

School-To-Work and the SAT

An analysis of the 1999 Student Descriptive
Questionnaire Data Set with respect to
students with School-to-Work-Type Experience

A report prepared for
The National School To Work Office
School-To-Work College/High School Partners
Project

by

Watson Scott Swail, Ed.D.
Educational Researcher and Policy Analyst

June 15, 2000

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INTRODUCTION

Youth career development has long been considered in terms of national economic development—that is, students of today will be tomorrow’s workforce. The investments made in these students in terms of education, work experience, and career guidance will help influence their future decisions about postsecondary education and eventual entry into the labor market.


In 1994 the School-to-Work Opportunities Act was signed into law to exemplify the importance of providing a coherent, sustained policy linking education and work preparation. Many agree that America has done an honorable job opening up the doors to postsecondary education for our nation’s youth. Although gaps still exist in who goes on to college and who goes where, by and large most who possess the academic capacity to engage in postsecondary education are given the opportunity at some level. However, policy and practice have been inconsistent in providing opportunities for students who are not necessarily bound for a four-year institution. The School-to-Work Opportunities Act was an effort on behalf of the Clinton Administration to bring focus on this often forgotten sector of society: a sector that provides much of the services and technological capacity for our nation.

While there are those that feel that vocational and career-oriented course work in secondary school and college are second-rate, others suggest that these are important opportunities to link students with the workforce. These opportunities come in the form of work internships, apprenticeships, career shadowing, or even career counseling at our schools. As well, there is growing evidence that these types of activities have a positive impact on the future academic and professional success of students.

The College Board was invited to join the New England Association of Schools and Colleges and its project with the National Center for Student



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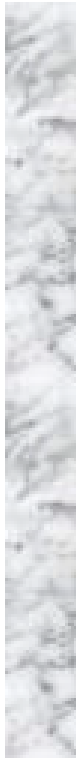


Aspirations (University of Maine), by the National School-To-Work Office (U.S. Department of Labor and U.S. Department of Education) to look at the academic outcomes of students who fit the school-to-work mold and see how they compare with other, more traditional students in high school and postsecondary education. This study consists of three distinct components: a national survey of high school students; a national survey of two- and four-year students; and an analysis of College Board data derived from SAT registration information and test scores. This report provides a summary of the third component of this study.

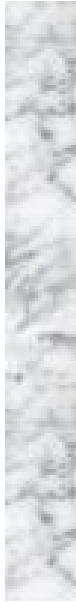
The Student Descriptive Questionnaire

When students register for the SAT, they complete what is called the Student Descriptive Questionnaire, or SDQ. The SDQ provides demographic and other pertinent information to help test developers and researcher better understand the dynamics between test scores, familial backgrounds, and student-reported interests, activities, and aspirations. The SDQ is based on an inventory of 41 items, ranging from basic demographics (race/ethnicity, gender) to courses taken in high school, anticipated major, and degree aspirations, among others (more information on the SDQ and SAT may be gathered by visiting the College Board website www.collegeboard.org).

In 1999, over 1.1 million students took the SAT I test, generating the largest database available in the United States of college-bound students. While the College Board does not have direct ties to school-to-work programs and does not ask questions specifically about student involvement in school-to-work programs, the SDQ does provide some information about student involvement in school-to-work-type activities. Specifically, the SDQ includes questions about student involvement in career-oriented activities and whether the student worked in a co-op during high school. Combining these two measures produces a cross-section of SAT test takers that were the most likely of all SAT test takers to have been involved with school-to-work-type activities.



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The Sample


The 1999 SDQ database consists of students who registered and completed the SAT during the 1998-99 school year. These data were assembled into a database in Fall 1999.

As is well known in the educational world, the SAT is a standardized instrument designed to measure a student's academic readiness and aptitude for higher education. In particular, the score on the SAT, which runs on a scale from 400 to a possible 1600 points (Verbal Test – 800; Math Test – 800), is used as a predictive indicator of how well a student may do in their freshman year at college. More specifically, the SAT score derived from the test correlates to student GPA at the end of the first year of college. Over the years, numerous studies in a large number of colleges show that the average correlation between the combined SAT Verbal and Math Scores and college grades is positive (.52). The SAT is used by a majority of schools, and approximately 60 percent of all high school graduates take the SAT. Counting the SAT II subject area test, the SAT is administered to over 2.2 million students each year across the United States and Internationally.

It is also well known that the sample of college-bound seniors in high schools is not a nationally-representative sample of all high school seniors, let alone all high school students. Because the test is self-selected (i.e., chosen by the students) by students who need the SAT for college admissions, the sample tends to be positively skewed toward college-going population, which is also skewed along certain socio-economic indicators and race ethnicity. For instance, students from low-income backgrounds, as well as those of minority descent, are less likely to register and take the SAT than students who are more affluent, white, or both. However, when used as a measure of those students who aspire to some form of postsecondary study, especially four-year schools, the SAT and SDQ provide very meaningful insight into the thoughts and directions of the college-bound population.

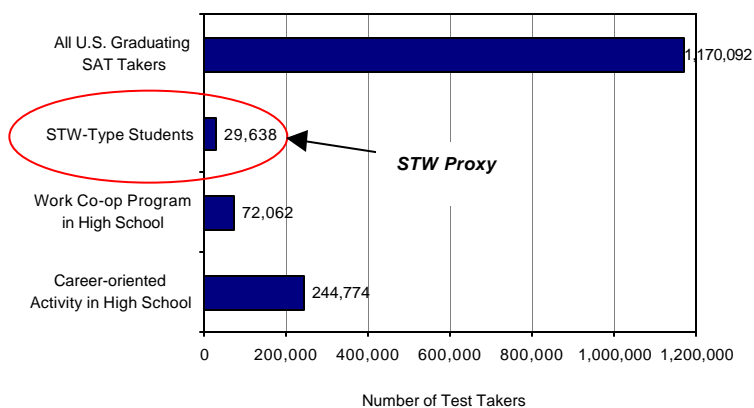


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To approximate students in the SDQ database that may have School-to-Work-type experiences, a proxy was developed using two items from the SDQ. The first asked students whether they had a career-oriented activity in high school. The second asked whether they took part in a work coop program in high school. Because the information from the SDQ is limited in terms of our ability to discern whether a particular student is “STW-like,” we will use the proxy as our stratifier. In some cases throughout this report, we also provide the data of students who had completed one or the other, plus the proxy itself.

FIGURE 1. Number of SAT Test Takers by Type



As can be seen in Figure 1, approximately 29,000 students (3 percent) from the SDQ universe of 1,170,092 fit our proxy measure. Over 72,000 (6 percent) students participated in a work coop program, and 244,774 (21 percent) participated in a career-oriented activity while in high school. While the percentages are not large, the sheer numbers provide a healthy sample for analysis.


The remainder of this report will provide an analysis of 1999 graduating SAT test takers that participated in both a career-oriented activity and worked at a co-op during high school with all graduating 1999 SAT test takers.

Findings


Socio-Economic Indicators

Analysis related to STW-type experiences is complicated by several socio-economic indicators: race/ethnicity, language acquisition, family income, and parents highest level of education. These indicators tell us that our STW-type cohort is much more likely than the remainder of the college-bound cohort to be minority, come from a household where English is not the primary language, have lower-family income, and whose parents are less likely to have a college background. The literature tells us that all these factors have great impact on a student's ability to overcome the odds and go to and complete college. It is likely, on the grand scale, that these students come from communities and families where college and academics are not as focused as in other SAT families. It is possible, if not likely, that many of these students are tracked into work experiences and other STW-type experiences as a non-college bound track. This is important to note when reviewing the upcoming findings. Given these background variables and the negative impact they have on academic development, it is not unusual to expect this group to achieve or aspire at levels less than their counterparts, the entire SAT/SDQ population of 1.1 million students. However, when these students do as well or better than the population at large, this could be construed as a very positive outcome. Of course, although the findings here do not statistically imply causation, they are both interesting and useful nonetheless.

Race and English as a second language. A greater percentage of those participating in both a career-oriented activity and work at a co-op in high school were minority students. About 32 percent of students participating in school-to-work type activities were non-Asian minorities compared with 21 percent of all 1999 graduating SAT takers. Nearly identical proportions of graduating SAT test takers participating in school-to-work activities and graduating SAT test takers overall reported a language other than English as their first language.

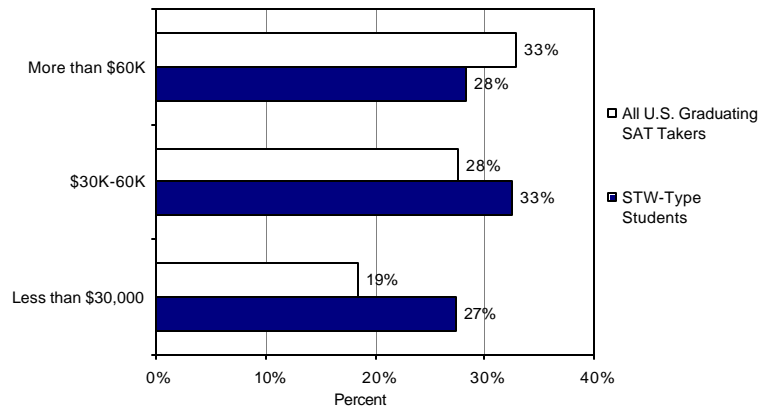


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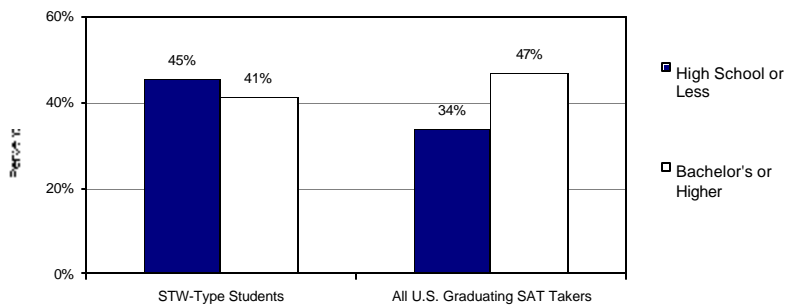
Family income. Students participating in school-to-work type activities were more likely to come from families with incomes under \$60,000 than SAT test takers overall. More than a quarter (27 percent) of the students who participated in a career-oriented activity and worked at a co-op in high school had family incomes of less than \$30,000 compared with 19 percent of all graduating SAT test takers. A higher percentage of students participating in school-to-work type activities also came from families with incomes of \$30,000 to \$60,000 than did SAT test takers overall.

FIGURE 2. Percent of STW-Type Students vs. All SAT Takers by Family Income



Parents' highest level of education. Parent's highest level of education is generally a strong indicator of whether a student will pursue a postsecondary degree. Generally, if a student has at least one parent who earned a bachelor's degree or higher, he/she is more likely to enroll in college. Thus, parents' highest level of education can be a critical determinant as to whether a student chooses to pursue postsecondary education. The highest level of education completed by almost half (45 percent) of the parents of students who participated in school-to-work type activities was high school. Among all SAT test takers, 34 percent had parents whose highest level of education was a high school diploma or its equivalent. SAT takers overall were more likely than SAT test takers who participated in a career-oriented activity and worked at a co-op to have at least one parent with a bachelor's degree or higher.

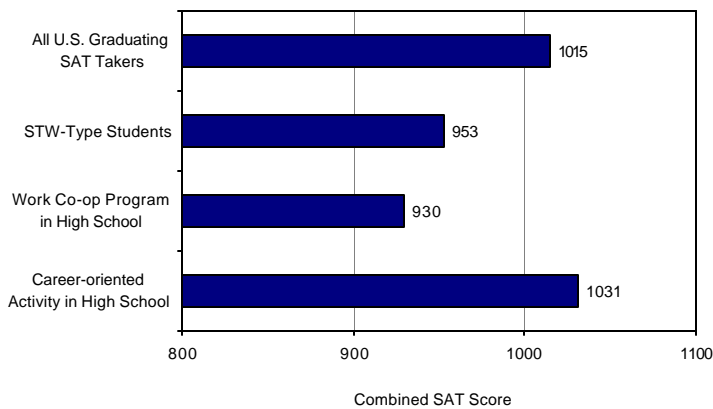
FIGURE 3. Parents Highest Level of Education by SAT Test Taker Type



Academic Indicators

SAT scores. These SAT takers had an average SAT 1 verbal score of 479 and an average SAT 1 mathematics score of 475. Average SAT scores for all graduating SAT test takers were 27 points higher on the verbal component and 34 points higher on the mathematics component. The average combined SAT score (V+M) for the SAT-wide cohort was 1015, compared to 953 for STW-type students. This difference, while statistically significant, represents a difference in about 2-3 questions on the three-hour examination. Thus, the data indicate that students who did not participate in both a career-oriented activity and work at a co-op had higher verbal, math, and, consequently, combined scores than students who did participate in these activities, but that considering our earlier discussion of socio-economic and other impacts, the scores of the STW-type cohort may be seen in a much more positive light.

FIGURE 4. Combined SAT Verbal and Math Scores by Type



Course taking and GPA. Through the SDQ, the College Board collects information about student course taking patterns throughout high school. Students who participated in the school-to-work type activities were more likely to take four years of English and three or more years of math than their counterparts. However, a greater proportion of graduating SAT test takers overall enrolled in at least one semester of pre-calculus or calculus than did SAT test takers who participated in school-to-work type activities. Thus, while the STW-type cohort did well in getting the academic fundamentals, as prescribed by the Carnegie Commission in 1983, there seems to be a barrier in moving toward the higher-level course work, such as AP. This could be a disadvantage for students during the college admissions process as well as in their academic development. In terms of GPA, 72 percent of students participating in school-to-work type activities had a B average or higher compared with 63 percent of all SAT test takers. The latter comparison may be affected by the fact that graduating SAT test takers overall were more likely to take higher-level mathematics classes than students who participated in a career-oriented activity and worked at a co-op, therefore reducing their GPAs.

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FIGURE 5. Course-Taking Characteristics of STW-Type Students Versus Entire SAT Cohort

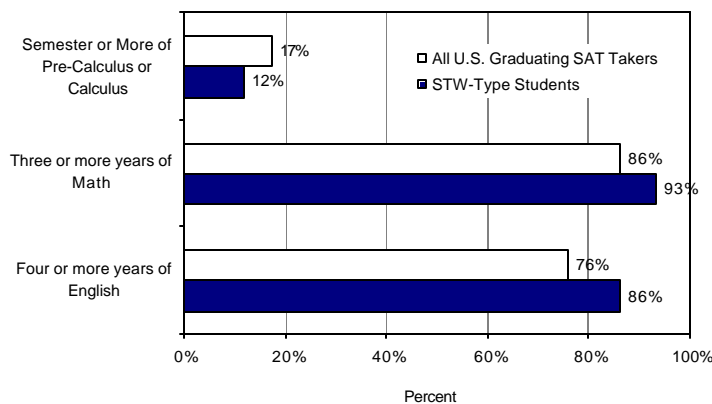
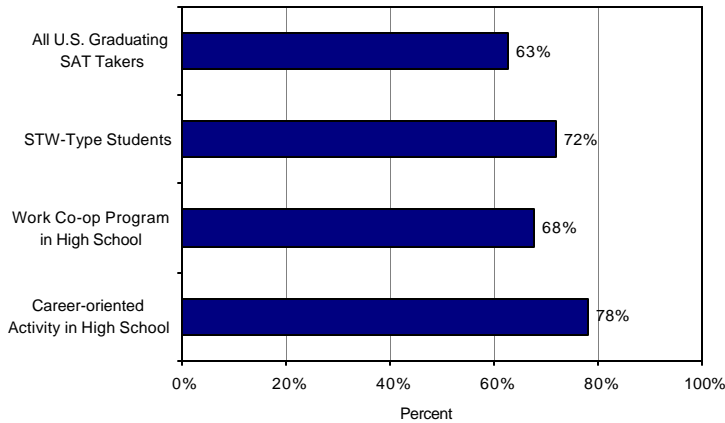


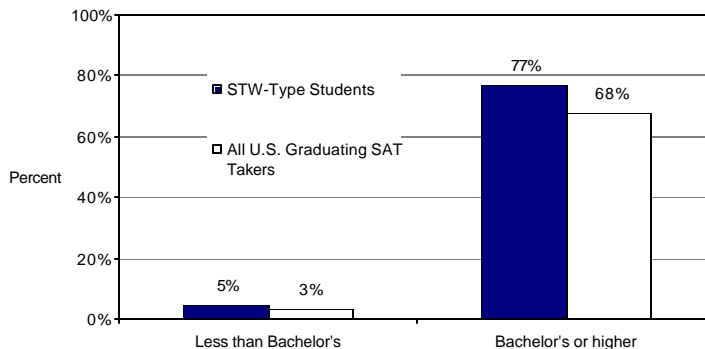
FIGURE 6. Percent of Students with a B or Better GPA



Degree aspirations and AP exemption plans. SAT test takers were asked what the highest degree was that they planned to attain. It is not surprising that the majority of all SAT test takers indicated that they intended to get a bachelor's degree or higher, as the SAT is often taken to gain admittance to a four-year college. However, a higher percentage of SAT test takers who participated in school-to-work type activities reported that they intended to attain a bachelor's degree or higher compared with graduating SAT test takers overall, despite the fact that a larger proportion of their parents had only completed high school. Their higher degree aspirations could be related to their involvement in school-to-work type activities. Similar percentages of all SAT test takers and SAT test takers that participated in school-to-work type activities (45 percent compared with 43 percent) planned to exempt from college coursework based on AP test scores.

A higher percentage of SAT test takers who participated in school-to-work type activities reported that they intended to attain a bachelor's degree or higher compared with graduating SAT test takers overall

FIGURE 7. Postsecondary Aspirations by Type



College level. While a higher percentage of SAT test takers who were involved with school-to-work like activities indicated that they planned to earn at least a bachelor's degree, a higher percentage of these students indicated that they were sending their SAT scores to a two-year college or vocational/technical school than SAT takers overall. A larger proportion of the former group of students also indicated that they would be sending their SAT scores to a four-year college or university than SAT test takers overall. Given the fact that the transfer rate between two- and four-year institutions is increasing, that may not be as much of a concern as time goes by. However, we also know that when students attend multiple institutions, and when they lengthen their postsecondary experience by a matter of semesters or years, they are less likely to persist to their goals than other students.

College major field of study. Despite participation in school-to-work activities, there was no difference between the two groups in terms of the percentage of students reporting that they would pursue a technical/vocational SAT major in college. Business and commerce was the most frequently selected anticipated major among SAT takers who participated in career-oriented activities and worked in a co-op. Health professions was the first most anticipated major of SAT test takers overall.

Conclusion

Although the SDQ does not specifically track students who are in school-to-work programs, it does provide useful data on students whose reported activities in high school make them likely school-to-work candidates. These students tended to come from poorer, less well-educated families, took less advanced coursework in mathematics, had lower SAT scores, were more likely to send their SAT scores to a vocational or two-year institution, and were more likely to be non-Asian minority students than 1999 SAT takers overall. However, a greater percentage of school-to-work type students also had a B or better GPA, and a higher percentage aspired to attain at least a bachelor's degree than 1999 SAT takers overall. While school-to-work type students may have come from less advantaged backgrounds, their performance in high school and their plans for the future show that factors other than socioeconomic background may be playing a role in their educational progress.

TABLE 1. Cross Tabulation of Various SDQ Items with STW-Related Student Experiences

| | Career-oriented Activity in High School | Work Co-op Program in High School | Career Oriented Activity AND Work Co-op in High School | All U.S. Graduating SAT Takers |
|--|---|---|---|--------------------------------------|
| #Students | 244,774 | 72,062 | 29,638 | 1,170,092 |
| Academic Outcomes | | | | |
| % of SAT Takers | 21% | 6% | 3% | 100% |
| SAT1 V Average | 517 | 465 | 479 | 506 |
| SAT1 M Average | 514 | 465 | 475 | 509 |
| V+M Average | 1031 | 930 | 953 | 1015 |
| GPA: B or Higher | 78% | 68% | 72% | 63% |
| Course Taking Patterns | | | | |
| Four or more years of English | 84% | 85% | 86% | 76% |
| Three or more years of Math | 94% | 92% | 93% | 86% |
| Semester or More of Pre- Calculus or Calculus | 20% | 11% | 12% | 17% |
| Income | | | | |
| Less than \$30,000 | 20% | 29% | 27% | 19% |
| \$30K-60K | 26% | 32% | 33% | 28% |
| More than \$60K | 36% | 27% | 28% | 33% |
| Parents Level of Education | | | | |
| High School or Less | 35% | 48% | 45% | 34% |
| Bachelor's or Higher | 53% | 39% | 41% | 47% |
| Anticipated College Majors | | | | |
| First | Health Professions 18% | Business & Commerce 17% | Business & Commerce 19% | Health Professions 14% |
| Most Anticipated Major | Business & Commerce 13% | Health Professions 17% | Health Professions 18% | Business & Commerce 11% |
| Third | Social Sciences & History 10% | Social Sciences & History 9% | Social Sciences & History 9% | Social Sciences & History 9% |
| Technical/Vocational SAT Major | 1% | 1% | 1% | 1% |
| Degree Goal | | | | |
| Less than Bachelor's | 3% | 5% | 5% | 3% |
| Bachelor's or higher | 79% | 73% | 77% | 68% |
| College Choice | | | | |
| Two-year College or Vocational/Technical School | 15% | 23% | 22% | 13% |
| Four-year College or University | 93% | 87% | 89% | 84% |
| College Activities | | | | |
| Co-op Work or Internship | 20% | 12% | 14% | 15% |