



## **Report on the Value and Need for a UW-Madison Office for STEM Outreach and Engagement**

### **Executive Summary**

At the request of the BioDeans, a 15 person Task Force representing units from across campus was assembled to determine the value and need of establishing a UW-Madison Office for STEM (Science, Technology, Engineering and Mathematics) Outreach and Engagement. The members of the task force unanimously agreed that formation of such an Office would benefit their units and campus as a whole. Specifically, the Task Force identified 19 benefits, which were grouped into six general categories:

- 1) coordination of outreach and engagement activities in a centralized organizational structure;
- 2) development of policy and new resources to guide and fund outreach and engagement;
- 3) provision of services to increase campus engagement in outreach;
- 4) establishment of a central access point where campus-campus and campus-community connections can be made;
- 5) leadership in identifying future outreach initiatives in STEM; and
- 6) improvement of public services offered through outreach initiatives

The Task Force recommends that the Office should reside in a neutral campus location, so as to be accessible and of service to all units, and identified the Division of Continuing Studies (DCS) as the ideal location.

The Task Force recommends that the Office staff include a Director, two Outreach Specialists (one to focus on external partners and one to focus on campus connections and collaborations), and an administrative assistant. The total estimated budget for the Office would be approximately \$400,000 (including fringe) annually. This funding could be generated from reallocation of current resources dedicated by individual STEM units engaged in outreach, or by allocating a percentage of overhead funds generated from grants, or by a combination of both mechanisms.

## **Introduction**

The Wisconsin Idea, “the principle that the university should improve people’s lives beyond the classroom,” motivates and guides faculty, staff and students across campus to engage in outreach activities. However, there is no centralized structure in place to facilitate connections and collaborations among these individuals. As a consequence, UW-Madison’s outreach efforts, many of which are in science, technology, engineering and mathematics (STEM), are compartmentalized and not as efficiently or effectively executed as they could or perhaps should be.

At a campus level, how can we create connections and synergies across the vast array of outreach programs? At the individual level, how do we support an Assistant Professor, for example, who is struggling with the “Broader Impact” requirement of her first NSF grant? Though informal cross-campus networks exist (e.g. the Science Alliance), there is no office on campus positioned to meet these needs. Likewise, there has been no strategic integration of STEM outreach activities across campus, and therefore no effort to leverage existing programs to make UW competitive for large, university-wide extramural awards in outreach. The breadth and depth of UW’s existing outreach activities, framed as part of the Wisconsin Idea, uniquely position us to become a national model for university service to the community. An office that is committed to tracking and coordinating STEM outreach efforts across campus is needed to realize this vision.

Beyond synergy within the university, there are significant challenges for the broader community in trying to find and navigate our outreach services. Where does a third grade teacher go to find a scientist or engineer to speak in his classroom about careers? There are several faculty members who would be interested in doing this, but there is no central office to help the teacher identify and connect with them. Instead, the teacher must make many calls to different department and college offices to find an interested faculty member. This is not only inefficient but frustrating and may discourage him from coming to the university for assistance in the future.

A task force with members representing STEM units across campus was convened in fall 2012 to discuss these challenges and others like them to determine whether establishment of a cross-campus Office for STEM Outreach might provide some resolution. The task force concluded that formation of such an office would address these challenges and envisioned a small unit with a mission focused on facilitating connections and coordinating existing and future outreach activities, but not delivering actual programs and activities. Such an office would have the potential to significantly increase UW’s efforts to realize the Wisconsin Idea by creating capacity to leverage existing outreach activities in more arenas. The task force further developed a set of recommendations regarding the administrative home and budget for this office, which are presented in this document for the Deans’ consideration.

## **Background**

Several years ago, School of Education Dean Julie Underwood and former Center for Biology Education Director Dave Nelson hosted listening sessions about the science outreach conducted by UW-Madison with both the UW-Madison campus community and with K-12 leaders. These listening sessions led to a proposal to the Baldwin awards

committee to fund the Wisconsin Leads in Math and Science project. Wisconsin Leads was funded and targets two areas: 1) Professional learning for teachers of math and science and 2) General science outreach activities.

Wisconsin Leads is a partnership between the Education Outreach and Partnerships office in the School of Education and the Institute for Biology Education (formerly the Center for Biology Education). It has piloted many projects for K-12 science and math teachers through partnerships with school districts and Cooperative Educational Service Agencies with goals of delivering exemplary professional development for teachers and developing a fiscally sustainable financial model for such activities.

Drs. Underwood and Nelson also envisioned a central office for general science outreach that would increase efficiency, effectiveness, and collaboration opportunities to better meet the needs of our community partners. In May 2012 the BioDeans unanimously approved the formation of a task force representing units from across campus to examine the value and need of such an office and make recommendations regarding its formation. (Appendix A: task force members) This report summarizes the task force discussions and recommendations.

### **Overview of Task Force Discussions**

The task force was charged with examining whether a centralized Office for STEM Outreach and Engagement would serve a campus need and provide value to campus and external partners. Specifically, the task force generated the following outcomes:

1. Identification of the projected value for campus and the community of the establishment of a campus-wide Office for STEM Outreach and Engagement;
2. A plan for the organizational design of the office; and
3. Recommendations for a long-term, sustainable funding plan for the Office.

Several reoccurring themes arose during the discussions of the task force. First, the office needs to carry out two-way exchanges of ideas required for true partnering relationships. This may most accurately be stated as community engagement. Outreach too frequently results in a one-way flow of ideas. Engagement is two-way. The task force emphasized that the Office must identify mutually developed challenges and mutually developed solutions. Carrying the idea further, engagement creates opportunities for more effective interactions between campus and community through outreach.

A second theme is the challenge of defining the appropriate scope of the duties and responsibilities of the Office. It may not be feasible, for example, for the Office to enable outreach and engagement to occur more effectively and efficiently, while also actually conducting outreach programs. These are diverse responsibilities and having the Office do both may not be the best way to serve campus. The enabling role would benefit campus much more and not create expectations that this is the Office that does all STEM outreach/engagement activities for all of campus.

It is the task force's recommendation that the BioDeans respond to this preliminary report and recommend either to proceed with a plan to form the Office as recommended by the task force or to discontinue discussions at this time. If the decision is made to proceed,

then a cross-campus planning and development committee should be formed to establish the Office.

**1. The Need and Value of an Office for STEM Outreach and Engagement**

Group brainstorming to identify possible value to campus for an Office for STEM Outreach led to 19 ideas fitting in six themes. Some are specific to campus (internal-campus focus), some specific to community members (community focus), and some cover both audiences. These ideas are summarized in table 1. Two of the most practical values will be increasing efficiency and reducing redundancy of efforts. Other long-term benefits will include greater innovation, capacity building, and access to campus resources by our community partners.

**2. The Organizational Design of an Office for STEM Outreach and Engagement**

Task force discussions regarding the organizational design of the Office centered on the potential value-added to existing outreach programs that the Office would bring. It was decided that the Office should not actually run outreach programs, but rather empower faculty and staff from across campus to run programs and facilitate efficiencies across those programs. Four areas of responsibility were identified for the office:

- 1) Director (1.0 FTE) – either a senior academic staff or tenured faculty member
- 2) Internal liaison for campus (1.0 FTE) – outreach specialist focused on facilitating cross-campus collaborations and connections between outreach programs
- 3) External liaison to the community (1.0 FTE) – outreach specialist focused on facilitating campus-community collaborations and connections
- 4) Administrative support person (1.0 FTE) – office support for the Director and liaisons

Annual Budget:	Director	\$100,000
	Outreach Specialist 1	\$60,000
	Outreach Specialist 2	\$60,000
	Administrative Assistant	\$40,000
	Fringe Benefits	\$107,000
	Travel, Professional Development, Office Supplies & Equipment	\$20,000
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	Total	\$387,000

Additional funds for day-to-day operational needs that could be contributed by the host unit were discussed. These included support for human resources, accounting, information technology needs (e.g. database management, website maintenance), marketing, communication, fund-raising and available physical space.

When evaluating possible administrative homes for the Office, the task force considered not only day-to-day operations, but also the need for a cross-campus, neutral unit with an aligned mission. Though several locations were removed from further discussion by this criterion, five units were identified as possible homes. The task force seemed most comfortable with three and rank-ordered their preference as 1) the Division of Continuing Studies, 2) the Graduate School, and 3) the reformed/restructured Center for Education

and Work in WCER and the School of Education. To date, only informal discussions have occurred with the DCS and CEW staff, who served on the task force (Jim Campbell from DCS and Mitch Nathan from CEW). No discussions with the Graduate School have taken place.

Importantly, informal discussions between Institute for Biology Education's Interim Director, Janet Branchaw, and the Director of the Space Management Office, Doug Rose, have led to the reservation of space for the OSOE on the third floor of the 445 Henry Mall building, pending a decision about the Office by the BioDeans. The Institute for Biology Education, the Delta Program in Research Teaching and Learning and some units of the Division of Continuing Studies all reside (or are soon to reside) in this building.

### **3. Long-Term Sustainable Funding for an Office for STEM Outreach and Engagement**

Two main ideas for ongoing, base funding for the Office were proposed: 1) reallocation of school/college funds currently used to support STEM outreach efforts, and 2) designation of a small percentage of "overhead" funds from federal grants. Once baseline funding is established and a Director hired, s/he would also be encouraged to set up a Foundation account and to secure additional funds from private foundations and federal agencies as appropriate.

#### **Additional Issues That Arose During Task Force Discussions**

- **The Name** The task force recognizes that the name of the Office will be critical in conveying its mission to campus and the broader community. It was decided that adding "engagement" to the name would convey the two-way exchange needed for successful outreach programs.
- **Models of Similar Offices Across the Nation** The task force recognized that it would be important to study how similar "Outreach Units" from across the nation have been formed and function. A list of such office was generated (Appendix B).
- **The Former UW-Madison Office of Outreach Development** A similar office, the UW-Madison Office of Outreach Development, existed previously on our campus, but was dissolved. The issues surrounding this dissolution should be investigated as part of the planning for a new office, so as to not duplicate past efforts that were deemed ineffective.
- **Survey Data Analysis** The Institute for Biology Education conducted an outreach survey four years ago that was completed by 149 campus outreach professionals, but a comprehensive analysis was not generated. This analysis should be done as part of the planning process.
- **Missing Input from Campus Units** The School of Medicine and Public Health and the Visitor and Information Program office were unable to participate in the task force. Input from these units is needed and they should be represented on the planning team.

**Table 1 – Summary of Need and Value of Office for Stem Outreach and Engagement**

	1. centralized organizational structure	2. policy and resource development	3. services to increase campus engagement	4. central access pt. for campus and community	5. future outreach initiatives in STEM	6. improve public services
1 - Links to vocation & emerging careers						X
2 - Connect Research Experiences for Teachers			X	X		
3 - Connect outreach facilities into cohesive place and name			X	X		X
4 - Central collecting of demographic data; where we are influencing the state	X	X				
5 - Advertising/matchmaking needs		X	X		X	X
6 - Connections to private and business sectors		X				
7 - Organize menu of outreach services and opportunities				X		X
8 - Assess work of teachers/economy of scale	X		X			
9 - Develop and foster partnerships internally			X	X		
10 - Promote college/career readiness			X			X
11 - Build community and sense of welcome for students				X		X
12 - Help PIs develop broader impacts and outreach statements; add value to outreach activities; administer/connect PIs to assessment resources		X	X			
13 - Stay current on research in public outreach and engagement			X			
14 - Ability to sustain/help sustain (fund) projects		X	X			
15 - Enable outreach (not run outreach programs)			X			
16 - Populate/create modern databases with faculty/staff/students					X	
17 - Share most effective strategies for engagement and broaden reach of current projects		X				
18 - Train and build capacity for faculty/staff/students to partner w/the public	X				X	X
19 - Interface with precollege programs on campus that have STEM focus	X		X	X		X

## **APPENDIX A -Task Force Members**

- Jack Jorgensen, Education, Education Outreach and Partnerships
- John Rudolph, Education, Curriculum & Instruction
- Mitch Nathan, Education, Center for Education and Work
- Lori Severtson, Nursing
- Jim DeMuth, Pharmacy
- Dale Bjorling, Veterinary Medicine
- Brian Mattmiller, Engineering
- Tom Browne, CALS
- Don Gillian-Daniel, DELTA
- Anne Lynn Gillian-Daniel, Engineering, MRSEC
- Laura Heisler, Wisconsin Institutes for Discovery
- Eric Wilcots, Letters & Science
- Jim Campbell, Continuing Studies
- Janet Branchaw, IBE
- Kevin Niemi, IBE
- Darin Harris, Facilitator, Office of Quality Improvement

## **APPENDIX B — Similar Outreach Offices Across the Nation**

### **University of Illinois, University Outreach and Public Service office,**

<http://www.uops.uillinois.edu>

--University Outreach and Public Service is a University central support unit that provides coordination, expertise, and support to the educational outreach and public engagement initiatives of the three campuses and university administration (Chicago, Springfield, Champaign campuses)

### **Stanford University, Office of Science Outreach,** <http://oso.stanford.edu/>

--Stanford University's Office of Science Outreach (OSO) encourages and assists Stanford faculty to engage in science outreach -- organized activities targeted at our nation's youth, school teachers, and general public that will increase their interest, understanding, and involvement in math, science, and engineering.

### **Texas Tech University, STEM Education and Outreach,**

<http://www.depts.ttu.edu/stem/>

--The STEM Education and Outreach Network is the new hub for Science, Technology, Engineering, and Mathematics resources at Texas Tech University. Use the links in the graphic below to explore the opportunities and resources available at Texas Tech.

### **University of Pennsylvania, Science Outreach Initiative,**

<http://www.sas.upenn.edu/STEMoutreach>

--The Science Outreach Initiative serves faculty and other researchers in the School of Arts and Sciences by helping them develop outreach program ideas and proposals, locating potential partners, and promoting information and resource exchange among all of Penn's STEM outreach programs.

### **Brown University, Science Center,** <http://brown.edu/academics/science-center/>

--Brown's Science Center is a state-of-the-art facility that supports teaching and learning in the sciences. The Center houses academic mentoring and support programs and serves as the campus clearinghouse for information about research and fellowship opportunities at Brown and around the world.

### **University of Missouri, Office of Science Outreach,**

<http://scienceoutreach.missouri.edu/>

The Office of Science Outreach (OSO) serves as a central resource at MU for science outreach. To accomplish this, the OSO works with university faculty, staff, graduate and undergraduate students, K-12 educators and students, and the general public to enhance the resources available for learning science.



**Virginia Tech, Biological Science Outreach program,**  
<http://www.biol.vt.edu/outreach/index.html>

--The Virginia Tech Biological Sciences Outreach Program, "SOuP", supports K-12 outreach education and encourages the growth of K-12 participation in research. SOuP works as part of the [VT-STEM \(VT-Science, Technology, Engineering, and Math\) Outreach Initiative](#) to form partnerships that support the University outreach mission. Researchers in the biosciences and geosciences can utilize the education outreach programs of SOuP to enhance their grant proposals.

**Northern Illinois University, STEM Outreach,** <http://niu.edu/stem/>

--NIU STEM Outreach increases STEM literacy and interest for K-12 students, families, and educators. We deliver off-campus programs and on-campus activities that increase science, technology, engineering, and mathematics literacy and enthusiasm among P-12 students, their families, and educators. Our office is also a central place to find information on the numerous outreach programs offered by NIU's STEM departments and the colleges.

**Washington University, Institute for School Partnerships,**  
<http://schoolpartnershipwustl.com/>

--Welcome to Washington University's Institute for School Partnership, where our goal is simple: improving K-12 students' development and success. If you're looking for innovation, you're in the right place.

**University of New Mexico, STEM Education Outreach Programs,**  
<http://stemed.unm.edu>

--Promoting Science, Technology, Engineering, and Math Education in New Mexico!

**Northwestern University, Office of STEM Education Partnerships,**  
<http://osep.northwestern.edu>

--Connecting K-12 students & teachers with the world-class science, technology, engineering and mathematics resources of Northwestern University.

**Rockefeller University, Science Outreach program,**  
<http://www.rockefeller.edu/outreach>

--Our goal is to engage students with hands-on, mentored science and to run workshops to provide teachers with the tools they need to instill a passion for science in their students.

**Vanderbilt University, Center for Science Outreach,** <http://www.scienceoutreach.org>

-- The Vanderbilt Center for Science Outreach (CSO) is dedicated to enhancing literacy in science, technology, engineering, and mathematics (STEM) through the

establishment of unique partnerships between University scientists, K-12 educators and students, and the local and global science community.

**Massachusetts Institute of Technology, Office of Engineering Outreach Programs,**  
<http://web.mit.edu/stem/About.html>

-- The Science Technology Engineering and Math (STEM) Program is a year-round academic enrichment opportunity provided free of charge to talented middle school students who want to get ahead in math and science.

### **C—Miscellaneous other task force items**

The task force met twice for introductory discussions and three times in whole committee during the fall semester of 2012 to address the items charged to the task force.