



**Written testimony of Michael E. Beeth
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**Presented before the
U. S. House of Representatives
Committee on Science, Space, and Technology
Subcommittee on Research and Science Education**

**Hearing on: *STEM In Action: Transferring Knowledge from the Workplace to the Classroom*
Hearing date: November 3, 2011**

Chairman Brooks, ranking member Lipinski, and members of the Subcommittee on Research and Science Education, thank you for the opportunity to discuss with you the Alternative Careers in Teaching program (act!). My name is Michael Beeth and I have coordinated the act! program since it began in 2006. Act! provides STEM professionals with five or more years of work experience a path to transition into careers as teachers of math or science. The act! program is unique in that we recognize and award credit for the academic preparation and real-life experiences STEM professionals can bring to teaching. More than 100 STEM professionals have enrolled in the act! program since 2006, and we have received inquires about this program from another 300 individuals.

Act! is a multi-institution partnership involving the University of Wisconsin Oshkosh, a 4-year comprehensive university and the third largest public institution in Wisconsin, and five two-year University of Wisconsin College campuses¹. Our partnership allows students to enroll in courses close to where they live and work, to take classes in on-line or hybrid formats and to remain employed as they complete our licensure program. We are interested in expanding the act! program to additional UW College campuses, particularly in southeast and central Wisconsin².

¹ UW Fond du Lac, UW Fox Valley, UW Manitowoc, UW Marinette and UW Sheboygan

² UW Waukesha, UW Baraboo-Sauk County and UW Richland

The act! program addresses the documented need for highly qualified math and science teachers in Wisconsin³. Northeast Wisconsin is fortunate to have the types of businesses and industries that can provide a large pool of individuals with degrees in math or science for the act! program. Seventy-eight percent of our students come from within a sixty-mile radius of Oshkosh, although we do have students in nearly every region of Wisconsin as indicated on the map attached to my testimony.

The impetus for the act! program came through the Northeast Wisconsin Educational Resource Alliance (NEW ERA) — a consortium of K-12 school districts, public and private colleges and universities across 18 northeast Wisconsin counties. Part of NEW ERA's mission encourages partnerships like act! that serve the learning needs of 1.2 million people in northeast Wisconsin and that strengthen the business and industrial community as well. NEW ERA is an outgrowth of NEW North – an organization of private and public sector business and education leaders that promote the region's human resources, talents and creativity for the purposes of sustaining and growing our economy.

Individuals become aware of the act! program through our web site, human resources departments at their employers, work force development offices, admissions advisors at one of our partner institutions or by word of mouth. We have done little formal advertising of the act! program since it well know to and promoted by the members of NEW North and NEW ERA.

Retaining STEM professional in the region and developing their talents as teachers is a goal for the act! program, NEW North and NEW ERA. Of 100 individuals admitted to act! so far, 7 hold terminal degrees, 26 a Master's degrees and 67 a Bachelor's degree. STEM professionals admitted to the act! program have majors in Genetics, Microbiology, Wood and Paper Science, Chemical Engineering, Geology, Environmental Science, Economics and Mathematics to name a few. One individual holds the Ph.D. in Mechanical Engineering and 10 patents related to tissue manufacture and paper machine fabrics; others have taught in institutions of higher education but now prefer to develop their expertise to teach in grades 6-12. These STEM professionals bring real-life experience from fields such as engineering, cartography, accounting, quality control, nuclear medicine, and statistical analysis and information technology. With the average age of individuals admitted to act! being 41, many bring 15 or more years of work experience.

Coursework in the act! program is based on principles of adult learning⁴. Online and hybrid courses allow our students maximum flexibility to remain employed until the semester they start their student teaching experience. Financial support for qualified individuals is available through two Robert Noyce National Science Foundation grants totaling \$1.5 million. Individuals who qualify for a Noyce award receive a stipend of \$13,000. We also partner with the Wisconsin Department of Public Instruction on a \$2.2 million US Department of Education grant to

³ Fischer, T. & Swanger, W. (2006). Wisconsin Supply and Demand of Educational Personal. Madison: WI. Wisconsin Department of Public Instruction.

⁴ Kasworm, C., Polson, C., & Fishback, S. (2002). Responding to Adult Learners in Higher Education. Malabar: Krieger.

increase the number of math and science teachers in Wisconsin. Both grants require recipients to teach in a high-need school for two years as a condition of accepting an award.

To date, thirty individuals have completed the act! program and are teaching. Twenty have full-time teaching positions – many in high need schools. Nine of our program completers are substitute teaching, and one opened a tutoring business in math. All of our program completers are place bound in the sense that they have spousal, family and civic connections to their communities. Our students are well known to school administrators as members of their communities first, and desirable as employees because of their maturity, the depth of their content knowledge and their work experience. Thus we are producing a pool of highly qualified math and science teachers who are connected to the communities where they are likely to teach.

One of the challenges our students face has to do with time management - broadly speaking. While our students have been successful learners and employees in the past, they must learn how to balance their attention to academic preparation with demands from their work, civic and family obligations, and expectations for involvement in extra-curricular duties. This challenge surfaces first during the student teaching experience and persists into the first year or two of full employment.

We are confident the STEM professionals we prepare have a level of analytical ability and human leadership skills, in addition to their content knowledge, that will serve their schools and the teaching profession well. Preparation in a STEM profession allows act! teachers to write integrated curriculum for local, state or national organizations, to assist colleagues in the analysis of student test data and to rigorously document the impacts of their own teaching on student learning. STEM professionals bring unique knowledge and skills to the teaching profession that traditional undergraduate students do not have or have not had the time to develop. In my opinion, it would be beneficial if all STEM professionals received explicit training regarding how they can become engaged in the education of K-12 students through programs like those assembled for this hearing.

Relevant web sites:

act! program: <http://www.uwfox.uwc.edu/academics/act2teach/>

NEW ERA: <http://www.neweraonline.org/>

NEW North: <http://www.thenewnorth.com/>

Map of act! students' hometowns.

78% live within a 60-mile radius of Oshkosh, WI

