

Transition from High School to Work or College: How Special Education Students Fare

Mary M. Wagner
Jose Blackorby

Abstract

Results are reported from the National Longitudinal Transition Study of Special Education Students. Dropout rates were high: 30% of students with disabilities dropped out of high school, and another 8% dropped out before entering high school. The average dropout with disabilities was 18 years old at the time of leaving but had earned less than half the credits needed to graduate.

Employment successes were strongly related to taking a concentration (four courses) in vocational education. Youths with learning disabilities or speech impairments were most likely to approach the rate of employment found in the general population. Postsecondary education was low: 37% of high school graduates with disabilities had attended a postsecondary school, compared with 78% of high school graduates generally. Students with hearing or visual impairments were most likely to attend college.

Students with disabilities were significantly more likely to be poor than were youths in the general population, and poverty tended to exacerbate the impact of having a disability. Impoverished students with disabilities were less likely than wealthier students with disabilities to be enrolled in those postsecondary education and training programs that could enable them to break out of poverty. When employed, the poorer students with disabilities earned significantly less per year than did those from wealthier families.

Placement in regular education (rather than special education) was associated both with better and worse postschool outcomes. Students with sensory or motor disabilities appeared to benefit from regular education placement. However, for many students, more time in regular education was associated with a higher likelihood of course failure, which was a strong predictor of dropping out of school.

Mary M. Wagner, Ph.D., is program manager of education and human services research at SRI International, Menlo Park, CA.

Jose Blackorby, Ph.D., is a research social scientist at SRI International, Menlo Park, CA.

In 1983, the first generation of children to go entirely through elementary school under the provisions of the Education for All Handicapped Children Act (Public Law 94-142) was approaching secondary school. The secondary school students with disabilities who had preceded them had left

school, and disquieting reports were surfacing in some states and communities regarding how they were faring as workers, postsecondary students, and citizens.¹⁻³ Graduation and employment rates were low, and so were wages. Most students were not furthering their educations after high school. Social adjustment often was difficult.

How widespread were these problems? Were students with particular characteristics more prone to have difficulty making the transition from school to adult life? What could schools or service agencies do to support students in making that transition more effectively?

The absence of answers to these kinds of questions prompted the U.S. Congress to direct the Department of Education to commission a study of “a sample of handicapped students, encompassing the full range of handicapping conditions, examining their educational progress while in special education and their occupational, educational, and independent living status after graduating from secondary school or otherwise leaving special education” (Public Law 98–199, section 618). In 1985, SRI International, under contract to the Office of Special Education Programs, began to develop the design, sample, and instruments for the National Longitudinal Transition Study of Special Education Students (NLTS). In 1987, under a separate contract, SRI initiated the NLTS, the largest single investment in research ever made in the special education field.

Since 1987, the NLTS has helped define much of what is known about the experiences of young people with disabilities nationally while they were in secondary school and in the early years afterward. The results of this study provided solid measures of the frequency of critical school experiences⁴ and accurate indicators of student performance.⁵ From the NLTS, researchers also learned the extent to which youths followed various life paths after high school, moving into postsecondary education, employment, residential arrangements of various kinds, and marriage and parenthood.⁶

The NLTS includes a nationally representative sample of more than 8,000 youths with disabilities,⁷⁻¹⁰ drawn from the rosters of special education students in more than 300 school districts nationwide. All sample members were special education students between the ages of 15 and 21 in the 1985–86 school year. Data were collected about them in 1987 and again in 1990. School records of sample members, telephone interviews with their parents and with the students themselves when possible, and surveys of the principals and teachers who served them all have contributed to a rich database about young people with disabilities in secondary school and early adulthood.

In describing their experiences, the NLTS reports percentages of youths with a particular status (for example, the percentage employed). Percentages reported in the NLTS and in this article have been weighted to represent youths nationally; they are not percentages of the sample, but estimates for the population of youths with disabilities as a whole and for students in each of the 11 federal special education disability categories in use in 1985. The distribution of disability categories within the full population of youths with disabilities nationally is depicted in Figure 1. Note that youths with learning, cognitive, and emotional disabilities predominate; physical and sensory disabilities are low-incidence conditions. Thus, for example, values for youths with learning

disabilities are weighted more heavily than those for youths with visual impairments when discussing youths with disabilities as a group because of the significantly greater number of those with learning disabilities in the population.

Given this large and representative sample and its broad scope and multiple sources of data, the NLTS is a firm basis for understanding how youths with disabilities fared in their early postschool years in furthering their educations or finding work. Specifically, the following questions are considered here:

- What were the goals of young people with disabilities for their early postschool years?
- What did special education students bring with them to their adult roles by way of education and training?
- To what extent did youths with disabilities participate in postsecondary education and in the workforce in their early years after secondary school?
- What factors contributed to more positive adult outcomes for youths with disabilities?

Postschool Goals of Young People with Disabilities

In interpreting the outcomes of young people with disabilities in their early postschool years, it is important to have an understanding of what they hoped to achieve. What goals did students have for after high school?¹¹ Examining their intended postschool paths provides an appropriate yardstick against which to assess the outcomes they achieved.

The majority of high school students with disabilities intended to enter the workforce upon leaving school.¹² In many ways, high school was a difficult academic environment for students with disabilities,⁵ and the world of work may have offered them a wider variety of activities at which they could succeed. Among 12th-graders with disabilities, more than half (56%) had a goal of finding competitive employment after leaving high school, 10% had a goal of obtaining supported employment,¹³ and 2% sought sheltered work.¹³ Even among those who did not intend to go to work immediately, training for work held dominance over academic pursuits. More than one-fourth of 12th-graders with disabilities (28%) had a goal of postsecondary vocational training, compared with 23% having college attendance as their postsecondary goal. Only among youths with speech or sensory impairments did one-third or more students have college attendance as their postschool goal. Given the prevalence of employment-

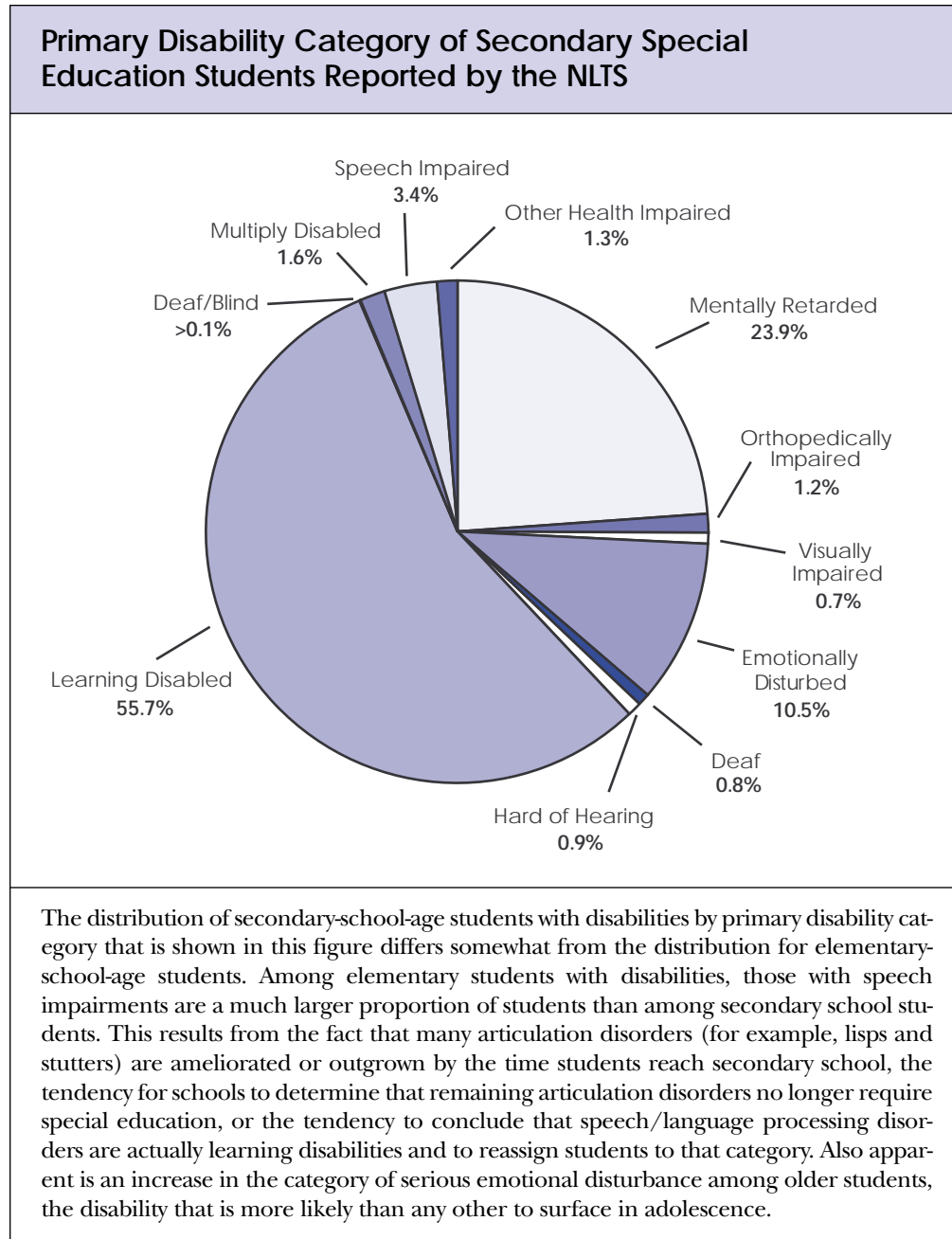
oriented goals, one would expect to see students with disabilities pursuing vocational programs with greater emphasis than college-preparatory academic programs, an expectation born out in the course-taking experiences of many high school students with disabilities.

Secondary School Education and Training

Young people with disabilities who graduated from high school on average earned 22 high school credits, as did high school graduates with no identified disabilities.¹⁴ Twelve of the credits earned by graduates with disabilities were in academic subjects,¹⁵ somewhat fewer than the fifteen credits earned by students in the general population.¹⁴ Reflecting their emphasis on vocational goals, the average secondary school student with disabilities earned five credits in vocational education, one more than typical high school students. One credit was earned in a life skills course, and the remaining four credits were earned in other subjects, such as physical education or the arts. With the exception of high school graduates with mental retardation or multiple disabilities, this pattern of credits earned did not vary significantly for students with different kinds of disabilities, largely due to the standardization imposed on high school course taking by state and school district graduation requirements.

Although virtually all high school students with disabilities spent the majority of

Figure 1



Source: Wagner, M., D'Amico, R., Marder, C., et al. *What happens next? Trends in postschool outcomes of youth with disabilities. The second comprehensive report from the National Longitudinal Transition Study of Special Education Students.* Menlo Park, CA: SRI International, 1992.

their class time taking academic courses, few of them took courses that were indicative of college-preparatory programs.¹⁶ For example, graduates with disabilities averaged 2.5 credits in mathematics, only marginally less than the 2.9 credits earned by typical high school students.¹⁴ Yet, throughout four grades of high school, only 12% of students with disabilities had taken any advanced mathematics (which includes algebra, geometry, trigonometry, or calculus),

courses often required for college entrance. Similarly, only 18% of students with disabilities had taken a foreign language at any time in high school. Further, only 7 of the 12 academic credits earned by graduates with disabilities as a group were in regular education academic courses. Special education courses may have conferred different kinds or levels of preparation for postsecondary education and other adult roles than courses taken in regular education.

Yet, these aspects of academic course taking varied widely for students with different kinds of disabilities. For example, among students with visual impairments, 51% took advanced mathematics at some time in high school, and 62% took a foreign language, reflecting the fact that postsecondary education was a more common intention among these students than among students with disabilities as a whole. Further, 13 of the 15 academic credits earned by students with visual impairments were in regular education classes, suggesting that more of their high school course work was comparable to that of typical students than was true for students with disabilities as a whole.

In addition to academic courses, virtually all students with disabilities (99%) who stayed in high school for four grade levels took some kind of vocational education during that time.¹⁷ However, many fewer (34%) took a “concentration” of vocational education—that is, four or more semester courses in the same skill area (for example, auto repair or computer programming). Most students (62%) took one or more survey courses—that is, beginning courses in a content area, with little or no follow-up in the same area to more fully develop the skills needed for employment in that field.

Vocational concentration was most common for students with learning disabilities (40%) and speech impairments (30%). It was least common for those with multiple (16%) or visual impairments (19%). However, these groups had different explanations for having relatively few vocational concentrators. As noted previously, students with visual impairments were the most likely to be taking college preparatory classes; vocational courses may have been inconsistent with their college ambitions, and there may have been little room in their schedules to include them. In contrast, students with multiple disabilities were among the most severely impaired and may not have had the functional abilities to pursue advanced skill training in many vocational areas.

Vocational concentration also was significantly more common among male students than among females (40% versus 23%; $p < 0.001$) and among white students than among African-American students (38% versus 16%; $p < 0.001$). The extent to

which these differences reflect differences in the preferences and goals of students and/or differences in the resources or programs available to them is unclear. Trade and industry was the most popular skill area among male vocational concentrators, 81% of whom concentrated in that skill area, whereas 62% of female students with disabilities who had a concentration in vocational education did so in office occupations.

At the time they entered high school, more than three-fourths of students with disabilities were at least a year older than their age peers.

Virtually all students (92%) who concentrated in vocational education took those courses as regular education classes. More than one-third of students with disabilities (38%) combined their vocational instruction with a work-study program; however, the majority of that work experience was school based, rather than community based.

Dropping Out of High School

The discussion thus far has considered the secondary school training of students with disabilities who had stayed in high school through four grade levels. They exited high school with a diploma, 22 credits, and a mixed bag of academic and vocational experiences. However, these students were fewer than 60% of those with disabilities who started high school: 30% of exiters from secondary school with disabilities dropped out of high school; another 8% dropped out before ever reaching high school.¹⁸ Among those who started high school but did not finish, the average age was 18 at the time of school leaving. Thus, dropouts with disabilities stayed in school as long as most of their peers who graduated, but at the time they left, they had earned only an average of 10 credits, fewer than half of the credits they needed to graduate.

This poor record of credits earned resulted from repeated course failure on the part of many students with disabilities. At the time they entered high school, more than three-fourths of students with disabilities were at least a year older than their age peers, indicating that they may have been retained at

grade level at some earlier point in their school careers. During four grade levels of high school, 64% failed at least one course. Course failure was found in the NLTS analyses to be among the strongest predictors that students would eventually drop out of

Course failure and dropping out were most common for students with serious emotional disturbances.

school.⁵ Course failure and dropping out were most common for students with serious emotional disturbances, among whom more than three-fourths failed a course in high school and almost half dropped out. In contrast, among deaf students, 44% failed one or more courses, and 11% dropped out.

Postschool Outcomes

Here the extent to which students with disabilities achieved their employment and postsecondary education goals is considered. Outcomes for a cohort of young people with disabilities when the group had been out of high school from three to five years are examined. Where comparable data are available, the outcomes of this cohort are compared with those of youth without identified disabilities who had been out of school a similar length of time.¹⁹

Postsecondary Education

Most American high school seniors expect to attend at least some college, and almost half of the youths in the general population expect to complete at least a bachelor's degree.²⁰ The pervasiveness of the expectation of postsecondary education reflects the reality of the increasing technical complexity of our economy. Schooling may be even more important for people with disabilities than for others. In the employment arena, educational credentials attest to skills, knowledge, and a work ethic that can help direct an employer's focus toward a person's abilities rather than disabilities.

Federal activities reflect a recognition of the important role of postsecondary education in helping persons with disabilities achieve adult independence and economic productivity. For example, the HEATH (Higher Education for Adult Training for

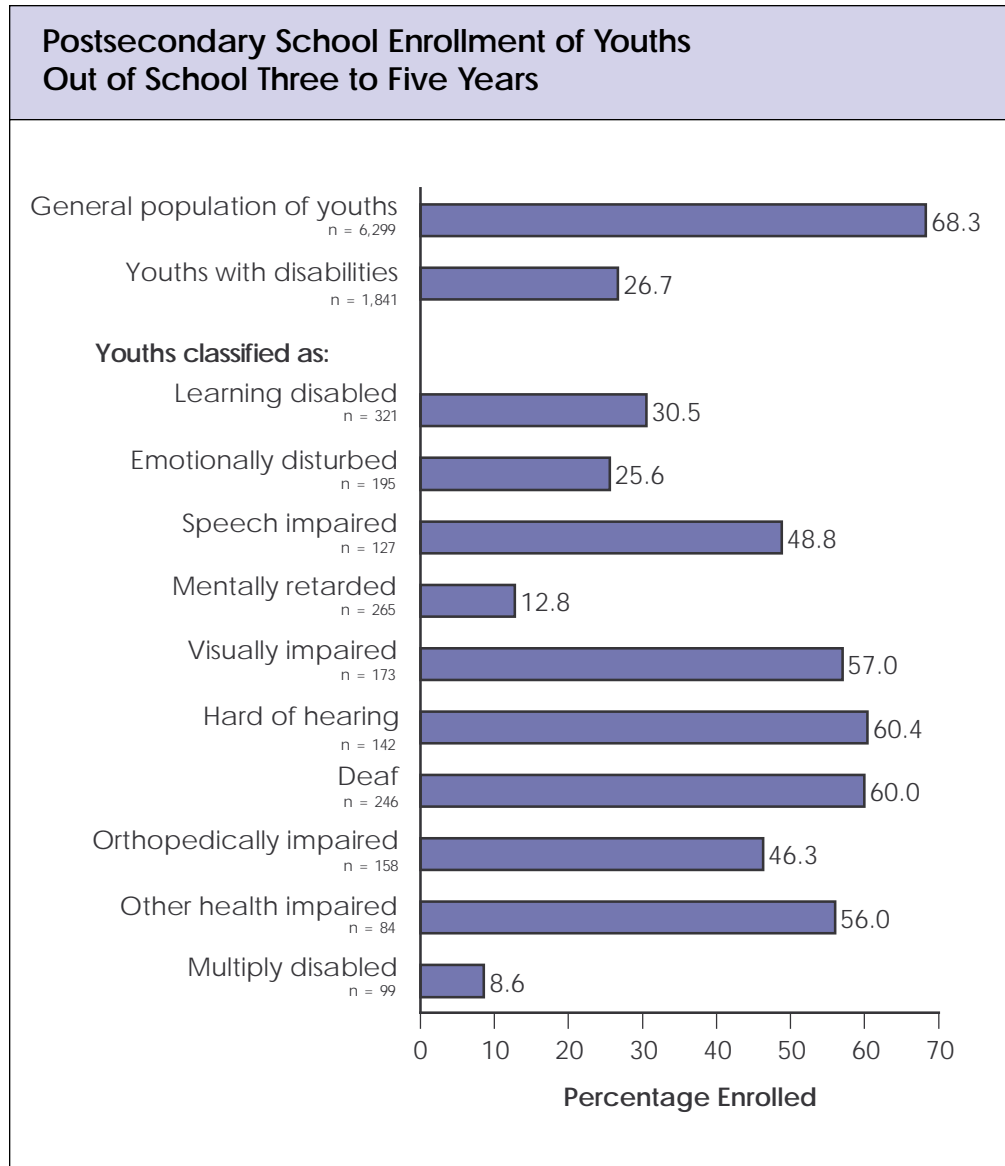
People with Handicaps) Resource Center, a federally funded center of information about education for individuals with disabilities, publishes a resource directory and operates the National Clearinghouse on Postsecondary Education for Handicapped Individuals. Federal legislation such as the Americans with Disabilities Act (Public Law 101-336), also supports the transition of youths with disabilities from secondary to postsecondary education.

Despite such legislation and information services, by definition, youths in special education have disabilities that make aspects of the educational process more difficult for them than for other youths. Thus, it is not surprising that the educational attainment of youths with disabilities is considerably lower than that of youths in general.²¹ Only 27% of youths with disabilities had been enrolled in postsecondary school at any time when they had been out of high school three to five years (see Figure 2). This enrollment percentage compares with an attendance rate of 68% for youths in the general population out of high school the same length of time.

Several factors may contribute to this sizable disparity between youths with disabilities and youths in the general population. One factor clearly is the nature of the disability the youths had. The majority of youths with disabilities had learning disabilities, mental retardation, or emotional disturbances (see Figure 1). Young people in these categories had among the lowest rates of postsecondary school attendance of any youths with disabilities. In contrast, young people with visual or hearing disabilities, for example, attended postsecondary schools at close to the same rate as youths in general.

Confounding this apparent relationship between disability and school attendance, however, is the fact that youths with learning disabilities, mental retardation, or emotional disturbances also had among the highest dropout rates of any youths with disabilities. Perhaps it was the absence of a high school diploma that created a barrier to further postsecondary education. However, the postsecondary enrollment rates of high school graduates with disabilities argues against this explanation. Even among graduates, only 37% of those with disabilities had enrolled

Figure 2



Source: Wagner, M., D'Amico, R., Marder, C., et al. *What happens next? Trends in postschool outcomes of youth with disabilities. The second comprehensive report from the National Longitudinal Transition Study of Special Education Students.* Menlo Park, CA: SRI International, 1992.

in postsecondary schools, compared with 78% of high school graduates in the general population who had been out of school for the same length of time.

One further potential contributing factor to lower rates of postsecondary education for youths with disabilities involves the demographic differences between these youths and youths in general. Secondary school students with disabilities were significantly more likely to be poor, African American, and from single-parent households than were youths in the general population.²² These factors may have created

social or economic barriers to postsecondary school attendance, which were more pronounced among youths with disabilities than among youths in the general population. However, when analyses were performed by the NLTS to adjust statistically a national sample of youths in the general population to match the gender, ethnic, and socioeconomic distribution of youths with disabilities, virtually none of the difference in postsecondary enrollment disappeared. The adjusted sample of youths in the general population, which was equally African American, poor, and from single-parent households, still had enrolled in

postsecondary schools at a rate more than twice as high as youths with disabilities (62% versus 27% when youths had been out of school three to five years; $p < 0.001$).

When youths with disabilities did go on to postsecondary schools, it rarely was to four-year colleges. Only 4% of youths with disabilities had ever attended a four-year college at the time they had been out of high school three to five years. Two-year college attendance was more common (only 12% of youth had ever attended), but postsecondary vocational training was the most common form of postsecondary education (16%). Thus, the employment-related goals of high school seniors with disabilities continued to be reflected in their educational choices several years after leaving high school.

Employment

American society has expressed increasing concern about the quality of its high school graduates and their ability to help the country be competitive in a global economy. The 1994 School-to-Work Transition Act (Public Law 103–239) is a reflection of the country's commitment to support students in acquiring high-end vocational skills and in transi-

without disabilities. More than two-thirds of youths (69%) in the general population were employed when they had been out of secondary school three to five years ($p < 0.001$).

Further, employment successes were not experienced by all youth with disabilities. As shown in Figure 3, only youths with learning or speech impairments began to approach the employment rates of youths as a whole. These were the categories of youths most likely to have taken a concentration of vocational education in high school. Successes also were most apparent for those who had graduated from high school. Almost two-thirds of graduates (65%) were employed competitively three to five years after high school compared with only 47% of dropouts. Three to five years after high school, employment also was significantly more common for young men with disabilities than for young women (64% versus 40%; $p < 0.001$) and for white youths than for African-American or Hispanic youths (61% versus 47% and 50%, respectively; $p < 0.05$).

Labor force participation did not necessarily translate into financial independence for youths with disabilities. The median hourly wage for working youths with disabilities was \$5.72 three to five years after high school (1990), and only 40% of working youths with disabilities were earning more than \$6.00 per hour. Wage levels were similar for most categories of youths except those with mental retardation or orthopedic impairments, among whom only 13% and 14%, respectively, were earning more than \$6.00 per hour when they had been out of school three to five years. Almost twice as many young men as women with disabilities were earning more than \$6.00 per hour (44% versus 23%; $p < 0.05$), and more than three times as many white working youths as African-American youths were earning that much (46% versus 14%; $p < 0.001$). Although graduates were significantly more likely than dropouts to have found jobs, they were not significantly more likely to be earning more than \$6.00 per hour (42% versus 38%).

Only youths with learning or speech impairments began to approach the employment rates of youths as a whole.

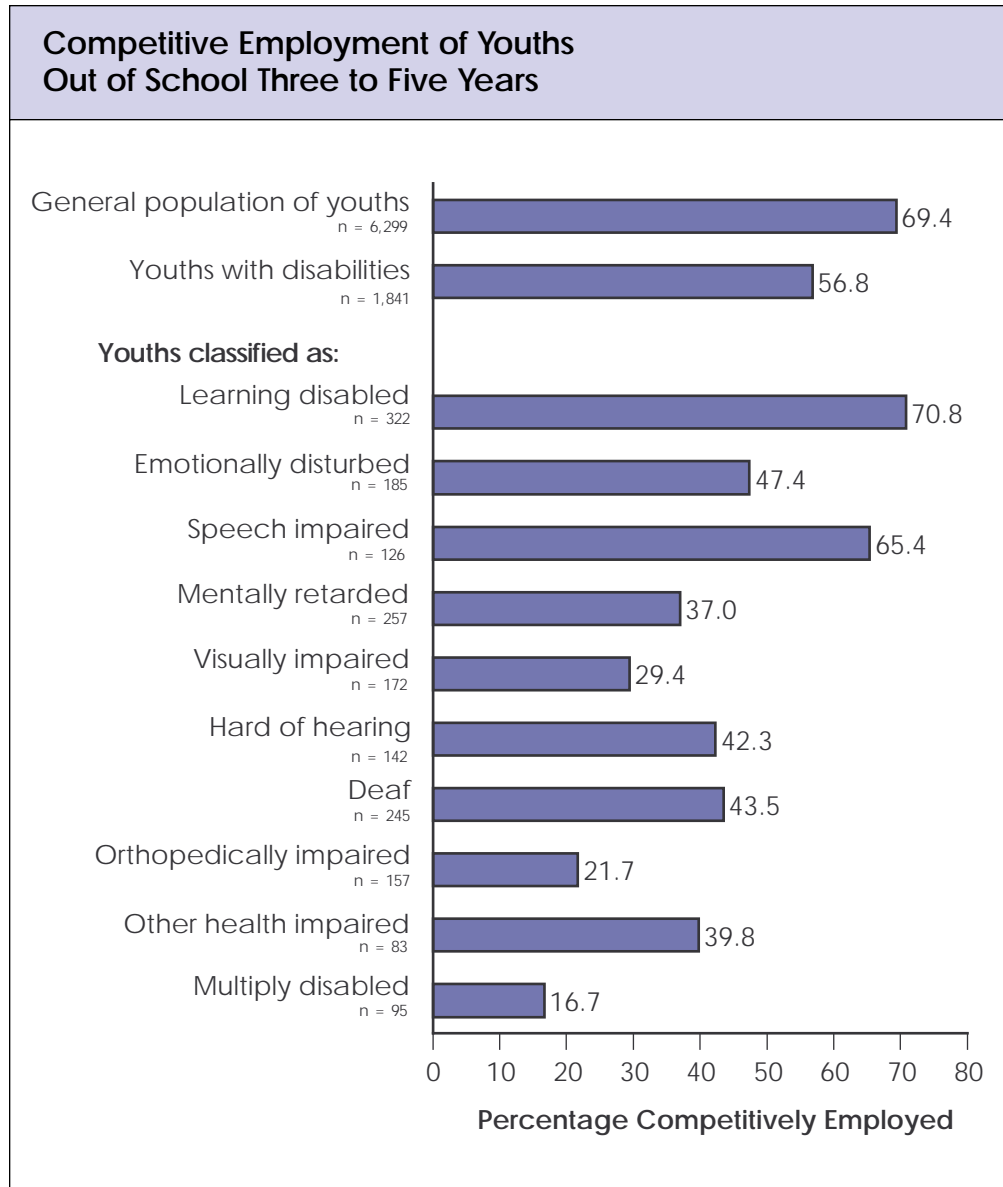
tioning to the kinds of jobs needed in an increasingly information-based economy. Provisions in that legislation explicitly require states to include students with disabilities in the plans they develop for school-to-work programs.

This inclusion of students with disabilities in employment-related transition programs reflects an understanding of the difficult time many of them have finding a place in the workforce after high school.²³ When youths with disabilities had been out of high school between three and five years, 57% were working competitively (see Figure 3), and the majority (43%) were doing so full time. Just over one-third of youths were not working (36%); many (17%) were not looking for work. These rates of participation in the work place lagged behind those of their peers

What Hurts? What Helps?

The previous sections have described the postsecondary education and employment outcomes of young people with disabilities. But describing outcomes is only the first step to understanding how public policy, educa-

Figure 3



Source: Wagner, M., D'Amico, R., Marder, C., et al. *What happens next? Trends in postschool outcomes of youth with disabilities. The second comprehensive report from the National Longitudinal Transition Study of Special Education Students.* Menlo Park, CA: SRI International, 1992.

tional programs, and related services can be used more effectively to help young people improve those outcomes. To go further, it is necessary to know what experiences in school helped students achieve their goals after leaving school. And it is necessary to know whether some school programs or experiences benefitted particular kinds of students most. In addressing these questions, the following aspects of postschool outcomes are examined:

■ Postsecondary education participation

1. Enrollment in an academic program—whether at any time since the youth

left high school he or she had been enrolled in a four-year college or in a two-year college program, which the parent or youth described as primarily academic.

2. Enrollment in a vocational program—whether at any time since the youth left high school he or she had been enrolled in a postsecondary vocational school (public or private) or in a two-year college program, which the parent or youth described as primarily vocational.

■ Employment

1. Whether the youth currently held a competitive job outside the home for which

he or she was paid (sheltered, supported, and volunteer work were not included as competitive paid employment).

2. An estimate of the annual total compensation youths received for their work.²⁴

These postschool outcomes were related to a variety of aspects of the school programs and experiences of youths while they were in secondary school, as identified through multivariate statistical analyses, described below. The sample of youths (about 1,200) included in these analyses had been out of high school up to three years.

Many aspects of the secondary school experiences of young people with disabilities are closely related to the nature and severity of their disability. For example, placement in regular education classrooms is more common for less severely impaired youths than for those with multiple disabilities. Other characteristics of youths also are interrelated, such as the close connection between a student coming from a poor family and attending a school with a large proportion of students from low-income households. These interrelationships make it difficult to disentangle the independent relationships of school factors

to understand how outcomes would differ for youths who were “average” on all other factors in the analysis but differed on the school factor under consideration.

The remainder of this article reports findings on the relationship of school factors to postschool outcomes, independent of differences between them, in disability category, self-care skills, functional mental skills, gender, ethnic background, coming from a single- or two-parent household, whether the youth was a parent, and the length of time the young person had been out of secondary school.²⁵ Results are reported for youths with disabilities as a whole and for youths in four disability clusters, to identify whether particular high school experiences were more effective in supporting the transition of students with particular kinds of disabilities. Because considering each of the 11 disability categories separately would severely fragment the sample for these analyses, youths have been combined into broader groupings. The “mild” disability cluster includes youths with learning, speech, and emotional disabilities and mild mental retardation. Youths with visual or hearing impairments comprise the “sensory” disability cluster, whereas the “physical” disability cluster includes youths with orthopedic or other health impairments. Deaf/blind youths and those with moderate or severe mental retardation or multiple disabilities are included in the “severe” disability cluster.

NLTS findings confirm that students from low-income households experienced poorer postschool outcomes than students with disabilities from higher-income households.

from postschool outcomes. Multivariate statistical techniques often are employed for just this purpose—to identify the relationship between a particular independent variable (for example, attending a special school) and an outcome, holding constant the variety of other factors included in the analysis. The results of multivariate analyses are reported here as the difference in the estimated probability of a particular outcome (for example, being competitively employed) between youth with a particular characteristic (for example, those who took vocational education) and those who did not have that characteristic, with the values of all other variables in the analysis held at their means. Thus, the analysis in essence creates “statistical twins,” allowing researchers

The Effects of Poverty

Considered here are the relationships to postschool outcomes of two aspects of poverty: attending a high-poverty school and individual household income.

Attending schools with relatively larger proportions of low-income students made no significant additional difference in postschool outcomes for students at those schools, independent of the poverty levels and other characteristics of the individual students themselves. However, household income is strongly associated with how youths from those households fare in their early postschool years.

NLTS findings confirm that students from low-income households experienced poorer postschool outcomes than students with disabilities from higher-income

Table 1

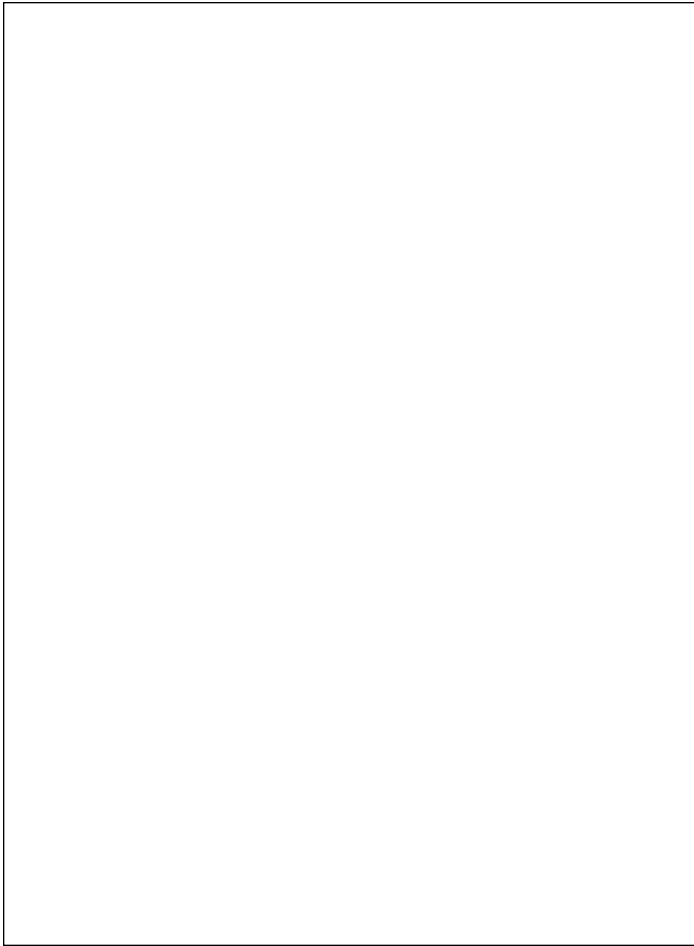
Estimated Difference in Postschool Outcomes Associated with Household Income ^a					
	All Youths with Disabilities	Type of Disability ^b			
		Mild	Sensory	Physical	Severe
Comparing youths from households with incomes of less than \$12,000 with those from households with incomes of \$38,000 to \$50,000, the estimated difference in					
The percentage enrolled in post-secondary academic programs	-9.3 ^c	-7.4 ^d	-13.1 ^e	-11.6	-5.0
The percentage enrolled in post-secondary vocational programs	-5.3	-3.4	-5.0	-1.5	-2.0
The percentage competitively employed	-2.9	-0.2	-3.3	-13.4	-13.1
The total dollar compensation earned from employment	-\$760 ^d	-\$1,144 ^d	-\$379	-\$1,103	-\$1,548 ^e
^a Income is the annual household income for 1986. ^b The "mild" disability cluster includes youths with learning, speech, and emotional disabilities and mild mental retardation. Youths with visual or hearing impairments comprise the "sensory" disability cluster, whereas the "physical" disability cluster includes youths with orthopedic or other health impairments. Deaf/blind youths and those with moderate or severe mental retardation or multiple disabilities are included in the "severe" disability cluster. ^c $p < 0.001$ ^d $p < 0.05$ ^e $p < 0.01$					
Note: Negative numbers on the chart indicate that students from low-income households were less likely to be enrolled or employed than were their wealthier peers.					

Source: Wagner, M., Blackorby, J., Cameto, R., and Newman, L. *What makes a difference? Influences on postschool outcomes of youth with disabilities. The third comprehensive report from the National Longitudinal Transition Study of Special Education Students.* Menlo Park, CA: SRI International, 1993.

households, as shown in Table 1. Youths with disabilities from low-income households were significantly less likely to attend postsecondary education programs, particularly academic programs, independent of other factors, confirming a relationship also apparent for youths in the general population.²⁶ These relationships are consistent in direction across all disability groups and statistically significant for youths with mild or sensory impairments. Thus, students from low-income house-

holds were less likely than their wealthier peers to have access to the advanced education and training that could enable them to break out of the poverty of their childhood.

Controlling for other factors, economically disadvantaged youths were not significantly less likely than others to be employed, but poorer youths earned less per year than did those from wealthier families, suggesting that they may have worked in lower-quality



jobs than youths with disabilities from higher-income households. Compensation gaps were largest for youths with both mild and severe impairments. These findings regarding the pervasive negative effects of family poverty are particularly disturbing in light of the growing number of children, with and without disabilities, who are growing up poor.

Enrollment in Academic Programs

Participation by students with disabilities in higher-level academic classes in high school (that is, advanced mathematics or a foreign language) related positively to enrollment in postsecondary academic programs. Among students with disabilities overall, those who took such classes in secondary school were 22 percentage points more likely to have enrolled in postsecondary academic programs than peers who did not take advanced academic courses, independent of other factors. It is likely that this relationship occurred both because those courses often were required for further education after high school and because enrollment

in such courses was indicative of a relatively high level of cognitive functioning on the part of the students enrolled in them. The relationship between academic, high school course taking and postsecondary school enrollment was strongest for youths with mild and physical disabilities; those taking advanced, high school academic classes were 27 and 26 percentage points ($p < 0.001$ and 0.05) more likely to enroll in postsecondary academic programs, respectively, than those with similar disabilities who did not take advanced academic courses in high school. A weaker relationship is noted for youths with sensory impairments (a 19-percentage-point difference, $p < 0.001$), and the relationship for youths with severe disabilities was not statistically significant (9 percentage points).

Consistent with the contribution of advanced course work to later enrollment in academic programs, youths who had college preparatory programs in high school were somewhat less likely than others to enroll in postsecondary vocational programs (9 percentage points), and significantly so for youths with physical disabilities (19 percentage points, $p < 0.05$). The level of academic preparation in high school was unrelated to either of the employment measures. Perhaps in their early postschool years, students with disabilities were not getting the kinds of jobs for which advanced course work was necessary or beneficial. Alternatively, youths who had taken advanced high school courses might still have been in college and, therefore, not yet experiencing employment effects of their earlier course taking.

Vocational Course Taking

The intention of vocational education is to benefit youths both in finding postschool employment and in the wages they earn. Table 2 shows that there were strong positive contributions of both survey and concentrated vocational training to the probability of competitive employment (20- and 19-percentage-point-high probabilities for vocational students). Although both concentrating on vocational courses and taking unrelated survey courses contributed to higher employment rates in this analysis, additional NLTS analyses suggest that employment gains grew over time for youths taking a concentration of courses, whereas the employment rate was fairly stable over

time for those taking unrelated survey courses, suggesting greater long-term benefits of concentrated vocational training.²³

Further, taking a concentration of vocational classes was related to larger incomes; concentrators were estimated to earn \$1,851 more than other students. Again, wage gaps increased over time in favor of those taking a concentration of vocational education.²³ These postschool benefits of concentrated vocational education are an encore to the positive outcomes associated with such training while students were still in secondary school.⁵

The largest benefits for both kinds of vocational course taking accrued to youths with mild disabilities, as expected, among whom vocational students had a probability of competitive employment almost 40 percentage points greater than that of students without vocational experiences in secondary school, independent of other differences between them. Further, for those youths, a concentration in vocational education was especially lucrative; concentrators were estimated to earn \$6,247 more annually than nonvocational or prevocational students. Youths who took survey vocational courses also earned more—nearly \$4,000 per year—than peers who took none. No statistically significant benefits of vocational training were identified for youths with severe disabilities or for youths with sensory disabilities.

Vocational education experiences were unrelated to postsecondary vocational education for all groups (not included in the table) and to postsecondary academic enrollment for youths as a whole. However, some differences in the relationship to academic education were observed for youths with different types of disability. For example, for youths with physical disabilities, taking either a concentration of vocational courses or participating in a work experience program was related to a significantly lower likelihood of pursuing postsecondary academic training, presumably because of greater emphasis on employment.

Contrary to expectations, Table 2 shows that, when other variables were included in the analyses, work experience did not make a significant added contribution to any out-

comes for youths with disabilities as a group. It is likely that the skills and foci of work experience programs and vocational education in general were similar and that the two factors became confounded when youths with disabilities were considered overall. However, work experience was positively and significantly associated with employment for youths with physical impairments and, to a lesser extent, those with mild disabilities.

Placement in Special or Regular Education Classes

The NLTS examined the relationships to postschool outcomes of two aspects of high school placement: whether youths attended special schools that served only students with disabilities and the percentage of class time students spent in regular education classes.

Overall, 8% of secondary school students with disabilities attended special schools, ranging from only a few percent of students with learning disabilities to about two-thirds of those who were deaf. The educational experiences of students in special schools clearly differed markedly from those of their

No benefits of regular education placements occurred for youths whose disabilities involved explicit learning problems or cognitive deficits.

peers in regular schools.²⁷ However, these differences did not manifest themselves in differences in postschool outcomes. The NLTS has found little relationship between postschool outcomes and attending special schools. Even for youths in the sensory disability categories who were most likely to do so, attending special school seems to have conferred no particular advantage.

However, controlling for other differences between youths, more time spent in general education classrooms was positively related to employment (see Table 3). For example, youths who spent all of their school day during secondary school in regular education settings were 11 percentage points more likely than their peers, who spent half of their time there, to be competitively employed and were estimated to

Table 2

Estimated Difference in Postschool Outcomes Associated with High School Vocational Education and Work Experience Programs				
	All Youths with Disabilities	Type of Disability ^a		
		Mild	Sensory	Physical ^b
Comparing youths who completed vocational education survey courses in high school with nonvocational or prevocational ^c students, the estimated difference in				
The percentage enrolled in post-secondary academic programs	10.3	3.6	2.3	—
The percentage competitively employed	19.8 ^d	35.6 ^e	16.6	—
The total dollar compensation earned from unemployment	\$1,097	\$3,993 ^d	\$1,021	—
Comparing youths who concentrated in vocational education ^f in high school with nonvocational or prevocational ^c students, the estimated difference in				
The percentage enrolled in post-secondary academic programs	2.0	-5.7	-2.6	-28.6 ^d
The percentage competitively employed	19.0 ^d	39.9 ^g	15.3	-5.3
The total dollar compensation earned from unemployment	\$1,851	\$6,247 ^g	\$1,071	\$2,009 ^d
Comparing youths who had taken a high school work experience program with those who had not, the estimated difference in				
The percentage enrolled in post-secondary academic programs	-9.3 ^d	-7.3	1.0	30.9 ^d
The percentage competitively employed	-2.0	10.4	-11.3	32.6 ^d
The total dollar compensation earned from unemployment	\$542	\$1,379	-\$697	\$4,196 ^g
^a There were no consistent or significant relationships between vocational education experiences and postschool outcomes for youths with severe disabilities; they are included in "all youths," but relationships are not reported for them separately. ^b The distribution of the vocational education variables for the physical disability cluster did not allow the inclusion of both variables. Thus, for this cluster, models included only concentration in vocational education. ^c Prevocational courses covered a significantly different curriculum from standard vocational education courses and so were considered separately. ^d p < 0.05 ^e p < 0.01 ^f A concentration is at least four semesters of vocational education in the same content area (for example, trade and industry, office occupations). ^g p < 0.001				

Source: Wagner, M., Blackorby, J., Cameto, R., and Newman, L. *What makes a difference? Influences on postschool outcomes of youth with disabilities. The third comprehensive report from the National Longitudinal Transition Study of Special Education Students*. Menlo Park, CA: SRI International, 1993.

Table 3

Estimated Difference in Postschool Outcomes Associated with the Amount of Time Spent in Regular Education Classes				
	All Youths with Disabilities	Type of Disability ^a		
		Mild ^a	Sensory	Physical
Comparing youths who spent all of their class time in regular education classes with those who spent half of their time there, the estimated difference in				
The percentage enrolled in postsecondary academic programs	3.2	10.4 ^b	-4.0	15.0
The percentage competitively employed	11.2 ^b	1.9	15.0 ^c	43.2 ^b
The total dollar compensation earned from unemployment	\$2,095 ^d	\$683	\$1,550 ^b	\$1,664 ^c
^a There were no consistent or significant relationships between regular education placement and postschool outcomes for youths with severe disabilities; they are included in "all youths," but relationships are not reported for them separately. ^b $p < 0.01$ ^c $p < 0.05$ ^d $p < 0.001$				

Source: Wagner, M., Blackorby, J., Cameto, R., and Newman, L. *What makes a difference? Influences on postschool outcomes of youth with disabilities. The third comprehensive report from the National Longitudinal Transition Study of Special Education Students.* Menlo Park, CA: SRI International, 1993.

have higher earnings (\$2,095). However, these employment advantages accrued only to youths with sensory or physical disabilities, not to the largest group of youths, those with mild impairments, or to severely impaired youths. This difference in impacts supports the notion that regular education benefits youths cognitively equipped to absorb regular high school course work as it is presented in regular education classes. No benefits of regular education placements occurred for youths whose disabilities involved explicit learning problems or cognitive deficits.

Time spent in regular education also was associated with a greater likelihood of postsecondary vocational enrollment for youths with mild disabilities (10 percentage points).

Two caveats must be offered in interpreting these findings. First, one should not interpret these relationships as implying that regular education necessarily caused

improvements in outcomes. Rather, it is possible that disabled youths who spent all of their time in regular education were more competent in ways not measured by the NLTS and that these differences contributed to their positive outcomes.

Second, these analyses reflect in large measure the experiences of youths who had succeeded sufficiently in regular education classrooms to graduate from high school. But many students did not do well enough in regular education classes to graduate. Findings from other NLTS research showed that spending more time in regular education was associated with a higher likelihood of course failure, which in turn contributed greatly to a higher likelihood of students' dropping out of school.⁵ Those who did not succeed in regular education settings and dropped out experienced negative postschool outcomes, as described below. Thus, regular education appears to confer advantages on those who

succeed in it and graduate, but the negative effects of dropping out dominate the experiences of those who do not succeed in regular education settings.

Successful Completion of Secondary School

Dropouts with disabilities had consistently poorer postschool outcomes than did their peers who persisted in school, independent of other differences between them. Dropouts were less likely to enroll in postsecondary vocational programs (a 14-percentage-point difference compared with nondropouts) and academic programs (a 12-percentage-point difference), particu-

ed with this kind of course taking for some students in terms of supporting their enrollment in postsecondary education programs. However, policies that foster academic course taking may leave little room in students' schedules for the vocational courses that are more attuned to the employment goals of a majority of students with disabilities. Vocational courses were strongly related to lower probabilities that students would drop out of school and, independent of school completion, also were strongly related to positive employment outcomes. Can course-taking policies be developed that permit flexibility in course choices rather than forcing students with disabilities to trade off the potential benefits of academic versus vocational courses?

Regular education academic courses are difficult for many students with disabilities, and when they fail there, students are more likely to drop out of school.

larly among youths with mild disabilities, those most likely to have dropped out (a 14-percentage-point difference). A pattern of negative, though weak, relationships was found between dropping out of secondary school and employment outcomes for youths with disabilities as a group when other factors in the analyses were controlled. These findings underscore for students with disabilities the importance of successfully completing secondary school as a platform for success in adulthood.

Summary

These analyses from the NLTS document the early postschool outcomes that were achieved by young people with disabilities who had gone through secondary school in the mid to late 1980s. The secondary school programs they experienced influenced, sometimes considerably, some of their later outcomes. What schools do can make a difference in what students later achieve.

Yet a variety of school reform policies may be inconsistent with findings regarding what helps students with disabilities achieve more positive postschool outcomes. For example, raising academic course requirements for graduation might encourage students to take more advanced academic courses, and data show benefits are associat-

Further, any courses, whether academic or vocational, only benefit those who can succeed in them. A consistent message of NLTS findings is that regular education academic courses are difficult for many students with disabilities, and when they fail there, students are more likely to drop out of school.⁵ Findings presented here confirm the negative postschool path taken by many students with disabilities who dropped out of school. Perhaps the greatest positive contribution schools can make to the postschool success of students with disabilities is to contribute to the in-school success of those students, regardless of the placement of their courses. As the inclusion movement gains momentum, great care must be paid to issues of quality and support. Placement in regular education offers little postschool benefit to students who cannot succeed in those courses.

Finally, NLTS analyses of contributions to outcomes for students with different kinds of disabilities confirm that there is no "magic bullet" that offers benefits to all students. Vocational education appears to have benefitted students with mild disabilities but not those with sensory impairments. Academic course taking benefitted those with sensory impairments but not those with severe disabilities. Regular education placement appears to have advantages in some outcome areas for students with physical disabilities but to be less helpful to those with either mild or severe disabilities. In shaping policy and programs for students with disabilities, a range of options, tailored to the

individual needs of students, continues to be the most effective approach to meeting the wide range of needs, preferences, and abilities of students who participate in special education. No principle that is held to be appropriate for all students, with or without

disabilities, is likely to succeed in helping all students meet their needs. A diversity of students requires a diversity of program choices if students are to benefit from their educations and make a successful transition to adulthood.

1. Mithaug, D.E., and Horiuchi, C.N. *Colorado statewide follow-up survey of special education students*. Denver: Colorado Department of Education, 1983.
2. Hasazi, S.B., Gordon, L.R., and Roe, C.A. Factors associated with the employment status of handicapped youth exiting high school from 1979–1983. *Exceptional Children* (1985) 51:455–69.
3. Edgar, E., Levine, P., and Maddox, M. *Washington state follow-up data of former secondary special education students*. Seattle: University of Washington, 1985.
4. Wagner, M., ed. *The secondary school programs of students with disabilities. A report from the National Longitudinal Transition Study of Special Education Students*. Menlo Park, CA: SRI International, 1993.
5. Wagner, M., Blackorby, J., and Hebbeler, K. *Beyond the report card: The multiple dimensions of secondary school performance of students with disabilities. A report from the National Longitudinal Transition Study of Special Education Students*. Menlo Park, CA: SRI International, 1993.
6. Wagner, M., D’Amico, R., Marder, C., et al. *What happens next? Trends in postschool outcomes of youth with disabilities. The second comprehensive report from the National Longitudinal Transition Study of Special Education Students*. Menlo Park, CA: SRI International, 1992.
7. Javitz, H., and Wagner, M. *The National Longitudinal Transition Study of Special Education Students: Report on sample design and limitations, wave 1 (1987)*. Menlo Park, CA: SRI International, 1990.
8. Javitz, H., and Wagner, M. *The National Longitudinal Transition Study of Special Education Students: Sample characteristics and procedures, wave 2 (1990)*. Menlo Park, CA: SRI International, 1993.
9. Wagner, M., Newman, L., and Shaver, D. *The National Longitudinal Transition Study of Special Education Students: Report on procedures for the first wave of data collection (1987)*. Menlo Park, CA: SRI International, 1989.
10. Marder, C., Habina, K., and Prince, N. *The National Longitudinal Transition Study of Special Education Students: Report on procedures for the second wave of data collection (1990)*. Menlo Park, CA: SRI International, 1992.
11. Postschool goals were reported in written questionnaires completed by teachers of 12th-grade students with disabilities who were familiar with the students’ school programs and transition plans.
12. Cameto, R. Support services provided by secondary schools. In *The secondary school programs of students with disabilities. A report from the National Longitudinal Transition Study of Special Education Students*. M. Wagner, ed. Menlo Park, CA: SRI International, 1993.
13. Supported employment often involves working in competitive jobs but with the wages earned being subsidized by public funds to provide an incentive to employers to hire persons with disabilities. Those in supported employment also may receive support services such as job training or supervision or advocacy from an employment “coach” or counselor. Sheltered employment is work in settings in which most or all other workers have disabilities; wages are generally below those earned in competitive jobs.
14. Hayward, B.J., and Thorne, J. *The educational programs of high school special education students*. Research Triangle Park, NC: Research Triangle Institute, 1990.
15. Hebbeler, K. Overview of the high school experiences of students with disabilities. In *The secondary school programs of students with disabilities. A report from the National Longitudinal Transition Study of Special Education Students*. M. Wagner, ed. Menlo Park, CA: SRI International, 1993.
16. Newman, L. Academic course-taking. In *The secondary school programs of students with disabilities. A report from the National Longitudinal Transition Study of Special Education Students*. M. Wagner, ed. Menlo Park, CA: SRI International, 1993.

17. Blackorby, J., Participation in vocational education by students with disabilities. In *The secondary school programs of students with disabilities. A report from the National Longitudinal Transition Study of Special Education Students*. M. Wagner, ed. Menlo Park, CA: SRI International, 1993.
18. Unlike students in the general population, who either graduate or drop out, students with disabilities have those two school-leaving options, as well as being able to “age out,” that is, stay in high school until the maximum age allowed (usually 21 years) without earning the credits to graduate.
19. Wagner, M., D’Amico, R., Marder, C., et al. *What happens next? Trends in postschool outcomes of youth with disabilities. The second comprehensive report from the National Longitudinal Transition Study of Special Education Students*. Menlo Park, CA: SRI International, 1992.
20. Gardner, J.A. *Transition from high school to postsecondary education: Analytical studies*. Washington, DC: Center for Education Statistics, 1987.
21. Marder, C. Education after secondary school. In *What happens next? Trends in postschool outcomes of youth with disabilities. The second comprehensive report from the National Longitudinal Transition Study of Special Education Students*. M. Wagner, R. D’Amico, C. Marder, et al. Menlo Park, CA: SRI International, 1992.
22. Marder, C., and Cox, R. More than a label: Characteristics of youth with disabilities. In *Youth with disabilities: How are they doing? The first comprehensive report from the National Longitudinal Transition Study of Special Education Students*. M. Wagner, L. Newman, R. D’Amico, et al. Park, CA: SRI International, 1991.
23. D’Amico, R. The working world awaits: Employment experiences during and shortly after secondary school. In *Youth with disabilities: How are they doing? The first comprehensive report from the National Longitudinal Transition Study of Special Education Students*. M. Wagner, L. Newman, R. D’Amico, et al. Menlo Park, CA: SRI International. 1991.
24. In calculating an estimate of total compensation, unemployed youths were considered to receive no compensation. Estimates for paid workers involved multiplying the reported hours typically worked per week by the reported hourly wage; a typical work year was assumed to involve 49 work weeks for those who did not receive paid sick leave or vacation. For workers who received paid sick leave and vacation, the work year, for purposes of calculating total compensation, was assumed to include 52 paid weeks. Medical insurance received as an employment benefit was valued at 6.1% of wages, as commonly calculated by the U.S. Bureau of the Census. *Statistical abstract of the United States*. 110th ed. Washington, DC: U.S. Department of Commerce, Bureau of the Census, 1990.
25. Wagner, M., Blackorby, J., Cameto, R., and Newman, L. *What makes a difference? Influences on postschool outcomes of youth with disabilities. The third comprehensive report from the National Longitudinal Transition Study of Special Education Students*. Menlo Park, CA: SRI International. 1993.
26. Stage, F.K., and Hossler, D. Differences in family influences on college attendance plans for male and female ninth graders. *Research in Higher Education* (1989) 30:301–14.
27. Wagner, M. Secondary school programs. In *Youth with disabilities: How are they doing? The first comprehensive report from the National Longitudinal Transition Study of Special Education Students*. M. Wagner, L. Newman, R. D’Amico, et al., eds. Menlo Park, CA: SRI International, 1991.