, emotional disturbances, or speech, sensory, or other health impairments are among the most likely to use textbooks often (61% to 72% do so, compared with 41% of students with autism, $p < .001$ for most comparisons), at least in part because they also are the most likely to have experiences reported for academic subject classes. In contrast, students with mental retardation, autism, or multiple disabilities are among the most likely to have their experiences reported for life skills classes and, therefore, also are among the most likely to use life skills materials often (35% to 40%, $p < .001$ compared with students with learning disabilities).

Exhibit 8-8
INSTRUCTIONAL MATERIALS USED IN SPECIAL EDUCATION CLASSES,
BY DISABILITY CATEGORY

	Learning Disability	Speech/ Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Autism	Traumatic Brain Injury	Multiple Disabilities
Percentage with frequency of using:											
Textbooks, worksheets, workbooks											
Often	70.3 (3.6)	61.9 (4.6)	59.4 (3.4)	72.0 (4.3)	64.0 (5.4)	61.2 (7.9)	51.7 (4.4)	66.2 (3.7)	41.2 (3.8)	69.0 (6.8)	37.3 (4.0)
Sometimes	24.3 (3.3)	30.9 (4.4)	26.0 (3.0)	20.0 (3.9)	31.1 (5.2)	25.8 (7.1)	28.5 (4.0)	27.5 (3.5)	34.3 (3.6)	23.7 (6.2)	36.1 (4.0)
Supplemental print materials											
Often	27.7 (3.5)	21.0 (3.9)	29.5 (3.1)	26.8 (4.3)	22.0 (4.7)	19.7 (6.5)	20.4 (3.5)	19.2 (3.1)	18.6 (3.0)	38.6 (7.1)	24.8 (3.6)
Sometimes	49.5 (3.9)	53.6 (4.8)	48.0 (3.4)	50.5 (4.9)	55.5 (5.6)	51.3 (8.1)	48.4 (4.4)	55.9 (3.9)	49.4 (3.8)	41.3 (7.2)	43.5 (4.2)
Lab equipment											
Often	3.9 (1.5)	8.6 (2.7)	18.5 (2.7)	3.0 (1.6)	7.0 (2.9)	11.1 (5.1)	11.5 (2.8)	3.0 (1.3)	25.2 (3.3)	11.3 (4.6)	27.6 (3.7)
Sometimes	16.4 (2.9)	18.1 (3.7)	20.4 (2.8)	21.0 (4.0)	21.3 (4.6)	22.9 (6.9)	18.5 (3.4)	21.1 (3.2)	25.1 (3.3)	24.1 (6.3)	17.4 (3.2)
Screen-based media											
Often	6.3 (1.9)	8.8 (2.7)	12.2 (2.3)	6.1 (2.3)	8.0 (3.1)	10.3 (4.9)	7.7 (2.3)	3.9 (1.5)	9.8 (2.3)	17.7 (5.6)	10.0 (2.5)
Sometimes	54.3 (3.9)	51.7 (4.8)	56.5 (3.4)	60.0 (4.8)	52.4 (5.6)	49.1 (8.1)	52.1 (4.4)	53.9 (3.9)	56.8 (3.8)	52.3 (7.3)	63.8 (4.0)
Life skills materials											
Often	5.8 (1.8)	8.4 (2.7)	35.2 (3.3)	11.1 (3.1)	5.2 (2.5)	14.6 (5.7)	16.3 (3.3)	7.7 (2.1)	34.6 (3.6)	18.5 (5.7)	39.5 (4.1)
Sometimes	18.1 (3.0)	20.0 (3.8)	35.3 (3.3)	27.3 (4.3)	23.0 (4.7)	24.8 (7.0)	31.3 (4.1)	20.8 (3.2)	30.6 (3.5)	38.2 (7.1)	32.5 (3.9)

Source: NLTS2 Wave 1 student's school program survey.
Standard errors are in parentheses.

Frequent use of computers for any purpose is not common for students in any category (Exhibit 8-9). However, computers are most likely to be used often for doing word processing or spreadsheets and for accessing the Internet by students with speech, visual, or other health impairments; 20% to 25% use computers often for word processing or other applications, and 16% to 22% use them often for Internet access. Those with mental retardation are the least likely to use computers in these ways often (6% and 5%, $p < .01$ compared with students with speech impairments).

Exhibit 8-9
COMPUTER USE IN SPECIAL EDUCATION CLASSES,
BY DISABILITY CATEGORY

	Learning Disability	Speech/Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Autism	Traumatic Brain Injury	Multiple Disabilities	Deaf-Blindness
Percentage with frequency of using:												
Computers for word processing, spreadsheets, etc.												
Often	16.0 (2.9)	20.1 (3.8)	6.3 (1.7)	12.8 (3.2)	14.6 (4.0)	24.9 (7.1)	18.6 (3.4)	20.0 (3.1)	16.7 (2.9)	11.8 (4.7)	15.9 (3.1)	12.7 (6.6)
Sometimes	48.5 (3.9)	44.8 (4.7)	37.5 (3.3)	45.9 (4.8)	52.6 (5.6)	48.3 (8.2)	46.1 (4.4)	47.8 (3.9)	26.9 (3.4)	45.4 (7.3)	30.8 (3.9)	48.5 (3.9)
Computers for Internet access												
Often	10.0 (2.3)	16.3 (3.5)	5.0 (1.5)	12.1 (3.2)	13.5 (3.9)	22.0 (6.7)	11.1 (2.7)	15.5 (2.8)	10.5 (2.4)	7.7 (3.9)	7.4 (2.2)	5.5 (4.5)
Sometimes	58.2 (3.8)	46.9 (4.7)	48.5 (3.4)	50.8 (4.8)	62.9 (5.5)	44.6 (8.1)	48.5 (4.4)	54.9 (3.9)	35.6 (3.7)	57.9 (7.2)	37.0 (4.0)	58.2 (3.8)
Computers for skills practice												
Often	5.9 (1.8)	9.3 (2.8)	9.8 (2.0)	9.2 (2.8)	6.4 (2.8)	13.3 (5.6)	11.7 (2.8)	9.9 (2.3)	18.5 (3.0)	12.2 (4.8)	13.8 (2.9)	5.2 (4.4)
Sometimes	33.4 (3.7)	31.3 (4.4)	42.3 (3.4)	35.5 (4.6)	29.9 (5.2)	41.4 (8.2)	32.7 (4.1)	31.8 (3.6)	35.1 (3.6)	35.9 (7.1)	36.3 (4.0)	33.4 (3.7)

Source: NLTS2 Wave 1 student's school program survey.

Standard errors are in parentheses.

Instructional activities outside of class. Students in every disability category are more likely to have instructional activities that occur outside the classroom be school-based (22% to 47% experience them often) than community-based activities (8% to 40% experience them often, Exhibit 8-10). Field trips are the least likely to occur often (6% to 25%). Frequent excursions outside the classroom, whether school-based or in the community, are experienced by students in disability categories with higher rates of taking life skills classes, including students with mental retardation, autism, or multiple disabilities. Conversely, students whose special education classes are most likely to have an academic subject focus are among the least likely to have community-based experiences, including students with speech or hearing impairments.

Exhibit 8-10
INSTRUCTIONAL ACTIVITIES OUTSIDE OF SPECIAL EDUCATION CLASSROOMS,
BY DISABILITY CATEGORY

	Learning Disability	Speech/Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Autism	Traumatic Brain Injury	Multiple Disabilities
Percentage with frequency of:											
School-based experiences (e.g., library activities)											
Often	23.2 (3.3)	22.1 (3.9)	43.6 (3.4)	22.9 (4.1)	21.7 (4.7)	31.5 (7.6)	31.2 (4.1)	21.5 (3.2)	46.6 (3.8)	33.6 (7.0)	37.0 (4.0)
Sometimes	21.0 (3.9)	13.9 (4.3)	29.3 (3.4)	15.1 (4.8)	22.4 (5.3)	28.6 (8.1)	21.0 (4.3)	18.5 (3.8)	23.6 (3.7)	26.6 (7.3)	30.6 (4.1)
Field trips											
Often	5.5 (1.8)	7.9 (2.6)	19.7 (2.7)	10.0 (2.9)	10.2 (3.4)	13.6 (5.7)	15.7 (3.2)	9.9 (2.3)	25.2 (3.4)	10.8 (4.5)	18.0 (3.2)
Sometimes	21.0 (3.9)	13.9 (4.5)	29.3 (3.4)	15.1 (4.6)	22.4 (5.5)	28.6 (8.2)	21.0 (4.3)	18.5 (3.7)	23.6 (3.8)	26.6 (7.3)	30.6 (4.2)
Community-based experiences (e.g., taking public transportation)											
Often	10.5 (2.4)	15.4 (3.5)	32.1 (3.2)	18.0 (3.8)	8.4 (3.2)	19.9 (6.6)	27.5 (4.0)	11.7 (2.5)	39.6 (3.8)	18.1 (5.6)	29.6 (3.8)
Sometimes	21.0 (3.2)	13.9 (3.3)	29.3 (3.1)	15.1 (3.5)	22.4 (4.8)	28.6 (7.5)	21.0 (3.6)	18.5 (3.1)	23.6 (3.3)	26.6 (6.5)	30.6 (3.9)

Source: NLTS2 Wave 1 student's school program survey.
Standard errors are in parentheses.

Students' Participation in Special Education Classroom Activities

As they try to meet the needs of diverse students in special education classrooms, teachers make many decisions regarding how to organize instructional time effectively and efficiently. The activities they choose can reflect both a specific point in the curriculum and a strategy of how best to meet the needs of students. For example, at one point in a unit, teachers may have students answer questions and participate in class discussions, whereas at another, teachers may have students work together on presentations or projects. Instructional activities may vary greatly from classroom to classroom because of such factors as the subject matter being addressed, teacher style and preferences, students' ages and skill levels, and time of the school year. Skilled teachers are able to adjust the mix of these factors and activities to meet student needs (Gersten & Dimino, 2001; McLeskey & Waldron, 2002; Moody, Vaughn, Hughes, & Fischer, 2000; Pressley, Roehrig, Bogner, Raphael, & Dolezal, 2002; Vaughn, Hughes, Moody, & Elbaum, 2001).

To provide a national perspective on the participation in classroom activities by students in special education classes, NLTS2 asked teachers in these settings to report whether specific individual students engage in the activities noted in Exhibit 8-11 "often," "sometimes," or "rarely or never."

**Exhibit 8-11
STUDENTS' PARTICIPATION IN SPECIAL EDUCATION
CLASSROOM ACTIVITIES, BY SUBJECT AREA**

	All Special Education Classes	Academic Classes	Study Skills Classes	Life Skills Classes
Percentage with frequency of:				
Working independently				
Often	57.9 (2.4)	59.3 (3.2)	64.3 (5.3)	42.1 (4.9)
Sometimes	34.3 (2.4)	33.7 (3.1)	31.3 (5.1)	41.5 (4.8)
Taking quizzes or tests				
Often	54.6 (2.5)	66.0 (3.1)	37.2 (5.4)	34.4 (4.7)
Sometimes	35.3 (2.4)	29.5 (3.0)	50.2 (5.6)	36.9 (4.8)
Participating in class discussion				
Often	47.9 (2.5)	53.1 (3.2)	40.0 (5.5)	39.8 (4.8)
Sometimes	42.0 (2.5)	40.3 (3.2)	46.8 (5.6)	40.0 (4.8)
Responding orally to questions				
Often	46.2 (2.5)	49.6 (3.2)	38.1 (5.5)	44.1 (4.9)
Sometimes	44.5 (2.5)	45.1 (3.2)	46.7 (5.6)	38.8 (4.8)
Working with a peer partner or group				
Often	28.5 (2.3)	28.8 (3.0)	27.5 (5.0)	27.8 (4.4)
Sometimes	59.9 (2.4)	61.2 (3.2)	59.3 (5.5)	57.5 (4.5)
Presenting in front of class or group				
Often	12.8 (1.7)	14.1 (2.3)	9.4 (3.3)	10.8 (3.1)
Sometimes	36.3 (2.4)	42.6 (3.2)	19.3 (4.5)	35.9 (4.7)

Source: NLTS2 Wave 1 student's school program survey.
Standard errors are in parentheses.

With the exception of presenting in front of a group or class, the large majority of students with disabilities (88% to 92%) participate in class in the ways investigated in NLTS2 at least sometimes. Overall, students in special education classes are most likely often to work independently in their classes and take quizzes or tests (58% and 55%, $p < .05$ to $p < .001$ compared with other activities). Participating frequently in class discussion and responding orally to questions also are common (48% and 46%). Fewer students work with a peer partner or group often (28%). Only 13% of students with disabilities frequently perform or present in front of a group in their special education class, although about half do so at least sometimes ($p < .001$ compared with other activities).

The frequency with which students engage in these various activities mirrors the purposes of their classes. Special education classes that emphasize a specific academic subject use many methods that are similar to

general education settings, such as classroom discussions and test taking. Specifically, test taking, participating in class discussions, and responding orally to questions are particularly common in academic classes. Two-thirds of students in academic subject classes take tests often, compared with 37% and 34% of students in classes that focus on study skills or life skills ($p < .001$). Similarly, students in academic subject classes are more likely to participate in class discussions often (53%) than are students in other kinds of classes (40%, $p < .05$). And students in academic classes are more likely than those in study skills classes to respond orally to questions often (50% vs. 38%, $p < .01$).

Students who are in study skills classes would be expected to work independently more often than students in other settings, and they do so in comparison with students in classes that focus on life skills (64% vs. 42%, $p < .01$). They also are the least likely to present information to the

class or a group; only 29% reportedly do so at least sometimes, compared with 47% and 57% of students in life skills or academic classes ($p < .05$ and $p < .001$).

NLTS2 data show that the diversity of needs and capabilities of students with different disabilities is reflected in their frequency of participation in a variety of instructional activities. Students within each disability category participate to varying degrees in all of the instructional activities investigated in NLTS2 (Exhibit 8-12). The majority in each category participate in each activity at least sometimes, with the exception of presenting in front of a class or group. However, levels of participation in the mix of activities differ considerably across disability categories.

Exhibit 8-12
STUDENTS' PARTICIPATION IN SPECIAL EDUCATION CLASSROOM ACTIVITIES,
BY DISABILITY CATEGORY

	Learning Dis-ability	Speech/ Language Impair-ment	Mental Retar-dation	Emotional Distur-bance	Hearing Impair-ment	Visual Impair-ment	Ortho-pedic Impair-ment	Other Health Impair-ment	Autism	Trauma-tic Brain Injury	Multiple Disabili-ties
Percentage with frequency of:											
Working independently											
Often	62.8 (3.8)	60.9 (4.6)	46.8 (3.4)	53.0 (4.8)	69.1 (5.2)	49.6 (8.1)	41.6 (4.3)	58.1 (3.8)	46.4 (3.8)	55.0 (7.3)	32.3 (3.9)
Sometimes	31.5 (3.6)	37.2 (4.6)	42.0 (3.4)	36.1 (4.7)	26.8 (5.0)	40.6 (8.0)	39.2 (4.2)	36.2 (3.7)	38.0 (3.7)	37.8 (7.1)	38.6 (4.0)
Responding orally to questions											
Often	46.0 (3.9)	43.9 (4.7)	46.6 (3.4)	46.2 (4.9)	53.7 (5.7)	64.0 (7.8)	49.7 (4.4)	48.4 (3.9)	34.1 (3.6)	57.3 (7.3)	43.0 (4.1)
Sometimes	46.1 (3.9)	46.9 (4.8)	40.9 (3.4)	45.3 (4.9)	31.7 (5.3)	29.7 (7.4)	35.4 (4.2)	46.6 (3.9)	38.1 (3.7)	36.2 (7.0)	31.3 (3.9)
Taking quizzes or tests											
Often	61.3 (3.8)	49.2 (4.8)	42.4 (3.4)	46.0 (4.9)	50.5 (5.6)	47.6 (8.1)	44.9 (4.3)	57.8 (3.8)	24.6 (3.3)	56.9 (7.3)	25.0 (3.6)
Sometimes	33.6 (3.7)	38.5 (4.7)	35.7 (3.3)	44.7 (4.8)	38.0 (5.5)	35.5 (7.8)	33.3 (4.1)	34.4 (3.7)	36.9 (3.7)	31.0 (6.8)	30.0 (3.8)
Participating in class discussion											
Often	49.7 (3.9)	43.7 (4.7)	45.2 (3.4)	44.6 (4.8)	59.6 (5.6)	54.3 (8.1)	50.2 (4.4)	48.8 (3.9)	25.1 (3.3)	58.4 (7.2)	37.1 (4.0)
Sometimes	43.4 (3.9)	44.0 (4.7)	38.8 (3.3)	43.5 (4.8)	28.8 (5.1)	31.9 (7.6)	31.5 (4.0)	41.8 (3.8)	35.0 (3.7)	32.0 (6.8)	33.8 (4.0)
Working with a peer partner or group											
Often	32.0 (3.7)	34.2 (4.5)	25.1 (3.0)	16.2 (3.6)	36.7 (5.4)	27.5 (7.3)	26.9 (3.9)	25.4 (3.4)	15.9 (2.8)	32.1 (6.8)	19.0 (3.3)
Sometimes	60.9 (3.8)	53.0 (4.8)	62.8 (3.3)	56.5 (4.9)	47.1 (5.6)	44.6 (8.2)	53.2 (4.3)	56.6 (3.9)	51.7 (3.8)	54.1 (7.3)	56.9 (4.1)
Presenting in front of class or group											
Often	15.7 (2.9)	8.7 (2.7)	9.1 (2.0)	6.4 (2.4)	12.9 (3.8)	7.1 (4.3)	9.6 (2.6)	13.2 (2.6)	6.2 (1.9)	14.2 (5.1)	4.0 (1.6)
Sometimes	38.0 (3.8)	42.1 (4.7)	31.5 (3.2)	33.1 (4.6)	29.1 (5.2)	37.6 (8.1)	35.5 (4.2)	37.9 (3.8)	23.1 (3.2)	36.1 (7.1)	38.7 (4.1)

Source: NLTS2 Wave 1 student's school program survey.
Standard errors are in parentheses.

Some categories of student have a pattern of active participation. For example, students with learning disabilities or speech or hearing impairments are among the mostly likely often to work independently (61% to 69%) or with a peer partner or group (32% to 37%). Those with learning disabilities also are the most likely to present in front of a class or group and to take quizzes or tests often, frequent activities in the academic subject classes they are very likely to take. At the other end of the participation spectrum are groups of students who have a pattern of relatively low participation, particularly students with autism or multiple disabilities. They are the least likely to work independently—16% and 29% do not do so even sometimes—and to participate in class discussion (40% and 29%, respectively, do not participate even sometimes). Students with emotional disturbances join them in being particularly unlikely to work with a peer partner or group (16% and 19% do so often) or present in front of a group or class (4% and 6% do so often).

Students in other categories, however, have a less consistent pattern of participation. For example, students with visual impairments are among the most likely to respond orally to questions (64%) and participate in class discussions often (54%), but they are no more likely than others to work independently (50%), perhaps because of their difficulty in working with print media on their own. Students with emotional disturbances do not differ from their peers with learning disabilities in the likelihood of responding orally to questions or participating in class discussions often, but they are half as likely to work with a peer partner or group often (16% vs. 32%, $p < .01$).

Factors Considered Important in Evaluating Students' Performance

Evaluation of student performance is an essential part of the teaching and learning process for all students. For students with disabilities, it enables teachers to determine whether students have mastered material, achieved IEP objectives, and learned at the desired rate. Additionally, student evaluations are important mechanisms for communicating to parents, administrators, and students themselves how students are faring academically. Teachers can take numerous factors into account in evaluating performance, including academic ability, participation in classroom learning activities, effort, progress, and attitudes and behavior.

School staff respondents were asked to report for specific individual students in special education classes the importance of the factors indicated in Exhibit 8-13 in determining grades or formal progress reports; they indicated whether each is “very important,” “somewhat important,” or “not important.”

Overall, daily class work is most likely to be considered very important; 88% of students have special education teachers who consider it so. However, students' behaviors are more likely to be considered very important than other aspects of students' school work. Three-fourths of students have teachers who consider attendance to be very important, with 64% and 62% having teachers who place similar importance on attitudes and behavior and on class participation, respectively. About half of students have teachers who consider homework, test results, and special projects to be very important. Evaluating student performance relative to a standard or to the class is less likely to be considered very important.

**Exhibit 8-13
FACTORS CONSIDERED VERY IMPORTANT IN
EVALUATING STUDENTS' PERFORMANCE IN SPECIAL
EDUCATION CLASSES, BY SUBJECT AREA**

	All Special Education Classes	Academic Classes	Study Skills Classes	Life Skills Classes
Percentage whose teachers report the factor to be very important				
Student work				
Daily class work	87.8 (1.7)	87.8 (1.7)	83.8 (3.8)	90.0 (2.0)
Homework	48.2 (2.7)	48.2 (2.7)	22.3 (5.0)	46.9 (3.4)
Test results	54.2 (2.6)	54.2 (2.6)	35.8 (5.5)	56.1 (3.3)
Special projects/ activities	48.3 (2.7)	48.3 (2.7)	43.8 (5.5)	48.5 (3.4)
Student portfolio	35.1 (2.9)	35.1 (2.9)	34.5 (5.7)	35.2 (3.7)
Student behaviors				
Attitude and behavior	63.9 (2.4)	63.9 (2.4)	66.3 (4.7)	62.9 (3.1)
Class participation	61.7 (2.4)	61.7 (2.4)	60.0 (4.9)	66.8 (3.1)
Attendance	75.7 (2.1)	75.7 (2.1)	71.8 (4.5)	76.6 (2.8)
Standards				
Performance relative to a set standard	37.9 (2.4)	37.9 (2.4)	35.4 (4.8)	38.3 (3.2)
Performance relative to class	17.0 (1.9)	17.0 (1.9)	12.2 (3.3)	15.4 (2.4)

Source: NLTS2 Wave 1 student's school program survey.
Standard errors are in parentheses.

There is considerable consistency in the importance placed on evaluation criteria across types of classes. The only differences are apparent for the importance placed on homework and test results. These are much less likely to be considered very important in study skills classes (22% and 36%) than other kinds of classes ($p < .001$ and $p < .01$ compared with other kinds of classes).

Although there are no differences in evaluation criteria across grade levels or for students with different demographic characteristics, disability category differences are apparent. However, they affect some evaluation criteria more than others (Exhibit 8-14). For example, 75% or more of students in every category have teachers who report that daily class work is very important in evaluating students' performance. There is relative consensus on the importance of student behaviors, as well; fewer than 20 percentage points differentiate the categories most and least likely to have teachers who consider those factors to be very important. For example, 60%

to 77% of students across categories have teachers who report that attitudes and behavior are very important, and between 64% and 82% have teachers who feel similarly about attendance.

However, there is much greater variability across categories in aspects of student work other than daily class work. The importance placed on homework ranges particularly widely across categories, from 20% of students with multiple disabilities whose special education teachers report that homework is very important in evaluating performance, to 63% of students with visual impairments whose teachers place similar importance on homework.

Test taking, homework, special projects, and performance relative to a set standard are particularly likely to be considered very important by teachers of students in categories that are most likely to have their classroom experiences reported for academic subject classes—students with learning disabilities, emotional disturbances, and speech or sensory impairments. They are least likely to be considered very important for categories of students who are more likely to have their experiences reported for life skills classes—students with mental retardation, autism, and multiple disabilities.

Exhibit 8-14
FACTORS CONSIDERED VERY IMPORTANT IN EVALUATING STUDENTS' PERFORMANCE
IN SPECIAL EDUCATION CLASSES, BY DISABILITY CATEGORY

	Learning Dis-ability	Speech/ Language Impair-ment	Mental Retar-dation	Emotional Distur-bance	Hearing Impair-ment	Visual Impair-ment	Ortho-pedic Impair-ment	Other Health Impair-ment	Autism	Trau-matic Brain Injury	Multiple Disabili-ties
Percentage whose teachers report the factor to be very important											
Student work											
Daily class work	89.0 (2.5)	87.9 (3.1)	84.0 (2.6)	90.0 (3.0)	90.4 (3.4)	91.2 (4.6)	81.5 (3.5)	86.5 (2.7)	79.5 (3.2)	85.7 (5.1)	75.4 (3.8)
Homework	53.3 (4.1)	49.6 (4.9)	26.9 (3.4)	54.2 (5.1)	58.5 (5.9)	62.7 (8.4)	39.2 (4.5)	47.4 (4.1)	26.0 (3.9)	40.0 (7.5)	20.1 (4.2)
Test results	60.2 (4.0)	52.5 (4.9)	35.1 (3.5)	55.6 (5.1)	54.0 (5.7)	53.5 (8.9)	47.5 (4.5)	53.8 (4.0)	34.0 (4.1)	48.4 (7.6)	23.7 (4.3)
Special projects/activities	53.0 (4.1)	46.9 (5.1)	38.4 (3.6)	38.9 (5.2)	52.5 (5.9)	68.3 (8.3)	44.6 (4.6)	49.5 (4.1)	37.6 (4.2)	50.3 (7.7)	33.3 (4.5)
Student portfolio	36.0 (4.7)	41.2 (5.8)	36.6 (3.8)	28.5 (5.3)	30.8 (6.2)	48.6 (9.8)	35.6 (4.8)	27.3 (4.3)	42.2 (4.4)	35.8 (8.7)	41.1 (5.0)
Student behaviors											
Attitude and behavior	62.3 (3.8)	63.2 (4.6)	62.7 (3.3)	74.9 (4.2)	68.7 (5.2)	77.0 (6.9)	59.8 (4.3)	62.0 (3.8)	64.9 (3.6)	71.5 (6.7)	60.0 (4.1)
Class participation	65.9 (3.7)	55.4 (4.7)	55.6 (3.4)	56.8 (4.9)	67.4 (5.3)	64.0 (7.9)	58.8 (4.3)	51.5 (3.9)	48.2 (3.8)	55.7 (7.3)	50.8 (4.2)
Attendance	76.3 (3.3)	74.1 (4.2)	72.0 (3.1)	82.1 (3.8)	77.5 (4.7)	79.9 (6.7)	73.1 (3.9)	74.6 (3.4)	64.1 (3.6)	66.4 (6.9)	65.1 (4.0)
Standards											
Performance relative to a set standard	40.4 (3.9)	42.2 (4.7)	31.4 (3.2)	34.7 (4.7)	30.7 (5.2)	59.4 (8.1)	34.9 (4.2)	40.4 (3.9)	28.4 (3.4)	36.1 (7.1)	29.9 (3.8)
Performance relative to the class	19.3 (3.1)	17.0 (3.6)	10.7 (2.1)	16.0 (3.6)	15.1 (4.1)	26.4 (7.3)	15.7 (3.2)	16.8 (2.9)	8.8 (2.2)	12.2 (4.8)	11.4 (2.7)

Source: NLTS2 Wave 1 student's school program survey.
Standard errors are in parentheses.

Summary

This chapter has examined the experiences of secondary school students with disabilities in a variety of special education classes, in part in an effort to illuminate “what’s special about special education.” NLTS2 findings demonstrate that secondary special education classes provide students instruction in a variety of subjects and skills. The majority receive instruction for an academic subject, such as math or language arts, whereas others are in special education classes that focus on acquiring basic academic skills or independent life skills, or where they receive help with study habits and homework. Some students in every disability category are in each of these types of special education classes, and they experience a range of instructional groupings and activities in them. However, there are important differences in what goes on in special education classes with different emphases, reflecting a tailoring of practices to both content and student differences.

Although special education classes that focus on academic subjects deal with content that mirrors subjects in general education classrooms, some tailoring of classroom practices is apparent. Students in such classes frequently are taught with a general education curriculum that has had some modification. Teachers in these classes often use both whole-class and small-

group instruction with their students to provide a range of learning experiences. Yet classroom practices reflect the demands of academic subject matter, whether or not students have disabilities. Students in subject-specific academic special education classes are more likely than their peers in other kinds of special education classes to take tests, respond orally to questions, and participate in class discussions often. Three-quarters of students have teachers who use textbooks, worksheets, and workbooks often—more than any other instructional materials. Computers are used rarely by students in academic subject classes. Further, although about one-quarter of students in academic subject classes frequently experience school-based instructional activities outside of their classrooms (e.g., trips to the school library), they rarely go on field trips or have community-based instructional experiences.

Special education classes that focus on study skills have a different mix of students than academic-subject classes and a different purpose; hence, classroom practices also are significantly different in many respects from those described above. Students with disabilities in study skills classes have teachers who use individualized instruction more than whole-group or small-group instruction. Most of these classes are taught without a specific curriculum so that classroom activities can be adapted to individual students' needs. Yet half of the students in these classes have teachers who use textbooks, worksheets, and workbooks often, and about one-third are frequently taught by using other print materials. Reflecting the individualized emphasis, the majority of students work independently more than they are involved in any other classroom activity. More students in study skills classes than in other types of classes use computers for word processing or creating spreadsheets as part of their independent work. Although one of five students in study skills classes experience school-based instruction outside of their classrooms, they rarely experience community-based activities or field trips.

The greatest specialization in instruction is found in special education classes that teach life skills. Students in these classes frequently are taught in small groups or receive individualized instruction, and three-quarters of students are in classes that use a specialized curriculum. Although fewer students in these than in other kinds of classes frequently respond orally to questions, work independently, or use textbooks, their teachers still use these instructional activities and materials more often than other teaching methods. On the other hand, teachers of students in life skills classes use life skills materials far more than do teachers of other classes, as would be expected. Students in life skills classes also are more likely than their peers to have frequent instructional experiences outside the classroom.

Across disability categories, teachers in all three types of classes base their student evaluations on daily class work, attitudes and behavior, class participation, attendance, and special projects. The importance of test results or homework plays a greater evaluative role for students in subject-specific academic and study skills classes than for students in life skills classes.

Although a range of curricula, instructional groupings, activities, materials, and evaluation criteria are used for students across the disability categories, many of the differences in the mix of classroom experiences for students with disabilities reflect the differences across disability categories in their likelihood of taking different kinds of classes.

9. EDUCATIONAL PROGRAMS TO MEET STUDENTS' NEEDS: A SUMMARY

By Mary Wagner

In *The Individual and Household Characteristics of Youth with Disabilities*, an earlier report from NLTS2, the diversity of secondary school students who receive special education services is documented. Not only do they have the wide range of demographic characteristics that are found in the general student population (e.g., differences in socioeconomic background, racial/ethnic and language diversity), but they also span the full spectrum of abilities on the many dimensions of functioning addressed in NLTS2 (e.g., mobility, communication, social skills). For example, although about 7 in 10 students with disabilities have no trouble carrying on a conversation, almost 1 in 10 are reported by parents to have “a lot of trouble” with such interactions. Similarly, most students with disabilities have normal use of their limbs, but 1 in 10 are reported to have “a lot of trouble” using their arms, hands, legs, or feet. Parents rate about one-fourth of students with disabilities as having high social skills but about one-fifth as having poor social skills (Wagner, Marder, Levine, et al., 2003).

Another look at the diversity of adolescents with disabilities is provided in *The Achievements of Youth with Disabilities*, an NLTS2 report that documents youth outcomes in multiple domains. It reports, for example, that about 30% of middle and high school students with disabilities read at the 4th grade level or below, whereas 6% read at the 11th grade level or above. Almost one-third of students with disabilities receive mostly As and Bs from their teachers, but 8% receive mostly Ds and Fs (Wagner, Marder, Blackorby, et al., 2003).

Chapter 2 of this report also points to the diversity of students' education-related experiences. For example, although almost one-fourth of students with disabilities are first identified as having a disability at school entry, about one in seven are first identified with a disability as infants or toddlers and about one-third at age nine or older. Almost one in five youth with disabilities have attended only one or two schools, the number expected if they change schools only for grade-level progressions, but a similar percentage experience the potentially negative effects of having gone to five or more schools. The school experiences of most students with disabilities do not include being retained at grade level, although one-third have experienced this event; one-third also have been suspended or expelled at some time in their school careers.

Clearly, if America's schools are to respond with the appropriate education for this diverse population of students with disabilities, as required by the Individuals with Disabilities Education Act Amendments of 1997 (IDEA '97), an array of educational program options must be available that provide the opportunity for individualization to meet student needs. At the same time, students with disabilities are to be held to high standards of academic performance and are to be given access to the general education curriculum to help them meet those standards. Striking the balance between appropriateness, individualization, high standards for all, and access to general education courses and curricula is a challenge to schools across the country. The NLTS2 findings in this report document the efforts being made to strike that balance in the school programs of students with disabilities and to match the diversity of their needs with a diversity of programs. Key observations about those efforts are highlighted below.

Students' Schools Have a Range of Resources

Students with disabilities attend schools that have a wide range of staff and programmatic resources available to help meet their needs. As would be expected, virtually all students with disabilities go to schools that have administrators, guidance counselors, librarians, and aides, and large majorities have access to speech pathologists or therapists, nursing staff, and school psychologists. Between about half and two-thirds also have access to social workers, reading or subject-area specialists, and a variety of related service personnel. On average, almost 90% of teachers in schools attended by students with disabilities are reported to be fully credentialed for their primary teaching assignment, and the large majority have more than 3 years of teaching experience.

Virtually all students with disabilities go to schools that support a band, chorus, or theater group or to play on a sports team, and large majorities have access to tutoring programs, summer school, supplemental instruction in reading and math, and academic and other kinds of student counseling. Most students with disabilities also go to schools that provide a variety of adolescent services, including substance abuse and pregnancy prevention education and school-to-work and conflict management programs. Less common are programs to treat substance abuse, support teen parents, or provide school-based health services.

Although a minority of students with disabilities attend special schools that serve only that population, the large majority go to schools that include students with disabilities in general education classes and that have special education resource rooms. Self-contained special education classrooms are available in schools attended by about six of seven students with disabilities, and about 60% are in schools that have classes co-taught by general and special educators and that provide individual instruction for students with disabilities. This range of staff and program resources provides a variety of options to meet the needs of all students.

Students Access a Diversity of Courses

As a group, secondary school students with disabilities take the full range of courses offered in their schools, consistent with the broad range of interests that would be expected in this diverse population. All but 1% take academic courses, which comprise four of their usual seven courses in a semester, typically including the same subjects that dominate the schedules of the general student population—language arts, mathematics, social studies, and science. In addition, about one in five students with disabilities also take a foreign language. Their participation in such courses has increased significantly in the last decade and a half (Wagner et al., forthcoming), since the original National Longitudinal Transition Study¹ examined the course taking patterns of secondary school students with disabilities for the first time. This increase suggests real progress in giving students with disabilities access to the kinds of courses that will prepare them for postsecondary education and other positive postschool outcomes.

In addition to their academic courses, about 6 in 10 students with disabilities take vocational education, usually a course with an occupationally specific focus (as opposed to a course devoted

¹ NLTS was designed and conducted for the Office of Special Education Programs between 1984 and 1993. It included a nationally representative sample of students who were ages 15 through 23 when the first data were collected in 1987. Many of its design features are mirrored in NLTS2 to permit comparisons between them for students of the same ages in both studies.

to increasing prevocational skills). Although vocational course-taking has become less common over time (Wagner et al., forthcoming), perhaps as a result of increased academic course-taking, the majority of students with disabilities still have some vocational training during their secondary school years. A concentration of such training has been shown to improve the employment prospects of youth with disabilities in their postschool years (Wagner et al., 1993).

Nonacademic subjects other than vocational education also are included in most students' schedules, typically two courses in a given semester. Some of these, such as physical education or fine arts, give students opportunities to explore a range of interests and hone a variety of skills, which may be particularly important for students who struggle to succeed academically. Others classes meet the needs of students who have weak study skills or who need to acquire life skills that will help support their future independence.

Students Typically Are Instructed in Multiple Settings

The vast majority of secondary school students with disabilities go to regular public schools, schools that are as likely to be in their neighborhoods as are the schools of students in the general population. About 3% attend special schools that serve only students with disabilities, and another 3% attend charter, magnet, or alternative schools.

Within their schools, the majority of students with disabilities experience both general and special education settings as part of their school programs. Overall, about one-fourth of students with disabilities take all their courses in general education classrooms. The majority of these students continue to receive related services as part of their individualized education program (IEP), although they also include the 5% of students with disabilities who discontinue special education services during about a 16-month period. Another 1 in 10 take all their courses in special education classrooms or individual or community-based settings. Thus, the instruction of two-thirds of students with disabilities is the "shared responsibility" (Will, 1986) of both the general and special education systems. On average, general education courses are 60% of the courses students with disabilities take in a given semester, whereas about 35% of courses are taken in special education classrooms and the remainder in other settings.

The likelihood that a student with disabilities will spend time in a general education or special education class varies markedly with the nature of his or her disability. Although the majority of students in all disability categories except deaf-blindness take at least one general education class, virtually all students with learning disabilities or speech or other health impairments have such classes on their course schedules, usually for academic subjects, as do 80% or more of students with orthopedic impairments or traumatic brain injuries. About three-fourths of students with emotional disturbances or hearing or visual impairments take general education courses in a given semester. From 40% to about 60% of students with autism, multiple disabilities, or deaf-blindness take general education classes; they typically are not academic classes.

Inside General Education Classrooms

NLTS2 provides a look at the degree of similarity between the instruction provided to students with disabilities and other students in both their general education academic and

vocational classes. In many respects, students with disabilities and their classmates have very similar instructional experiences, although some important differences also are apparent.

Delivery of Instruction to Students with Disabilities Typically Mirrors the Class as a Whole

In both general education academic and vocational courses, the teacher-driven instructional practices used for students with disabilities largely mirror those used for the class as a whole. Regarding instructional groupings used in academic classes, for example, there are no significant differences between the frequency that students with disabilities and the class as a whole experience whole-class or small-group instruction or individual instruction from the teacher. Likewise, in general education vocational classes, six out of seven students with disabilities are reported by teachers to experience the same instructional groupings as their classmates. Similarly, there are no differences reported in the kinds of materials used in general education academic or vocational classes for the majority of students with disabilities and their classmates.

The conclusion that students with disabilities are subject to instructional practices that are similar to those of their classmates in general education classes is an important part of the answer to the question “Do students with disabilities have access to the general education curriculum?” However, consistency in instructional practices for all students also could raise a question of whether the practices that are suitable for a general education class as a whole also are suitable for meeting the individual learning needs that distinguish students with disabilities from their nondisabled peers.

Yet a closer look at exceptions to the similarities in teacher-driven practices that are in use for all students in general education classrooms suggests that some attention to individual needs is part of the classroom experience. For example, although 85% of general education vocational teachers report that their students with disabilities experience the same instructional groupings as other students in their classes, and more than 90% report that the materials and equipment used are the same, the remaining students with disabilities experience a different mix of instructional groupings and materials, presumably reflecting their individual needs. Further, in general education academic classes, students with disabilities are significantly more likely to receive individual instruction from an adult other than the general education teacher. This increased individual instruction for students with disabilities is facilitated by the fact that 19% of them are in classes in which a special education teacher also is present, and 12% of them have teacher aides or assistants in their classrooms to augment the instruction given by teachers.

Curricular Content for Many Students with Disabilities Differs from the Class

Although instructional practices in use in general education academic and vocational classes may be largely the same for all students, the majority of students with disabilities in academic classes receive a modified curriculum. About half of students with disabilities in general education academic classes reportedly receive a curriculum that teachers describe as having “some modifications,” and about 1 in 10 students receive a substantially modified a curriculum. A specialized or individualized curriculum is very rare but occurs for 2% of students with disabilities in general education academic classes. Thus, about one-third of students with disabilities in general education academic classes have access to the same curriculum as the rest of their classmates. Less curricular modification is apparent in general education vocational

classes, in which six out of seven students with disabilities are reported to use the same curriculum as the class as a whole.

Supports Provided to Teachers Leave Some Uninformed

The vast majority of general education academic classroom teachers receive some support for having students with disabilities in their classes. However, substantially fewer receive any particular kind of support. In fact, only about 60% of students with disabilities have general education academic teachers who receive any information about the needs of those students, and only about half have teachers who receive any input or consultation from a special educator or other staff about how to meet those needs. This means that 40% of students with disabilities in general education academic classes have teachers who are uninformed about their needs, and half have teachers who have no collegial support to draw on in meeting them.

Teachers of general education vocational classes more frequently report receiving information about individual students with disabilities in their classes and receiving consultation from a special educator or other staff than teachers of students with disabilities in general education academic classes. About six of seven students with disabilities in general education vocational classes have teachers who have been informed about their individual learning needs, and three-fourths have teachers who receive consultation on meeting those needs. Yet even at these rates, there are students with disabilities in general education academic and vocational classes who do not receive the benefits that could accrue from having teachers who are well informed about the educational implications of their disabilities and who receive support from professional staff who are well versed in meeting the needs of students with disabilities.

Most Accommodations and Supports for Students Do Not Require Modifications to Instructional Practices

Teachers of general education academic classes report that virtually all students with disabilities in their classes receive some kind of accommodation, modification, or other support to help them succeed. Increased time to take tests and complete assignments is by far the most common accommodation; three-fourths of students with disabilities receive more time to take tests, and two-thirds receive more time to complete other assignments. Accommodations or modifications that require changes to general education teachers' practices are much less common. For example, about one-fourth or fewer students with disabilities have slower-paced instruction, different assignments, or modified tests. Special educators monitor the progress of 60% of students with disabilities who take general education academic classes.

Most Factors Used in Evaluating Student Performance Are the Same for All Students in Class; Not All Students with Disabilities Keep Up

For the most part, students with disabilities in general education classes, both academic and vocational, have teachers who use similar factors in evaluating their performance and the performance of their classmates. In vocational education classes, about three-fourths of students with disabilities are reported to be subject to the same grading criteria as the class as a whole. In academic classes, teachers place the same importance for all students on such factors as completing routine assignments, student behavior, and classroom participation. Only in the case of test results and performance relative to a set standard do criteria vary. Teachers are less likely

to rely heavily on these measures in grading students with disabilities than in grading other students in class.

Consistent with the prevalence of similar grading criteria, virtually all students with disabilities in general education academic and vocational classes are expected to keep up with others in the class. However, only about three-fourths of students with disabilities reportedly do so in general education academic classes; about six of seven students do so in general education vocational classes.

How Is Special Education Special?

The preceding section compared the classroom experiences of students with disabilities in general education classrooms with those of their classmates as a whole to assess the extent to which they not only are present in such classes but truly have access to the general education curriculum. The focus of this section shifts to students' experiences in special education classrooms—specifically, those in which academic subjects are taught—and compares them with the experiences of peers in general education academic classes to identify the differences between general and special education that could be considered the special features of special education.

Special Education Classes Provide Opportunities for Tailoring Instruction to Individual Student Needs

Several aspects of special education classrooms where academic subjects are taught suggest that, relative to general education academic classes, they provide considerably greater individualization of instruction. For example, special education academic classes average 11 students and 2 adults, compared with an average of 25 students and 1 adult in general education academic classes, giving greater opportunity for individual adult attention to students. In fact, small-group and individual instruction are reportedly used substantially more often in special than in general education academic classes. Almost half of students in special education academic classes receive instruction in small groups often, compared with about one in five students with disabilities in general education classes. Individual instruction from the teacher and from another adult also are more common in special than in general education academic classrooms.

NLTS2 findings also suggest that the curriculum used in special education classes often is tailored to individual students' needs; about one-third of students in special education academic classes have a specialized or individualized curriculum, which is a very rare occurrence in general education academic classes. About one-fourth of students in special education classes have a substantially modified general education curriculum, compared with about 1 in 10 students in general education academic classes.

The environment in special education academic classes appears to be structured to encourage students' direct participation more than is true in general education academic classes. Students in special education classes are reported by their teachers to be significantly more likely to respond orally to questions and present to the class often than peers with disabilities in general education academic classes. Greater participation by students with hearing impairments may result from the much greater likelihood that students in special education classes have teachers who use manual as well as oral communication. Students in special education academic classes also are more likely to work independently often.

The frequency of instructional activities that go on outside the classroom for students who take special education academic classes suggests that their teachers are able to provide wider opportunities for learning and applying academic subject matter in real-world settings; school- and community-based out-of-classroom instructional experiences and field trips all are more common for students in special than in general education academic classes.

Some Aspects of Instruction Are Similar in Special and General Education Academic Classes

Although the number and kind of participants in special and general education academic classes differ markedly, as do many of the instructional practices used in them, other aspects of instruction in the two settings are similar. The use of many kinds of instructional materials is quite consistent across settings. For example, the use of computers for skills practice, Internet access, or applications such as word processing and working with spreadsheets is no more or less common in special than general education academic classes, as is true for the use of print materials other than textbooks. The frequency of some classroom activities also are the same. Students in the two settings are equally likely often to work with a peer partner or in a group and to be subject to tests or quizzes to assess their learning. Further, general and special education academic class teachers place equal importance on those test results in assessing students' performance. They also weigh similarly the importance of students' performance relative to a set standard and to the performance of the rest of the class and to their work on special projects or activities when evaluating students' performance.

Some Criteria for Assessing Students' Performance Differ Markedly Between Special and General Education Academic Classes

Although students with disabilities in general education academic classes are subject largely to the same grading criteria as the rest of the students in those classes, the criteria used for their peers in special education classes differ markedly in several respects. Students in special education classes are much more likely than their peers in general education classes to have their teachers consider their daily class work and the compilation of that work in a portfolio as very important. However, their homework is less likely to be considered very important.

Factors other than students' work also are considered differently by special and general education academic teachers when assessing the overall performance of their students with disabilities. Attendance, class participation, and students' attitudes and behavior all are more likely to be considered very important for students in special education than in general education academic classes.

Special Education Is Not a Uniform Experience

The preceding section compared the instruction of students with disabilities in academic subjects in special education and general education classes and highlighted both similarities and differences in students' experiences. However, the special education classroom experiences of about 40% of students with disabilities represented in NLTS2 were not reported for academic subject classes, such as math or language arts, but for classes that focus on study skills, basic academics, or life skills that support students' independence. Providing these kinds of classes is another reflection of the efforts of schools to meet the learning needs of individual students.

Study skills classes and those that focus on life skills differ from each other and from special education academic classes in important ways. For example, although all kinds of special education classes are smaller and have lower student-adult ratios than general education classes, nonacademic special education classes have lower student-adult ratios, on average, than academic special education classes, with life skills classes having the lowest ratio, largely because they average three adults in the classroom. Classes focused on life skills also are more likely than other special education classes to have both manual and oral communication in use.

As would be expected, what goes on in special education classes with different foci differs significantly. For example, study skills classes tend not to have a curriculum or to use whole-class instruction because classroom activities emphasize helping students with their homework or working on individual skill improvement needs. Consistent with those purposes, students are more likely to receive individual attention from the teacher and to work independently often and are less likely to take tests than their peers in special education academic classes. Frequent use of computers for Internet access and for such applications as word processing or working with spreadsheets also is more common in study skills classes than in special education classes with a different focus.

In contrast, students in classes that emphasize life skills are most likely to have an individualized curriculum. Students in these classes are less likely than those in other kinds of special education classes to work independently and more likely than their peers in academic classes to have individual instruction. Not surprisingly, it is more common for students in life skills classes to make frequent use of manipulable materials that enable them to practice independence skills. They also are the most likely to make frequent excursions outside the classroom for instructional purposes, including activities in both school- and community-based settings and field trips. Again, this range of classroom contexts and practices increases the potential for schools to meet the individual learning needs of students with disabilities.

The Role of Vocational Education Courses and Services

Students with disabilities are less likely to take vocational education now than previously, a trend that is offset by an increase in academic course taking (Wagner et al., forthcoming). Nonetheless, the school programs of a majority of students with disabilities in a given semester still include vocational courses, most of which are taken in general education classrooms. The prevalence of vocational course taking may reflect in part the fact that the primary transition goal of more than half of students with disabilities is to gain competitive employment, and 40% have a goal of postsecondary vocational training. Vocational courses are more likely to be occupationally specific than to focus on prevocational skills.

In a given semester, vocational course taking is augmented by participation in school-sponsored work experience programs for about one-fourth of students with disabilities. During their high school careers, students also receive a variety of other vocational services, particularly vocational skills assessments and career counseling. Participation in more specialized or intense programs or services, such as Tech Prep or entrepreneurship programs, internships, or job placement or job coaching services, is still relatively rare. However, vocational course taking and participation in work experience programs and all kinds of other vocational services are more common among juniors and seniors who are preparing to transition out of high school than among younger students.

Most students with disabilities in general education vocational courses are succeeding in class; as noted previously, six of seven students with disabilities are reported to keep up with their general education vocational classes, compared with three-fourths of their peers in general education academic classes. Thus, vocational education courses may provide an important opportunity for students with disabilities to experience rewards for learning and good classroom behavior, as well as helping them to meet transition goals.

Disability Variations in Instructional Programs and Experiences

As with most aspects of the lives of students with disabilities that are addressed in NLTS2, school programs and classroom experiences differ in many ways for students with different primary disabilities.

Disability Distinguishes Patterns of Courses and Settings

Not surprisingly, students with different primary disabilities have quite different patterns of course taking, and those courses involve different mixes of settings. For example, virtually all students with learning disabilities or speech or other health impairments take academic classes, and they are more likely than many groups to have those classes involve college prep subjects, including science and foreign language. Two-thirds or more of the courses they take are in general education classrooms. Students with hearing, visual, or orthopedic impairments have a very similar pattern of course taking, but they are less likely to have general education classes on their course schedules (although the majority still do).

In contrast to these groups, academic courses and general education settings are much less likely to figure prominently in the course schedules of students with mental retardation, autism, multiple disabilities, or deaf-blindness. Instead, they are more likely than many other groups to take vocational education courses, particularly those focused on prevocational skills, and the majority of their classes are in special education or community or other settings. They also are the most likely to have their special education experiences be reported for life skills rather than academic classes.

Disability Variations in Instructional Practices within Settings Are Less Pronounced, but Important

Although disability differences are important in distinguishing patterns of course taking and placements, they less markedly distinguish the experiences of students within them. For example, for the large majority of students with disabilities who take general education academic classes, those classes function at grade level and contain an average of 18 to 23 students. For the most part, students with different disabilities use the same kinds of instructional materials with similar frequency as each other and their classes as a whole. Whole-class instruction is the dominant mode for students in all categories, and instructional activities outside the classroom are relatively rare for all groups. Teachers of general education academic classes place the same importance on homework, daily class work, and students' behavior, attitudes, attendance, and class participation in grading students in all disability categories. Similarly, within a given kind of special education class (i.e., academic, study skills, or life skills), disability differences are few.

There are important differences, however, in some classroom experiences across disability categories. Curriculum is an area in which such differences occur. For example, within general education academic classes, students with speech impairments are the most likely to have access to the general education curriculum; half have an unmodified general education curriculum, including the 22% of students with that disability who are declassified from special education in about a 16-month period. In contrast, about one-fourth of those with traumatic brain injuries and one in seven students with multiple disabilities have an unmodified curriculum. They also are three or four times more likely to receive frequent individual instruction than their peers with speech impairments. In general education vocational classes, these students also are among the least likely to have experiences that are similar to the class as a whole. In special education classes, more than 60% of students with mental retardation, autism, or multiple disabilities have individualized curricula, compared with about one-fourth of students with learning disabilities or speech or other health impairments.

Teacher and student supports also differ across disability categories. For example, students with visual impairments are more likely than other categories of students to have general education teachers in both academic and vocational classes who receive special materials to use with them. They and their peers with hearing impairments also are the most likely to have physical adaptations to their general education academic classrooms. However, they are among the least likely to receive additional time to take tests or complete assignments or to have slower-paced instruction, consistent with the fact that their disabilities often do not have inherent cognitive implications.

In addition, students with different disabilities participate in class in different ways and at different levels. In general education academic classes, for example, students with mental retardation are the least likely to respond orally to questions, present in front of a group or the class, or work independently. In contrast, in special education classes, it is students with multiple disabilities who are least likely to participate.

Finally, teachers' expectations for their students and what they consider important in evaluating students' performance differ across categories. In general education academic classes, students with mental retardation are the least likely to have teachers who consider their placement in those classes to be "very appropriate" and are the least likely to be keeping up with other students in their classes. Although several grading criteria are applied uniformly to students with different disabilities, those with mental retardation are the least likely to have test results figure prominently in their grades. Similar differences are noted in general education vocational classes for both students with mental retardation and those with multiple disabilities.

The Emphasis on Vocational Services Differs across Categories

As mentioned above, vocational course taking is more common for students in some disability categories than others. Other vocational programs and services also differ across categories. For example, differences in participation in school-sponsored work experience programs mirror different course taking, in that students with mental retardation, autism, or multiple disabilities are much more likely to participate than students with learning disabilities or speech impairments, for example. They also are more likely to receive job readiness training. On the other hand, students with learning disabilities or speech impairments are more likely than those with autism or multiple disabilities to receive career skills assessments.

Demographic Variations in Instructional Programs and Experiences

It is not only students' primary disabilities that differentiate their school programs and classroom experiences; demographic factors, too, distinguish the experiences of some students with disabilities from those of others, but only on some dimensions. For example, general education academic teachers place similar importance on the factors they use to evaluate students' performance in their classes, and vocational education teachers have similar perceptions of students' placement and performance, regardless of demographic differences between students. Teachers of special education classes are particularly likely to overlook demographic differences; no aspects of special education classrooms or instructional experiences differ significantly for students with different demographic characteristics. However, some differences are noted.

Gender. Boys with disabilities are more likely than girls to be in classes that function at grade level, whereas girls are more likely to be in classes that perform below grade level. Perhaps this difference is related to the fact that girls with disabilities are more likely than boys to have teachers who report that their placement in general education academic classes is "very appropriate." In addition, boys with disabilities who take general education vocational courses are more likely than girls to be subject to the same discipline practices as other students in the class. Again, this difference may relate to the fact that boys are much more likely than girls to have been suspended or expelled at some time in their school careers.

Household income. Youth from less affluent households (i.e., with incomes of \$25,000 or less) have a pattern of experiences with school and professional services that differs from that of more affluent peers (with incomes of more than \$50,000) from an early age. Students from lower-income households first receive professional services for a disability later and first receive special education services at school later than youth from more affluent households. During their school careers, they are less likely to progress untroubled; they are much more likely than higher-income youth to be retained at grade level and to be suspended or expelled during their school careers. In secondary school, their school programs tend to be less challenging. For example, less affluent students with disabilities are less likely than students from wealthier households to take a foreign language course, and general education courses are a smaller proportion of the courses they take. In addition, students from lower-income households are more likely to receive slower-paced instruction in general education academic classes, to be granted more time to take tests, and to have tests read to them. However, they are less likely than peers from higher-income households to use classroom computers for word processing tasks and to work independently often. In general education vocational classes, exposure to an unmodified general education curriculum is less likely among students with disabilities from lower-income households than among upper-income peers. However, some forms of teacher support are more common for general education vocational teachers with students with disabilities from lower-income households.

Race/ethnicity. Many of the differences between students with disabilities with different racial/ethnic backgrounds are consistent with differences found for household income, because students of color are more likely to grow up in lower-income households. African-American youth begin to receive professional services for their disabilities and special education services later, on average, than white youth. In addition, African-American youth with disabilities are much more likely than either white or Hispanic students to be suspended or expelled during their

school careers. General education courses are a smaller proportion and special education courses a larger portion of the course schedules of African-American students with disabilities than those of white students.

In general education academic classes, African-American and Hispanic students with disabilities are less likely than white students to have white teachers and more likely to have teachers who have less experience working with students with disabilities, although their teachers still average 8 years of such experience. Across racial/ethnic groups, students are about equally likely to receive an unmodified curriculum and to experience various instructional groupings, and the materials they use in the classroom and the activities in which they participate outside of class also differ little, but African-American students with disabilities are less likely than their white or Hispanic peers to use textbooks frequently, and minority students are more likely than white students to be given additional time to complete assignments.

In general education vocational classes, white students with disabilities are more likely than African-American students to have an unmodified general education curriculum and to be subject to the same testing methods as other students in their general education vocational classes. Finally, white students are more likely than Hispanic students to be in classes with teachers who indicate they have smaller student loads or class sizes because there are students with disabilities in their classes.

Looking Ahead

These findings from NLTS2 provide a comprehensive view of the secondary school programs of students with disabilities and of their experiences in general education, special education, and vocational education classes. In doing so, NLTS2 helps inform important issues in special education policy and practice, such as the degree to which students with disabilities have access to the general education curriculum. Yet this multifaceted view of school programs and classroom experiences still focuses largely on a single semester in the entire secondary school careers of students with disabilities.

Future waves of data collection for NLTS2 will enable the value of its longitudinal design to be realized. For example, collection of transcripts as students with disabilities leave high school will enable a look at the full range of courses and credits earned by students with disabilities, to address such questions as, Are students with disabilities who intend to pursue postsecondary education taking courses that will prepare them for that future? Are students whose primary transition goal is employment taking courses consistent with that vision? Further, longitudinal data will enable NLTS2 to address the critical linkages between secondary school programs and later outcomes. For example, how does a school program that emphasizes general education academic course taking relate to the academic performance and school completion of students with those programs? Do various related and support services provided to students with disabilities with similar academic or social challenges help those students to succeed? What are the postschool experiences of students with disabilities whose school programs differed in content, setting, or supports? Findings related to these kinds of questions will be documented in future NLTS2 reports.

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Appendix A

NLTS2 SAMPLING, DATA COLLECTION, AND ANALYSIS PROCEDURES

This appendix describes several aspects of the NLTS2 methodology relevant to the Wave 1 data reported here, including:

- Sampling local education agencies (LEAs), schools, and students
- Data collection procedures and response rates
- Weighting the data
- Estimation and use of standard errors
- Unweighted and weighted sample sizes
- Calculating statistical significance
- Measurement issues.

NLTS2 Sample Overview

The NLTS2 sample was constructed in two stages. A stratified random sample of 3,634 LEAs was selected from the universe of approximately 12,000 LEAs that serve students receiving special education in at least one grade from 7th through 12th grades. These LEAs and 77 state-supported special schools that served primarily students with hearing and vision impairments and multiple disabilities were invited to participate in the study, with the intention of recruiting 497 LEAs and as many special schools as possible from which to select the target sample of about 12,000 students. The target LEA sample was reached; 501 LEAs and 38 special schools agreed to participate and provided rosters of students receiving special education in the designated age range, from which the student sample was selected.

The roster of all students in the NLTS2 age range who were receiving special education from each LEA¹ and special school was stratified by disability category. Students then were selected randomly from each disability category. Sampling fractions were calculated that would produce enough students in each category so that, in the final study year, findings will generalize to most categories individually with an acceptable level of precision, accounting for attrition and for response rates to the parent/youth interview. A total of 11,276 students were selected and eligible to participate in the NLTS2 parent interview/survey sample.

Details of the LEA and students samples are provided below.

¹ LEAs were instructed to include on the roster any student for which they were administratively responsible, even if the student was not educated within the LEA (e.g., attended school sponsored by an education cooperative or was sent by the LEA to a private school). Despite these instructions, some LEAs may have underreported students served outside the LEA.

The NLTS2 LEA Sample

Defining the Universe of LEAs

The NLTS2 sample includes only LEAs that have teachers, students, administrators, and operating schools—that is, “operating LEAs.” It excludes such units as supervisory unions; Bureau of Indian Affairs schools; public and private agencies (e.g., correctional facilities); LEAs from U.S. territories; and LEAs with 10 or fewer students in the NLTS2 age range, which would be unlikely to have students with disabilities.

The public school universe data file maintained by Quality Education Data (QED, 1999) was used to construct the sampling frame because it had more recent information than the alternative list maintained by the National Center for Education Statistics. Correcting for errors and duplications resulted in a master list of 12,435 LEAs that met the selection criteria. These comprised the NLTS2 LEA sampling frame.

Stratification

The NLTS2 LEA sample was stratified to increase the precision of estimates, to ensure that low-frequency types of LEAs (e.g., large urban districts) were adequately represented in the sample, to improve comparisons with the findings of other research, and to make NLTS2 responsive to concerns voiced in policy debate (e.g., differential effects of federal policies in particular regions, LEAs of different sizes). Three stratifying variables were used:

Region. This variable captures essential political differences, as well as subtle differences in the organization of schools, the economic conditions under which they operate, and the character of public concerns. The regional classification variable selected was used by the Department of Commerce, the Bureau of Economic Analysis, and the National Assessment of Educational Progress (categories are Northeast, Southeast, Midwest, and West).

LEA size (student enrollment). LEAs vary considerably by size, the most useful available measure of which is student enrollment. A host of organizational and contextual variables are associated with size that exert considerable potential influence over the operations and effects of special education and related programs. In addition, total enrollment serves as an initial proxy for the number of students receiving special education served by an LEA. The QED database provides enrollment data from which LEAs were sorted into four categories serving approximately equal numbers of students:

- **Very large** (estimated² enrollment greater than 14,931 in grades 7 through 12)
- **Large** (estimated enrollment from 4,661 to 14,931 in grades 7 through 12)
- **Medium** (estimated enrollment from 1,622 to 4,660 in grades 7 through 12)
- **Small** (estimated enrollment from 11 to 1,621 in grades 7 through 12).

LEA/community wealth. As a measure of district wealth, the Orshansky index (the proportion of the student population living below the federal definition of poverty, Employment

² Enrollment in grades 7 through 12 was estimated by dividing the total enrollment in all grade levels served by an LEA by the number of grade levels to estimate an enrollment per grade level. This was multiplied by 6 to estimate the enrollment in grades 7 through 12.

Policies Institute, 2002) is a well-accepted measure. The distribution of Orshansky index scores was organized into four categories of LEA/community wealth, each containing approximately 25% of the student population in grades 7 through 12:

- **High** (0% to 13% Orshansky)
- **Medium** (14% to 24% Orshansky)
- **Low** (25% to 43% Orshansky)
- **Very low** (more than 43% Orshansky).

The three variables generate a 64-cell grid into which the universe of LEAs was arrayed.

LEA Sample Size

On the basis of an analysis of LEAs' estimated enrollment across LEA size, and estimated sampling fractions for each disability category, 497 LEAs (and as many state-sponsored special schools as would participate) was considered sufficient to generate the student sample. Taking into account the rate at which LEAs were expected to refuse to participate, a sample of 3,635 LEAs was invited to participate, from which 497 participating LEAs might be recruited. A total of 501 LEAs actually provided students for the sample, 101% of the target number needed and 14% of those invited. Analyses of the region, size, and wealth of the LEA sample, both weighted and unweighted, confirmed that that the weighted LEA sample closely resembled the LEA universe with respect to those variables.

In addition to ensuring that the LEA sample matched the universe of LEAs on variables used in sampling, it was important to ascertain whether the stratified random sampling approach resulted in skewed distributions on relevant variables not included in the stratification scheme. Several analyses were conducted.

First, three variables from the QED database were chosen to compare the "fit" between the first-stage sample and the population: the LEA's racial/ethnic distribution of students, the proportion who attended college, and the urban/rural status of the LEA. This analysis revealed that the sample of LEAs somewhat underrepresenting African American students and college-bound students, and overrepresenting Hispanic students and LEAs in rural areas. Thus, in addition to accounting for stratification variables, LEA weights were calculated to achieve a distribution on the urbanicity and racial/ethnic distributions of students that matched the universe.

To determine whether the resulting weights, when applied to the participating NLTS2 LEAs, accurately represented the universe of LEAs serving the specified grade levels, data collected from the universe of LEAs by the U.S. Department of Education's Office of Civil Rights (OCR) and additional items from QED were compared for the weighted NLTS2 LEA sample and the universe. Finally, the NLTS2 participating LEAs and a sample of 1,000 LEAs that represented the universe of LEAs were surveyed to assess a variety of policies and practices known to vary among LEAs and to be relevant to secondary-school-age youth with disabilities. Analyses of both the extant databases and the LEA survey data confirm that the weighted NLTS2 LEA sample accurately represents the universe of LEAs.

The NLTS2 Student Sample

Determining the size of the NLTS2 student sample took into account the duration of the study, desired levels of precision, and assumptions regarding attrition and response rates. Analyses determined that approximately three students would need to be sampled for each student who would have a parent/youth interview in Wave 5 of NLTS2 data collection.

The NLTS2 sample design called for findings to be generalizable to students receiving special education as a whole and for the 12 special education disability categories currently in use and reported in this document. Standard errors were to be no more than 3.6%, except for the low-incidence categories of traumatic brain injury and deaf-blindness. Thus, by sampling 1,250 students per disability category (with the two exceptions noted) at the outset, 402 students per category were expected to have a parent or youth interview in year 9. Assuming a 50% sampling efficiency (which is likely to be exceeded for most disability categories), 402 students would achieve a standard error of estimate of slightly less than 3.6%. All students with traumatic brain injury or with deaf-blindness in participating LEAs and special schools were selected. Students were disproportionately sampled by age to assure that there would be an adequate number of students who were age 24 or older at the conclusion of the study. Among the eligible students, 40.2% will be 24 or older as of the final interview.

LEAs and special schools were contacted to obtain their agreement to participate in the study and request rosters of students receiving special education who were ages 13 through 16 on December 1, 2000 and in at least 7th grade.³ Requests for rosters specified that they contain the names and addresses of students receiving special education under the jurisdiction of the LEA, the disability category of each student, and the students' birthdates or ages. Some LEAs would provide only identification numbers for students, along with the corresponding birthdates and disability categories. When students were sampled in these LEAs, identification numbers of selected students were provided to the LEA, along with materials to mail to their parents/guardians (without revealing their identity).

After estimating the number of students receiving special education in the NLTS2 age range, the appropriate fraction of students in each category was selected randomly from each LEA and special school. In cases in which more than one child in a family was included on a roster, only one was eligible to be selected. LEAs and special schools were notified of the students selected and contact information for their parents/guardians was requested.

Data Sources

Data reported here are drawn from a survey of parents of NLTS2 youth, conducted by telephone and mail, and mail surveys of staff in schools attended by NLTS2 sample members.

Parent Interview/Survey

The NLTS2 conceptual framework suggests that a youth's nonschool experiences, such as extracurricular activities and friendships; historical information, such as age when disability was

³ Students who were designated as being in ungraded programs also were sampled if they met the age criteria.

first identified; household characteristics, such as socioeconomic status; and a family's level and type of involvement in school-related areas are crucial to student outcomes. Parents/guardians are the most knowledgeable about these aspects of students' lives. They also are important sources of information on outcomes across domains. Thus, parents/guardians of NLTS2 sample members were interviewed by telephone or surveyed by mail in 2001, as part of Wave 1 data collection.

Matches of names, addresses, and telephone numbers of NLTS2 parents with existing national locator databases were conducted to maximize the completeness and accuracy of contact information and subsequent response rates. A student was required to have a working telephone number and an accurate address to be eligible for the parent interview sample.

Letters were sent to parents to notify them that their child had been selected for NLTS2 and that an interviewer would be attempting to contact them by telephone. The letter included a toll-free telephone number for parents to call to be interviewed if they did not have a telephone number where they could be reached reliably or if they wanted to make an appointment for the interview at a specific time.

Computer-assisted telephone interviewing (CATI) was used for parent interviews, which were conducted between mid-May and late September 2001. Ninety-five percent of interviews were conducted in English and 5% in Spanish.

All parents who could not be reached by telephone were mailed a self-administered questionnaire in a survey period that extended from September through December 2001. The questionnaire contained a subset of key items from the telephone interview. Exhibit A-1 reports the responses to the telephone and mail surveys.

Overall, 91% of respondents reported that they were parents of sample members (biological, adoptive, or step), and 1% were foster parents. Six percent were relatives other than parents, 2% were nonrelative legal guardians, and fewer than 1% reported other relationships to sample members.

**Exhibit A-1
RESPONSE RATES FOR NLTS2
PARENT/GUARDIAN TELEPHONE
INTERVIEW AND MAIL SURVEY**

	Number	Percentage
Total eligible sample	11,276	100.0
Respondents		
Completed telephone interview	8,672	76.9
Partial telephone interview completed	300	2.7
Complete mail questionnaire	258	2.3
Total respondents	9230	81.9
Nonrespondents		
Refused	738	6.5
Language barrier	138	1.2
No response	1,170	10.4
Total nonrespondents	2,046	18.1

School Data Collection

Data sources for the findings reported here also include for each NLTS2 student, (a) a mail survey of a teacher of a general education academic class, if he or she took such a class, (b) a mail survey of a school staff person who was most knowledgeable about the student's overall school program, and (c) a mail survey of a school staff person who could describe the school's characteristics. The NLTS2 conceptual framework holds that classroom context, curriculum, instruction, accommodations, and assessment are crucial to student outcomes and are most amenable to intervention. Mail surveys collected information about aspects of the classroom experiences of students with disabilities in general education academic classes and in vocational education and special education settings. Further, students' school experiences extend beyond the classroom, so that

related services, IEP goals, participation in district/state assessments all have a place in students' experiences and can relate to student progress. These data are best provided by school staff who are most knowledgeable about the student's classroom experiences and school programs.

The first step in the school data collection process was to identify the school attended by NLTS2 students during the 2001-02 school year. School attendance data had been collected as part of the parent interview during the summer and fall of 2001. Parent responses relating to schools were coded (e.g., address, phone) using the Quality Education Data (QED) database. For identified schools not in the QED database or for students for whom there was no parent interview, school district records collected for sampling were used to identify students' schools. Names of students thought to attend each school were sent to schools for verification using the School Enrollment form. In addition to verification of enrollment, this form requested that schools provide the name of a school staff member who would be willing to coordinate the distribution of school surveys for NLTS2 students attending each school. Participation agreements were signed by coordinators, who received reimbursement for their efforts at varying levels, depending on the number of NLTS2 students in the school.

In March 2002, packets were sent to each coordinator and to school principals in schools that did not name a coordinator, which included a general education academic teacher questionnaire for each sample member (with instructions to return the questionnaire if a student did not have such a class), a school program questionnaire for each sample member, and a single school characteristics survey for the school. A second packet was sent in April 2002. Additional mailings were conducted to individual teachers in May 2002. By the end of the survey period, general education academic teacher surveys were completed for 2,822 students, or 60% of eligible sample members, and completed school program surveys were returned for 6,038 students, or 59% of eligible sample members. School information was collected for 7,545

students, either from the school characteristics survey (a response rate of 60%) or publicly available databases.

Weighting Wave 1 Data

The percentages and means reported in the data tables throughout this report are estimates of the true values for the population of youth with disabilities in the NLTS2 age range. The estimates are calculated from responses of parents and school staff of NLTS2 sample members. The response for each sample member is weighted to represent the number of youth in his or her disability category in the kind of LEA (i.e., region, size, and wealth) or special school from which he or she was selected.

Exhibit A-2 illustrates the concept of sample weighting and its effect on percentages or means that are calculated for students with disabilities as a group. In this example, 10 students are included in a sample, 1 from each of 10 disability groups, and each has a hypothetical value regarding whether that student participated in organized group activities outside of school (1 for yes, 0 for no). Six students participated in such activities, which would result in an unweighted value of 60% participating. However, this would not accurately represent the national population of students with disabilities because many more students are classified as having a learning disability than orthopedic or other health impairments, for example. Therefore, in calculating a population estimate, weights in the example are applied that correspond to the proportion of students in the population that are from each disability category (actual NLTS2 weights account for disability category and several aspects of the districts from which they were chosen). The sample weights for this example appear in column C. Using these weights, the weighted population estimate is 87%. The percentages in all NLTS2 tables are similarly weighted population estimates, whereas the sample sizes are the actual number of cases on which the weighted estimates are based (similar to the 10 cases in Exhibit A-2).

Exhibit A-2
EXAMPLE OF WEIGHTED PERCENTAGE CALCULATION

Disability Category	A Number in Sample	B Participated in Group Activities	C Example Weight for Category	D Weighted Value for Category
Learning disability	1	1	5.5	5.5
Speech/language impairment	1	1	2.2	2.2
Mental retardation	1	1	1.1	1.1
Emotional disturbance	1	0	.9	0
Hearing impairment	1	1	.2	.2
Visual impairment	1	1	.1	.1
Orthopedic impairment	1	0	.1	0
Other health impairment	1	1	.6	.6
Autism	1	0	.2	0
Multiple disabilities	1	0	.1	0
TOTAL	10	6	10	8.7
	Unweighted sample percentage = 60% (Column B total divided by Column A total)		Weighted population estimate = 87% (Column D total divided by Column C total)	

The students in LEAs and state schools with data for each survey were weighted to represent the universe of students in LEAs and state schools using the following process:

- For each of the 64 LEA sampling cells, an LEA student sampling weight was computed. This weight is the ratio of the number of students in participating LEAs in that cell divided by the number of students in all LEAs in that cell in the universe of LEAs. The weight represents the number of students in the universe who are represented by each student in the participating LEAs. For example, if participating LEAs in a particular cell served 4,000 students and the universe of LEAs in the cell served 400,000 students, then the LEA student sampling weight would be 100.
- For each of the 64 LEA cells, the number of students in each disability category was estimated by multiplying the number of students with that disability on the rosters of participating LEAs in a cell by the adjusted LEA student sampling weight for that cell. For example, if 350 students with learning disabilities were served by LEAs in a cell, and the LEA student sampling weight for that cell was 100 (that is, each student in the sample of participating LEAs in that cell represented 100 students in the universe), there would be an estimated 35,000 students with learning disabilities in that cell in the universe.
- For the state schools, the number of students in each disability category was estimated by multiplying the number of students with that disability on the rosters by the inverse of the proportion of state schools that submitted rosters.
- The initial student sampling weights were adjusted by disability category so that the sum of the weights (that is, the initial student sampling weights multiplied by the number of students with completed interviews) was equal to the number of students in the geographical and wealth cells of each size strata. The adjustments were typically small and essentially served as a nonresponse adjustment. However, the adjustments could become substantial when there were relatively few interviewees (as occurred in the small and medium strata for the lowest-incidence disabilities) because in these cases, there might not be any interviewees in some cells, and it was necessary to adjust the weights of other interviewees to compensate. Two constraints were imposed on the adjustments: (1) within each size stratum, the cells' weights could not vary from the average weight by more than a factor of 2, and (2) the average weight within each size strata could not be larger than 4 times the overall average weight. These constraints substantially increased the efficiency of the sample at the cost of introducing a small amount of weighting bias (discussed below).
- In a final step, the weights were adjusted so that they summed to the number of students in each disability category, as reported to OSEP by the states for the 2000-2001 school year (Office of Special Education Programs, 2001).

The imposition of constraints on the adjusted weights increased sampling efficiency at the cost of introducing a small amount of bias. The average efficiency increased from 51.7% to 67.4%; the largest increases in sampling efficiency occurred for youth with emotional disturbances (from 44.4% to 81.0%) and for those with multiple disabilities (from 32.1% to 56.8%). Biases introduced by the imposition of constraints on the student weights generally were very small. The largest bias in size distribution was for youth with visual impairments (decreasing from 17.1% in the smallest size stratum to 11.6%) and those with autism (decreasing

from 21.3% in the smallest size stratum to 17.5%). All other changes in the size distribution were 1.5% or less, and the average absolute change was only 0.4%. The largest bias in wealth distribution was for those with multiple disabilities (from 22.2% in wealth stratum 3 to 16.6%, and from 18.3% in wealth stratum 4 to 22.0%). All other changes were 2.1% or less, and the average absolute change was only 0.6%. All biases in regional distribution were 2.1% or less, and the average absolute change was only 0.5%. Considering the increase in sampling efficiency, these biases are considered acceptable.

The reason for the reduction in the proportion of students represented in the cells mentioned above is that there were relatively few students with interview/survey data in those cells. For example, small LEAs had only 21 students with visual impairments with data, requiring that they represent an estimated 1,701 students with visual impairments from small LEAs. The weighting program determined that the average weight required (i.e., 81.0) violated the constraints, and therefore reduced these weights to a more reasonable value (i.e., 56.2).

Estimating Standard Errors

Each estimate reported in the data tables is accompanied by a standard error. A standard error acknowledges that any population estimate that is calculated from a sample will only approximate the true value for the population. The true population value will fall within the range demarcated by the estimate, plus or minus the standard error 95% of the time. For example, if the cohort 2 estimate for youth's current employment rate is 29%, with a standard error of 1.8 (as reported in Exhibit 5-7), one can be 95% confident that the true current employment rate for the population is between 27.2% and 30.8%.

Because the NLTS2 sample is both stratified and clustered, calculating standard errors by formula is not straightforward. Standard errors for means and proportions were estimated using pseudo-replication, a procedure that is widely used by the U.S. Census Bureau and other federal agencies involved in fielding complex surveys. To that end, a set of weights was developed for each of 32 balanced half-replicate subsamples. Each half-replicate involved selecting half of the total set of LEAs that provided contact information using a partial factorial balanced design (resulting in about half of the LEAs being selected within each stratum) and then weighting that half to represent the entire universe. The half-replicates were used to estimate the variance of a sample mean by: 1) calculating the mean of the variable of interest on the full sample and each half-sample using the appropriate weights; 2) calculate the squares of the deviations of the half-sample estimate from the full sample estimate; and 3) adding the squared deviations and divide by (n-1) where n is the number of half-replicates.

Although the procedure of pseudo-replication is less unwieldy than development of formulas for calculating standard errors, it is not easily implemented using the Statistical Analysis System (SAS), the analysis program used for NLTS2, and it is computationally expensive. In the past, it was possible to develop straightforward estimates of standard errors using the effective sample size.

When respondents are independent and identically distributed, the effective sample size for a weighted sample of N respondents can be approximated as

$$\text{Neff} = N \times (E^2[W] / (E^2[W] + V[W]))$$

where Neff is the effective sample size, $E^2[W]$ is the square of the arithmetic average of the weights and $V[W]$ is the variance of the weights. For a variable X, the standard error of estimate can typically be approximated by $\sqrt{V[X]/\text{Neff}}$, where $V[X]$ is the weighted variance of X.

NLTS2 respondents are not independent of each other because they are clustered in LEAs, and the intra-cluster correlation is not zero. However, the intra-cluster correlation traditionally has been quite small, so that the formula for the effective sample size shown above has worked well. To be conservative, however, the initial estimate was multiplied by a “safety factor” that assures that the standard error of estimate is not underestimated.

To determine the adequacy of fit of the variance estimate based on the effective sample size and to estimate the required safety factor, 24 questions with 95 categorical and 2 continuous responses were selected. Standard errors of estimates were calculated for each response category and the mean response to each question for each disability group using both pseudo-replication and the formula involving effective sample size. A safety factor of 1.25 resulted in the effective sample size standard error estimate underestimating the pseudo-replicate standard error estimate for 92% of the categorical responses and 89% of the mean responses. Because the pseudo-replicate estimates of standard error are themselves estimates of the true standard error, and are therefore subject to sampling variability, this was considered an adequate margin of safety. All standard errors in Wave 1 are 3.0% or less, except for categories of deaf-blindness, traumatic brain injury, and visual impairments, where sample sizes are small. For these disability categories, the standard errors were at most 4.9%, 4.9%, and 3.5% for dichotomous variables.

Unweighted and Weighted Sample Sizes

As indicated above, standard errors accompany all estimates reported in the descriptive data tables. How close an estimate comes to a true population value is influenced by the size of the sample on which the estimate is based. Larger samples yield estimates with smaller standard errors, indicating that those estimates are closer to true population values than estimates with larger standard errors based on smaller samples.

The actual, or “unweighted,” sample sizes for each variable reported in the descriptive data tables are included in Appendix B. However, some readers may be interested in determining the number of youth in the nation represented by a particular estimate (e.g., if 22% of youth are employed at a given time, how many youth in the country are employed?). A first step in determining these “weighted” sample sizes involves multiplying the percentage estimate by the actual number of youth in the nation represented by that estimate (see example below). However, 95% of the time, the true population value is likely to diverge from that estimate by as much as the amount of the standard error. Therefore, it is more appropriate to use the standard error to calculate a range in the number of youth represented by an estimate, rather than relying on the single value resulting from multiplying the estimate by the size of the population it represents.

Consider the example depicted in Exhibit A-3. NLTS2 findings indicate that 25.1% of youth with learning disabilities are currently employed (see Exhibit 6-15). The standard error accompanying that estimate is 2.1, indicating that the true current employment rate for the population is likely to fall between 23% and 27.2%. There are 1,130,539 youth with learning disabilities in the NLTS2 age range. Multiplying the percentages by this population size yields a single-point estimate of 283,765 and a range of 260,024 to 307,507, within which the actual population size will fall, with 95% confidence.

**Exhibit A-3
EXAMPLE OF CALCULATING WEIGHTED SAMPLE SIZES**

A	B	C	D	E	F
Percentage Estimate	Standard Error	Range around Estimate (Column A Plus or Minus Column B)	Population Size	Single-point Weighted Population Affected (Column A x Column D)	Range in Weighted Population Affected (Column C x Column D)
25.1	2.1	23.0 to 27.2	1,130,539	283,765	260,024 to 307,507

Because percentage estimates are provided not only for the full sample of youth with disabilities, but also for youth who differ in primary disability category, readers must have the actual population size for each of these subgroups to calculate weighted sample sizes for some estimates. These population sizes are presented in Exhibit A-4.

**Exhibit A-4
POPULATION SIZES OF GROUPS REPRESENTED BY NLTS2**

Groups	Number
All youth with disabilities	1,838,848
Disability category:	
Learning disability	1,130,539
Speech/language impairment	76,590
Mental retardation	213,552
Emotional disturbance	203,937
Hearing impairment	22,001
Visual impairment	8,013
Orthopedic impairment	21,006
Other health impairment	98,197
Autism	14,637
Traumatic brain injury	6,379
Multiple disabilities	34,865
Deaf-blindness	340

Calculating Significance Levels

In general, references in the text of the report to differences between groups highlight only differences that are statistically significant with at least 95% confidence, (denoted as $p < .05$). Beyond the differences highlighted in the text, readers may want to compare percentages or means for specific subgroups to determine, for example, whether the difference in the percentage of students who are male between students with learning disabilities and those with hearing impairments is greater than would be expected to occur by chance. To calculate whether the difference between percentages is statistically significant, the squared difference between the two percentages of interest is divided by the sum of the two squared standard errors. If this product is larger than 3.84, the difference is statistically significant at the .05 level—i.e., it would occur by chance fewer than 5 times in 100. Presented as a formula, a difference in percentages is statistically significant at the .05 level if:

$$\frac{(P_1 - P_2)^2}{SE_1^2 + SE_2^2} > 1.96^2$$

where P_1 and SE_1 are the first percentage and its standard error and P_2 and SE_2 are the second percentage and the standard error. If the product of this calculation is 6.63 to 10.79, the significance level is .01, products of 10.8 or greater are significant at the .001 level.

Measurement and Reporting Issues

The chapters in this report provide information on specific variables included in analyses. However, several general points about NLTS2 measures that are used repeatedly in analyses should be clear to readers as they consider the findings reported here.

Categorizing students by primary disability. Information about the nature of students' disabilities came from rosters of all students in the NLTS2 age range receiving special education services in the 2000-01 school year under the auspices of participating LEAs and state-supported special schools. In data tables included in this report, students are assigned to a disability category on the basis of the primary disability designated by the student's school or district. Although there are federal guidelines in making category assignments (Exhibit A-5), criteria and methods for assigning students to categories vary from state to state and even between districts within states. Thus, there is the potential for substantial variation in the nature and severity of disabilities included in categories (see for example, MacMillan & Siperstein, 2002). Therefore, NLTS2 data should not be interpreted as describing students who truly had a particular disability, but rather as describing students who were categorized as having that primary disability by their school or district. Therefore, it is appropriate to conclude that descriptive data are nationally generalizable to youth in the NLTS2 age range who were classified as having a particular primary disability in the 2000-01 school year.

Exhibit A-5
DEFINITIONS OF DISABILITIES⁴

Autism: A developmental disability significantly affecting verbal and nonverbal communication and social interaction, generally evident before age 3, that adversely affects a child's educational performance. Other characteristics often associated with autism are engagement in repetitive activities and stereotyped movements, resistance to environmental change or change in daily routines, and unusual responses to sensory experiences. The term does not apply if a child's educational performance is adversely affected primarily because the child has a serious emotional disturbance as defined below.

Deafness: A hearing impairment so severe that the child cannot understand what is being said even with a hearing aid.

Deaf-Blindness: A combination of hearing and visual impairments causing such severe communication, developmental, and educational problems that the child cannot be accommodated in either a program specifically for the deaf or a program specifically for the blind.

Hearing impairment: An impairment in hearing, whether permanent or fluctuating, that adversely affects a child's educational performance but that is not included under the definition of deafness as listed above.

Mental retardation: Significantly subaverage general intellectual functioning existing concurrently with deficits in adaptive behavior and manifested during the developmental period that adversely affects a child's educational performance.

Multiple disabilities: A combination of impairments (such as mental retardation-blindness, or mental retardation-physical disabilities) that causes such severe educational problems that the child cannot be accommodated in a special education program solely for one of the impairments. The term does not include deaf-blindness.

Orthopedic impairment: A severe orthopedic impairment that adversely affects educational performance. The term includes impairments such as amputation, absence of a limb, cerebral palsy, poliomyelitis, and bone tuberculosis.

Other health impairment: Having limited strength, vitality, or alertness due to chronic or acute health problems such as a heart condition, rheumatic fever, asthma, hemophilia, and leukemia, which adversely affect educational performance.⁵

⁴ From ERIC Digests (1998).

⁵ OSEP guidelines indicate that "children with ADD, where ADD is a chronic or acute health problem resulting in limited alertness, may be considered disabled under Part B solely on the basis of this disorder under the 'other health impaired' category in situations where special education and related services are needed because of the ADD" (Davila, 1991).

Exhibit A-5
DEFINITIONS OF DISABILITIES (Concluded)

Emotional Disturbance:⁶ A condition exhibiting one or more of the following characteristics, displayed over a long period of time and to a marked degree that adversely affects a child's educational performance:

- An inability to learn that cannot be explained by intellectual, sensory, or health factors
- An inability to build or maintain satisfactory interpersonal relationships with peers or teachers
- Inappropriate types of behavior or feelings under normal circumstances
- A general pervasive mood of unhappiness or depression
- A tendency to develop physical symptoms or fears associated with personal or school problems.

This term includes schizophrenia, but does not include students who are socially maladjusted, unless they have a serious emotional disturbance.

Specific Learning Disability: A disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, that may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations. This term includes such conditions as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. This term does not include children who have learning problems that are primarily the result of visual, hearing, or motor disabilities; mental retardation; or environmental, cultural or economic disadvantage.

Speech or language impairment: A communication disorder such as stuttering, impaired articulation, language impairment, or a voice impairment that adversely affects a child's educational performance.

Traumatic brain injury: An acquired injury to the brain caused by an external physical force, resulting in total or partial functional disability or psychosocial impairment, or both, that adversely affects a child's educational performance. The term applies to open or closed head injuries resulting in impairments in one or more areas, such as cognition; language; memory; attention; reasoning; abstract thinking; judgment; problem-solving; sensory, perceptual and motor abilities; psychosocial behavior; physical functions; information processing; and speech. The term does not apply to brain injuries that are congenital or degenerative, or brain injuries induced by birth trauma. As with autism, traumatic brain injury (TBI) was added as a separate category of disability in 1990 under P.L. 101-476.

Visual impairment, including blindness: An impairment in vision that, even with correction, adversely affects a child's educational performance. The term includes both partial sight and blindness.

The exception to reliance on school or district category assignment involves students with deaf-blindness. District variation in assigning students with both hearing and visual impairments to the category of deaf-blindness results in many students with those dual disabilities being assigned to other primary disability categories, most often hearing impairment, visual impairment, and multiple disabilities. Because of these classification differences, national estimates suggest that there were 3,196 students with deaf-blindness who were ages 12 to 17 in 1999 (National Technical Assistance Center, 1999), whereas the federal child count indicated that 681 were classified with deaf-blindness as their primary disability (Office of Special Education Programs, 2001).

⁶ P.L. 105-17, the Individuals with Disabilities Education Act Amendments of 1997, changed "serious emotional disturbance" to "emotional disturbance." The change has no substantive or legal significance. It is intended strictly to eliminate any negative connotation of the term "serious."

To describe the characteristics and experiences of the larger body of youth with deaf-blindness more accurately and precisely, students who were reported by parents or by schools or school districts⁷ as having both a hearing and a visual impairment were assigned to the deaf-blindness category for purposes of NLTS2 reporting, regardless of the primary disability category assigned by the school or school district. This increased the number of youth with deaf-blindness for whom parent data were collected from 24 who were categorized by their school or district as having deaf-blindness as a primary disability to 166. The number of students reassigned to the deaf-blindness category and their original designation of primary disability are indicated in Exhibit A-6.

Exhibit A-6 ORIGINAL PRIMARY DISABILITY CATEGORY OF YOUTH ASSIGNED TO DEAF-BLINDNESS CATEGORY FOR NLTS2 REPORTING PURPOSES	
Original Primary Disability Category	Number
Deaf-blindness	24
Visual impairment	46
Hearing impairment	43
Multiple disabilities	31
Orthopedic impairment	7
Mental retardation	6
Traumatic brain injury	4
Other health impairment	3
Speech/language impairment	1
Autism	1
Total	166

Demographic characteristics. Findings in this report are provided for youth who differ in age, gender, household income, and race/ethnicity when differences are statistically significant. For the large majority of youth, age, gender, and race/ethnicity were determined from data provided by students' schools or districts. For youth for whom information was not provided by schools or districts, data for these variables were taken from the parent interview/survey. Classifying the household income of students' households relied exclusively on information provided during the parent interview/survey.

Comparisons with the general population of students. In cases in which survey databases for the general population of youth are publicly available (e.g., the National

Household Education Survey), comparison statistics have been calculated from them for youth who match in age the 14- through 18-year-old NLTS youth included in this report. However, many of the comparisons have been made using published data. For many of these comparisons, differences in samples (e.g., ages of students) or measurement (e.g., question wording on surveys) reduce the direct comparability of NLTS2 and general population data. Where these limitations affect the comparisons, they are pointed out in the text and the implications for the comparisons are noted.

Reporting statistics. Statistics are not reported for groups with fewer than 35 members. Statistics with a decimal of .5 are rounded to the nearest even whole number.

⁷ Some special schools and school districts reported secondary disabilities for students. So, for example, a student with visual impairment as his or her primary disability category also could have been reported as having a hearing impairment as a secondary disability.

APPENDIX A REFERENCES

Davila, R. R. (1991). *Clarification of policy to address the needs of children with attention deficit disorders within general and/or special education*. Memorandum to Chief State School Officers. Washington, DC: U.S. Department of Education, Office of Special Education and Rehabilitative Services.

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National Technical Assistance Center. (1999). *National Deaf-Blind Child Count Summary*. Monmouth OR: Teaching Research Division, Western Oregon University.

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Appendix B

DEMOGRAPHIC CHARACTERISTICS OF YOUTH WITH DISABILITIES AND THEIR HOUSEHOLDS

Understanding the characteristics of youth with disabilities is a crucial foundation for serving them well. Youth bring to their educational experiences a complex history and background that is shaped by demographic characteristics, such as age, gender, and ethnicity; by family background and circumstances, such as parents' education and household income; and by the nature of the students' disabilities. These factors help structure the involvement of youth at home, at school, and in the community, as well as the ways in which they, their parents, school staff, and other service personnel work together toward positive results for youth. Thus, individual and household characteristics are essential elements of the context for many major life experiences of youth, including those at school, and understanding that context will inform how these experiences are interpreted.

A brief summary of selected individual characteristics and household risk factors of youth with disabilities is presented below.¹

Individual Characteristics

For youth, age is a major determinant of development that influences their competence and independence. Yet, there is quite a bit of variation in maturation among teens, resulting in sizable differences in abilities and activities between youth of the same age. Gender is a defining human characteristic, and during adolescence, when young people are exploring their sexuality and gender roles, it can shape their experiences and choices in powerful ways. In addition, racial/ethnic and language background can be associated with rich cultural traditions, patterns of relationships within families and communities, and strong group identification, which can generate important differences in values, perspectives, expectations, and practices.

The importance of understanding the demographic makeup of the population of youth with disabilities is crucial in interpreting NLTS2 findings for the group as a whole and for youth with particular disability classifications. It also is a foundation for interpreting comparisons between youth with disabilities and those in the general population.

Below, the primary disability classifications among youth with disabilities are reported, and other traits that are important to their experiences are described. These are presented for youth with disabilities as a whole, compared with the general population when possible, and then described as they vary for youth with different primary disability classifications.

¹ A more detailed discussion of these characteristics can be found in Levine, Wagner, & Marder (2003) and Levine, Marder, Wagner, & Cardoso (2003).

Primary Disabilities of Youth

In the 2000-01 school year, students who received special education constituted 13% of all 13- to 16-year-olds who were enrolled in school.² Exhibit B-1 depicts the primary disability classifications assigned by schools to those students (Office of Special Education Programs, 2002). Overall, 62% of students receiving special education in this age group were classified as having a learning disability. Youth with mental retardation and emotional disturbances comprised 12% and 11% of students, respectively. Another 5% of youth were classified as having other health impairments, and 4% were identified as having speech impairments. The seven remaining disability categories each comprised 1% or less of the total child count or, taken together, about 5% of youth with disabilities. Thus, when findings are presented for youth with disabilities in this age group as a whole, they represent largely the experiences of those with learning disabilities.

Primary Disability Classification	Federal Child Count ³		NLTS2 Weighted
	Number	Percentage	Percentage
Specific learning disability	1,130,539	61.8	62.0
Speech/language impairment	76,590	4.2	4.0
Mental retardation	213,552	11.7	12.2
Emotional disturbance	203,937	11.2	11.4
Hearing impairment	22,001	1.2	1.3
Visual impairment	8,013	.4	.5
Orthopedic impairment	21,006	1.2	1.2
Other health impairment	98,197	5.4	4.6
Autism	14,637	.8	.7
Traumatic brain injury	6,379	.2	.3
Multiple disabilities	34,865	1.2	1.8
Deaf-blindness	340	<.1	.2
TOTAL	1,838,848	100.0	100.0

It is important to note that, although students receiving special education often are referred to as “students with disabilities,” the population of those with disabilities is larger than those receiving special education. For example, parents of 6% of the general population of children under age 18 report that their children have a visual impairment, 13% have a hearing impairment, and almost 16% report that their children have a speech impairment (National Center for Health Statistics, 2001). Yet, the number of students who receive special education services primarily for those

impairments combined constitute fewer than 3% of all students under age 18 (Office of Special Education Programs, 2002). This difference points up the fact that many children and youth experience some degree of disability that does not require specially designed instruction.

Exhibit B-1 demonstrates that the weighted distribution of NLTS2 youth very closely approximates that of youth with disabilities in the nation. Thus, weighted findings from NLTS2 provide an accurate picture of the characteristics, experiences, and achievements of youth with the range of disabilities highlighted in Exhibit B-1.

² General student enrollment is available by grade level rather than age. Grades 7 through 10 were used in calculating the general student enrollment (National Center for Education Statistics, 2001).

³ Data are for youth ages 13 to 16 who were receiving services under IDEA, Part B, in the 2000-01 school year in the 50 states and Puerto Rico (Office of Special Education Programs, 2002).

Age

Although the youth included in NLTS2 were ages 13 through 16 when they were selected, by the time school data were collected in the 2001-02 school year, 17% of youth were 14 and more than one-third (38%) were 17 or 18 (Exhibit B-2). Therefore, findings are reported here for youth who are 14 through 18, with an average age of almost 16.

Each successive age cohort includes youth who were identified as eligible for special education services at that age, as well as those identified earlier who still are receiving special education. However, each age cohort does not include students who left school or special education at earlier ages. Thus, the disability mix shifts across the age cohorts because some disabilities are more prevalent among younger students whereas others do not emerge until later, and because school-leaving disproportionately affects some disability categories.

Youth in each disability category are distributed across the age groups in a similar pattern, with one exception. Almost one-fourth (24%) of youth with speech impairments are age 14, and a similar percentage are 17 or 18 making them significantly younger, on average, than those in almost every other disability category ($p < .05$ to $p < .001$).

Exhibit B-2
YOUTH'S AGE ON MARCH 15, 2002, BY DISABILITY CATEGORY

Age	All Youth	Learning Disability	Speech/ Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Autism	Traumatic Brain Injury	Multiple Disabilities	Deaf-Blindness
14	17.2 (1.5)	18.5 (2.4)	23.5 (2.7)	12.9 (2.2)	15.9 (2.9)	14.4 (2.7)	15.6 (3.4)	9.1 (1.9)	14.2 (2.1)	17.1 (2.5)	9.6 (3.4)	13.9 (2.6)	14.4 (4.4)
15	21.7 (1.7)	20.9 (2.5)	26.5 (2.9)	22.0 (2.7)	24.7 (3.4)	22.4 (3.2)	17.7 (3.6)	24.5 (2.9)	22.5 (2.6)	21.4 (2.7)	22.8 (4.9)	16.7 (2.7)	24.8 (5.4)
16	23.5 (1.7)	23.9 (2.6)	23.9 (2.8)	23.3 (2.7)	20.2 (3.2)	19.8 (3.1)	24.0 (4.0)	27.4 (3.0)	25.9 (2.7)	25.3 (2.9)	21.6 (4.8)	23.0 (3.1)	23.8 (5.3)
17 or 18	37.6 (2.0)	36.7 (3.0)	26.1 (2.8)	41.9 (3.2)	39.3 (3.9)	43.3 (3.8)	42.7 (4.6)	39.0 (3.3)	37.5 (3.0)	36.2 (3.2)	46.0 (5.8)	46.4 (3.7)	37.0 (6.0)
Mean	15.9 (.1)	15.9 (.1)	15.6 (.1)	16.0 (.1)	15.9 (.1)	16.0 (.1)	16.1 (.1)	16.0 (.1)	15.9 (.1)	15.9 (.1)	16.1 (.1)	16.1 (.1)	15.9 (.1)

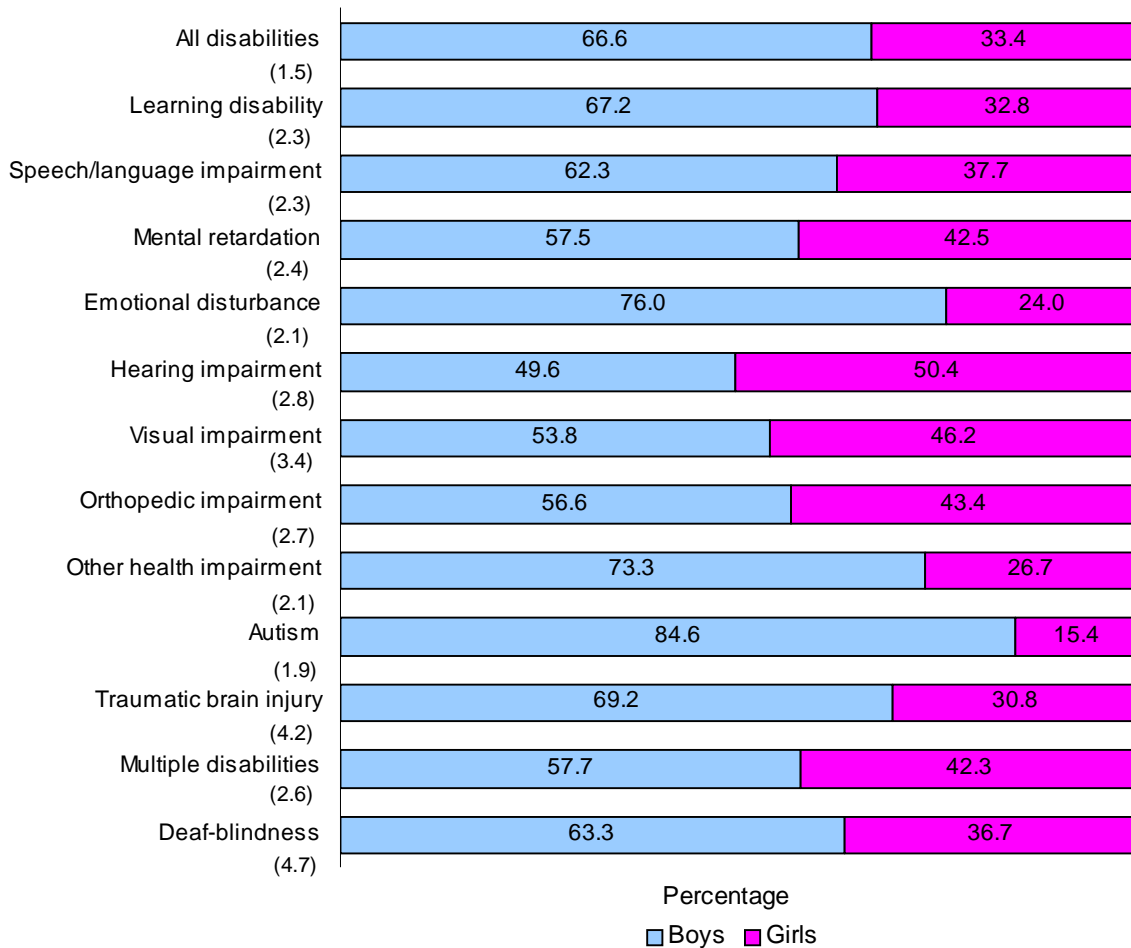
Source: NLTS2 Wave 1 parent interviews.
Standard errors are in parentheses.

Gender

Two-thirds of youth with disabilities in the NLTS2 age range are boys (Exhibit B-3). The 2:1 ratio among children with disabilities has been found among infants and toddlers (Hebbeler et al., 2001), as well as among elementary and middle school students (Marder & Wagner, 2002).

Boys make up between 58% and 77% of youth in most disability categories, but among youth with autism, 85% are boys. In contrast, among youth with hearing or visual impairments, the percentages come close to the distribution of boys in the general population (50% and 54%). Thus, youth with different disability classifications can be expected to differ in their experiences and achievements because of their gender composition, as well as their disability differences.

**Exhibit B-3
STUDENT GENDER, BY DISABILITY CATEGORY**



Source: NLTS2 Wave 1 parent interview s.
 Standard errors are in parentheses.

Race/Ethnicity

Although white students make up approximately the same percentage of youth with disabilities as they do of the general population, differences are apparent between the two populations for youth of color, particularly African American youth (Exhibit B-4). They constitute almost 21% of youth with disabilities, compared with 17% of youth in the general population ($p < .01$).⁴ This finding is consistent with research that has demonstrated that disability is most prevalent among African Americans across the age range (Bradsher, 1995). Small differences between youth with disabilities and youth in the general population in other racial/ethnic groups are not statistically significant.

⁴ National Center for Education Statistics (2002).

Exhibit B-4
RACIAL/ETHNIC BACKGROUNDS OF YOUTH, BY DISABILITY CATEGORY

Percentage whose race/ethnicity is:	All Youth	Learning Disability	Speech/ Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Autism	Traumatic Brain Injury	Multiple Disabilities	Deaf-Blindness
White	62.1 (1.5)	62.3 (2.3)	64.7 (2.3)	54.8 (2.4)	61.4 (2.4)	59.9 (2.8)	62.1 (3.4)	64.3 (2.6)	76.6 (2.0)	62.0 (2.6)	68.5 (4.2)	65.6 (2.5)	62.4 (4.7)
African American	20.7 (1.3)	18.4 (1.9)	17.7 (1.8)	33.3 (2.3)	25.0 (2.2)	17.5 (2.1)	20.1 (2.8)	15.5 (2.0)	13.3 (1.6)	23.7 (2.3)	17.9 (3.5)	18.4 (2.1)	14.7 (3.4)
Hispanic	14.1 (1.1)	16.2 (1.8)	14.2 (1.7)	9.6 (1.4)	10.2 (1.5)	17.3 (2.1)	14.0 (2.4)	16.4 (2.0)	7.7 (1.2)	8.9 (1.5)	10.0 (2.7)	11.6 (1.7)	19.5 (3.9)
Asian/Pacific Islander	1.3 (.4)	1.0 (.5)	2.1 (.7)	1.2 (.5)	1.4 (.6)	4.1 (1.1)	3.0 (1.2)	3.2 (1.0)	1.2 (.5)	4.0 (1.0)	2.3 (1.4)	1.8 (.7)	2.9 (1.6)
American Indian/ Alaska Native	1.2 (.3)	1.3 (.5)	.9 (.5)	.5 (.3)	1.6 (.6)	1.2 (.6)	.3 (.4)	.4 (.3)	.7 (.4)	.7 (.4)	1.2 (1.0)	2.3 (.8)	.0 (.0)

Source: NLTS2 Wave 1 parent interviews.
Standard errors are in parentheses.

The disproportionality of African Americans among youth with disabilities is concentrated in a few categories. Whereas the racial/ethnic composition of youth with learning disabilities; speech, hearing, or orthopedic impairments; or multiple disabilities resembles the general population, African Americans comprise significantly larger percentages of youth with mental retardation (33%) and emotional disturbances (25%). The percentage of Hispanic youth is particularly small among those with other health impairments (8%) or autism (9%). These racial/ethnic differences between disability categories may contribute to differences in the experiences of youth, apart from their differences in disability.

Household Risk Factors

A child's household is his or her first educational setting. At home, children form their first emotional attachments, achieve their early developmental milestones, and acquire the foundation for their subsequent growth and learning. During adolescence, the family can be the context within which a youth wrestles with his or her desire for independence and separation, and the need to stay connected to family and home. Thus, as children grow up, what they need from their families and others who share their households may change, but children and youth continue to have their values, expectations, and preferences shaped by their experiences at home.

This section examines several aspects of households that can be risk factors in children's development: living with other than two parents, having a poorly educated or unemployed head of household, or living in a low-income household (see for example, Duncan & Brooks-Gunn, 1997). These factors are described for youth with disabilities as a whole compared with the general population, and then for youth who differ in their primary disability classification.

**Exhibit B-5
HOUSEHOLD CHARACTERISTICS OF YOUTH
WITH DISABILITIES AND YOUTH
IN THE GENERAL POPULATION**

	Youth with Disabilities	Youth in the General Population
Percentage living:		
With two parents	61.4 (1.6)	73.8 ^a (1.0)
With one parent	31.1 (1.5)	22.5 ^a (1.0)
With relative(s)	5.3 (.7)	3.2 (.4)
With a legal guardian/not a relative	1.1 (.3)	^b
In foster care	1.0 (.3)	^b
In another arrangement	.3 (.1)	.5 (.2)
Percentage with:		
Head of household who is not a high school graduate	21.0 (1.3)	10.0 ^c (.6)
Unemployed head of household	17.0 (1.2)	11.0 ^c (.6)
Percentage with annual household income of:		
\$25,000 or less	36.6 (1.6)	19.7 ^d
\$25,001 to \$50,000	30.0 (1.5)	25.5
More than \$50,000	33.4 (1.5)	54.6
Percentage in poverty	23.5 (1.4)	16.3 ^e

Source: NLTS2 Wave 1 parent interviews.

^a Computed using data for 13- to 17-year-olds from the National Longitudinal Study of Adolescent Health, 1999.

^b Youth living with a legal guardian, in foster care, or in residential school or institution are included in the "other arrangement" category.

^c Computed using data for 13- to 17-year-olds from the National Household Education Survey, 1999.

^d Data are for youth 12 through 17 years old. U.S. Census Bureau (2002a).

^e U.S. Census Bureau (2002b).

Standard errors are in parentheses.

Household Risk Factors for Youth with Disabilities and the General Population

Like youth in the general population, a majority of youth with disabilities (61%) live in households with two parents (either biological, step, or adoptive parents, Exhibit B-5). This is substantially below the 74% of youth in the general population who do so ($p < .001$). Another 31% live with one parent. Thus, 92% of youth with disabilities live with a parent. Five percent of youth live with other adult family members in households that do not include one of their own parents, and 1% live with a legal guardian who is not a family member. One percent of youth with disabilities live in foster care; few live at a residential school or institution.⁵

The heads of household of youth with disabilities tend to have lower levels of education than parents of the general population of youth. In the general population, 10% of heads of household are not high school graduates, whereas more than twice as many heads of household of youth with disabilities have not graduated from high school ($p < .001$). Similarly, heads of households of youth with disabilities are more likely to be unemployed (17%) than those in the general population (11%, $p < .001$).

Consistent with lower education levels and rates of employment, youth with disabilities are more likely than others to be poor. Almost one-fourth of them live in poverty, compared with about 16% of youth in the general population ($p < .001$). Poverty has been shown to have negative impacts on children and youth with disabilities and their

families in multiple domains, including health, productivity, physical environment, emotional well-being, and family interaction (Park, Turnbull, & Turnbull, 2002).

⁵ These include residential or boarding schools, hospitals, mental health facilities, group homes, and correctional facilities.

Disability Differences in Household Risk Factors

The prevalence of risk factors among households of youth with different disabilities shows quite a wide range (Exhibit B-6). Most striking, youth with mental retardation are more likely than others to experience high levels of each kind of risk, as are youth with emotional disturbances to a somewhat lesser degree. These youth are the least likely to live with two parents and among the most likely to live in foster care. They also are the most likely to come from households in poverty and those with heads of household who are not employed.

In contrast, youth with other health impairments have the lowest rates of some kinds of risk factors. For example, they are among the least likely to be living in poverty or in a household where the head of household is unemployed, and most likely to be living with two parents. In fact, they are somewhat less likely to experience some of these risk factors than youth in the general population. Youth with physical and sensory impairments are in the mid-range among the disability categories on many risk factors.

Exhibit B-6
HOUSEHOLD CHARACTERISTICS, BY DISABILITY CATEGORY

	Learning Disability	Speech/ Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Autism	Traumatic Brain Injury	Multiple Disabilities	Deaf-Blindness
Living:												
With both parents	63.3 (2.4)	69.7 (2.3)	54.8 (2.6)	48.7 (2.6)	65.8 (2.8)	61.0 (3.5)	66.9 (2.7)	71.9 (2.2)	67.5 (2.5)	61.2 (4.5)	63.6 (2.6)	60.3 (5.2)
With one parent	30.6 (2.3)	24.8 (2.2)	34.5 (2.5)	38.1 (2.6)	26.0 (2.6)	30.7 (3.3)	27.4 (2.5)	22.2 (2.0)	27.0 (2.4)	30.3 (4.2)	24.9 (2.4)	35.7 (5.1)
With relative(s)	5.0 (1.1)	3.5 (.9)	6.2 (1.3)	7.9 (1.4)	5.3 (1.3)	5.8 (1.7)	3.6 (1.1)	2.8 (.8)	2.3 (.8)	5.7 (2.1)	4.3 (1.1)	3.4 (1.9)
With a legal guardian (not a relative)	.6 (.4)	.6 (.4)	2.3 (.8)	2.2 (.8)	2.5 (.9)	2.0 (1.0)	1.1 (.6)	1.0 (.5)	1.1 (.6)	1.6 (1.2)	2.3 (.8)	.0 (.0)
In foster care	.5 (.4)	1.2 (.5)	1.8 (.7)	2.8 (.9)	.3 (.3)	.1 (.2)	.5 (.4)	1.7 (.6)	1.7 (.7)	.9 (.9)	2.6 (.9)	.0 (.0)
In another arrangement	.1 (.2)	.1 (.2)	.4 (.3)	.4 (.4)	.2 (.4)	.3 (.4)	.4 (.5)	.3 (.4)	.4 (.4)	.2 (.6)	2.3 (.9)	.7 (.9)
With head of household who is:												
Not a high school graduate	20.3 (2.0)	19.7 (2.0)	32.3 (2.4)	19.5 (2.1)	18.3 (2.3)	15.1 (2.6)	14.9 (2.0)	13.3 (1.6)	11.2 (1.7)	15.1 (3.4)	14.2 (1.9)	18.4 (3.9)
Not employed	14.0 (1.7)	14.8 (1.8)	28.2 (2.3)	24.0 (2.3)	14.2 (2.1)	17.5 (2.8)	16.3 (2.1)	12.5 (1.6)	16.0 (2.0)	17.0 (3.6)	20.1 (2.2)	19.4 (4.0)
In poverty	22.1 (2.1)	19.2 (2.1)	41.4 (2.6)	29.8 (2.4)	20.2 (2.4)	19.7 (2.9)	20.4 (2.4)	15.0 (1.8)	15.0 (1.8)	18.8 (3.6)	24.0 (2.5)	24.3 (4.7)

Source: NLTS2 Wave 1 parent interviews.
Standard errors are in parentheses.

Summary

Youth with disabilities constitute 13% of all 13- to 16-year-olds who were enrolled in school in the 2000-01 school year, when NLTS2 sample members were selected. Although they include students with 12 different primary disability classifications, 85% are classified as having either learning disabilities, mental retardation, or emotional disturbances as their primary disabilities.

NLTS2 youth were 14 through 18 years old when school surveys were conducted. Youth as a group are almost 16, on average, although youth with speech/language impairments are somewhat younger, as a group.

Almost two-thirds of youth with disabilities are boys. Boys are little more than half of youth with sensory impairments, but they are about three-fourths of youth with emotional disturbances and other health impairments and more than 80% of youth with autism.

African American youth are a larger proportion of youth with disabilities relative to the general population. This difference between the two populations of youth is consistent with patterns found among infants and toddlers with disabilities or developmental delays, as well as among elementary- and middle-school-age students receiving special education. However, disproportionality is concentrated among youth in a limited number of disability categories. African Americans make up particularly large proportions of those with mental retardation or emotional disturbances. The percentage of Hispanic youth is particularly small among those with other health impairments or autism.

The households of youth with disabilities also differ significantly from the general population in the prevalence of several risk factors for poor outcomes. Of particular note is the significantly higher rate of low-income households among youth with disabilities, probably a reflection, in part, of the overall lower levels of education and employment among heads of households of youth with disabilities. Several risk factors are particularly prominent among youth with mental retardation and emotional disturbances.

Awareness of these important differences between youth with disabilities and those in the general population, and of the highlighted differences between youth with different primary disability classifications, is an important foundation for understanding the experiences described in this report.

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Appendix C

UNWEIGHTED SAMPLE SIZES

Appendix C

UNWEIGHTED SAMPLE SIZES

Exhibit C-1

UNWEIGHTED SAMPLE SIZES FOR EXHIBITS FOR ALL STUDENTS WITH DISABILITIES: EXHIBITS 2-1 TO 2-3, 3-1 TO 3-13, 4-1 TO 4-4, 4-6, 4-7, 5-1, 5-4, 5-9, 6-1, 6-17, 6-19 TO 6-21, 6-28, 7-1, 7-3, 7-5, 7-6, AND B-1 TO B-5

Exhibit Number/Contents	Sample Size	Exhibit Number/Contents	Sample Size
Exhibit 2-1		Exhibit 3-7	
First receipt of service	8,499	Placement options	4,779
First receipt of special education	8,377	General education class size	4,777
Exhibit 2-2	8,711	Resource room class size	4,514
Exhibit 2-3		Self-contained class size	4,390
Skipped a grade	8,845	Exhibit 3-8	4,777
Grade skipped	8,829	Exhibit 3-9	
Repeated a grade	8,768	Standardized test policy	5,689
Grade repeated	8,634	Gives exemptions	5,236
Suspended or expelled	8,840	Test exemption policy	4,602
Exhibit 3-1	7,391	Test score reporting policy	4,657
Exhibit 3-2	6,933	Exhibit 3-10	
Exhibit 3-3	6,853	Have graduation requirements	4,569
Exhibit 3-4		Type of requirements	4,424
Number of nonteaching staff	4,259	Exhibit 3-11	
Speech pathologists	4,387	Graduation rate, general education students	3,434
Nursing/medical personnel	4,803	Graduation rate, students with disabilities	3,620
School psychologists	4,597	Rate of giving special diplomas	3,108
Social workers	4,520	Rate of taking college entrance examinations	4,430
Guidance counselors	5,382	College enrollment rate	4,384
Other related service personnel	4,259	Exhibit 3-12	5,446
Administrators	5,481	Exhibit 3-13	
Librarians/media personnel	5,375	Expulsions	5,033
Reading specialists	4,608	In-school suspensions	4,810
Instructional aides	5,379	Out-of-school suspensions	5,089
Itinerant or special-subject staff	4,295	Incidents of violence	4,878
Exhibit 3-5	5,655	Arrests at school/school events	4,725
Exhibit 3-6		Exhibit 4-1	5,529
In library/media center	5,456	Exhibit 4-2	5,548
Internet access in library/media center	5,242	Exhibit 4-3	
In general education classrooms	4,656	Any academics	5,563
Internet access in general education classrooms	4,327	Language arts	5,487
In special education classrooms	5,571	Mathematics	5,472
Internet access in special education classes	5,143	Science	5,354
In vocational education classrooms	4,591	Social studies	5,370
Internet access in vocational education classes	4,285	Foreign language	5,593
Times to use computers	5,653	Academics as percentage of courses	5,563

Exhibit C-1
UNWEIGHTED SAMPLE SIZES FOR EXHIBITS FOR ALL STUDENTS WITH DISABILITIES:
EXHIBITS 2-1 TO 2-3, 3-1 TO 3-13, 4-1 TO 4-4, 4-6, 4-7, 5-1, 5-4, 5-9, 6-1, 6-17, 6-19 TO 6-21,
6-28, 7-1, 7-3, 7-5, 7-6, AND B-1 TO B-5 (Concluded)

Exhibit Number/Contents	Sample Size	Exhibit Number/Contents	Sample Size
Exhibit 4-4	5,593	Exhibit 6-19 to 6-21	2,562
Exhibit 4-6		Exhibit 6-28	
Any academics	5,512	Appropriate placement	2,564
Language arts	5,124	Expected to keep up	2,107
Mathematics	4,980	Do keep up	2,550
Science	4,252	Exhibit 7-1	
Social studies	4,417	Curriculum	1,570
Foreign language	1,042	Instructional groupings	1,546
Any vocational education	3,411	Instructional materials	1,563
Prevocational education	2,403	Class activities	1,564
Occupationally specific vocational education	2,954	Testing methods	1,546
Any other nonacademics	4,984	Discipline	1,579
Fine arts	2,982	Grading criteria	1,556
Physical education	4,096	Exhibit 7-3	
Life skills/social skills	2,607	Exhibit 7-5	
Study skills	1,981	Appropriate placement	1,595
Exhibit 4-7	5,563	Expected to keep up	1,595
Exhibit 5-1		Do keep up	1,575
Academic focus	2,568	Exhibit 7-6	
Special education focus	3,316	Any work experience	5,512
Vocational setting	2,734	On-campus work experience	5,011
Exhibit 5-4	2,556	Off-campus work experience	4,901
Exhibit 5-9	2,556	Vocational services	4,136
Teacher race/ethnicity	2,527	Exhibit B-1	11,276
Fully credentialed	2,554	Exhibit B-2	9,225
Years teaching experience	2,574	Exhibit B-3	9,230
Years teaching students with disabilities	2,563	Exhibit B-4	9,229
Training is adequate	2,558	Exhibit B-5	
Exhibit 6-1	2,565	Living arrangements	8,429
Exhibit 6-17	2,395	Head of household education	8,461
		Head of household employment	8,446
		Income	8,333
		Poverty	8,026

Exhibit C-2
UNWEIGHTED SAMPLE SIZES FOR EXHIBITS FOR DISABILITY CATEGORIES:
EXHIBITS 2-4, 4-8 TO 4-11, 5-2, 5-3, 5-5,5-8, 6-8 TO 6-10, 6-13, 6-16, 6-18, 6-24 TO 6-27,
7-2, 7-4, 7-5, 7-7, 8-6 TO 8-10, 8-12, 8-13, B-2 TO B-4, AND B-6

	Learning Dis-ability	Speech/ Language Impair-ment	Mental Retar-dation	Emo-tional Distur-bance	Hearing Impair-ment	Visual Impair-ment	Ortho-pedic Impair-ment	Other Health Impair-ment	Autism	Trau-matic Brain Injury	Multiple Disabili-ties	Deaf-Blind-ness
Exhibit 2-4												
First receive service	801	776	756	750	810	649	858	865	874	354	863	143
First receive special education services	817	776	773	732	789	627	845	861	834	353	834	136
Received early intervention services	66	107	230	66	482	402	598	149	458	64	554	110
Received preschool special education services	218	322	409	255	668	556	725	379	777	133	718	126
Number of schools attended	847	825	800	765	815	655	875	882	876	360	864	147
Repeated a grade	852	828	807	789	816	652	878	892	878	359	870	147
Suspended/expelled	851	833	818	793	821	660	882	892	887	366	889	148
Exhibit 4-8												
Any academics	545	484	549	352	573	470	591	588	576	219	517	99
Language arts	533	477	542	349	572	463	578	580	566	214	519	99
Mathematics	533	475	541	349	565	460	581	580	565	209	519	99
Science	532	464	528	335	549	444	574	576	548	206	504	98
Social studies	535	473	522	341	562	450	574	566	546	206	501	97
Foreign language	548	486	554	353	574	470	597	590	577	220	529	100
Academics as percentage of courses	545	484	549	352	573	470	591	588	576	219	517	99
Exhibit 4-9												
Any vocational education	545	484	549	352	573	470	591	588	576	219	517	99
Kind of vocational education	548	486	554	353	574	470	597	590	577	220	529	100
Vocational education as percentage of courses	545	484	549	352	573	470	591	588	576	219	517	99
Exhibit 4-10												
Any other nonacademics	545	484	549	352	573	470	591	588	576	219	517	99
Nonacademic subjects	548	486	554	353	574	470	597	590	577	220	529	100
Other nonacademics as percentage of courses	545	484	549	352	573	470	591	588	576	219	517	99
Exhibit 4-11	545	484	549	352	573	470	591	588	576	219	517	99
Exhibit 5-2	348	221	479	238	189	104	359	371	421	145	403	40
Exhibit 5-3	311	236	384	169	169	99	293	308	329	114	294	--
Exhibit 5-5	376	361	142	194	221	154	320	409	154	105	96	--
Exhibit 5-8												
General education	372	360	138	194	218	151	313	406	154	103	94	--
Special education	347	226	481	239	188	104	357	371	434	148	409	40
Vocational education	294	225	385	165	370	275	280	291	345	114	330	68
Students receiving special education services	363	334	137	188	209	139	305	394	148	102	94	--
Exhibit 6-8	375	365	142	193	225	153	320	411	156	105	96	--
Exhibit 6-9												
Whole-class instruction	374	366	143	194	225	154	321	414	154	105	98	--
Small-group instruction	365	357	142	190	218	153	319	407	153	104	98	--
Individual instruction from adult other than teacher	361	353	140	188	217	152	315	398	150	101	97	--

--Too few cases to report separately.

Exhibit C-2
UNWEIGHTED SAMPLE SIZES FOR EXHIBITS FOR DISABILITY CATEGORIES:
EXHIBITS 2-4, 4-8 TO 4-11, 5-2, 5-3, 5-5,5-8, 6-8 TO 6-10, 6-13, 6-16, 6-18, 6-24 TO 6-27,
7-2, 7-4, 7-5, 7-7, 8-6 TO 8-10, 8-12, 8-13, B-2 TO B-4, AND B-6 (Continued)

	Learning Dis-ability	Speech/ Language Impair-ment	Mental Retar-dation	Emo-tional Distur-bance	Hearing Impair-ment	Visual Impair-ment	Ortho-pedic Impair-ment	Other Health Impai-ment	Autism	Trauma-tic Brain Injury	Multiple Disabili-ties	Deaf-Blind-ness
Lab equipment	366	356	143	190	221	151	318	407	151	102	96	--
Field trips	367	355	136	190	218	149	322	409	154	103	96	--
Community-based instruction	366	356	138	191	218	149	317	409	153	104	95	--
Exhibit 6-10	374	366	140	192	223	154	319	412	156	105	98	--
Exhibit 6-13												
Take tests or quizzes												
Student with a disability	373	363	142	191	222	152	320	409	152	105	98	--
Whole class	376	367	143	192	224	154	320	412	154	105	98	--
Respond to questions												
Student with a disability	372	363	143	191	223	154	324	409	150	105	97	--
Whole class	376	366	143	192	225	154	323	414	156	105	97	--
Present to class or group												
Student with a disability	365	364	143	189	223	153	321	404	152	105	95	--
Whole class	371	364	142	194	222	153	321	410	155	105	97	--
Work independently												
Student with a disability	370	364	143	190	223	151	323	407	152	105	97	--
Whole class	374	364	142	192	224	153	321	412	154	103	97	--
Work with peer or group												
Student with a disability	372	361	141	191	219	151	324	402	153	105	98	--
Whole class	376	365	142	192	223	154	321	409	154	105	96	--
Exhibit 6-16												
Test results												
Student with a disability	367	361	142	193	221	149	320	414	156	103	97	--
Whole class	374	363	141	193	225	154	324	415	156	105	98	--
Special projects/activities												
Student with a disability	366	357	139	194	223	148	318	410	153	105	94	--
Whole class	370	362	142	194	225	151	323	415	153	105	97	--
Performance relative to rest of the class												
Student with a disability	368	358	139	192	220	149	320	409	153	103	96	--
Whole class	371	359	141	192	224	152	319	410	153	103	96	--
Exhibit 6-18	354	327	129	179	204	139	304	393	151	96	95	--
Exhibit 6-24 to 6-26	375	358	141	191	224	153	323	415	157	103	97	--
Exhibit 6-27												
Appropriate placement	373	365	140	191	225	152	322	413	156	105	97	--
Expected to keep up	293	290	115	154	192	132	269	336	135	86	82	--
Do keep up	371	365	136	187	223	150	324	412	157	104	96	--
Exhibit 7-2												
Curriculum	244	196	161	115	126	73	178	227	79	68	86	--
Instructional groupings	243	198	158	113	126	73	171	220	73	67	87	--
Instructional materials	242	198	160	114	127	73	178	221	78	68	87	--
Class activities	244	198	160	115	127	71	175	222	79	69	87	--
Testing methods	242	193	152	115	126	72	178	221	78	67	85	--
Discipline	248	195	163	111	128	76	177	227	82	68	86	--
Grading criteria	241	196	154	114	126	72	178	223	79	68	88	--

--Too few cases to report separately.

Exhibit C-2
UNWEIGHTED SAMPLE SIZES FOR EXHIBITS FOR DISABILITY CATEGORIES:
EXHIBITS 2-4, 4-8 TO 4-11, 5-2, 5-3, 5-5,5-8, 6-8 TO 6-10, 6-13, 6-16, 6-18, 6-24 TO 6-27,
7-2, 7-4, 7-5, 7-7, 8-6 TO 8-10, 8-12, 8-13, B-2 TO B-4, AND B-6 (Continued)

	Learning Disability	Speech/ Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Autism	Traumatic Brain Injury	Multiple Disabilities	Deaf-Blindness
Exhibit 7-4	190	137	154	91	112	64	157	197	82	62	81	--
Exhibit 7-5												
Appropriate placement	248	198	163	114	129	75	181	229	81	71	88	--
Expected to keep up	250	199	162	115	129	76	180	227	82	68	89	--
Do keep up	242	194	162	115	129	76	178	225	82	67	87	--
Exhibit 7-7												
On-campus work experience program	491	406	503	315	518	422	540	512	530	202	487	--
Off-campus work experience program	484	396	486	313	515	410	527	504	520	193	467	--
Vocational services	417	335	417	269	441	353	432	453	412	162	382	--
Exhibit 8-6	346	224	479	240	188	106	361	370	430	145	405	--
Exhibit 8-7												
Whole-class instruction	340	221	476	236	181	103	354	363	425	148	401	--
Small-group instruction	342	223	480	237	181	104	358	366	430	147	407	--
Individual instruction from a teacher	345	221	479	238	186	106	359	365	429	146	407	--
Individual instruction from an adult other than the teacher	339	215	472	234	183	104	353	363	420	146	400	--
Exhibit 8-8												
Textbooks/workbooks	347	229	479	240	187	107	363	370	429	148	407	--
Supplemental materials	343	226	486	239	186	106	360	370	427	148	405	--
Lap equipment	341	224	479	237	184	105	359	366	427	147	403	--
Screen-based media	344	226	479	238	185	107	361	368	431	149	406	--
Life skills materials	341	224	484	238	187	106	360	368	428	149	408	--
Exhibit 8-9												
Word process, etc.	346	228	481	240	185	104	365	372	427	144	407	--
Internet access	348	229	480	240	185	106	364	369	427	148	406	--
Skills practice	345	224	479	239	186	103	362	371	430	147	404	--
Exhibit 8-10												
School-based activities	344	226	479	237	184	105	355	362	426	143	407	--
Field trips	339	223	480	235	185	103	354	360	424	144	407	--
Community-based activities	340	222	479	233	181	103	351	358	428	144	402	--
Exhibit 8-12												
Works independently	347	227	483	239	187	106	362	373	431	148	409	--
Responds to questions	344	225	484	237	179	106	358	370	434	147	407	--
Takes tests or quizzes	346	223	484	237	184	105	358	372	430	147	408	--
Participates in discussions	341	225	485	238	183	106	359	367	428	148	407	--
Works with partner/group	342	225	480	234	184	104	360	366	429	147	410	--
Presents to class/group	342	224	480	233	181	101	358	367	426	147	405	--

--Too few cases to report separately.

Exhibit C-2
UNWEIGHTED SAMPLE SIZES FOR EXHIBITS FOR DISABILITY CATEGORIES:
EXHIBITS 2-4, 4-8 TO 4-11, 5-2, 5-3, 5-5,5-8, 6-8 TO 6-10, 6-13, 6-16, 6-18, 6-24 TO 6-27,
7-2, 7-4, 7-5, 7-7, 8-6 TO 8-10, 8-12, 8-13, B-2 TO B-4, AND B-6 (Concluded)

	Learning Disability	Speech/ Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Autism	Traumatic Brain Injury	Multiple Disabilities	Deaf-Blindness
Exhibit 8-13												
Daily class work	336	221	465	232	179	105	342	361	405	145	370	--
Homework	311	208	398	216	165	97	307	338	311	139	281	--
Test results	317	207	431	215	172	91	316	347	326	139	288	--
Special projects/activities	306	195	420	203	168	90	306	326	343	135	320	--
Student portfolio	222	148	355	164	127	77	245	246	315	105	281	--
Attitude and behavior	344	226	482	236	186	104	360	368	431	145	403	--
Class participation	343	224	483	234	187	103	359	365	428	146	401	--
Attendance	342	227	483	235	186	101	362	367	427	148	400	--
Performance relative to a set standard	334	222	477	232	183	104	356	362	427	146	402	--
Performance relative to rest of the class	336	221	476	234	184	102	351	364	427	147	395	--
Exhibit B-2	883	871	864	836	865	685	913	923	921	374	923	167
Exhibit B-3	884	871	965	936	965	686	914	923	922	374	923	167
Exhibit B-4	884	871	865	836	865	685	914	923	922	374	923	167
Exhibit B-6												
Living arrangements	804	797	772	754	764	618	849	858	873	354	872	138
Head of household education	806	798	779	738	773	619	853	875	881	339	846	154
Head of household employment	807	797	777	737	773	618	849	873	879	339	844	153
Poverty	775	736	734	733	751	601	796	827	807	341	792	133

--Too few cases to report separately.

Exhibit C-3
UNWEIGHTED SAMPLE SIZES FOR EXHIBITS BY HOUSEHOLD INCOME AND RACE/ETHNICITY:
EXHIBITS 2-5, 4-12, AND 6-27

	Income			Race/Ethnicity		
	\$25,000 or Less	\$25,001 to \$50,000	More than \$50,000	White	African American	Hispanic
Exhibit 2-5						
First professional services	2,663	2,332	2,736	5,208	1,688	1,113
First special education services	2,645	2,315	2,714	5,125	1,651	1,116
Repeated a grade	2,773	2,409	2,800	5,323	1,780	1,154
Suspended or expelled	2,797	2,423	2,817	5,363	1,794	1,164
Exhibit 4-12						
Foreign language	1,439	1,416	1,618	3,666	1,113	596
Academics as percentage of courses	1,426	1,408	1,612	3,642	1,108	591
Settings	1,426	1,408	1,612	3,642	1,108	591
Exhibit 6-27	531	644	881	NA	NA	NA

Exhibit C-4
UNWEIGHTED SAMPLE SIZES FOR EXHIBITS BY GRADE LEVEL:
EXHIBITS 4-5, 5-4, 6-7, 6-23, AND 7-6

	7th or 8th	9th	10th	11th or 12th
Exhibit 4-5				
Mathematics	745	1,137	1,392	1,706
Science	738	1,121	1,362	1,662
Social studies	742	1,110	1,357	1,690
Any vocational education	749	1,153	1,408	1,761
Occupationally specific vocational education	750	1,158	1,413	1,767
Vocational education as percentage of courses	749	1,153	1,408	1,761
Other nonacademics	749	1,153	1,408	1,761
Fine arts	750	1,158	1,413	1,767
Physical education	750	1,158	1,413	1,767
Other nonacademics as percentage of courses	749	1,153	1,408	1,761
Exhibit 5-4	395	584	662	850
Exhibit 6-7				
Small-group instruction	390	572	657	837
Individual instruction from an adult other than the teacher	385	570	644	824
Textbooks, etc.	387	579	648	833
Computers for academic drills	394	581	655	849
Field trips	385	577	656	832
School-based instructional activities	393	578	661	845
Exhibit 6-23	394	583	662	849
Exhibit 7-6				
Any work experience	698	1,054	1,285	1,569
On-campus work experience	686	1,041	1,269	1,541
Off-campus work experience	666	1,001	1,231	1,556
Vocational services	NA	952	1,245	1,572

Exhibit C-5
UNWEIGHTED SAMPLE SIZES FOR EXHIBITS BY ACADEMIC SUBJECT AREA:
EXHIBIT 5-4, 6-6, 6-12, 6-15, AND 6-22

	Language			
	Arts	Mathematics	Science	Social Studies
Exhibit 5-4	713	563	551	583
Exhibit 6-6				
Curriculum	712	563	551	585
Whole-class instruction	698	554	541	573
Small-group instruction	698	557	543	574
Computers for academic drills	692	557	540	564
Computers for Internet	699	557	548	577
Supplemental print materials	701	558	549	575
Lab equipment	696	557	549	566
Life skills materials	698	555	544	574
Exhibit 6-12				
Respond to question				
Student with disability	709	560	546	578
Other students	713	562	550	585
Present to class or group				
Student with disability	705	559	541	573
Other students	707	562	549	576
Work independently				
Student with disability	707	557	545	580
Other students	711	557	551	576
Work with peer or group				
Student with disability	708	558	537	576
Other students	711	561	547	575
Exhibit 6-15				
Test results				
Student with disability	703	562	544	575
Other students	712	564	552	581
Homework				
Student with disability	703	554	541	573
Other students	711	559	548	580
Special projects/ activities				
Student with disability	695	553	543	577
Other students	710	555	548	583
Portfolio				
Student with disability	696	553	532	566
Other students	704	553	542	570
Performance relative to a set standard				
Student with disability	698	551	543	573
Other students	711	555	548	579
Exhibit 6-22	708	559	552	576

Exhibit C-6
UNWEIGHTED SAMPLE SIZES FOR EXHIBIT 5-6 AND 5-7

	General Education Academic Class	Special Education Class	Vocational Education Class	General Education Vocational Class	Special Education Vocational Class
Exhibit 5-6					
All students	2,436	3,341	5,459	2,985	1,989
General education students	2,526	3,341	2,498	1,516	928
Special education students	2,436	3,341	3,137	1,469	1,061
Exhibit 5-7					
General education teacher	2,442	3,265	3,221	NA	NA
Special education teacher	2,443	3,300	3,227	NA	NA
Classroom aides	2,494	3,298	3,234	NA	NA
1-to-1 instructional assistants	2,494	3,306	3,241	NA	NA
Specialists	2,494	3,300	3,235	NA	NA
Adult volunteers	2,494	3,302	3,231	NA	NA
Average students per adult	2,436	3,265	2,498	NA	NA

Exhibit C-7
UNWEIGHTED SAMPLE SIZES FOR EXHIBITS WITH YOUTH
WITH DISABILITIES IN GENERAL ACADEMIC CLASSES AND THE
CLASS AS A WHOLE: EXHIBITS 6-2 TO 6-5, 6-11, 6-14

	Student with Disabilities	Class as a Whole
Exhibit 6-2		
Whole class instruction	2,526	2,573
Small group instruction	2,531	2,567
Individual instruction from a teacher	2,523	2,558
Individual instruction from another adult	2,496	2,532
Exhibit 6-3		
Textbooks/workbooks	2,522	2,556
	2,533	2,562
Supplemental print material		
Lab equipment/ tools	2,517	2,547
Screen-based media	2,526	2,559
Life skills materials	2,522	2,555
Exhibit 6-4		
Academic drills	2,498	2,544
Word processing, etc.	2,521	2,546
Internet access	2,528	2,564
Exhibit 6-5		
School based	2,553	2,572
Field trips	2,524	2,542
Community-based	2,520	2,548
Exhibit 6-11		
Takes tests/quizzes	2,552	2,570
Responds to questions	2,556	2,576
Presents to class/group	2,539	2,559
Works independently	2,550	2,561
Works with peer or group	2,541	2,560
Exhibit 6-14		
Daily class work	2,542	2,568
Homework	2,534	2,564
Test results	2,547	2,573
Special projects	2,531	2,562
Portfolio	2,509	2,532
Attendance	2,527	2,558
Class participation	2,548	2,574
Attitude/behavior	2,537	2,564
Performance to a set standard	2,527	2,558
Performance relative to rest of the class	2,528	2,542