PRACTICE BRIEF
Academic Coaching: Outcomes from a Pilot Group of Postsecondary STEM Students with Disabilities

Scott Bellman
Sheryl Burgstahler
Penny Hinke
University of Washington

Abstract

Faced with poor retention and graduation rates for students with disabilities, postsecondary institutions have experimented with interventions to help students succeed in college. This practice brief describes a pilot initiative in which 41 students with disabilities pursuing science, technology, engineering, and mathematics (STEM) degrees at three postsecondary institutions engaged in weekly academic coaching sessions primarily aimed at improving students' executive functioning. Data collected through an online survey of participants at the end of the initiative suggests that the academic coaching services increased their self-confidence, motivation, and determination to succeed. Participants reported that they gained skills in time management, studying, note taking, organization, prioritization, writing, self-advocacy, and stress management as a result of the academic coaching. Although literature regarding academic coaching and students with disabilities has often focused on students with LD or ADHD, results of the pilot initiative suggest that students with a variety of disabilities can benefit from coaching relationships.

Keywords: STEM, disabilities, academic coaching, executive functioning

Individuals with disabilities experience less academic and career success than their non-disabled peers, particularly in fields such as STEM (National Science Foundation, 2012). Street et al. (2012) suggest that students with LD and/or ADHD may be at increased academic risk in STEM, at least in part because they cannot meet STEM course demands regarding executive functioning (i.e., managing the cognitive processes used in planning, organizing, strategizing, paying attention to details, and managing time). They point out that STEM courses place a particularly heavy demand on cognitive skills that are often weak in students with some types of disabilities. Since the development of the frontal cortex in humans and the associated acquisition of executive functioning skills continue well into the third decade of life (Giedd et al., 1999), appropriate interventions in the college years hold promise for improving the executive functioning of undergraduate students with disabilities.

Academic coaching interventions have been shown to help at-risk students acquire the skills necessary to succeed in a competitive postsecondary environment (Field, Parker, Sawilosky, & Rolands, 2013; Parker & Boutelle, 2009; Zwart & Kallemeyn, 2001). In a seminal book on the topic, ADHD coaching is described as "a unique collaborative relationship designed to help college students with ADHD develop the awareness, cognitive processes, behavioral patterns, and environmental structures needed to overcome the performance deficits caused by their disability" (Quinn, Ratey, & Maitland, 2000, p.17).

In an early study (Zwart & Kallemeyn, 2001), researchers explored the effectiveness of a peer-based coaching program designed primarily for college students diagnosed with ADHD and/or learning disabilities (LD). The purpose of the coaching intervention was to help students improve their self-efficacy and study strategies. The results suggest that students who participated in the coaching program experienced reduced anxiety and improved time management skills, motivation to take responsibility for school-related tasks, study skills, and test preparation strategies.

Observing that students most at risk for underachieving or dropping out of college are typically in their first or second year, one university adopted an academic coaching intervention designed to help first- and second-year students succeed in college studies (Robinson & Gahagan, 2010). In this work, academic coaching was defined as a "one-to-one interaction with a student focusing on strengths, goals, study skills,

engagement, academic planning and performance." Ninety-two percent of the participants in the intervention during the 2007-2008 school year improved their grade point average and otherwise demonstrated academic improvement over the academic year (Robinson & Gahagan, 2010).

In another study (Parker, Hoffman, Sawilowsky, & Rolands, 2011), seven undergraduates with ADHD who were enrolled in a highly competitive university setting participated in a semester-long pilot program that examined the effects of coaching on their executive functioning skills. All but one of the students had achieved a cumulative GPA of 3.0 or higher, suggesting that even high achieving students with impairments that affect executive functioning can benefit from academic coaching. Participants reported in interviews that coaching enhanced their ability to achieve academic goals, that they enjoyed working with their coaches, and that they felt less stressed and more in control of their lives. These findings, supported by quantitative data, suggest that coaching may help students with executive functioning challenges achieve greater academic success.

Another recent article (Field et al., 2013) explored the effects of academic coaching on learning and study skills, self-regulation, and subjective well-being of undergraduates with ADHD attending two- and four-year colleges. Results from this study, which included a control group, suggest that coaching can be highly effective in helping students improve their executive functioning skills and manage their daily stress. Specifically, students who received coaching earned higher scores on the Self-Regulation cluster of the Learning and Study Strategies Inventory and the College Well-Being Scale than did similar students in a comparison group.

Some studies have explored the characteristics of successful academic coaching programs. For example, Swartz, Prevatt, and Proctor (2005) studied the impact of an eight-week intervention in which graduate students in a Counseling and School Psychology program provided one-to-one coaching to undergraduate students with ADHD. The approach was designed to transfer responsibility for change to the undergraduate students by focusing on strategizing about behaviors, giving carefully tailored feedback, and asking questions rather than giving recommendations. Among other things, the study highlighted the importance of the quality of the student-coach relationship in the success of any coaching intervention.

Depiction of the Problem

The authors of this article, who have worked with students who have a wide range of disabilities as they transition to and pursue college studies, have observed that underdeveloped executive functioning presents a barrier to success for some students, particularly those pursuing rigorous fields of study such as those in STEM. Postsecondary STEM students with disabilities regularly talk about struggling to manage time, complete assignments, maintain focus or shift focus from one task to another, make plans, and organize tasks. Further, it has been observed that such struggles can affect a student's ability and/or motivation to maintain relationships on campus and engage in school-related activities.

In contrast to earlier studies that focused on students with LD and/or ADHD, the pilot study described in this article explored the efficacy of providing academic coaching services to postsecondary STEM students with a wide variety of disabilities who reported a need for academic support. While the coaching services offered in the current study were not specific to STEM coursework or learning, all participants were pursuing STEM fields.

Participant Demographics and Institutional Partners and Resources

Forty-one students who were members of the National Science Foundation-funded project called *AccessSTEM* (DO-IT, 2013a), which is directed by the Disabilities, Opportunities, Internetworking, and Technology (DO-IT) Center at the University of Washington (DO-IT, 2013b), participated in at least one session of the *AccessSTEM* pilot coaching initiative. About half of the students identified as male (53%), while the other half (47%) identified as female. Students reported their disabilities as follows: 11 (27%) had attention deficit disorder (ADD) or ADHD; nine (22%) had a mobility impairment; eight (20%) had a learning disability; eight (20%) had a mental health diagnosis such as depression or anxiety; four (10%) had a sensory impairment; four (10%) had a systemic health diagnosis; three (7%) had post-traumatic stress disorder; two (5%) had an autism spectrum diagnosis; and two (5%) had Tourette's syndrome. Ten students (24%) reported having more than one disability. Four students (10%) reported that they were a veteran of the United States military.

Twenty-nine (71%) of the students were attending a two-year community college and twelve (29%) were enrolled at a four-year institution. Twenty-eight (68%) students identified their race as Caucasian; eight (20%) identified as Asian; six (15%) identified as African

American; one (2%) identified as Hispanic; and one (2%) identified as American Indian. Three students (7%) reported belonging to more than one race.

Students learned about the coaching service through a combination of announcements and referral. The pilot initiative was advertised in the *AccessSTEM* electronic community, in the *Opportunities!* Newsletter sent to *AccessSTEM* members, and in flyers distributed to disability support offices at the participating institutions. Ultimately, the most effective form of student recruitment proved to be through faculty and staff member referrals after hearing about the academic coaching service through email announcements on campus or through their relationships with staff of the DO-IT Center.

Description of Practice

The purpose of the *AccessSTEM* academic coaching pilot initiative was to employ evidence-based practices in academic coaching to help postsecondary STEM students with a range of disabilities develop skills and strategies in support of their academic goals. The service was provided at no cost to *AccessSTEM* students enrolled at the University of Washington, Bellevue College, and South Seattle Community College. Funding to support the initiative was provided by the University of Washington and the National Science Foundation. The academic coach traveled to the three campuses to provide the service in-person. In between sessions, the coach communicated with students via telephone and email.

For the purpose of this intervention, academic coaching was defined as a "one-to-one interaction with a student focusing on strengths, goals, study skills, engagement, academic planning and performance" (Robinson & Gahagan, 2010). Recognizing that everyone is different and that even the same disability can affect people differently, coaching sessions were tailored to the specific needs of each student. Concepts fundamental to the practice of coaching – self-assessment, reflection, and goal setting – provided the framework for the coaching intervention (Robinson & Gahagan, 2010). Quality counseling and communication skills such as listening, reflection, questioning, and empathy perceived as important to the success of the intervention (Swartz et al., 2005) were utilized. Students were offered one-hour in person coaching sessions each week. Some chose to attend sessions less frequently.

The academic coach utilized in the current study had over ten years of experience providing coaching services at several universities in England. The coach had completed the Portfolio of Experience for Study Skills Support Tutors by demonstrating proficiency in three core skill areas: (1) Designing and Implementing an Individualized Learning Plan, (2) Effective Communication and Specific Learning Disabilities, and (3) The Learning Process of Specific Learning Disabilities: Assessment and Analysis. The coach also participated in semi-annual training workshops and conferences over many years and held a Certificate in Personal Coaching from the Coaching Academy (www.the-coaching-academy.com/). More information about credentials and training for academic coaches is available at TREE (http://www.ntatutor.com/certification-training-topics-for-academic-coaches.html), the Center for Credentialing and Education (http://www.cce-global.org/bcc/training), and the International Coach Federation (http://www.coachfederation.org/).

Student Self-assessment. During the initial meeting, the academic coach and student discussed the student's challenges, strengths, resources, and perceived needs as well as his/her expectations for coaching. Students were asked to identify short-term and long-term academic goals and to evaluate skills related to time management, studying behaviors, interpersonal communication, organization, and academic planning. Self-reporting that occurred during these initial conversations provided a foundation for future work.

Inquiry model. During subsequent sessions, the coach asked a series of open-ended questions in an effort to learn more about the student's interests, goals, and motivations. This coaching approach, referred to as the "inquiry" model, emphasizes asking over telling (Parker & Boutelle, 2009; Robinson & Gahagan, 2010). By asking specific types of questions, the coach also modeled reflective thinking and helped students develop the ability to plan and set goals. This has been found to be especially important for students with ADHD, who benefit from having decision-making, prioritizing, and time management skills modeled for them (Parker & Boutelle, 2009). Coaching also encouraged students to replace negative thoughts with positive ones and to view their challenges from different perspectives. Parker and Boutelle (2009) discussed how coaching influenced undergraduates' use of "self-talk" in this manner.

Evaluation of Observed Outcomes

Coaching services were offered during the 2011-2012 and 2012-2013 academic years. At the end of the each academic year, students provided feedback about the coaching experience through an online survey consisting of six open-ended questions. The survey was created by the coach and a project evalua-

tor and administered anonymously online. Participants were given the opportunity to respond but were not required to do so. Survey results from 16 students who completed more than three coaching sessions and responded to the survey are described below. On average, these participants attended 12 coaching sessions. The majority of survey respondents engaged in in-person, weekly coaching sessions during an academic quarter.

Item 1. What impact, if any, have the academic coaching sessions had on you? Students mentioned, in order of decreasing frequency:

Improved structure, organization, or time management skills	7
Decreased stress, felt reassured or supported	5
Increased motivation, confidence, self-esteem, or self-advocacy	5
Gave effective strategies to meet goals	4
Improved communication or writing skills	3
Improved ability to focus on tasks	3
Clarified goals or provided support for goals	2

One student stated, "The academic coaching has really helped my self-esteem greatly." These results seem to reflect cognitive and affective benefits reported in other studies.

Item 2. In what ways, if any, has participating in the academic coaching sessions helped you achieve your educational or personal goals? Students mentioned, in order of decreasing frequency:

Improved goal setting, prioritization of goals, or goal advancement	6
Increased confidence/self-advocacy or decreased self-criticism/negativity	6
More focused and organized career search, or internship success	5
Improved writing, reading, study skills, or information retention	2
Experienced reduced stress or manages stress better	2
Improved awareness/strategies to overcome barriers imposed by disability	2
Improved grade point average	1

Specific comments included: "The work we do is invaluable and I can't put a price on [my coach's] gifted tutoring and support," and "The academic coaching has made my grades better and I am able to navigate school transitions easier and talk to school officials better."

Item 3. Do you feel that participating in the coaching sessions has made a difference in where you are today? Every student responded "yes" to this question.

Item 4. Please describe the differences you have experienced as the result of participating in the coaching sessions. What, specifically, has changed? Students mentioned, in order of decreasing frequency:

Improved self-awareness or confidence	6
Improved organization, goal-setting, or priority-setting	5
Improved emotional regulation, stress management	5
Feeling of being supported	4
Improved learning strategies or knowledge retention	4
Improved communication	2

One student said, "I am now able to ask better questions to my professors and the school financial aid, registrar, and disability service offices."

Item 5. List three strategies or skills you have learned as a result of participating in the coaching sessions. Students mentioned, in order of decreasing frequency:

Time management and organization skills	8
Goal setting	5
Strategies to improve writing and reading skills	4
Study skills	2
Breaking projects into smaller steps or making outlines	2
Self-awareness	2
Utilize existing resources	2

Students also mentioned seeing things to completion, test-taking strategies, and asking others for feedback about progress.

Additional feedback was received when participants shared benefits of academic coaching with their academic coach and with the *AccessSTEM* electronic community, which includes peers and mentors interested in STEM fields. Students with a variety of disabilities talked about learning how to prioritize action items, figuring out how to obtain the right accommodations, learning how to stay on track when things did not go as planned, gaining perspective, acknowledging success, improving time management skills, and organizing things such as email messages, notebooks, calendars, and other correspondence.

Discussion

As noted earlier, development of the frontal cortex and the associated acquisition of executive functioning skills continues well into one's 20s. This is of particular importance when one considers that postsecondary STEM students with disabilities are often undergraduate students aged 18-25 who are not faring well in retention and graduation rates compared to their non-disabled peers. Although the literature regarding academic coaching and students with disabilities has often focused on students with LD and/or ADHD, the results of the *AccessSTEM* academic coaching pilot initiative suggest that students with a variety of disabilities can benefit from coaching relationships. Every participant who completed the survey responded that coaching had made a difference in his or her life. Overall, students reported that coaching helped them learn new skills and strategies to help them succeed at college.

Data collected during the pilot initiative also suggests that the academic coaching service improved the study skills, self-confidence, and motivation of postsecondary STEM students with a variety of disabilities. Specifically, students identified time management, note taking, organization, prioritizing, writing, self-advocacy, and stress management among the strategies and skills they had learned through their academic coaching experiences. These reports suggest that the academic coaching services provided in the pilot study enhanced the executive functioning of students with disabilities, increasing their capacity to manage the cognitive processes used in planning, organizing, strategizing, paying attention to details, and managing time.

Implications and Portability

Individuals who wish to implement coaching interventions on other campuses can benefit from the developing literature base that defines critical aspects and perceived benefits of academic coaching and the existence of training programs for academic coaching. However, the lack of availability of well-trained coaches and funding to support their work remains a barrier to wide-scale implementation of academic coaching services at postsecondary institutions.

Limitations in this pilot study are related to the small size of the participant group and lack of a comparison group, the qualitative nature of the self-reported student feedback, and issues related to self-selection. However, the results of this pilot initiative add to the growing body of evidence that students with disabilities perceive that academic coaching helps them acquire executive functioning skills that contribute to academic success.

The authors recommend that future research be undertaken to explore the efficacy of providing academic coaching to postsecondary STEM students with a wide range of disabilities. Future efforts could include the utilization of a control group, comparisons of reported gains and academic success by disability type, and pre/post measures of skills and well-being.

References

DO-IT (2013a). *AccessSTEM*. Retrieved from www.washington.edu/doit/Stem/

DO-IT (2013b). *DO-IT*. Retrieved from www.washington.edu/doit

Field, S., Parker, D., Sawilowsky, S., Rolands, L. (2013) Assessing the impact of adhd coaching services on university students' learning skills, self-regulation, and well-being. J*ournal of Postsecondary Education and Disability, 26*(1), 67-81.

Giedd, J. N., Blumenthal, J., Jeffries, N., Castellanos, F.., Liu, H., Zijdenbos, A., Paus, T., Evans, A., et al. (1999, October). Brain development during childhood and adolescence: a longitudinal MRI study. *Nature Neuroscience 2*(10), 861–863.

National Science Foundation. (2012). *Women, minorities, and persons with disabilities in science and engineering*. Arlington, VA: Author. Retrieved from http://www.nsf.gov/statistics/nsf03312/

Parker, D. R., & Boutelle, K. (2009). Executive function coaching for college students with learning disabilities and ADHD: A new approach for fostering self-determination. *Learning Disabilities Research & Practice, 24*(4), 204-215.

Parker, D. R., Hoffman, S. F., Sawilowsky, S., & Rolands, L. (2011). An examination of the effects of ADHD coaching on university students' executive functioning. *Journal of Postsecondary Education and Disability, 24*(2), 115-132.

Quinn, P. O., Ratey, N. A., & Maitland, T. L. (2000). *Coaching college students with AD/HD: Issues and answers.* Washington, D.C., US: Advanced Books, 21-43.

Reaser, A., Prevatt, F., Petscher, Y., & Proctor, B. (2007). The learning and study strategies of college students with ADHD. *Psychology in the Schools, 44*(6), 627-637. doi:10.1002/pits.20252

Robinson, C., & Gahagan, J. (2010). Coaching students to academic success and engagement on campus. *About Campus*, 26-29. doi:10.1002/abc.20032

Street, C., Koff, R., Fields, H., Kuehne, L., Handlin, L., Getty, M., & Parker, D. (2012) Expanding access to STEM for at-risk learners: A new application of universal design for instruction. *Journal of Postsecondary Education and Disability, 25*(4), 363-375.

Swartz, S. L., Prevatt, F., & Proctor, B. E. (2005). A coaching intervention for college students with attention deficit/hyperactivity disorder. *Psychology in the Schools, 42*(6), 647-655. doi:10.1002/pits.20101

Wolf, L. E. (1999). College students with ADHD and other hidden disabilities: outcomes and interventions. *Annals of the New York Academy of Sciences*, 385-395. Online Wiley Library.

Zwart, L. M., & Kallemeyn, L. M. (2001). Peer-based coaching for college students with ADHD and learning disabilities. *Journal of Postsecondary Education and Disability, 15*(1), 1-15.

About the Authors

Scott Bellman is manager of programs at the DO-IT (Disabilities, Opportunities, Internetworking, and Technology) Center at the University of Washington. Scott received a M.A. degree in rehabilitation counseling from the University of Iowa in 1996. His interests include inclusive STEM education and the career development of postsecondary students with disabilities. He can be reached at: swb3@uw.edu.

Penny Hinke worked as a Study Coach for students with disabilities for Access SUMMIT at The University of Manchester (UK) from 2000 to 2010, and worked at the DO-IT (Disabilities, Opportunities, Internetworking, and Technology) Center at the University of Washington as an Academic Coach for postsecondary students with disabilities from 2011 to 2013. Penny received her Bachelor's and Master's degrees in French from the University of Wisconsin-Madison. Her interests include teaching and coaching students with disabilities. She can be reached at: penny.hinke@goddard.edu.

Sheryl Burgstahler founded and directs the DO-IT (Disabilities, Opportunities, Internetworking, and Technology) Center at the University of Washington (UW) and directs UW's Access Technology Services. Dr. Burgstahler is an affiliate professor in the College of Education. Her teaching and research focus on the successful transition of students with disabilities to college and careers and on the application of universal design to technology, learning activities, physical spaces, and student services. She can be reached at: sherylb@uw.edu.

Authors' Note

This material is based upon work supported by the National Science Foundation under award #HRD-1042260 and #HRD-0833504. Any opinions, findings, and conclusions or recommendations expressed in this paper are those of the authors and do not necessarily reflect the views of the National Science Foundation.