

REPORT AND RECOMMENDATIONS

**ON THE ENHANCEMENT OF GRANTSMANSHIP
IN OKLAHOMA HIGHER EDUCATION**

TO

THE OKLAHOMA STATE REGENTS FOR HIGHER EDUCATION

FROM

THE OKLAHOMA HIGHER EDUCATION GRANTSMANSHIP TASK FORCE

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Introduction

Since 2001, in collaboration with the State Regents, the Oklahoma EPSCoR (Experimental Program to Stimulate Cooperative Research) has helped and is helping to build the research competitiveness of Oklahoma's universities through strategic support of research instruments and facilities, research collaborations, integrated education and research programs, and high-performance computer networks. In 2004, Oklahoma EPSCoR and the Oklahoma Regents jointly funded a staff position, the Coordinator for Grant Writing and External Funding Technical Assistance, or the "grants whip," charged to assist all state colleges and universities in grantsmanship efforts with primary focus on the undergraduate institutions. The main mission at first was to help the undergraduate faculty who were involved in the **IDeA Network of Biomedical Research Excellence** (INBRE) grant project to obtain further research grant funds. The salary sharing and responsibility sharing gradually moved from a primary INBRE focus to a total statewide focus between 2004 and 2008.

When this position was created, more statewide coordination and information sharing was provided by the Regents. Since 2004 OSRHE has sponsored annual state meetings focusing on grant administration capacity building and support; multiple annual skill building workshops and videoconference training sessions on grantsmanship topics; visits to all campuses to provide support, capacity building; one-on-one assistance in grant seeking; regular grant resource search information distributed statewide; access to one central grant resource search data base; and a Summer Grant Writing Institute co-sponsored by OSRHE and EPSCoR that is open to all faculty members. A collaborative organization comprised of the sponsored programs administrators of the undergraduate universities was created as the Council on Grantsmanship and Research. National, regional and state conferences have been provided with sessions on enhancing grantsmanship at a system-wide or state level, publications have been shared, and peer mentoring for researchers and grant seekers has been enhanced.

The assessment of the current status and history of grantsmanship in Oklahoma is the basis of the considerations of the Oklahoma State Regents Higher Education Grantsmanship Task Force. Members approached the task from the points of view of the comprehensive universities, the regional universities, the community colleges, K-12 education and business. After a thorough review of the status of grantsmanship in Oklahoma colleges and universities, the Task Force presents the following report as a status of grantsmanship in colleges and universities and a set of recommendations for the expansion, growth and facilitation of grantsmanship in Oklahoma in the future.

Recommendations

Recommendation #1: Enhance the grantsmanship capacity of the Oklahoma State System of Higher Education.

Potential strategies:

- Establish a **system-wide advisory council for grantsmanship and research** that includes broad representation from all university and college tiers, state government, private industry, foundations and other state-level committees and councils.
- **Sustain and augment system-wide efforts to stimulate grantsmanship and research including:**
 - efforts that further develop grantsmanship knowledge and skills of faculty, staff, administrators and students
 - efforts of Oklahoma's EPSCoR initiatives
 - efforts of OSRHE's grants assistance initiative
 - efforts of Oklahoma's Louis Stokes Alliances for Minority Participation program
- **Implement and evaluate new system-wide initiatives to stimulate grantsmanship and research** including:
 - an initiative to increase access to comprehensive funding search engines and databases such as the Community of Science
 - an initiative to augment visibility, recognition and communication of successful grantsmanship activities
 - an initiative that provides opportunities for faculty, staff and administrators to review best practices in grantsmanship and research within Oklahoma and across the nation
 - an initiative that encourages and facilitates the development of multi-agency, multi-campus, multi-partner and multi-disciplinary approaches. An example is the Oklahoma Nanotechnology Applications Project (ONAP) coordinated by OCAST which requires partnering between companies and researchers
- Explore the feasibility of a **system-wide data collection system to track and report grantsmanship activities** and the implementation of an effective longitudinal data base system.

Rationale:

- There is a need to **maximize state investment, results and impact** through the alignment of grantsmanship efforts with existing state initiatives including: 1) Oklahoma's Economic Development Generating Excellence

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(EDGE) initiative; 2) Oklahoma's initiative to become the Research Capital of the Plains; and 3) OSRHE's initiative to increase the research capacity of higher education.

- **Oklahoma's Experimental Program to Stimulate Competitive Research (EPSCoR)** program has increased the state's research capacity. This increased capacity has been followed by increased grant funding. EPSCoR initiated projects have been secured from National Science Foundation (NSF), Department of Defense (DOD), Department of Energy (DOE), Environmental Protection Agency (EPA), National Aeronautics and Space Administration (NASA), National Institutes of Health (NIH) and the United States Department of Agriculture (USDA). EPSCoR may serve as a potential model for expansion of capacity building efforts by seeding and initiating collaborative projects that involve senior researchers, undergraduate researchers and students which maximizes resource sharing and collaboration.
- **Oklahoma's research and grantsmanship community can help the Oklahoma State System of Higher Education better achieve its mission by securing increased federal funds for college- and university-based research.** Oklahoma faculty members can increase their efficiency and productivity in obtaining federal grants. For example, in 2003, Oklahoma had 5,390 doctoral scientists and engineers ranking 33rd in the nation with regard to the number of doctoral scientists and 28th in the number of doctoral engineers. Oklahoma received \$292 million in federal research and development funding. Comparatively, Kansas had fewer doctoral scientists ranking 34th and fewer doctoral engineers, ranking 33rd, yet secured \$349 million, or \$57 million more than Oklahoma (Science and Engineering State Profiles, National Science Foundation, Division of Science Resources Statistics, 2005).
- **There is an impending, critical shortage of individuals to meet science and engineering workforce needs** as identified by the National Science Board (*The Science and Engineering Workforce: Realizing America's Potential*, 2002). Evidence exists that increasing research and internship opportunities for students increases the probability of those students pursuing STEM (science, technology, engineering and math) degrees. Also, considerable federal and foundation funds are available to support excellent research and internship experiences, and Oklahoma needs to increase its grantsmanship capacity in order compete for its share of these funds.
- **The suggested strategies will also assist Oklahoma in addressing teacher shortages in critical preK-12 subject areas.**

Recommendation #2: Increase investments and establish incentives necessary to encourage the continual development of a culture of grantsmanship and research on the campuses of Oklahoma's Primarily Undergraduate Institutions (PUI).¹

Potential strategies:

- **Make direct state investments to increase the grantsmanship and research capacity on the campuses of Oklahoma's PUIs.** Potential activities include:
 - utilize successful investment models like those used to support Oklahoma's research institutions as well as those models used by Oklahoma's EPSCoR, INBRE and OCAST programs. These models involve institutional commitment, collaborative resource sharing, external funding and support in addition to institutional resource support and seed funding for preliminary research and program development
 - require direct investments from the state to be accompanied by campus investments to ensure sustainable impact
 - employ an application process that incorporates a rigorous peer review component to further insure quality of projects and return on investment
 - where appropriate, develop collaborative research centers within the community college and regional university tiers. The EPSCoR program in Oklahoma funded by NSF and the IDeA program funded by NIH have been highly successful in establishing similar centers and might serve as a model for replication
 - reward and recognize institutions that successfully engage in grantsmanship activities. A potential strategy might include the incorporation of an incentive within the funding formula that rewards institutions when grant funding exceeds a defined threshold
 - develop new or expand existing programs that will further encourage or provide incentives for summer faculty and student internships that lead to partnerships on grants and research

- **Develop initiatives that encourage campus-based activities and investments necessary to increase the grantsmanship and research capacity on PUI campuses.** Potential activities include:
 - host professional development and strategic planning opportunities for campus-based leadership teams
 - develop campus-based systems that encourage and afford opportunities for faculty and staff to review grants

¹ Primarily Undergraduate Institutions are often defined as two-year, four-year, masters-level and small doctoral colleges and universities that have undergraduate enrollments that exceed graduate enrollments (National Science Foundation). The Task Force has included Oklahoma's public regional university tier and the community college tier in its PUI definition.

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- support the development of programs that provide recognition to faculty who submit proposals and receive funding for research and programmatic grants. Potential considerations include: initial start-up funding to attract and retain outstanding faculty who successfully engage in grantsmanship and research; funding for release time from teaching for faculty engaged in writing and administering grants; funding for travel and release time from teaching for faculty who become involved in collaborative grant programs.
- conduct a survey of university and college foundations to determine the relationship between the foundation and fundraising and their involvement or support for grantsmanship and research at that institution.

Rationale:

- Within Oklahoma's public universities, 73.29% of students and 61.48% of faculty attend or teach at one of Oklahoma's PUIs. If Oklahoma is going to achieve its goal of becoming the Research Capital of the Plains and, if Oklahoma is going to increase in its capture rate of federal research and development funding, then **strategic efforts must be made to enhance the culture of grantsmanship and research on Oklahoma's PUI campuses.**
- Recently, **Oklahoma has made significant investments necessary to enhance a culture of grantsmanship and research at its two research universities** supporting OU cancer research and OSU agriculture and medical care. The success and impact of those investments are undeniable and provide a potential investment and incentive model for Oklahoma's PUIs.
- Moreover, Oklahoma's millions of dollars of investment in the **Experimental Program to Stimulate Competitive Research (EPSCoR)** program, and more specifically investment in the collaborative **INBRE (IDeA Network of Biomedical Research Excellence) project** has demonstrated significant impact by involving undergraduate faculty and students with graduate researchers. Because these projects have had the desired impact and are significant first steps, there is an emerging research culture on some of Oklahoma's undergraduate campuses. This culture is characterized by faculty members who are engaging in research, are involving students in that research, and are publishing the results of that research.
- Many of **Oklahoma's PUIs lack the capacity to develop a culture of grantsmanship and research.** Capacity has been defined in terms of (1) human resources: faculty, staff and administrators who need the knowledge, understanding and skills necessary to pursue grant funding and to incorporate research as pedagogy within the curriculum; and (2) infrastructure: (a) curriculum and programs in which research is an integral component; (b) institutional policies and offices that specifically support, encourage and reward faculty who engage in grantsmanship and research; (c) institutional policies and offices that support,

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encourage and reward faculty who engage students in undergraduate research and program delivery; and (d) financial support for initial equipment and materials necessary to support undergraduate research.

- **Faculty and student internships increase retention of quality faculty and students in Oklahoma and increase the research capacity of those individuals and their home institutions.** Successful internship programs supported through the Oklahoma Center for the Advancement of Science and Technology (OCAST) and EPSCoR may provide suitable models for achieving similar results linked to enhancing the grantsmanship culture on Oklahoma PUI campuses.
- Only eight of the eleven regional institutions and five of the twelve community colleges have designated offices to support grantsmanship and research activities. Only with **systems of support and incentives, reliable information, time to produce, and faculty release time**, will faculty, staff and administrators be able to achieve funding desires.
- There is a need to **define the role of grantsmanship and research** within the historic context of the PUI mission. Grantsmanship and research must evolve within this context to ensure sustainability. Faculty must understand that grants and research, as well as teaching and learning, enhance their own careers. Undergraduate research has also been used as a tool to facilitate the development of multidisciplinary STEM (science, technology, engineering, and math) courses and research.

Evaluation and indicators of success:

The efforts of the Oklahoma State Regents for Higher Education to enhance the grants culture in Oklahoma through the implementation of these recommendations must be evaluated using a variety of indicators and evaluation processes. These continuous improvement processes could be a coordinating function of the advisory council. Suggested indicators of success include:

Process indicators:

- Establishment of a statewide advisory council for grantsmanship and research
- Integration of task force recommendations and related concepts into the existing OSHRE strategic plans, committees and councils
- Implementation of a system-wide longitudinal data base to track and report grantsmanship activities
- Regular review of system-wide grantsmanship activity
- System-wide access to a comprehensive grant search-engine and grant resource database

Quantitative indicators:

- Increased college and university funding for research and development
- Increased number of faculty, staff, administrators and students engaged in grantsmanship, research and internship activities

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- Increased number of students majoring and graduating in STEM disciplines
- Increased number of faculty, staff and administrators accessing the search-engine and database
- Increased number of OSHRE generated media stories and communication pieces spotlighting system grantsmanship efforts
- Increased number of grantsmanship activities sponsored by OSRHE
- Increased number of attendees at OSRHE sponsored grantsmanship events
- Increased number of students who graduate in STEM fields from Oklahoma's system of higher education
- Increased number of STEM majors who choose to remain in Oklahoma for a career
- Increased number of Oklahoma students from undergraduate institutions who continue their studies in graduate schools
- Increased state investment in grantsmanship and research activities on PUI campuses
- Increased campus investment in grantsmanship and research activities
- Increased number of grantsmanship and support offices on PUI campuses
- Increased number of PUI campuses with formal grantsmanship and research plans and policies
- Increased number of undergraduate research projects and courses on PUI campuses
- Increased number of new faculty research positions funded by OSRHE the institution to support faculty who successfully engage in grantsmanship and research activity
- Increased number of research centers in Oklahoma which result from collaborative grant efforts
- Increased number of funded partnership grants that include multi-agency, multi-campus, or multi-partners
- Increased number of college and university foundations whose mission includes supporting a culture of grantsmanship at undergraduate universities