

The Midwest Explorer: The Midwest Alliance Newsletter. Vol. 3, No. 1, Spring 2009

Cover Story: Been There, Done That: Midwest Alliance Mentors Help Students with Disabilities Explore STEM

Fear of the unknown can be a powerful thing. When the unknown centers around life after high school and you have a disability, things can get really tricky. Add the possibility of STEM and fear can escalate into inaction and wasted potential.

The Midwest Alliance offers a mentoring program that strives to make navigating the unknown—in this case, postsecondary education in STEM—less frightening for students with disabilities in Illinois, Iowa and Wisconsin. The program matches mentors, who are college or university students or alumni with disabilities, with high school or college underclassmen mentees with similar interests and backgrounds. Face-to-face and electronic interactions focus on self advocacy, transitioning to higher education, academic accommodations and study skills.

Both sides of the mentoring relationship realize substantial benefits. Mentees gain guidance and support from a mentor with similar academic or professional interests; help with building skills and knowledge; assistance in transitioning from high school to postsecondary education; and the ability to earn stipends. Mentors acquire satisfaction from helping others with similar interests; leadership experience; access to learning resources such as specialized training, referrals and consultation; and stipends.



For mentor Andrew Archer, a graduate student in Social Work at UW-Madison, who uses instant messaging and e-mail to keep in contact with his two mentees, the program's use of technology is enhancing his mentoring experience. In addition to removing barriers of distance, he believes the Internet allows for physical anonymity and restricts superficial judgments, both important benefits for quickly advancing dialogue.

“One of my students disclosed his (disability) early on in the program,” he said. “The ease of disclosure on the Internet has made it very easy for my mentees to communicate their personal concerns and seek out information about how I have dealt with life transitions.”

Andrew feels the digital organization of the Midwest Alliance mentoring program makes it efficient, successful and groundbreaking.

“Helping these two individuals with goal setting, socializing and self advocacy has affirmed my beliefs that the Internet is a tool that will progressively change the scope of human services,” he said. “The focus is not on the individual’s disability. Instead it gives these very successful individuals free rein to express their interests with someone they know will be an objective, attentive listener (reader).”



Mentor Stacy Ellingen, a senior at UW-Whitewater, used her personal experiences navigating through college with a disability to help her mentee avoid some of the pitfalls she encountered.

“My mentee had high expectations for himself, which was great, but needed some guidance with time management and self-advocacy,” she related. “I shared some of my experiences, which helped him see how to self advocate.”

Her efforts paid off when her mentee succeeded in asking for accommodations for his college sociology course, in which he scored among the highest in his class on the midterm. With her encouragement, he completed his college applications, and she’s confident he’ll be successful there.

Sidebar:

Interested in being a part of the Midwest Alliance Mentoring Program? Visit www.stemmidwest.org to learn more about eligibility and participation requirements.

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PI's Corner

Welcome to the Spring 2009 edition of the Midwest Alliance newsletter! We hope you'll find our new format more reader-friendly and useful.

The most notable change is that our newsletter is now called *The Midwest Explorer*. The title reflects our basic reason for existence: To encourage as many students with disabilities as possible to consider STEM and to help them explore the countless possibilities these fields of study represent.

You'll also notice that we've updated the newsletter's look and design to make it more accessible. We hope that these changes will broaden the reach of the newsletter and make it easier for our readers to find the information that is of interest to them.

In addition to these changes, we'd like to point out some upcoming Midwest Alliance events we hope you'll take part in. Key among them is our workshop on students with disabilities and STEM on April 1 and 2 at the University of Northern Iowa, which aims to build relationships among the various constituents who serve students with disabilities so that these students can reach their full potential.

On June 22 and 23 we'll host a second National Workshop at the University of Illinois. This time we're focusing on students with psychological disabilities and identifying successful practices and other methods to improve their educational access.

Immediately following the National Workshop, we'll offer an immersion experience in design for students with disabilities. "Exploration by Design: How Stuff Works" will use hands-on activities, experiments and discussion to explain how the way things work relates to design and STEM overall.

Mark your calendars and join us for these and other exciting programs coming out of the Midwest Alliance. And thank you for taking the time to learn more about what we're doing to encourage students with disabilities and provide meaningful opportunities for them. We appreciate your interest and support.

Sincerely,

Jay K. Martin
Principal Investigator



Midwest Alliance Helping Research Mentors Meet the Needs of Students with Disabilities

By Christine Pfund

The Delta Program (www.delta.wisc.edu) is a research, teaching and learning community that helps current and future faculty succeed in the changing landscape of science, engineering and math higher education. The program's three core principles—teaching as research, learning through diversity, and learning community—support science faculty in their ongoing improvement of student learning. A recent partnership with the Midwest Alliance is allowing us to better incorporate the needs of students with disabilities into these methodologies and is integral to our development of an expanded research mentor training curriculum.

The success of an independent research experience depends largely on a positive relationship between the student and the research mentor. Therefore, it is vital that faculty serve as effective mentors. While many efforts focus on helping prospective and new faculty learn skills in grant writing, lab management and classroom teaching, mentoring has been conspicuously absent.

To address this gap, the Wisconsin Program for Scientific Teaching developed the Mentor Seminar to train research mentors to communicate effectively, consider issues of human diversity, discuss mentoring approaches with colleagues, and apply a “scientific teaching” approach to mentoring. The seminar's goal is to train graduate students and post-docs in effective mentoring techniques. To date, more than 300 mentors have been trained at UW-Madison. In addition, the Mentoring Seminar has been taught at 32 institutions nationwide to over 900 graduate and post-doc students. A guidebook for leading the seminar is available online at: http://www.hhmi.org/resources/labmanagement/downloads/entering_mentoring.pdf.

With funding from the National Science Foundation, the Delta Program is currently working to adapt and enhance the Mentor Seminar's training and materials for broad use across STEM. In addition to disciplinary adaptations, the Program is working to infuse diversity issues throughout the program to develop cultural competency in mentors and to help them develop it in their mentees.

Our collaboration with Midwest Alliance staff has helped us consider the needs of mentees with disabilities in this process. The partnership is enhancing research mentor training and bringing to the forefront issues mentors need to consider in order to work most effectively with mentees who have both visible and invisible disabilities.

Dr. Christine Pfund is the Associate Director of the Delta Program in Research, Teaching and Learning and co-Director of the Wisconsin Program for Scientific Teaching at UW-Madison. She is connected with many of the major National Science Foundation initiatives at UW-Madison targeted at improving graduate and undergraduate education in the sciences, including several efforts focused on diversity issues.



SSI Placement Inspires Midwest Alliance Participant

Cameron Webb does not want to be normal. He explains himself by way of example, pointing out that a normal person who receives an electric shock after pulling a lever thinks, “I guess I shouldn’t do that,” and walks away. A person who wonders if that happens every time and pulls the lever again, well, that not-exactly-normal person is a scientist.

“The most useful part of science is the mistakes,” he observes. “And simply thinking about science, wondering what happens if...—*that* is the best part.”

Eighteen-year-old Cameron has always been curious, skeptical and particularly quick to discern exceptions to anything presented as a rule, but it wasn’t until he became immersed in the scientific method and hands-on research during his Midwest Alliance placement at the Summer Science Institute that he recognized himself as a scientist.

“He has such an inquisitive mind about science,” noted Gloria Belken, who served as Cameron’s Midwest Alliance mentor. “Well advanced over his peers.”

Yet in a traditional high school setting, Cameron’s unique perspectives and idiosyncratic learning style are generally not perceived as blessings, but obstacles. When he appears to be daydreaming, Cameron might actually be pondering the taste difference between *sevendehydrocholerstrol* and its radiated counterpart, *cholecalciferol* (i.e., vitamin D in our bodies and vitamin D from sunshine). Or wondering why hematite—two molecules of iron and three of oxygen—is bright red, while magnetite—three molecules of iron and four of oxygen—is black?

As a member of Robert Bohanan’s aquatic biology research team at SSI, such inquisitiveness was welcome for the in-depth, applied research the participants conduct. SSI also stresses the importance of working with others and that a “real” scientist is one who practices scientific methodology, which is required of all SSI participants, all lessons Cameron has taken to heart. Inspired by his experiences at SSI, he plans to pursue a career in consumer science, where he would like to search for exceptions to the rule that result in new or different applications.

“What if there was some way to turn a CD player into a pacemaker, or something like it, which could be really inexpensive?” he wonders.

He has similar ideas about glo-sticks, hair products and food preservatives and believes scientists are obliged to make science interesting.

“If I could be on a scientific team with a scientist who was fun or one who knew more but was boring, I would choose the fun scientist,” he notes.

Asked if he himself would like to become a fun scientist, Cameron replied, “I *am* a fun scientist.”



Summer Science Institute Makes Accommodations an Area of Focus with Support from the Midwest Alliance



By Robert Bohanan

The Summer Science Institute is one of several programs at UW-Madison's Center for Biology Education that seek to improve participation of students from groups traditionally underrepresented in the sciences. Our specific aim is to attract a diverse group of students who are interested in science in general and in life sciences specifically, and to support development of attitudes, knowledge and skills that will help them be successful as undergraduates in STEM. We take pride in our efforts to improve participation in STEM by learners from a variety of ethnic, socio-economic and cultural backgrounds.

As an instructor in a large introductory biology course at UW-Madison, I have been struck by a more invisible diversity among students in my class, up to 15 percent of whom use some form of accommodation on exams and quizzes. This prompted me to question how my own teaching and our summer programs could better support diverse learners who may benefit from such accommodations. Our collaboration with the Midwest Alliance has allowed us to further our mission at SSI by including students with disabilities.

The Midwest Alliance staff helps SSI recruit prospective participants and then supports the students and their families with the application and orientation processes. Midwest Alliance participants in the Summer Science Institute are eligible to count this camp as their internship and they receive a \$500 stipend. Both they and their parents receive additional assistance from the Midwest Alliance in finding other beneficial opportunities, including the chance to be in a mentoring relationship with a college student or alumnus who has a disability. Visit www.stemmidwest.org to learn more.

The intensive, immersion-like SSI experience, which gives many students their first taste of supervised independence, is very challenging and the staff works hard to balance program structure and student needs. The Midwest Alliance staff facilitates discussion among SSI

program staff, district staff, students and families to ensure a positive experience. Our partnership with Midwest Alliance has taught us that accommodations cannot focus solely on academics, but need to be integrated into daily living, safety, social and recreational activities as well.

Our work with the Midwest Alliance has allowed us to explore a range of mutually beneficial program possibilities, which has not only helped our work with the Midwest Alliance students, but added significantly to our work with all of our students. Most importantly, our staff is more keenly aware of the less visible forms of diversity undoubtedly present in our learning communities. Thanks to our collaborations with Midwest Alliance, we're better prepared to work with students with disabilities and inspire them to pursue fields of study and careers in STEM.

Robert Bohanan coordinates Center for Biology Education science enrichment programs including the Summer Science Institute and Precollege Enrichment Program for Learning Excellence at UW-Madison in partnership with the School of Education. He leads SchoolYard Biology, an NSF-funded inquiry-based professional development partnership as part of the North Temperate Lakes Long-term Ecological Research. Robert teaches ecology in Introductory Biology and a graduate seminar on inquiry-based teaching and learning at UW-Madison.

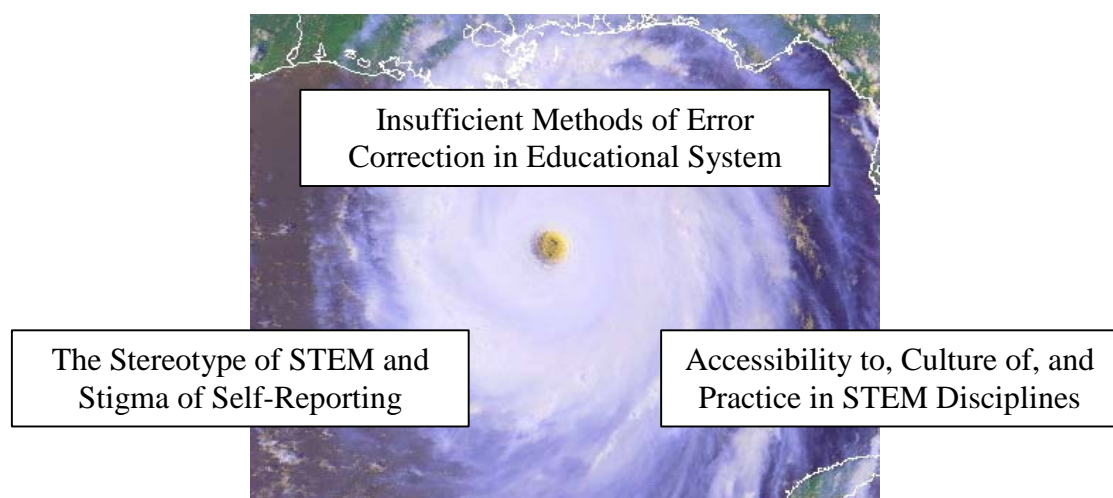


Taming the Perfect Storm

By Jay K. Martin, Principal Investigator

In December, I had the privilege of participating in the Winter Storm symposium held at Wright State University in Dayton, home to a National Science Foundation Integrative Graduate Education and Research Traineeship (IGERT) program on Learning with Disabilities. Wright State has partnered with Ohio State University in forming one of the newest NSF Regional Alliances for Persons with Disabilities in STEM (RDE-RAD), Ohio's STEM Ability Alliance. Wright State also has a remarkable historic institutional commitment to providing access and opportunities for students with disabilities. Suffice it to say that the meeting was inspirational, and I am indebted to my hosts for including me.

In preparing for my workshop presentation, I realized that we have begun to close a loop in understanding barriers to students with disabilities pursuing and/or choosing STEM education and careers. And, with any situation, once the problems are understood, solutions can be devised to provide remediation. As illustrated below, I believe there are three components influencing participation in STEM by people with disabilities—which in some cases create a “perfect storm” of deterrents.



I hypothesize that STEM stereotypes and/or the stigma associated with self-reporting a disability are factors that significantly limit student participation in STEM—and the areas where the most immediate and substantial gains can be made. Stereotypes are created through the implication that participation in STEM requires special abilities—math excellence, for example—which may or may not be true. Unfortunately, this message is reinforced via virtually all sources students encounter when thinking about a course of study and career choice. The stigma associated with self-reporting can eliminate the possibility for services and accommodations essential for participation and continued success in STEM for students with disabilities.

If we assume that there are more students with disabilities who are capable of and wanting to participate in STEM education than the number currently doing so, then it's reasonable to conclude that something is wrong with the educational system. What's wrong? In system engineering terms, there are insufficient means for error correction. For example, suppose a budding STEM student has a bad experience in Algebra II. It's possible that this single experience will determine whether he or she continues to consider STEM a possibility for him/her. If the student, though capable and willing, decides STEM is not an option because of his or her course performance, this is a system error; system response has led the student to incorrectly determine that STEM is not for him/her. Mentoring programs such as those offered through the Midwest Alliance significantly impact error prevention and correction because students have a wider variety of information from which to evaluate their participation in STEM via their interactions with their mentors.

The challenge most difficult to remedy lies in the nature of the disciplines themselves, which contribute to reduced participation. If the disciplines are not accessible, students with disabilities will not be able to participate successfully. My experiences teaching an introductory engineering course a few years ago at UW-Madison are perhaps telling in another regard. I often encountered students fully capable of making significant contributions in engineering, and yet they did not pursue the major. Conversations with these students led me to believe this was because they were either turned off by the culture they found within the discipline, or uncertain whether participation in the discipline would have meaning for them. In other words, they were worried that as a practicing engineer, they might not get to contribute to the solution of problems they cared about, and they wanted that opportunity.

On the second day of the symposium, after the host city had experienced a real winter storm, I slipped on the ice and fell. I checked to see if anything was broken and was relieved to find nothing amiss. Before getting up, I happened to look up into the limitless gray sky and found myself filled with hope—not just because I had survived this fall intact (similar to the falls I took while pursuing STEM), but because of the people I had met at the Winter Storm whose contributions are on track for taming this perfect storm of deterrents. These dedicated individuals—Jeff Vernooy, Clark Shingledecker, John Flach, Michelle Wheatley, Margaret Izzo and others from the IGERT and Alliance programs—and the students with whom they're engaged filled me with hope. I was full of hope (and a little peace) because this is our work also, and together, the possibilities, not the limits, are as depthless as that winter sky.

Mark Your Calendar! Midwest Alliance Events

Join the Midwest Alliance for informative programs for students, parents and academic personnel and other opportunities benefiting students with disabilities. Click on the links below for more information.

Midwest Alliance Student Panel & Biotechnology Workshop for Students

March 27, 2009

UW-Madison Biotechnology Center

Explore college or university studies. Advance registration required.

Math and/or Science Education Project

April 1 and April 2, 2009

University of Northern Iowa

Working conference with follow-up publication to improve attitudes toward, investigate ways to better support, and plan accommodations/supports for students with disabilities who are interested in secondary and postsecondary STEM. Invitation only. Email trolf@illinois.edu to request invitation.

Wounded Warriors & Transition Workshop for Veterans, Students and Family Members

April 17, 2009

University of Illinois Champaign-Urbana

Sessions focus on easing challenges faced by returning veterans transitioning to higher education and high school students with disabilities in their transition to any type of higher education institution.

Midwest Alliance Transition Forum for Students and Family Members

May 15, 2009

UW-Madison

Panel discussion about available supports and services for students transitioning from high school to postsecondary education.

The National Workshop on Psychological Disabilities

June 22 and June 23, 2009

University of Illinois Champaign-Urbana

Discussion with follow-up recommendations to improve support of students with psychiatric disabilities in postsecondary STEM fields. Invitation only. Email trolfe@illinois.edu to request invitation.

Exploration by Design: How Stuff Works Workshop for Students and Family Members

June 24-25, 2009

University of Illinois Champaign-Urbana

Hands-on activities, experiments and discussions to uncover the inner workings of stuff. Concurrent parent workshop about supporting the transition from high school to postsecondary education. Register online by April 30, 2009.

Internships for High School and College Students

Register as a Midwest Alliance participant and receive a stipend of up to \$1,000!

[AAAS Entrypoint!](#)

Eligibility: Full-time undergraduate or graduate student with a disability and majoring in science, engineering or some business fields. Contact AAAS for additional criteria and deadline.

[UW-Madison Summer Research Opportunities Program](#)

Eligibility: Must be college or university undergraduate student. Deadline: Varies.

[UW-Madison Pre-College Enrichment Opportunity Program for Learning Excellence \(PEOPLE\)](#)

Eligibility: Enrolled in grade 6 or 9. Note: Students must be in 9th grade to qualify for a Midwest Alliance stipend. Deadline: April.

[Summer Science Institute](#)

Eligibility: Grades 9-12. Deadline: April.

[Worldwide Youth in Science and Engineering Camps](#)

Eligibility: Grades 10-12. Deadline: April 15, 2009.

Other Events for Students, Parents and Academic Personnel

[Badger State Science and Engineering Fair](#)

March 28, 2009
Marquette University

[2009 Rehabilitation and Transition Conference](#)

April 1-3, 2009
Kohler, WI

[Parent Leadership Conference--Building Partnerships for Student Success](#)

April 29, 2009
Madison, WI

[Making Transitions Easier](#)

April 24, 2009
Madison Area Technical College

[The Circles of Life Families Conference](#)

April 30 & May 1, 2009
Madison, WI

[Autism Society of Wisconsin 2009 Annual Conference](#)

May 7-9, 2009
Wisconsin Dells, WI