



Progress of DO-IT Participants Toward College and Careers

Current Results of the ALTS

by Sheryl Burgstahler, Elizabeth Moore, and Lyla Crawford

People with disabilities are underrepresented in challenging academic and career fields, including those in science, technology, engineering, and mathematics (STEM). Since 1992, DO-IT (Disabilities, Opportunities, Internetworking, and Technology) has undertaken activities to increase the success of people with disabilities in college and careers.

DO-IT has encouraged participation in STEM fields with funding from the National Science Foundation (NSF). DO-IT's latest NSF-funded projects are *AccessSTEM* and *AccessComputing*. The goal of *AccessSTEM* is to increase the number of individuals with disabilities who have degrees and careers in STEM. *AccessComputing* focuses more specifically on computing fields and employment.

The ALTS

The *AccessSTEM/AccessComputing/DO-IT* Longitudinal Transition Study (ALTS) explores college and career outcomes for students with disabilities who have participated in DO-IT activities that were at least partially funded by NSF. Current results can be found at <http://www.washington.edu/doit/Stem/tracking2.html>. This report summarizes DO-IT interventions and selected results of the ALTS.

The ALTS measures progress toward degrees and careers of students with disabilities who had a goal of postsecondary education while in high school and received DO-IT-sponsored interventions (e.g., internships, mentoring, college transition activities).

The ongoing study is designed so that participant responses can be updated and data can be analyzed at any time. Recognizing that some respondents in the study are still enrolled in secondary school or are recent high school

graduates, the researchers track the status of respondents as they progress through critical junctures that lead to degrees and careers (Figure 1). The ALTS Logic Model (Figure 2) provides a visual representation of DO-IT activities in which respondents were involved, as well as project outputs, goals, outcomes, and long-term impacts.

The data of ALTS respondents are compared to statistics from nationwide studies, including the National Longitudinal Transition Study (NLTS and NLTS-2) in which postsecondary education was part of participants' high school transition plans (SRI International, 1987-1993; Wagner et al., 2005).

Results

As of January 2009, ALTS included a total of 212 respondents with disabilities that affect:

- mobility 53%
- learning 25%
- psycho-social issues 22%
- hearing 14%
- vision 13%
- chronic health 9%

Participation

Respondents participated in the following evidence-based practices:

- *Technology access.* The proportion of respondents who had access to adaptive software or hardware was quite low (27%) before participation in DO-IT programs, but very high (61%) after participation.
- *Internships and other work-based learning.* Forty-four (44%) percent of respondents completed at least one internship.



- *Mentoring.* Ninety-five (95%) percent of respondents reported having access to mentors during program participation, up from 32% before participation.
- *College and career transition workshops and camps.* Approximately one half (53%) of respondents participated in college and career transition workshops or camps.
- *Other STEM activities.* One third of respondents were involved in other extracurricular STEM service groups, clubs, or other activities.

Participants and staff rated the value of all interventions highly for promoting college and career success.

Education

ALTS participants experienced a 100% high school completion rate; in comparison, the high school completion rate of NLTS and NLTS2 participants was 54% and 70%, respectively. Approximately half of both ALTS and NLTS postsecondary participants began their postsecondary studies at technical or two-year colleges.

An overwhelming majority (92%) of ALTS high school graduates attended a two- or four-year college, of which 93% attended within two years from high school graduation. This outcome suggests the positive impact of DO-IT interventions when compared to the NLTS participants of which 31% took a postsecondary course within two years after high school. This finding is not surprising to DO-IT staff who consider the ongoing program supports, as noted in DO-IT's critical junctures model (Figure 1), essential for many students with disabilities to transition successfully to and succeed in college and careers.

At the time the data was collected, 41%, 60%, and 58% of ALTS respondents at two-year, four-year, and graduate schools, respectively, majored in STEM. Fifty respondents earned a

total of 60 degrees, 33 (55%) of these certificates or degrees were in STEM. In contrast, a national postsecondary student aid study by the National Center for Education Statistics (NCES) (Berkner et al., 2005), found that even though undergraduate students with disabilities choose natural sciences and engineering at the same rate (18%) as students without disabilities, graduate students with disabilities are less likely than those without disabilities to major in natural sciences and engineering. Specifically, 9% of the NCES graduate students with disabilities majored in natural sciences and engineering as compared to 13% of graduate students without disabilities. These results suggest that DO-IT interventions may be helping to fill the gap in STEM studies between youth with and without disabilities.

Perhaps DO-IT's greatest impact on the number of STEM degrees earned by students with disabilities results from interventions that increase degree attainment overall. The total number of STEM degrees is likely larger than what it would be otherwise due to the increased pool of college graduates with disabilities as a result of these interventions. Data should be analyzed in light of the fact that DO-IT recruits students with disabilities who are not necessarily initially interested in STEM, as noted in the "Earlier Research Results Regarding DO-IT Interventions" section of this publication. Data suggest that DO-IT interventions increase the overall perception of career options of participants, particularly girls, and the interest in STEM of those not initially interested in STEM.

Post-School Employment

Forty-eight ALTS respondents were recorded as currently "employed" in positions. Employed respondents were engaged equally in STEM- and non-STEM-oriented work. When compared to respondents who were not yet in post-school employment, employed respondents had participated in more extracurricular STEM



organizations and activities (52%), were more likely to have been enrolled in postsecondary STEM studies, and, not surprisingly, had completed more years of college and earned more college degrees.

Many participants who pursued non-STEM careers (e.g., accounting, law, education, journalism) benefited from the STEM knowledge and encouragement they gained through DO-IT activities. Their positive responses to ALTS questions about the value of DO-IT interventions suggest that these activities supported the NSF goal of expanding the STEM literacy of all citizens. For example, participants who were encouraged to take mathematics courses as a result of DO-IT activities are prepared to pursue math-intensive careers such as accounting. Participants who became teachers are now in positions to encourage other young people with disabilities to consider STEM careers. Those who have become attorneys and other professionals serve as role models to young people with disabilities, helping them consider career options that they previously thought were unattainable.

Earlier Research Results Regarding DO-IT Interventions

The *DO-IT Scholars* program, originally funded in 1992 by NSF and now funded by the State of Washington, supports transitions from high school to college and careers for students with disabilities. *DO-IT Scholars* are college-bound high school students who face significant challenges in pursuing postsecondary studies and careers as a result of their disabilities. They are not necessarily initially interested in STEM fields, but program activities include those designed to increase interest and knowledge in STEM. By providing an on-campus summer study, year-round peer and mentor support, and work-based learning experiences, DO-IT helps these students develop self-determination, social, academic, technology, career, and employment skills and successfully transition to adulthood.

A rich body of evaluation and research data has been collected on this program. It includes reports from *Scholars*, parents, and mentors and analyzes the perceived value of program interventions and participant differences with respect to gender, disability, and STEM interest. Some of the results are summarized at <http://www.washington.edu/doi/Stem/tracking.html>. Highlights include the following:

- Parents of *DO-IT Scholars* reported that DO-IT increased their children's interest in college; awareness of career options; self-esteem; and self-advocacy, social, academic, career, and employment skills.
- *DO-IT Scholars* reported that DO-IT participation helped them prepare for college and employment; develop Internet, computer, self-advocacy, social, and independent living skills; increase awareness of career options; and increase self-esteem and perseverance.
- Those who participated in work-based learning opportunities reported increased motivation to work toward a career, gain knowledge about careers and the workplace, learn job-related skills, improve their ability to work with supervisors and coworkers, and increase skills in self-advocating for accommodations.
- Fewer participants with mobility impairments reported a career goal in STEM fields than those with other types of disabilities.
- There was a higher percentage of students who began with low interest or aptitude in STEM and majored in STEM fields as compared to those who began with interest or aptitude in STEM and majored in non-STEM fields in college.
- Significantly more males than females identified themselves as having STEM interests, strengths, and career goals.
- Career options perceived by both genders increased significantly during DO-IT participation; however, female participant perceptions changed more.



Conclusion

The ALTS and earlier studies suggest that DO-IT interventions positively impact high school and college graduation rates and career participation, particularly in STEM fields, for people with disabilities.

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Acknowledgments

The content of this publication was taken with permission from *Report of the AccessSTEM/AccessComputing DO-IT Longitudinal Transition Study (ALTS)* at <http://www.washington.edu/doit/Stem/tracking2.html>. The DO-IT Scholars program, in which many study respondents participated, has been primarily funded by the National Science Foundation (grant #9255803, 9550003, and 9800324) and the State of Washington since 1992.

The *AccessSTEM/AccessComputing* DO-IT Longitudinal Transition Study (ALTS) is supported by the National Science Foundation (award #HRD-0227995, HRD-0833504 in RDE, and CNS-0540615 and CNS-0837508 in CISE). Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.

About DO-IT

DO-IT (Disabilities, Opportunities, Internetworking, and Technology) serves to increase the successful participation of individuals with disabilities in challenging academic programs. Primary funding for DO-IT is provided by the National Science Foundation, the State of Washington, and the U.S. Department of Education. For further information, to be placed on the DO-IT mailing list, or to request materials in an alternate format, contact:

DO-IT
Box 354842
University of Washington
Seattle, WA 98195-4842
doit@u.washington.edu
<http://www.washington.edu/doit/>
206-221-4171 (FAX)
206-685-DOIT (3648) (voice/TTY)
888-972-DOIT (3648) (toll free voice/TTY)
509-328-9331 (voice/TTY) Spokane
Director: Sheryl Burgstahler, Ph.D.

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Figure 1. AccessSTEM: Progress of Teens with Disabilities Toward STEM Careers

Project Inputs Leading Students to Critical Junctures

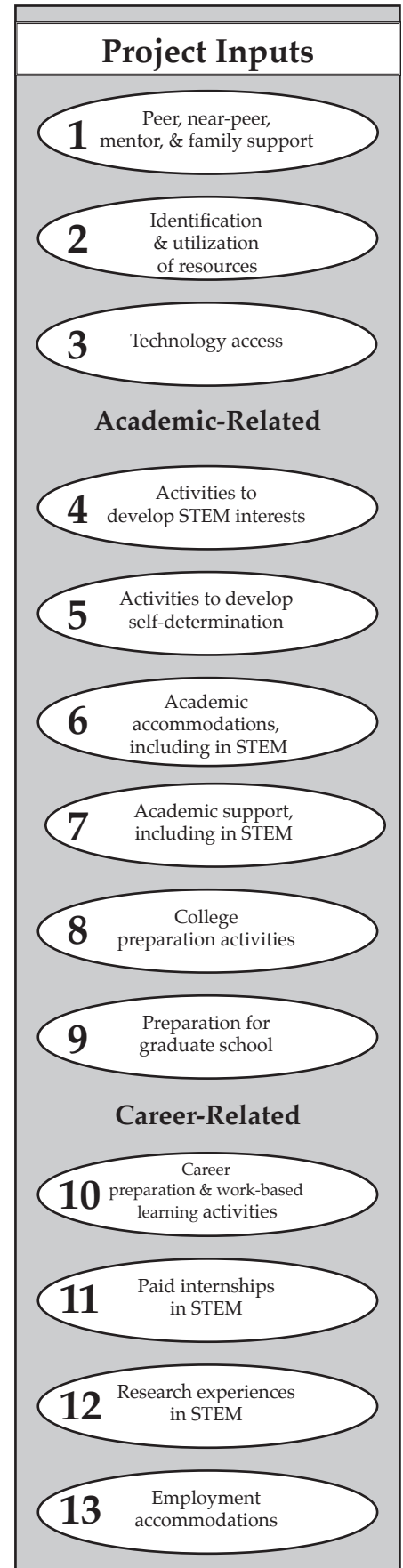
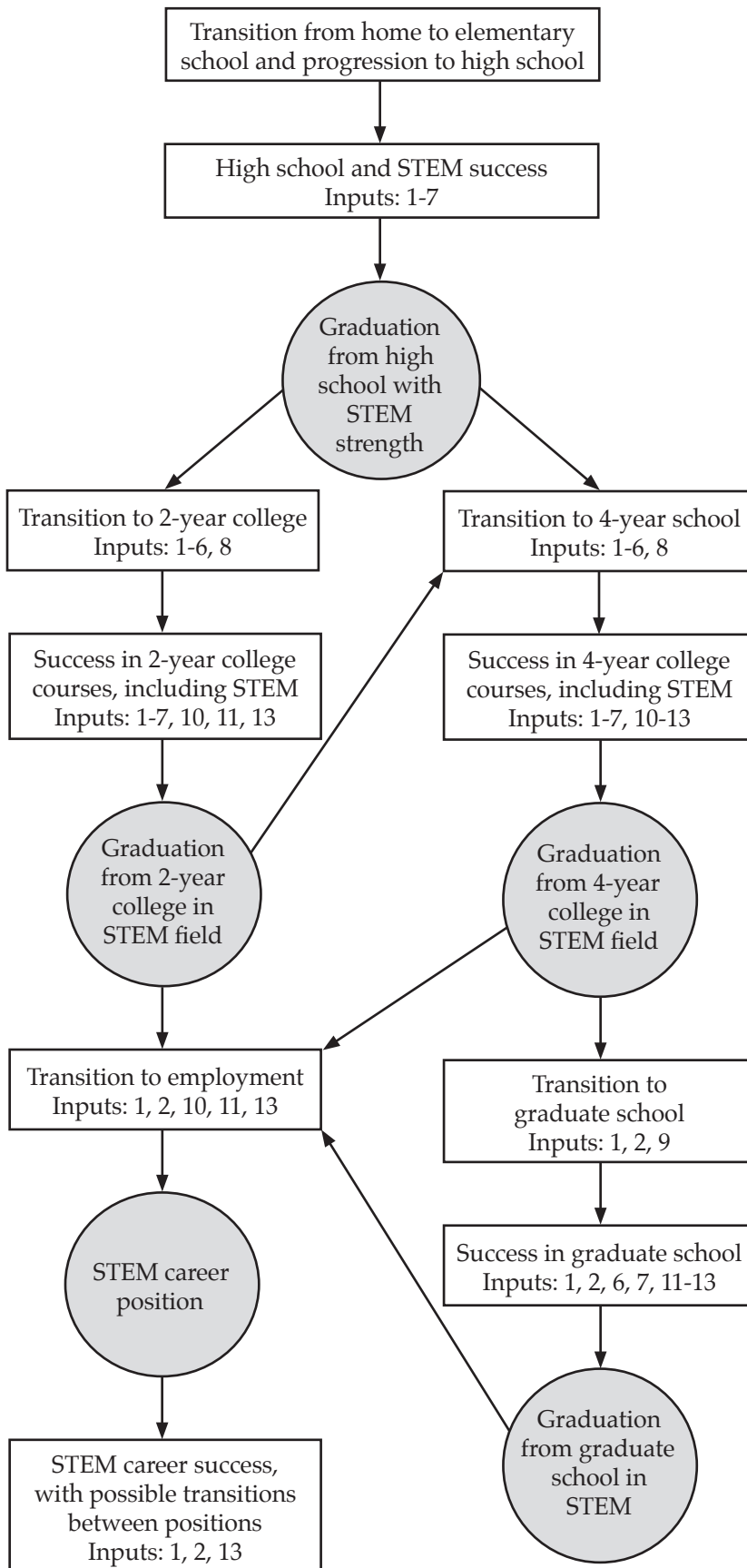
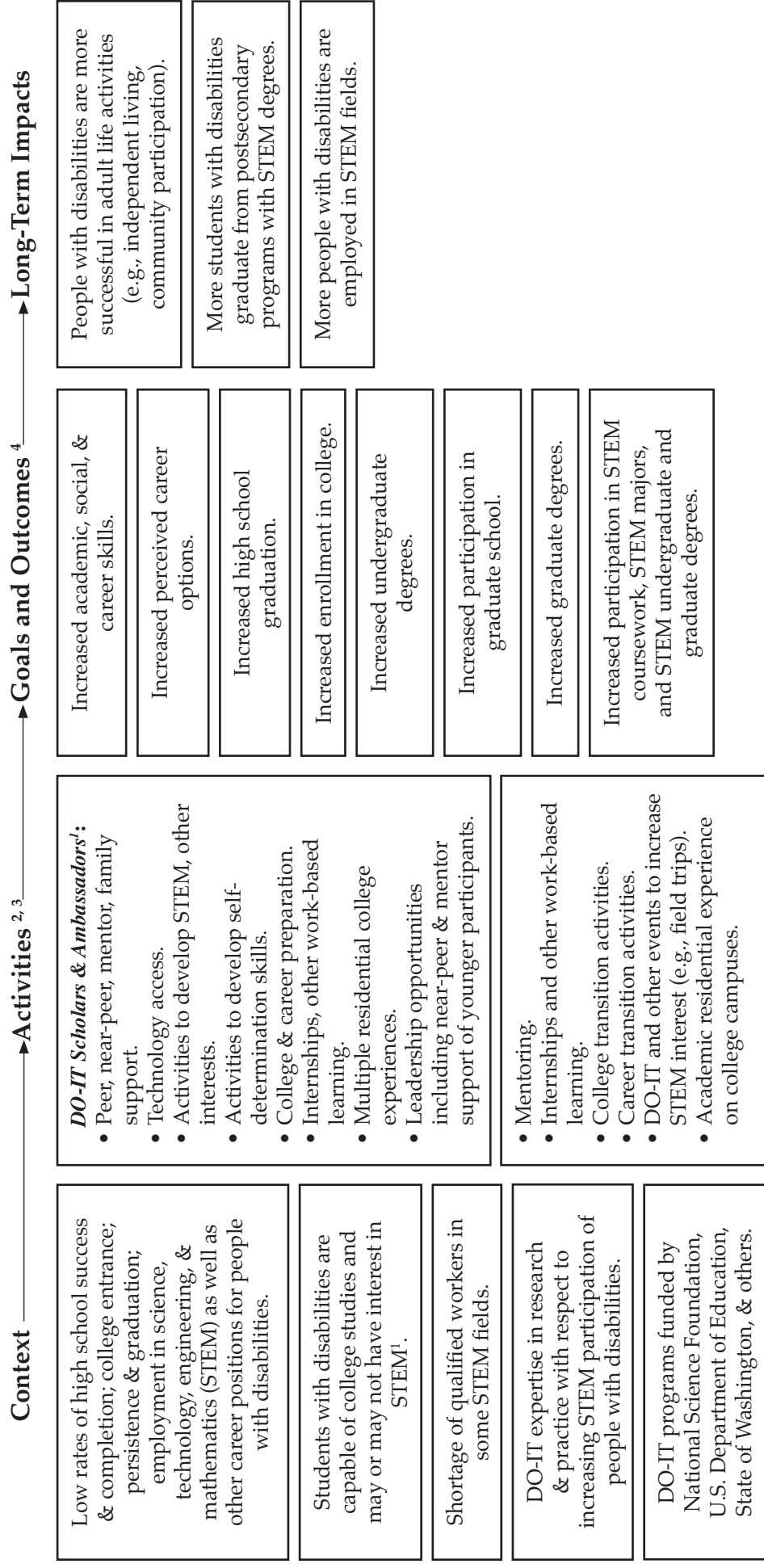


Figure 2. ALTS Logic Model



Notes:

- Participants in the *DO-IT Scholars and Ambassadors* program and other DO-IT activities are not necessarily initially interested in STEM. The program promotes general STEM interest and knowledge as well as college studies and careers in STEM and other pursuits based on individual needs and skills.
- An ALTS respondent may (a) be a *DO-IT Scholar or Ambassador* and receive multiple interactions as noted; (b) participate in a single activity; or (c) participate in several individual activities (e.g., internship and mentoring).
- Although *DO-IT Scholars and Ambassadors* receive more interventions than other participants, as a group they may be less likely to be initially interested in STEM than other participants who often enter the program because they are interested in STEM (e.g., as an *AccessSTEM* participant).
- These goals and outcomes are relative to available nationwide data, such as that from the National Longitudinal Transition Study (NLTS).