

**TASK FORCE ON MISSOURI STATE
UNIVERSITY FUTURES**

FINAL REPORT

**Submitted to the Office of the President
January 20, 2006**

Executive Summary

The Task Force on Missouri State University Futures has completed its charge and respectfully submits its findings and recommendations. The Task Force identified 11 research emphasis areas, all of which are highly interdisciplinary, to be considered for additional University support:

- American History and Cultures
- Biotechnology
- Entrepreneurship
- Environment and Water Resources
- Global Perspectives with an Emphasis on Asia
- Health Promotion
- Materials Science
- Performing and Creative Arts
- Research on Human Development
- Research on Learning, Teaching, and Intervention
- Technology and Emerging Art Forms

To arrive at these recommendations, the Task Force assessed how other universities are approaching future strategies for investment in research; established and utilized criteria to follow in identifying proposed emphasis areas; examined numerous internal documents and reports to determine areas of activity and strength; solicited faculty input through a number of means including open forums; and, solicited feedback from the community through an open forum held at the Springfield Area Chamber of Commerce.

The Task Force had the extraordinarily difficult job of balancing a number of legitimate but competing concerns, including the balance between research and teaching. These included the issue that external funding is more readily available in some research areas than in others; the need to promote interdisciplinary research in an existing administrative structure that is not supportive of interdisciplinary research; the need to ensure that the emphasis areas are complementary to and supportive of the University's mission in public affairs as well as the major themes promoted by the University; and, the need to promote research and scholarship without diminishing the University's strength as a teaching institution. And of course, the background for all discussions is the ever tightening budget constraints faced by Missouri State University.

The Task Force believes that the 11 emphasis areas identified in this report are relevant in today's environment. However, the Task Force acknowledges that these emphasis areas are organic in nature and are certainly subject to change. Some emphasis areas will flourish, others may not. The need to add additional emphasis areas in the future is likely to occur. Further, activities of other committees on campus, for example the Public Health Task Force, may give rise to other emphasis areas for consideration, such as public health.

Given the dynamics of rapidly changing environments in which the University operates, the Task Force recommends that the University adopt an organizational structure for coordination and distribution of University resources in development of identified research emphasis areas. The Task Force also recommends strongly that a method of assessing the efficiency and effectiveness of each emphasis area be undertaken on a three-year cycle. Emphasis areas not meeting expectations should be eliminated and not subject to further consideration as a special focus for University investment. Finally, the Task Force recommends that a faculty committee, chaired by the Vice President for Research and Economic Development be given the responsibility of providing the organizational structure necessary for coordination and distribution of university resources in the development of identified interdisciplinary research areas, as well as the on-going assessment of each area. Recommendations made by the committee will be forwarded to the Provost and President for final actions.

Background

One of the first actions taken by Dr. Nietzel after becoming president of Missouri State University was the establishment of the Task Force on Missouri State University Futures. For membership on that Task Force, President Nietzel selected some of the University's most accomplished faculty, recognized for their influential scholarship and for their ability to understand the University in broad, inclusive terms and to represent the highest standards of excellence in teaching, research, and service. President Nietzel appointed Acting Provost Frank Einhellig as chair of the Task Force. Members of the task force included:

Dr. Jim Baker	Research and Economic Development
Dr. Chris Barnhart	Biology
Dr. Mike Carlie	Sociology, Anthropology, and Criminology
Dr. Marc Cooper	History
Dr. Peter Collins	Music
Dr. Jane Doelling	School of Teacher Education
Dr. Ryan Giedd	Physics and Astronomy
Dr. Dennis Hickey	Political Science
Dr. Michael Hignite	Computer Information Systems
Dr. Jane Hoogestraat	English
Dr. Kathryn Hope	Nursing
Dr. Julie Masterson	Communication Science and Disorders
Dr. D. Wayne Mitchell	Psychology
Dr. Elizabeth Rozell	Management
Dr. Dennis Schmitt	Agriculture
Dr. Wade Thompson	Theatre and Dance

President Nietzel emphasized from the beginning that the examination of future areas of research and scholarly focus was to be led by faculty. The membership and composition of the Task Force represented the President's desire to engage faculty in key decision-making tasks that will help shape Missouri State's future.

Charge

In his initial memo to the Task Force, President Nietzel indicated that many universities have launched similar efforts to identify those areas of knowledge that should be targets of focused reinvestment. In general terms, he asked the Task Force to concentrate on identifying broad intellectual/research themes, rather than specific departments, units or programs, for the recommended priorities.

The specific charge to the Task Force on Missouri State University Futures was to:

- Assess the current status of the University's scholarly and educational strengths as well as its best opportunities for initiatives with a high potential for excellence;
- Recommend up to 12 areas of contemporary scholarship that should be the priorities for investments of new and reallocated resources, particularly the addition of faculty lines; and,
- Propose specific options for academic restructuring and reorganization that will promote interdisciplinary innovations, strengthen research and degree programs, increase administrative efficiency, and generate additional savings in administrative costs that can be reallocated to academic priorities.

Dr. Nietzel directed the task force to consider multiple criteria in its assessment, including the following:

- Major trends and opportunities in extramural funding;
- Areas where growth in knowledge is expected to be most dramatic;
- Special needs of Missouri, Springfield, and the Ozarks to include economic development, technological advances, cultural enrichment, physical well-being, and social prosperity;
- Encouragement of new collaborations in research and learning as well as linkages to the University's existing and emerging research strengths;
- Compatibility with the University's statewide mission in public affairs; and,
- Potential for contributing to superior undergraduate, graduate, and professional education.

It should be noted that at the second meeting of the Task Force (September 1, 2005) the group made two changes to the criteria identified by Dr. Nietzel. The first change was that the third bulleted point was modified to read:

- Special needs **and resources** of Missouri, Springfield, and the Ozarks to include economic development, technological advances, cultural enrichment, physical well-being and social prosperity.

In addition, **sustainability** was added as new criteria to be used in assessing and developing a list of research and scholarly emphasis areas.

Process

The first meeting of the Task Force was held on August 25, 2005. At that meeting it was decided that the Task Force would meet weekly. One of the first activities of the Task Force was to review how other universities had approached setting up research and scholarship emphasis areas. Projects from the University of Kentucky and the University of Wisconsin were reviewed. After those reviews, it was decided to conduct a survey of Missouri State faculty to determine what areas of emphasis that they would suggest and support. At its September 1 meeting, the Task Force drafted a letter to the campus community to solicit feedback to be utilized for the development of initial "clusters" or emphasis areas. It was also decided at that meeting to develop a website to allow additional input from the campus community. During the following meeting on September 7, the final version of the letter was approved and sent via email to all faculty on campus.

As part of the review process, the Task Force examined Institutional Review Board documents to determine the number and nature of research projects dealing with human subjects submitted by units on campus. The prior three-year history of all the proposals submitted for external funding by institutes/centers, colleges, and departments was also reviewed.

Feedback from more than 180 faculty was received between September 9 and September 27. At its September 29 meeting, the Task Force reviewed the faculty feedback results and developed a number of very broad categories, and tentative working models to be used in paring down the research and scholarship emphasis areas. The early categories, based on faculty feedback (website, emails, and personal contact), reviewing IRB and grant activity, and committee knowledge of the University resulted in the following topics.

- Public Health
- Life Science
- Environmental Management
- Life-Span Studies
- Materials Science
- History and Culture of the Americas
- International Studies
- Technology and the Arts
- Learning Disabilities
- Societal and Behavioral Issues
- Entrepreneurship
- Technology Development
- Agricultural Sciences
- Music/Theatre
- Performing Arts

After a great deal of discussion, this initial list was refined and subcommittees were established to solicit additional input and to further refine the proposed research and scholarship emphasis areas. The list of categories, with subgroup members in parenthesis, included:

- Materials Science (Rozell, Hignite, Giedd)
- Entrepreneurship (Rozell, Hignite, Giedd)
- Life-Span Behavioral Studies (Masterson, Doelling, Mitchell, Hope, Carlie)
- Public Health (Masterson, Mitchell, Hope, Carlie, Doelling)
- History and Cultures of the Americas (Hickey, Carlie, Cooper)
- International Studies (Carlie, Cooper, Hickey)
- Life Sciences (Barnhart, Giedd, Schmitt, Einhellig)
- Environmental and Water Quality (Barnhart, Giedd, Schmitt, Einhellig)
- Musical Theatre (Collins, Thompson, Masterson)
- Technology and the Arts (Collins, Thompson, Masterson)
- Teaching and Learning Research (Carlie, Doelling, Hope, Masterson, Mitchell)
 - This particular emphasis area evolved after the subgroups were selected

A concept statement was developed for each proposed emphasis area by each subgroup. Further, the subgroups evaluated their emphasis areas according to how they aligned with the following list of previously established criteria.

- **Funding:** Major trends and opportunities in extramural funding.
- **Growth:** Areas of knowledge anticipated to experience the most dramatic growth.
- **Unique Resources:** Unique existing resources as well as current needs in Missouri, the Ozarks, and/or Springfield regarding economic development, technological advances, cultural enrichment, physical well-being, and/or social prosperity.
- **Collaborations:** New collaborations in research and/or learning as well as linkages to the University's existing and emerging research strengths.
- **Strengths:** Building on existing strengths.
- **Mission Fit:** Compatibility with the University's statewide mission in public affairs.
- **Education Fit:** Contributions to superior undergraduate, graduate, and professional education.
- **Sustainability:** Programs will be sustainable for the long-term.

In subsequent meetings, the subgroups made presentations to the Task Force as a whole concerning their assigned emphasis areas. In this manner, each of the final emphasis areas was modified and

eventually approved by the Task Force and then posted on the web site www.missouristate.edu/president/committees/futures/emphasis/default.htm for further review by the campus and external communities. In addition to receiving feedback collected from the web site, the Task Force held two public forums on campus (November 28 and November 29) and one public forum off-campus at the Springfield Area Chamber of Commerce on November 30. In all, more than 100 people attended these forums.

A representative listing of comments and/or recommendations from the on campus open forums included:

- There is a lack of clear, accessible information regarding research productivity.
- Outstanding scholars/faculty that don't necessarily fall in one of the emphasis areas should also be recognized for their contributions.
- Greater emphasis needs to be put on the Public Affairs Mission by implementing an additional cluster to include humanities and liberal arts.
- Health emphasis is too broad and general which causes it to lose its meaning and as a result it needs to be narrowed to public health.
- The University needs to develop mechanisms to promote interdisciplinary activity.
- The University must develop a mechanism(s) to measure the success/progress of each emphasis area.

Highlighted comments and/or recommendations gathered at the off campus open forum included:

- Overall, it would be good to condense and consolidate the areas of focus. For example, health and research on human development could be combined.
- The focus areas seem well aligned with the Springfield Area Chamber of Commerce and business community goals.
- The University must continue to strategically tie into community needs, such as those highlighted in the Community Focus report card for Springfield and Greene County.
- Importance of foreign language studies and international programs must continue to be recognized.
- The University needs to evaluate this program and remain flexible to change as new areas of focus emerge.
- The University needs to have at least one specific example in each emphasis area on how this program enables Missouri State University to better connect with the community and respond to important community needs.

Also during this period of time, Dr. Einhellig met with the Faculty Senate (October 13 and November 10), Graduate Council (October 12, November 9 and December 7), and the Academic Administrators Assembly (October 24 and November 21) providing updates and progress reports.

On December 1, the Task Force met to discuss incorporation of feedback received from the website and from the public forums. Once again, the subcommittees worked to incorporate feedback from the public forums and to further modify and refine the emphasis areas, with some alteration, changing of titles and narrowing of focus. The final formal meeting of the Task Force was held on December 8. After the final formal Task Force meeting, Task Force subcommittees continued to fine tune the recommended research and scholarship emphasis areas. This process extended into mid-January 2006.

The research emphasis areas that best meet the established criteria previously listed are recommended by the Task Force for consideration by the President of Missouri State University. Those emphasis areas are discussed in the next section of this report. The Task Force members recognize that some emphasis areas have a broader scope than others, but the consensus is that significant self-narrowing will occur by the interest and effort of faculty that work in these areas.

Recommended Research and Scholarship Emphasis Areas

After numerous meetings, thorough discussion, and review of faculty and community feedback, the Task Force recommends that the President consider investing additional resources in the following areas, listed in alphabetical order:

- American History and Cultures
- Biotechnology
- Entrepreneurship
- Environment and Water Resources
- Global Perspectives with an Emphasis on Asia
- Health Promotion
- Human Development
- Materials Science
- Performing and Creative Arts
- Research on Learning, Teaching, and Intervention
- Technology and Emerging Art Forms

The concept for each research and scholarship emphasis area is summarized below. More detailed information for each emphasis area is presented in Attachment One.

American History and Cultures

Americans share a history but participate in many cultures. This area encompasses the study, preservation, and dissemination of scholarship relating to American history, societies, and cultures from the perspectives of the humanities and social sciences. While this emphasis area encompasses the span of American history and the breadth of its cultures, including its literature, art, and popular culture, it focuses on those aspects of culture and history unique to Missouri and the Ozarks.

Sample Projects:

- Big Eddy Site: A multi-component Paleoindian Site on the Ozark border of southwest Missouri
- A quasi-experimental approach to improve the performance of students in American history

Biotechnology

Biotechnology is the understanding and improvement of living organisms. During the past three decades, novel molecular approaches have led to a rapid accumulation of knowledge in biological systems. The translation of this new knowledge to practical applications presents unprecedented economic opportunities in all areas dealing with living organisms, from medicine, to animal husbandry, to crop production. Biotechnology is expected to become an important, if not the most important, driving force of the 21st century economy. For example, the biotechnology industry employed 713,000 workers in 2002 and is anticipated to employ 815,000 workers in 2007. Jobs in the biotechnology sector typically pay 1.5 times the United States annual average salary.

The inherent complexity of living organisms presents challenges for both basic and translational life sciences. Meeting these challenges requires a coordinated interdisciplinary approach. Missouri State University has strong research programs in animal reproduction and product improvement, nerve cell biology, and the plant genomics areas. While these programs can serve as seeds for future growth, they need to be strengthened by contribution from agriculture, biomedical sciences, chemistry, mathematics, and computer and material sciences. A strong interdisciplinary research and scholarship cluster in plant

and animal biotechnology will enable the University to play a prominent role in establishing a modern, life science-based economy in Missouri.

Sample Projects:

- Cloning and functional analysis of defense-related genes from disease-resistant grapevines.
- Development of techniques and protocols for artificial insemination of elephants in captivity.

Entrepreneurship

The definition of Entrepreneurship is complex and multifaceted. Entrepreneurship may be conceptualized as the practice of starting new businesses, but entrepreneurs also are those who pioneer change by creating new products and/or processes. These activities have long been associated with creating job opportunities and the spectrum of entrepreneurship activities can be found in both for-profit and not-for-profit entities.

There are two distinct aspects to entrepreneurship with regard to the typical university's participation in such initiatives. The first involves an emphasis on economic development through interdisciplinary research efforts focused on the advancement of community, regional, state or national initiatives. The second emphasis is a focused effort aimed at creating the next generation of entrepreneurs by providing the business skills and research necessary for creation and market technologies, other products, and ideas.

Sample Projects:

- The Small Business Development Center Financial Consulting Service funded by the Small Business Administration during the 15 months from 10/1/04 to 12/31/05, provided assistance to 38 entrepreneurial enterprises in Southwest Missouri in securing \$22M in investment capital for these enterprises, creating or retaining an estimated 1050 jobs.
- The Support American-Made Experiment starting in 1991 has provided product evaluation and entrepreneurial management practices assessment to about 2200 entrepreneurial growth-oriented manufacturing enterprises and placed 2050 products from 110 product lines on the shelves.

Environment and Water Resources

This emphasis area encompasses the study of ecosystems, human impacts on the environment, and sustainable resource management. The Ozarks region is biogeographically and geologically distinctive and possesses relatively intact but sensitive physical environment and biological communities. Aquatic and terrestrial natural resources are major factors in the quality of life and the regional economy. Missouri State has a superior record of research and funding in several areas of environmental science, and is well-positioned to achieve regional and national recognition.

Sample Projects:

- Conservation biology and restoration of federally-endangered species in rivers.
- Using geospatial science to relate land use to water quality trends.

Global Perspectives with an Emphasis on Asia

Broadly defined, the concept of “Global Perspectives” includes the study of international issues and trends (globalization, democratization, socio-economic development, religious-cultural interaction, international security, environmental degradation, etc.), area studies, and language skills. Whereas the focus of global perspectives may shift because of changes in the political, economic, or cultural contexts, the world in all its manifestations is increasingly interdependent, necessitating an emphasis as broad as possible.

It is anticipated that the university will continue to develop expertise in various regions of the world. For example, the university has emphasized efforts in Asia during the past several years. Asia, comprising such countries as China, Korea, Mongolia, Japan, India and Indonesia, contains more than half the world’s population. Confucianism, Buddhism, Chinese traditions, and Hinduism form the core of its shared cultural heritage. Asian states also share a history which unites this region and differentiates it from the rest of the world. Despite our long and intimate engagement with Asia, Americans are often unfamiliar with the area, its civilizations, its customs, and its languages. Since 1945 the economies of the region have grown at an extraordinary pace. The American economy is now intimately connected to the economies of Asia, and they are themselves connected through an intricate web of commercial and financial ties. Despite the growing importance of the region, there are no other Asia programs in Missouri at state-supported institutions of higher education. Missouri State’s strength in this area is unique within the state.

Sample Projects:

- Security dynamics in Central Asia, with a particular emphasis on radical or militant Islam.
- Development of strategies to promote peace and stability across the Taiwan Strait and reduce the chance for conflict between China and Taiwan.

Health Promotion

Health promotion research focuses on the prevention of disease and facilitation of wellness by maintaining or maximizing the health potential of individuals, families, communities, and societies. Health promotion emphasizes the achievement of an optimal level of health through health education, disease prevention, and health protection. Research goals include the identification of determinants of health, the avoidance of disease complications, and the development and evaluation of strategies to modify health knowledge, attitudes, and behaviors.

Sample Projects:

- Techniques and evaluation of newborns for hearing deficits.
- Development of strategies for smoking reduction and behavioral change.

Human Development

Human Development promotes collaboration among diverse disciplines and supports research regarding populations with and without disabilities from conception through the final stages of life. The research includes the study of individual and developmental differences in human behavior and cognition. Research goals include basic and applied studies. Examples of current and potential research include descriptions of typical and atypical behavioral and cognitive processes, evaluating treatment outcomes of experimental interventions at various age levels, and functional assessments of independence and behavior-motor skills of individuals at various age levels.

Sample Projects:

- Studies to identify and describe the behavioral and cognitive processes that account for learning deficits observed typically in preterm-low birth weight infants so that optimal intervention strategies can be designed and provided.
- Measurement of balance in healthy children and young adults (ages 5 to 19 years) in order to determine normalized values so that health care providers can effectively treat children and young adults with impaired balance.

Materials Science

The general field of Materials Science involves the examination of all classes of materials from an interdisciplinary viewpoint with an emphasis on making connections between the underlying structure and the processing, properties, and performance of a material. Advances in materials science have resulted in “made to order” materials where exacting control of the most fundamental microscopic processes (referred to as nanotechnology) result in unique applications. Economic development based on the application of materials science to nanotechnological challenges and new product development has led to the creation of Missouri State’s Center for Applied Science and Engineering (CASE). CASE’s focus is to apply materials science technologies to product development for corporate affiliates and for interdisciplinary learning experiences.

Missouri State’s emphasis in Materials Science is on discovering and applying new nanotechnologies driven by commercial interest with a focus on remediation materials, electronic materials, and biomaterials that have unique properties when exposed to the Biological, Chemical, Physical, and FAR IR spectrums through hardening, particle detection, and collective response mechanisms. In addition to the traditional sciences, many opportunities in applying new materials science nanotechnologies involve novel manufacturing, management, and marketing approaches.

Sample Projects:

- *Biosensors made from Carbon and Polymer-Based MEMS.*
- *Polymer Based Highly Parallel Nanoscopic Sensors for Rapid Detection of Chemical and Biological Threats.*

Performing and Creative Arts

The Performing and Creative Arts represent disciplines that intersect with music, dance, theatre and the visual arts. The Performing and Creative Arts emphasis would initiate dialog among research/creative activities from various areas and focus on the interaction of those areas with the ultimate goal of establishing excellence in artistic activity. Areas would include theatre, dance, music, musical theatre, visual arts, speech, and creative writing. Media would serve as a means of recording and disseminating live performance. In addition to maintaining a high level of artistic activity in traditional settings, potential creative/research projects could include oral performance of literature in cooperation with creative writing, modern dance interpretations of literature and/or music, collaborative presentations within new visual arts genres and media/sound design connecting to performing and creative arts.

Sample Projects:

- *The Graphic Imperative: International Posters for Peace, Social Justice and the Environment, 1965-2005.*
- The Musical Theatre program was recently honored by the Kennedy Center/American College Theatre Festival for the outstanding full-length production *Cicada Dance*.

Research on Learning, Teaching, and Intervention

Research on Learning, Teaching, and Intervention requires systematic analysis of the learning process and identification of instructional methods and modalities that best facilitate learning in typical and atypical populations. Included is an analysis of instructional content, pedagogy, and the relationship of teaching practices and clinical interventions to learner outcomes. Studies in this area involve critical evaluation of instructional practices that have a significant impact on students at all levels of ability, from preschool through adult education. This research also includes an evaluation of how students learn and the social and moral context of the learning and teaching process.

Sample Projects:

- Analysis of how students' spellings can be used to improve reading performance and optimize the chances of all students meeting the No Child Left Behind accountability criteria.
- Enhancing intrinsic motivation for research through service-learning.

Technology and Emerging Art Forms

The creation of new art forms and the development of new technologies are both driven by creative problem solving. Creative practitioners within the arts have become increasingly more involved in the application of new technologies to the development of new art forms. This transition has eliminated many of the traditional boundaries that have separated various forms of artistic exploration. The Technology and Emerging Art Forms initiative would coordinate faculty and students from various disciplines and focus research on emerging arts technologies and their interaction with artists and the public. Areas would include, but are not limited to, visual arts and design, media film production, communications, biomedical sciences, computer sciences, dance and music. Examples of current and potential research include digital applications in photography, printmaking, graphic design and animation, musical/video collaborations, musical composition, dance/video interactive performances, and the study of vocal production through collaboration of science and theatre disciplines.

Sample Projects:

- *Understanding the Voice: The Value of Interdisciplinary Collaboration.*
- *Video Game*, an art expo, international juried video festival in video animation.

Recommendations to Support Implementing Selected Research and Scholarship Emphasis Areas

The Futures Task Force was given the charge to identify research areas in which Missouri State University is excelling and/or should develop excellence. These research areas are to provide a focus for investment by the University with the hope that in the future they can become areas on which Missouri State can build a world class reputation. It is expected that the research areas, within a reasonable period of time, will be self-sufficient through the generation of significant external funding. This self-sufficiency will not be feasible without a significant initial investment by the University.

Many of these research areas have major interdisciplinary components. The Futures Task Force has been made aware of challenges and issues encountered by the University in rewarding departments and faculty members that participate in interdisciplinary work (e.g., collaboration by multiple departments to develop and offer general education courses). While interdisciplinary challenges have been evident in curriculum, there are concerns that gaining forums for interdisciplinary research sharing may also be difficult, and it will need continued dialogue and leadership to champion these endeavors. Hence, there

was a consensus in the Task Force that development of a website portal to foster interactions on research, as well as teaching and service, should be considered.

Faculty working in these interdisciplinary research areas should realize that decisions for promotion, tenure, and review ultimately reside within departments and colleges, so they must remain sensitive to the priorities of their department and college. The Futures Task Force hopes that considerations will be stated in departmental promotion, tenure, and review documents that appropriately reward faculty for participation in interdisciplinary research.

The Futures Task Force proposes that the Vice President for Research and Economic Development oversee the coordination and distribution of University resources in the initial stages of developing the identified research areas. This investment should be consistent with the infrastructural needs identified by the University Research Task Force report for the proposed long range plan *Daring to Excel: A Long-Range Vision and Five-Year Plan (2005-2010)* summarized below. This investment is expected to be in addition to the normal investments made at the college and departmental levels. It is envisioned that as internal funds become available to invest for strengthening emphasis areas named in this report, a "request for proposal (RFP)" process will be used. The process will solicit proposals from Deans or jointly from several Deans, as well as Board of Governors' approved Centers and Institutes given the interdisciplinary nature of the research emphasis areas. The proposals will need to describe not only the details of the research investment proposed, but also the strategic gain, outcome, and long-term impact that can be made from such an investment. As a part of this process, a faculty advisory committee chaired by the Vice President for Research and Economic Development will review the proposals and forward recommendations to the Provost and President for making selected investments to enhance specific research emphasis areas.

In general there is a tremendous need to improve and enhance the infrastructure facilitating research in current and potential areas of excellence identified by the Futures Task Force. The University Research Task Force, in their work toward developing the university's five-year plan, identified several means to improve research productivity and a summary of these recommendations is provided below. The Futures Task Force endorses the recommendations contained with the University Research Task Force report to be incorporated into the university's long-range plan and encourages review of the document in its entirety at <http://www.missouristate.edu/daringtoexcel/research/>.

- 1. Expand space allocation to meet research needs.** The availability of research space and facilities must be evaluated with space allocations in line with interdisciplinary research goals.
- 2. Provide necessary administrative and staff support.** The proliferation of research projects over the last five years and the projected future increase in sponsored research projects requires a commensurate increase in resources for supporting administrative units and committees. Particular needs are evident in the areas of accounting, purchasing, assistance with acquiring research grants and contracts, compliance with federal and state regulations, and technical work in direct support of research.
- 3. Maintain flexibility of individual workload assignments.** The proportions of individual workload assigned to teaching, research, and service must be flexible within departments to allow for the best use of individual talents and opportunities. Equitable distribution of the department workload should be the responsibility of the department head with justification of individual loads facilitated by systematic reporting of productivity via the professional development plan.
- 4. Recognize research productivity in staffing decisions.** Departmental staffing and workloads start with the premise that all faculty members are allocated time, equipment, and necessary physical facilities to pursue a reasonable level of creative activity. Staffing decisions, over time, should be based on equitable assessments of research productivity as well as on credit hour production.

5. Recognize research mentoring as teaching. Recognition and reward of this type of teaching is essential for involvement of students in research at all levels, and for the viability of graduate programs. The accounting of research specific courses should be reviewed and made consistent among departments. Since mentoring produces a low ratio of student credit hours to faculty hours, and an adequate credit hour production must be maintained, credit hour production should be addressed on a department level, and in the context of overall department or program productivity.

6. Support graduate programs and graduate research. Research productivity and graduate education are strongly interdependent. Graduate students are an important resource, and Missouri State University must compete for high-quality graduate students with GA stipends and opportunities that are comparable to those at similar graduate-level institutions.

7. Improve library and travel resources. In particular, the erosion of scholarly journal subscriptions must be reversed and the availability of on line journals increased. It is expected that faculty will eventually generate a greater portion of their own travel funds from external sources. However, in the interim, additional monies to cover costs of presentation of research findings will be necessary in order to allow faculty to establish or strengthen credibility in their research areas and be optimally competitive in seeking external funds.

8. Develop a pool of senior research faculty members. Some areas of excellence identified by the Futures Committee will most probably require the hiring of senior faculty members who have strong records of federally funded research within the areas. Some areas may lack depth in terms of current faculty members with strong, funded research programs, and some areas may not have any current faculty members fitting these criteria. Senior faculty members are needed to mentor others and to serve as role models and consultants.

9. Adopt a system to assess research productivity across departments and colleges. Unless research productivity is recorded, assessed, and recognized, there is little incentive for units to set research goals and no formal basis to judge their performance. Hence, Missouri State must develop a system to measure and track research productivity, and selected evidences of this assessment should be exhibited in the Departmental Profiles.

10. Provide greater support services during the pre- and post-award phases. Although Missouri State University has in place the Office of Sponsored Research, grant submission and management at the level suggested by the Futures Task Force will require a substantial increase in support services. Most principal investigators at Missouri State currently do not have access to adequate assistance at the department, college, center, or institute level during the preparation of grant proposals.

In accomplishing the ten recommendations above, the Futures Task Force recognizes that securing external funding for research and infrastructure development will be critical. To that end, the Futures Task Force further recommends the following:

1. Missouri State University has a number of research centers and institutes. These units were established as separate research units for a variety of reasons, but primarily to focus on an area of interest that either would not normally be identified with a specific academic unit or would extend beyond the interests of any one academic unit. The Futures Task Force recognizes that these centers and institutes can be instrumental in supporting the interdisciplinary activities of the proposed research and scholarship emphasis areas. However, it is unclear at this time if all of the institutes and centers are being operated in an optimal fashion. Therefore, the Futures Task Force recommends that the University undertake an administrative review of existing institutes and centers in much the same manner as current practices in academic program review. Further, the administrative review should lead to recommendations on how each center and institute can best be utilized to

assist in the development of the proposed emphasis areas. For example, the Center for Applied Science and Engineering can be directly supportive to emphasis areas including biotechnology, environment and water resources, materials science, and entrepreneurship while the newly created Community and Social Issues Institute supports activities that are important in the American history and cultures, health promotion and research on human development emphasis areas.

2. The University should undertake a thorough review of its indirect cost recovery process. It is recommended that recovered indirect costs be focused on building the research infrastructure, including support of research activities in the proposed emphasis areas.
3. To enhance the opportunity to obtain external funds to support development of the proposed emphasis areas, the Futures Task Force recommends that the University investigate the feasibility of establishing a Research Foundation with 501 (c) 3 status. Many grants are not available to “educational institutions.” However, they are available to 501 (c) 3 foundations of “educational institutions.” The research foundation would increase opportunities for external funding in emphasis areas such as the performing arts.
4. While not making specific recommendations for academic unit reorganizations, some reorganization would be beneficial to the full implementation of proposed emphasis areas. For example, the potential for biotechnology research might be enhanced if the Departments of Agriculture and Fruit Science were to develop degrees in horticulture and animal science. The Futures Task Force recommends that the president of the university investigate structural changes that might aid in implementing the proposed emphasis areas.
5. The Futures Task Force recommends that steps be taken to ensure that information regarding funding decisions, and actual budgets and expenditures, be easily accessed by the Missouri State University community.
6. As feasible, additional budget, including potential 1% reallocation monies proposed by the President should be directed to support the research and scholarship emphasis areas.
7. Finally, the Task Force recommends that the University reward efficiency at the departmental/program level by encouraging cost saving efforts and reallocation of monies to research.

Conclusion

The members of the Task Force on Missouri State University Futures would like to thank everyone who participated in this effort. A special debt of gratitude is owed Ms. Tami Sutton for her service as staff assistant to the Task Force. The Futures Task Force has worked diligently and objectively to identify broad intellectual/research themes with the potential to enhance the University's opportunity to excel in focused research and scholarly areas. By choosing to invest in these emphasis areas, the University will enhance greatly its opportunity to develop a world class reputation.

ATTACHMENT ONE

Detailed Description of Proposed Research and Emphasis Areas

American History and Cultures

Concept: Americans share a history but participate in many cultures. This area encompasses the study, preservation, and dissemination of scholarship relating to American history, societies, and cultures from the perspectives of the humanities and social sciences. While this emphasis area encompasses the span of American history and the breadth of its cultures, including its literature, art, and popular culture, it focuses on those aspects of culture and history unique to Missouri and the Ozarks.

<p>FUNDING: Examples of major trends and opportunities in extramural funding</p>	<ul style="list-style-type: none"> • Current major funded projects: Missouri State University faculty members currently receive external funding through sponsored research in the following areas: Archaeology [Center for Archaeological Research (CAR) about \$500,000 per year] American Religion (Lilly Endowment \$116,000 part of a \$700,000 project), American History education (\$1.8 million 2001-2007 Dept. of Education of which \$1.4 million is administered through Missouri State). • The bulk of CAR funds derive from Cultural Resource Management (CRM) contracts. CRM through federal mandates is now a billion dollar a year business. Though CRM funding has been flat since 2001, it is likely to increase in the future along with land development. • Funding for American History programs aimed at improving student performance directly or through teacher development programs did not exist in 2000. In 2001 Congress authorized \$60 million. By 2005 this had increased to about \$150 million per year through the Department of Education and NEH. Missouri State History faculty are heavily involved in many aspects of these programs. Congressional resolutions of September 2005 indicate that the Congress will add American History requirements to NCLB with additional financial support. This appears to a major growth area. • The Lilly, Templeton, Pew, Kellogg, and Ford foundations, fund research on American religion with several million dollars a year in grants. They have also made large investments in individual university programs totaling \$23 million in recent years. This appears to be a major growth area.
<p>GROWTH: Examples of areas of knowledge you anticipate will experience the most dramatic growth</p>	<ul style="list-style-type: none"> • Local and public history programs. • American History Education • American Religion • Racial and Ethnic Studies <ul style="list-style-type: none"> ○ Diaspora studies (i.e., Hispanic, Caribbean, African diasporas in the U.S. as part of larger movements) ○ African American Studies ○ American Indian Studies ○ Hispanic American Studies ○ Jewish Studies ○ Creole Studies (post Katrina)
<p>UNIQUE RESOURCES: Examples of unique existing resources as well as current needs in Missouri, the Ozarks, and/or Springfield regarding economic development, technological advances, cultural enrichment, physical well-being, and/or social prosperity</p>	<p><i>Existing Resources:</i></p> <ul style="list-style-type: none"> • Center for Archaeological Studies • Ozark Studies Institute • Wilson Creek National Battlefield / General Sweeney Museum • History Museum • Ozarks Afro-American Heritage Museum • Ralph Foster Museum • The Max Hunter Folk Song Collection • <i>Shannon County: Home and Shannon County: The Hearts of the Children</i> • Greene County Archives • Meyer Library Special Collections (Missouri State, Labor, Judaism, Gay/Lesbian archives)

	<p><i>Needed Resources:</i></p> <ul style="list-style-type: none"> • Missouri State Museum (housing CAR, and its archaeological collections, local history and cultural collections, and fine arts collections) • Archaeological equipment (Remote sensing, global positioning devices) • Reformulation of Center for Ozarks Studies • Library electronic media resources • Coordination of local cultural resource programs • Improved coordination of faculty research in area
<p>COLLABORATIONS: Examples of new collaborations in research and/or learning as well as linkages to the University's existing and emerging research strengths</p>	<p><i>Existing Collaborations:</i></p> <ul style="list-style-type: none"> • Internal Collaborations <ul style="list-style-type: none"> ○ CAR collaborates with Anthropology, Geography, Geology, and Planning, Biology, Art and Design ○ Teaching American History includes collaborations among Economics, History, and the Center for Social Science Research ○ Latin American and Caribbean Studies includes collaboration among History, Anthropology, Political Science, and Art and Design ○ Ozarks Studies Institute has promoted collaborations among several departments ○ Religion and English professors collaborated on a book (faculty unaware of each others work until recently) • External Collaborations <ul style="list-style-type: none"> ○ CAR collaborates with KU faculty to do research on Big Eddy site materials ○ History department collaborates through the TAH grant with the following school districts: Springfield, Republic, Ozark, Nixa, Marshfield as well as the Greene County Archives and History Museum. Members of the History department regularly collaborate with Wilson Creek National Battlefield on various projects and played a significant role in helping the Battlefield obtain Congressional funding to purchase of the General Sweeney collection. ○ Anthropology faculty are engaged in several projects including a language retention project with the Quapaw tribe of Oklahoma, preservation of tribal culture with the Kiowa of Oklahoma, heritage tourism in Jamaica. ○ MCL faculty have been working on outreach projects with local Hispanic organizations. <p><i>New Collaborations:</i></p> <ul style="list-style-type: none"> • Missouri State faculty are often unaware of the work of others in their fields because of departmental and college boundaries. Development of an emphasis area could bring together faculty members from many departments for the development of large scale projects. • There is a great need in southwest Missouri for a museum housing local history and culture collections. This facility could also serve as a clearinghouse for faculty members wishing to collaborate and link up with external cultural facilities. • Cultural resource development could be linked to private companies with an interest in heritage tourism (Silver Dollar City, Bass Pro, etc.)
<p>STRENGTHS: Examples of building on existing strengths</p>	<ul style="list-style-type: none"> • Missouri State faculty members have been enormously productive in this area over the years. Two of our Distinguished Professors are American historians. Scholars in History, English, Sociology and Anthropology, Geography, Theatre, and Religious Studies to name a few areas have produced a library of books and articles. • External funding in CAR and Teaching American History is nearing a million dollars a year. • The Institute for Ozark Studies has played an important role on campus in the past and could be again important in the future with proper funding.

	<ul style="list-style-type: none"> • Strong collaborations with local school districts • Strong library holdings
MISSION FIT: Examples of compatibility with the University's statewide mission in public affairs	The study, preservation, and dissemination of scholarship related to the Americas is central to the public affairs mission.
EDUCATION FIT: Examples of contributions to superior undergraduate, graduate, and professional education	<ul style="list-style-type: none"> • A Missouri State University Museum would greatly enhance undergraduate programs in archaeology, history, anthropology, area studies, geography, geology, religious studies, and many others. • A museum would create possibilities for graduate programs in cultural resource management, public history, and anthropology which do not now exist. • New investment in remote sensing and positioning equipment would create new opportunities for students • An emphasis in this area would enhance professional development opportunities for public school teachers, community college teachers, NGO administrators, and local business executives interested in learning something about the area.
SUSTAINABILITY:	To sustain development after an initial investment, faculty members would: <ul style="list-style-type: none"> • Develop new undergraduate and graduate programs • Collaborate with Community and Social Issues Institute to resolve local and regional problems • Develop collegial organizations designed to overcome departmental isolation New archaeological equipment would allow CAR: <ul style="list-style-type: none"> • to compete for a greater variety of contracts • to more efficiently complete work • to train students on latest equipment A museum would allow faculty: <ul style="list-style-type: none"> • to seek external funding in areas supported by existing collections • to seek external support for museum development • to display research to the wider public

Biotechnology

Concept: Biotechnology is the understanding and improvement of living organisms. During the past three decades, novel molecular approaches have lead to a rapid accumulation of knowledge in biological systems. The translation of this new knowledge to practical applications presents unprecedented economic opportunities in all areas dealing with living organisms, from medicine, to animal husbandry, to crop production. Biotechnology is expected to become an important, if not the most important, driving force of the 21st century economy. For example, the biotechnology industry employed 713,000 workers in 2002 and is anticipated to employ 815,000 workers in 2007. Jobs in the biotechnology sector typically pay 1.5 times the United States annual average salary.

The inherent complexity of living organisms presents challenges for both basic and translational life sciences. Meeting these challenges requires a coordinated interdisciplinary approach. Missouri State University has strong research programs in animal reproduction and product improvement, nerve cell biology, and the plant genomics areas. While these programs can serve as seeds for future growth, they need to be strengthened by contribution from agriculture, biomedical sciences, chemistry, mathematics, and computer and material sciences. A strong interdisciplinary research and scholarship cluster in plant and animal biotechnology will enable the University to play a prominent role in establishing a modern, life science-based economy in Missouri.

<p>FUNDING: Examples of major trends and opportunities in extramural funding</p>	<p>The federal government has recognized that the United States' global competitiveness in biotechnology can only be maintained if basic research is kept at a high level at academic institutions. Consequently, federal dollars to support both basic and translational life sciences have been increasing in the past decades. Funding for life sciences has quadrupled since the 1980's. Major granting agencies are the National Institutes of Health, National Science Foundation, the Departments of Agriculture and Energy, and the National Aeronautics and Space Administration. Obtaining funds from these agencies remains highly competitive. Currently, Missouri State researchers are obtaining more than \$1 million annually for life science research in a variety of disciplines. For example, researchers are developing novel therapeutic strategies for chronic pain conditions involving the trigeminal nerve. This research is becoming increasingly competitive in acquiring funding from the National Institutes of Health.</p> <p>Venture capital represents another source of funding for applied life science research. Approximately half of all biotech funding is from venture capital. This source is much more complex: in addition to strong science, venture capital takes into consideration business-type issues, such as patent protection, market potential, and management.</p>
<p>GROWTH: Examples of areas of knowledge you anticipate will experience the most dramatic growth</p>	<p>The rate at which life science discovery and innovation is accelerating is unparalleled in any other sciences. The continuation of this trend is ensured by the advent of the new, high-throughput approaches of genomics, proteomics, and metabolomics. These approaches enable biologists to study an organism as an entity and not merely as the sum of its parts. The resulting global perspective reveals new interactions and complexities and improves our basic understanding of biological systems. Rapid growth is predicted in the areas of enabling technologies such as bioinformatics and bioengineering. Bioengineering is expected to be further improved, since proof of a gene's function can only be provided in a genetically modified experimental organism. In addition to basic sciences, a dramatic progress is being made in the application of the resulting biological information in such economically important areas as medicine, pharmaceuticals, agriculture, food industry, and industrial and environmental microbiology.</p> <p>Animal biotechnology is a rapidly expanding area of research. As an example, animals can be used in the study of novel drug delivery systems, pharmacological properties of medicinal compounds etc. Bio-engineered animals are useful in developing animal models of disease, for example in investigating the role of inflammation in several diseases such as Parkinson's and Alzheimer's.</p>
<p>UNIQUE RESOURCES: Examples of unique existing resources as</p>	<p>The existing components of the plant and animal biotechnology research program have established strong ties with enterprises (hospitals, zoological garden, wineries) which uniquely anchor their activities to the local community. Furthermore, the plant genomics program utilizes genetic resources of wild plant species native to the region.</p>

<p>well as current needs in Missouri, the Ozarks, and/or Springfield regarding economic development, technological advances, cultural enrichment, physical well-being and/or social prosperity</p>	<p>A complete cell and molecular biology lab developed by the biology department is comparable to those at larger research institutions. The regional hospitals in Springfield represent a unique resource for cooperation in this emphasis area. The ultrasound evaluation of carcass traits in cattle is complementary to the status of Missouri being second in the U.S. in numbers of beef cow-calf operations and the tenderness of beef has been identified as the number one consideration in and proximity to the Southwest Research Center in Mt. Vernon, Missouri is a unique resource for collaboration between Dr. Tommy Perkins and colleagues at the University of Missouri.</p> <p>The proposed plant and animal biotechnology program uniquely meets the needs of the region. The program will attract life science companies bringing well-compensated, high-tech jobs which are needed in southern Missouri. The program will also train a well-prepared work force and provide an academic background for life sciences companies. Furthermore, a strong biotechnology research program can work towards solutions to specific problems of the local economy. A point in case is the grape genomics research program which helps the viticulture industry by contributing to the development of plant varieties that are better adapted to the local environment.</p>
<p>COLLABORATIONS: Examples of new collaborations in research and/or learning as well as linkages to the University's existing and emerging research strengths</p>	<p>The increasingly interdisciplinary approach to life sciences naturally brings together collaborations. Collaborative arrangements, particularly among various disciplines, are becoming pre-requisites for competitive funding. Although signs of intramural collaborative arrangements have begun to appear, such arrangements are few and far between at Missouri State University. There is a need for university incentives to encourage more intramural arrangements. Extramural collaborations with research-one institutions are more common and are likely to develop further. The plant genomics program is perhaps the best example with collaborators from the Stowers Institute for Medical Research, the Danforth Plant Science Center, the University of Missouri-Columbia, and Purdue University. Plans and agreements are in place to extend these collaborations to foreign institutions, for example, Szent Istvan University in Hungary and the Federal Institute for Plant Breeding in Germany. In addition, the university is collaborating with groups as diverse as the National Headache Center, zoos from around the world, and the Discovery Center of Springfield.</p> <p>Current collaborations within the university occur across several departments and the potential for future collaboration with private organizations through the Jordan Valley Innovation Center has the potential to tremendously enhance these operations.</p>
<p>STRENGTHS: Examples of building on existing strengths</p>	<p>Strong research programs in animal reproduction and product improvement, nerve cell biology, and plant genomics/biotechnology are already established and well equipped. Expertise and procedures are in place to secure funding from federal and state agencies. In addition to the Office of Sponsored Research and Programs, the University is in the process of establishing the Jordan Valley Innovation Center. JVIC will enable the university to attract significant venture capital funds in the area of translational biotechnology. A further strength is the highly supportive, political climate created by local, state, and federal representatives who recognized the potentials of biotechnology in the future of the region.</p>
<p>MISSION FIT: Examples of compatibility with the University's statewide mission in public affairs</p>	<p>Biotechnology has the power to modify and to use as experimental system all living organisms, including human beings. Consequently, its ethical and moral implications have already created a nation-wide public debate. This debate is likely to emerge as the most important public affairs issues in the new century. By building deep expertise in biotechnology, the university will be able to make relevant, science-based contributions to this public debate.</p> <p>In the future, the program will also have to face questions about privately funded university research, the ownership of publicly funded scientific research results, its free distribution to the scientific community, and its utilization by for-profit enterprises. By tackling such questions, the biotechnology projects will bring these public affairs issues to the university.</p>

	<p>Further, the biotechnology cluster relates directly to three of the university's five themes: business and economic development, science and the environment, and health.</p>
<p>EDUCATION FIT: Examples of contribution to superior undergraduate, graduate and professional education</p>	<p>The interdisciplinary nature of the biotechnology program will provide students with modern educational opportunities where scientific problems cannot be addressed in within a single discipline. Instead, a scientific problem is approached by the combined application of several disciplines. Gene expression profiling, for example, can only be performed with a solid background in both biology and statistics. The advantage of this interdisciplinary approach is most evident in graduate education, where students will be trained to perform real-life biotechnology applications. In undergraduate education, the biotechnology program will have benefits in the development of new courses that introduce these complex scientific approaches.</p> <p>As science programs typically do, the biotechnology program will attract out-of-state and foreign students to Missouri State. This will give local students an exposure to cultural diversity and/or will bring opportunities for them to work in other regions of the country or abroad – an important factor in enhancing the education of Missouri State students.</p>
<p>SUSTAINABILITY:</p>	<p>Sustainability depends on funding, facilities, and expertise. Competitive funding has been well established for some of the programs, (e.g., nerve cell research), while others (e.g., plant genome research) remain to develop a solid publication record to obtain such funding. The competence and practical orientation of the research help in establishing and maintaining external funding. Facilities are in place for all of these programs, although instrumentation is highly fragmented. Combining instruments to a single shared biotechnology core facility at Missouri State University would greatly increase the efficiency with which the costly life science equipment is used. A biotechnology core facility will also enhance the undergraduate and graduate education. Recruiting and retaining expertise is a challenge, as Missouri State University salaries are below the salaries at comparable universities. This inequity presents a particular problem with the Mountain Grove faculty, who are severely underpaid receiving 9-month salary compensation in 12-month appointments.</p> <p>This cluster will also require a review of the existing programs in agriculture with the potential for reorganizing agriculture around plant (horticulture) and animal science strengths.</p>

Entrepreneurship

Concept: The definition of Entrepreneurship is complex and multifaceted. Entrepreneurship may be conceptualized as the practice of starting new businesses, but entrepreneurs also are those who pioneer change by creating new products and/or processes. These activities have been long associated with creating job opportunities, and the spectrum of entrepreneurship activities can be found in both for-profit and not-for-profit entities.

There are two distinct aspects to entrepreneurship with regard to the typical university's participation in such initiatives. The first involves an emphasis on economic development through interdisciplinary research efforts focused on the advancement of community, regional, state or national initiatives. The second emphasis is a focused effort aimed at creating the next generation of entrepreneurs by providing the business skills and research skills necessary for creation and market technologies, other products, and ideas.

<p>FUNDING: Examples of major trends and opportunities in extramural funding</p>	<p>Establishment of a significant entrepreneurship program will require substantial funding. This has been true of many other entrepreneurship programs, since much of the funding for such programs has come from private and/or foundation sources. In the last three decades, the number of endowed positions in entrepreneurship and related fields has increased one-hundred-fold in the United States and is likely to pass the 500 mark by years end, with an average endowment of over \$2,250,000 (Katz, Kauffman Foundation, 2004). Private funding of entrepreneurship education is not limited to chaired professorships; since a sampling of 25 of the 124 members of the national consortium of Entrepreneurship Centers indicated 60 percent were named centers (list dated 11/4/04). At the present, Missouri State University has potential donors who have indicated a preliminary interest in supporting an Entrepreneurship Center.</p>
<p>GROWTH: Examples of areas of knowledge you anticipate will experience the most dramatic growth</p>	<p>Entrepreneurial small businesses create most of the new jobs and innovations that fuel the nation's economy and half of American private sector employees work in small businesses. During the last ten years, small companies have generated the majority of new jobs, and it is projected that by 2025 half of the North American labor force will be self-employed. Entrepreneurship is risky. More than 80 percent of start-ups fail within five years, with 90 percent of these failures due to poor management.</p> <p>Education and adherence to sound key principles and practices can increase average success rates for small businesses to over 80 percent. (Webb, Conference The Role of Entrepreneurship in Economic Development, Washington, DC, Proceedings, March 7, 2005)</p> <p>In 2000-2001, firms with fewer than 500 employees saw a net increase of 1,150,875, while larger businesses experienced a net employment decrease by 999,970. Over the decade of the 1990s, small business creation fluctuated between 60 and 80 percent, while contributing all of the net new jobs in the non-farm private sector.</p> <p>Smaller enterprises create more than 50 percent of the non-farm private gross domestic product (GDP). Small firms also produce 13 to 14 more patents per employee than large patenting firms. These patents are twice as likely as large firm patents to be among the one percent most cited. In addition, these firms are the leading employers of scientists, engineers and computer workers, employing 39 percent of such workers. (U.S. Bureau of the Census, SBA Advocacy Small Business Statistics and Research) It should be noted that while some 30% of successful entrepreneurial endeavors involve high-tech initiatives, some 70% do not.</p>
<p>UNIQUE RESOURCES: Examples of unique existing resources as well as current needs in Missouri, the Ozarks, and/or Springfield regarding economic</p>	<p>The university has a growing program in basic and applied technical and applied research as well as collaborative efforts with private sector technical and scientific enterprises, most notably through the Jordan Valley Innovation Center, the Center for Applied Science and Engineering, and other relevant programs. These and other technical programs at the university could provide a valuable resource for exposing entrepreneurship students to technical and scientific research, while at the same time providing the students in these programs and their attendant departments with an exposure to the knowledge required for commercialization of new technical and scientific discoveries and the output of like applied research and development efforts.</p>

<p>development, technological advances, cultural enrichment, physical well-being, and/or social prosperity</p>	<p>The present gap between these two major components of the industrial innovation process is a long standing weakness in our nation’s efforts to bring new products, processes, and services to the marketplace, thereby blunting the effectiveness of both public, including university and private sector efforts, at economic development. New products, processes, and services for industry do not grow on trees, nor is building a better technological mousetrap sufficient enough to cause the world to beat a path to one’s door. It is the combination of significantly competitive scientific/technological research and development output, and sound business practices that result in economic development and jobs for workers and recent graduates of our educational institutions. Industrial innovation is a product of both technological research and business commercialization efforts. The relationship between these two basic components is multiplicative; anything that diminishes either component reduces the other.</p>
<p>COLLABORATIONS: Examples of new collaborations in research and/or learning as well as linkages to the University’s existing and emerging research strengths</p>	<p>Entrepreneurship is rich with opportunities for cross-campus and off-campus collaboration with cooperative learning experiences for students in a variety of technical and non-technical disciplines, thereby providing an alternative to working for others and providing them with an opportunity, as President Nietzel recently put it, to create jobs, rather than to take jobs.</p>
<p>STRENGTHS: Examples of building on existing strengths</p>	<p>Springfield, Missouri, and the surrounding region, is highly entrepreneurial; therefore, providing significant entrepreneurial expertise and applied resources to draw upon, as well as opportunities for applied learning experiences.</p> <p>With regard to specific Missouri State research efforts in the area, since 2002 some 25 research-based entrepreneurship articles have been published by Missouri State faculty in the College of Business Administration.</p>
<p>MISSION FIT: Examples of compatibility with the University’s statewide mission in public affairs</p>	<p>At its core, entrepreneurship is both educational—enabling students to be all they can be—and public affairs through economic development—stimulating the development and commercialization of both university, including faculty and student-generated technology, and private sector technology, in the form of new products, processes, and services to enhance societal well-being and providing new jobs for American workers.</p>
<p>EDUCATION FIT: Examples of contributions to superior undergraduate, graduate, and professional education</p>	<p>In addition to meeting a growing student interest in an alternative to working for others, entrepreneurship provides students with an opportunity for real-life learning experiences through internships and applied research. In the case of growth-oriented enterprises of both a technical and non-technical nature, students are given an opportunity to participate in interdisciplinary research and action teams; thereby providing students the ability to learn from other students in other disciplines, as well as from the entrepreneur and that firms employees. It also allows for their collaborative applied research, and enhances their class room learning experiences by providing them with an opportunity to apply what they have learned in the classroom in a real-life setting.</p>
<p>SUSTAINABILITY:</p>	<p>Given the entrepreneurial climate that exists in Southwest Missouri and specifically the large number of privately formed organizations in the area, the potential for obtaining funding/support from these local entrepreneurs would seem to be significant. In addition, given the history of small business development in this country and the availability of governmental funding (in the form of economic development grants, e.g.) additional continued sources of external funding would also appear to be possible. Potential external funding opportunities exist in the form of grants from the Kauffman Foundation, the Ford Foundation, Small Business Administration, and the U.S. Department of Education.</p>
<p>LIMITING FACTORS:</p>	<p>Additional faculty lines will be required for both the educational mission and economic development support. Physical facilities will have to be reallocated or constructed depending on the size of the endeavor. However, there is a high probability for donor support for such infrastructure needs.</p>

Environment and Water Resources

Concept: This emphasis area encompasses the study of ecosystems, human impacts on the environment, and sustainable resource management. The Ozarks region is biogeographically and geologically distinctive and possesses relatively intact but sensitive physical environment and biological communities. Aquatic and terrestrial natural resources are major factors in the quality of life and the regional economy. Missouri State has a superior record of research and funding in several areas of environmental science, and is well-positioned to achieve regional and national recognition.

<p>FUNDING: Examples of major trends and opportunities in extramural funding</p>	<p>This area has a robust and sustained record of external grant support, scholarly publication, and graduate education among an interdisciplinary group of faculty members. Over the past 3 years, grant activity has averaged 18 awards and \$403,000 annually. Additional support includes Congressional appropriations of \$300,000 for the Bull Shoals Field Station and \$500,000 for the Ozarks Environmental and Water Resources Institute for fiscal year 2005, with another \$500,000 earmarked for 2006. Research grants and contracts have been mainly for applied research, sponsored by government resource agencies including federal (National Park Service, U.S. Fish and Wildlife Service, U.S. Geological Survey, U.S. Environmental Protection Agency, U.S. Army Corps of Engineers) and state agencies (Missouri Department of Conservation, Missouri Department of Natural Resources, Arkansas Game and Fish Commission, Kansas Department of Wildlife and Parks) as well as the National Science Foundation. Funding is facilitated by membership in the Upper and Middle Mississippi Valley Cooperative Ecosystems Study Unit, providing favored status with Department of Interior agencies. Funded activities include environmental assessment and monitoring, geospatial analysis, endangered species research and restoration, and environmental education. Given the existing research base, the injection of federal appropriations, and future support by the University for faculty and facilities, Missouri State could compete for long-term environmental monitoring projects and large basic research grants and become a nationally recognized leader in environmental research.</p>
<p>GROWTH: Examples of areas of knowledge you anticipate will experience the most dramatic growth</p>	<p>Environmental problems and demand for related research will inevitably escalate due to human population growth, resource consumption, and related impacts. Particular problems include pollution from urban, industrial and agricultural sources and historical lead-zinc mining, nutrient enrichment of surface water from human population and confined animal feed operations, particularly swine and poultry, agricultural and forestry pest management, harmful algal blooms in lakes and rivers, and invasive species of non-native plants and animals. Affected interests include recreational and tourist industries, public health, agriculture, forestry, sport fisheries, and government agencies complying with the Clean Water Act and Endangered Species Act.</p>
<p>UNIQUE RESOURCES: Examples of unique existing resources as well as current needs in Missouri, the Ozarks, and/or Springfield regarding economic development, technological advances, cultural enrichment, physical well-being, and/or social prosperity</p>	<p>The Ozarks environment is a major regional attraction and an important factor in quality of life. Regional advantages include relatively low population density, large areas of National Forest, National Scenic Riverways, nationally and globally significant biota and geology, scenic and relatively pristine rivers, and man-made lakes, providing outdoor recreational opportunities in proximity to major population centers. The karst geology of the Ozarks creates particular problems and needs for expertise with regard to sustainable development. Existing research centers and the Bull Shoals Field Station provide a framework for environmental research and education. There is strong regional interest among organizations and businesses in environment & water quality issues. Organizations include James River Basin Partnership, Watershed Committee of the Ozarks, Upper White River Basin Foundation, The Nature Conservancy, Audubon Society, Discovery Center, and the Ozark Underground Laboratory. Business interests include Bass Pro, Silver Dollar City, Fantastic Caverns, real estate, and other businesses that depend on environment, tourism, and outdoor recreation.</p>

<p>COLLABORATIONS: Examples of new collaborations in research and/or learning as well as linkages to the University's existing and emerging research strengths</p>	<p>The University has strong ties to state and federal resource agencies and is increasingly respected as a source of expertise in environmental science. A National Park Service research unit was recently established at Missouri State, with responsibility for biological and environmental assessment and monitoring on federal lands. Many opportunities exist for collaboration among departments, facilitated by existing interdisciplinary units. The Bull Shoals Field Station is a partner in the new NSF-sponsored environmental monitoring projects NEON (National Ecological Observatory Network) and Earthscope, which could potentially lead to partnership in large monitoring grants.</p>
<p>STRENGTHS: Examples of building on existing strengths</p>	<p>There is a strong record of scholarly publication, education, and sustained and increasing grant support from multiple sources. Faculty in several departments have established research programs in relevant subject areas, including fluvial geomorphology, cartography and remote sensing, environmental geochemistry, water quality and watershed assessments, biotic indices, conservation biology, population ecology, physiological ecology, plant allelopathy, invasive species biology, and environmental education. Existing interdisciplinary units include Ozarks Environmental and Water Resources Institute, the Center for Resource Planning and Management, and the Bull Shoals Field Station. The geographic area is attractive to faculty with environmental interests, and the physical location of the University is conducive to field studies in natural areas.</p>
<p>MISSION FIT: Examples of compatibility with the University's statewide mission in public affairs</p>	<p>Environment is the most comprehensive concept of shared resources and responsibilities. Effective and sustainable resource management requires that private and public interests be balanced for the benefit of society as a whole. A research emphasis on environment is implicit in the University mission and in the theme of Science and the Environment. Research in this area benefits the public on multiple levels. Education in this area prepares students to deal with critical challenges that must be met by scientists, policy makers, and voters.</p>
<p>EDUCATION FIT: Examples of contributions to superior undergraduate, graduate, and professional education</p>	<p>Understanding of the Natural World is a General Education goal of the University. There is a history of environmental outreach and education programs at MSU and new initiatives are actively being pursued by faculty. Many Missouri State students have strong interests in the natural world and in conservation and resource management. Research in this area has an excellent record of undergraduate and graduate student involvement. Students who participate in research funded by resource agencies are well-positioned for eventual employment by those agencies. Professional opportunities for BS and MS students in the public and private sectors are good to excellent, particularly in rapidly advancing technical areas such as remote sensing and environmental remediation.</p>
<p>SUSTAINABILITY:</p>	<p>Environmental problems and therefore demand for environmental science will increase with human population. Research in this area has been increasingly active and well funded at Missouri State, despite significant handicaps. There is need to encourage graduate programs by sponsoring fee waivers and by increasing graduate student stipends. Facilities and salaries must be upgraded to attract quality faculty and students. Net loss of faculty lines from the natural sciences must be reversed. Key faculty lines recently lost and not yet replaced include aquatic entomology and phycology, both of which support bioassessment of water quality in streams and lakes. Other areas for addition of faculty lines might include toxicology, urban ecology, environmental management/planning, and surface water hydrology/modeling.</p>

Global Perspectives, with a Special Emphasis on Asia

Concept: Broadly defined, the concept of “Global Perspectives” includes the study of international issues and trends (globalization, democratization, socio-economic development, religious-cultural interaction, international security, environmental degradation, etc.), area studies, and language skills. Whereas the focus of global perspectives may shift because of changes in the political, economic, or cultural contexts, the world in all its manifestations is increasingly interdependent, necessitating an emphasis as broad as possible.

It is anticipated that the university will continue to develop expertise in various regions of the world. For example, the university has emphasized efforts in Asia during the past several years. Asia, comprising such countries as China, Korea, Mongolia, Japan, India and Indonesia, contains more than half the world’s population. Confucianism, Buddhism, Chinese traditions, and Hinduism form the core of its shared cultural heritage. Asian states also share a history which unites this region and differentiates it from the rest of the world. Despite our long and intimate engagement with Asia, Americans are often unfamiliar with the area, its civilizations, its customs, and its languages. Since 1945 the economies of the region have grown at an extraordinary pace. The American economy is now intimately connected to the economies of Asia, and they are themselves connected through an intricate web of commercial and financial ties. Despite the growing importance of the region, there are no other Asia programs in Missouri at state-supported institutions of higher education. Missouri State’s strength in this area is unique within the state.

<p>FUNDING: Examples of major trends and opportunities in extramural funding</p>	<p>Funding in the areas of global and regional research is partially a reflection of politics and global trends, especially when the funding source is the U.S. federal government. In the past, the State Department and other federal agencies have focused on the former Soviet Union and other “socialist” countries, but with the events of 9-11, the continued “war on terrorism,” and the growing economic and geo-strategic significance of other regions, a shift has occurred to the Middle East and other critical areas such as Central Asia and East Asia, as well as issues of geo-strategic significance.</p> <p>Previously, the University has secured and is securing funding from the U.S. State Department (Muskie Fellowships, Contemporary Issues Fellowships, for example) and other government departments (Department of Education). Some departments at Missouri State have also acquired significant funding from private foundations (especially Defense and Strategic Studies) and foreign governments (Taiwan—Political Science).</p> <p>The University must continue to seek funding from these sources, but a vast array of funding sources is available, including the Japan, Rockefeller, Soros, Freeman, Ford, and Gates Foundations, the British Academy, the East-West Center, and private multinational corporations (locally, for example, the Mueller and Kraft corporations).</p> <p>For Asia in particular, the Association for Asian Studies web site lists dozens of U.S. and Asian funding sources, and funding sources in these and other areas are extremely extensive and growing at a rapid pace.</p>
<p>GROWTH: Examples of areas of knowledge you anticipate will experience the most dramatic growth</p>	<p>For obvious reasons, international security studies may be the most prevalent growth area, but economic and development studies will expand as well, as will research on ethnic and religious conflicts, humanitarian aid, health issues, immigration, and international law (genocide). In addition, growth can be expected in critical area studies (East Asia, India, the Middle East and Africa, the former Soviet Bloc, Latin America) and languages (Arabic, Chinese, Farsi, for example), trade and international economics, and cultural awareness and diversity. To illustrate these trends and opportunities, the U.S. Congress has declared 2006 “The Year of Study Abroad,” thereby encouraging requests for funding in this area.</p> <p>In Asia, growth is expected in language studies, particularly in Mandarin, Japanese, Korean and Hindi; studies related to Asian markets for American goods and services; collaborative studies fostering economic growth; political and policy studies concerning the United States and East Asia; and historical studies, particularly those relating to twentieth century issues.</p>

<p>UNIQUE RESOURCES: Examples of unique existing resources as well as current needs in Missouri, the Ozarks, and/or Springfield regarding economic development, technological advances, cultural enrichment, physical well-being, and/or social prosperity</p>	<p>In addition to the “hardware”—campus in China, existing exchange programs, Missouri State has the “software” required for the study of global perspectives, with a large number of specialists in international, comparative, and area studies in such fields as archeology, history, political science, anthropology, religious studies and the arts. We also have a growing number of foreign language specialists that underline and support these studies, and we are one of only 43 UN Depository Libraries that allows for extensive research on the UN and other international institutions.</p> <p>Furthermore, as outlined in a recent story in the <i>Springfield News-Leader</i>, the Ozarks economy is increasingly dependent upon international trade. For example, the local business presence in China has climbed dramatically in recent years, and connections and interests are growing in other emerging markets, including Latin America and Eastern Europe.</p> <p>The University has also the necessary personnel to expand collaborative research endeavors in such areas as material sciences, agro-business, and international security studies. The new Jordan Valley Center will further strengthen economic and research collaborations between the University and private businesses.</p> <p>In Asia, we have many collaborations with Chinese institutions of higher learning; access to Missouri State campuses in China; strong relationships between several Missouri State faculty and Taiwanese and mainland scholars; and strong local commercial interests in Chinese and other Asian markets.</p>
<p>COLLABORATIONS: Examples of new collaborations in research and/or learning as well as linkages to the University’s existing and emerging research strengths</p>	<p>Investment in “global perspectives” as defined above will lead to better internal collaborations through interdisciplinary activities, external research cooperation, and faculty exchanges that will expand the opportunities for our faculty and graduate students, and attract more foreign faculty, researchers and students to Missouri State University. Other collaborations between the University and other institutions of higher learning and private businesses are emerging or already exist as outlined above. Our teaching education program could also serve as a center of teaching training and research for other schools in the region and abroad. Collaborative endeavors are also planned in international security studies, public administration, agro-business, and agricultural research with universities in Eastern Europe.</p> <p>In relation to Asia, Missouri State University is a regional center of the East-West Center’s Asian Studies Development Program; has a formal affiliation with Beijing University of Technology which establishes the groundwork for future joint projects between the two universities; is collaborating with Liaoning Normal University on the basis of their plant science programs, and an Articulation Agreement for Dual Master’s Degrees in Plant Science has been signed; has a formal affiliation with China Agricultural University located in Beijing for friendly cooperation and mutual benefit to further academic relations and international understanding; entered into a formal affiliation for friendly cooperation and mutual benefits with Yunnan Agricultural University, located in Kunming China, and a three-year agreement with Liaoning University of Traditional Chinese Medicine located in Shenyang, China, to allow collaboration in the development of joint degree programs in nursing, physical therapy, and other health care-related areas; and there is an exchange program between the Political Science Department and the Graduate Institute of Political Science at National Sun Yat-sen University (Taiwan). In addition, Missouri State University and the China Agricultural University and Ningxia Forestry Institute, Co. Ltd. signed an agreement to promote collaboration in the development of joint research and training projects in viticulture, enology and food science; and two agreements exist with Henan Institute of Finance and Economics in Zhengzhou China. The first agreement is a formal affiliation by Missouri State University and Henan Institute of Finance and Economics for friendly cooperation and mutual benefit to further academic relations and international understanding, whereas the second agreement between the two universities is to establish a joint Master of Business Administration education program.</p>

<p>STRENGTHS: Examples of building on existing strengths</p>	<p>Research strengths in several “global perspectives” and area studies are substantial, particularly on international security studies, including terrorism, cultural studies, socio-economic and political development, and in such regions as the Caribbean, the Middle East, and the former Soviet Bloc. The publication record of Missouri State faculty in these issues and regional areas includes numerous books and articles in professional journals. Missouri State University is also one of very few institutions of higher learning in the United States which has a landmine studies program and an internationally known expert on landmines.</p> <p>In Asia in particular, several faculty members have strong publication records on international security and area studies (Taiwan-Chinese relations, Central Asia), religious studies (Sri Lankan Buddhism), socio-cultural studies (social movements in Hindu India) and historical research (China’s foreign relations and the Maoist era), and the arts (Indian Art); Missouri State University has a presence in China, Taiwan and India; there is an existing Asian Studies minor; and Chinese (minor) and Japanese language studies are already within the MCL curriculum.</p> <p>Seven faculty outside of Asian Studies have attended East-West Center summer seminars at the University of Hawaii which strengthens knowledge on and collaborative research efforts on Asia.</p>
<p>MISSION FIT: Examples of compatibility with the University’s statewide mission in public affairs</p>	<p>Research and curricular offerings on global perspectives and area studies square nicely with the focus on the public affairs theme of educating citizens who are aware of and knowledgeable in both domestic and global issues and trends, and are familiar with regions and languages outside of the United States and besides English. The ongoing democratization trend also supports the theme of democracy. Finally, the growing global economy and increased levels of interdependence are incorporated into the focus on economic development of Missouri, the economic well-being of Missourians, and the Institution’s contributions to the State’s future.</p> <p>Given the population size and rapidly enhancing significance of Asia for the United States, Missouri, and the local communities that experience enlarged immigration from Asia and links with Asian businesses and governments, educating citizens on that area of the world by focusing on its cultural heritage, economic significance and potential, and democratization efforts is particularly important. Thus, the study, preservation, and dissemination of scholarship related to Asia fit into the University’s mission of developing educated citizens who are familiar with this region and its relationship to local issues and development.</p>
<p>EDUCATION FIT: Examples of contributions to superior undergraduate, graduate, and professional education</p>	<p>Increasing global and regional curricular offerings strengthens existing programs in area studies (minors in Latin American, Middle Eastern, and Asian Studies, and Chinese), international business programs, and graduate studies (Master of Business Administration, Master of International Affairs and Administration, Master of History, and Master in Defense and Strategic Studies). Collaborative research efforts and exchange programs will also strengthen undergraduate and graduate programs in such disciplines as linguistics and language studies, cultural studies, agriculture, chemistry, material sciences, and health.</p> <p>An Asian Studies emphasis area will strengthen existing programs in Political Science, History, Modern and Classical Languages, Religious Studies, Business Administration, Finance, and others. There is also a need for a graduate-level program in Asian Studies offered through a public university in Missouri.</p>
<p>SUSTAINABILITY:</p>	<p>All the evidence available supports the notion that the state’s, region’s and University’s linkages with the global community will continue to accelerate in the future, as economies and socio-cultural and political systems become increasingly interdependent and globalization accelerates. These global trends must be addressed to prevent our nation, state and region and our students from falling behind the rest of the world.</p> <p>Whereas no new resources may be expected from the state, issues of global perspectives and knowledge of various areas of the world are simply too important to</p>

ignore. The University is in the fortunate position that it already has the expertise, enthusiasm, and skills required to train students and conduct research on these aspects. Efforts in the past to raise resources to sustain these endeavors have proven successful, and must be continued and intensified, especially in the absence of significant financial support from the Institution and the State. The likelihood of additional external funding on issues of global significance, including international security studies, knowledge of geo-strategic regions, and critical languages, is highly likely from both federal and international sources.

A combination of increasing interest in Asia, together with strengthening commercial and cultural ties, indicates that programs related to Asian Studies are likely to attract external funding for the foreseeable future as well. The agreements between Missouri State and Chinese institutions of higher learning, together with our permanent campuses in China, facilitate the sustainability of these links and require us to expand programs in Asian Studies.

Health Promotion

Concept: Health Promotion research focuses on the prevention of disease and facilitation of wellness by maintaining or maximizing the health potential of individuals, families, communities, and societies. Health promotion emphasizes the achievement of an optimal level of health through health education, disease prevention, and health protection¹ Research goals include the identification of determinants of health, the avoidance of disease complications, and the development and evaluation of strategies to modify health knowledge, attitudes, and behaviors.

<p>FUNDING: Examples of major trends and opportunities in extramural funding</p>	<p>Current Funding: US Department of Health and Human Services, Missouri Department of Health and Senior Services, Missouri Department of Transportation, Missouri Foundation for Health, and the Community Partnership of the Ozarks.</p> <p>Other Opportunities: The National Institute of Health (Including the various institutes and centers), Center for Disease Control and Prevention (CDC), Agency for Health Research and Quality (AHRQ) Missouri Department of Education and Secondary Education all have current grant funding available in the area of health promotion.</p>
<p>GROWTH: Examples of areas of knowledge we anticipate will experience the most dramatic growth</p>	<p>The NIH is currently emphasizing research on health promotion in the areas of ethnic and minority disparities, worksite health, oral health, obesity and health literacy. Research on outcomes of health promotion and disease prevention interventions, including health status, quality of life indicators, and cost/benefit analyses are also evident. Many local, state, and federal agencies are funding studies related to the leading health indicators identified in <i>Healthy People 2010</i>² (physical activity, obesity, tobacco and substance abuse, sexual behavior, mental health, injury and violence, environmental quality, immunization, and access to care). Rising rates of morbidity and mortality related to chronic diseases, such as diabetes and cardiac disease are fruitful areas for funding.</p>
<p>UNIQUE RESOURCES: Examples of unique existing resources as well as current needs in Missouri, the Ozarks, and/or Springfield regarding economic development, technological advances, cultural enrichment, physical well-being, and/or social prosperity</p>	<p>Existing unique resources: Missouri State University has a history of funding in the areas of health promotion related to health screening, risk reduction, health education, and interdisciplinary research. Examples of resources to support health promotion research include: the Speech, Language, and Hearing Clinic, the Physical Therapy Clinic, Taylor Health and Wellness, health programs that utilize student placement in community clinical sites, and the many community partnerships already established with Departments in the University. The Ozarks Public Health Institute (OPHI) is a resource for individuals doing research in health promotion and collaborations could result in proposals for external funding. Missouri State University is the only public institution to offer an Audiology Doctorate in the state, and the Master of Social Work program is only one in the region. The Division of Statistics and Research is providing a valuable service to area health organizations. Multiple faculty have cited research agendas that include a "family institute" that would support expanded clinical activities unique to the region including providing resources in couples counseling, healthy families, conflict resolution, advocacy, and disability support. The area of Counseling has a Specialist Degree Program ready to submit through governance and when funding is available, this program would include a thesis requirement to support faculty/student research.</p> <p>New resources The new Missouri State University wellness initiative for faculty, staff, and students currently under development would be a fruitful area for research.</p> <p>Current needs: The region, due to the demographics of the population in the Ozarks, is at risk for many health problems. In addition, state budget cuts have affected the health care of many individuals in the state. Health problems in the region include high rates of alcohol, tobacco, and drug abuse, obesity, and teenage pregnancy.</p>
<p>COLLABORATIONS: Examples of new collaborations in</p>	<p>There are many opportunities for new multidisciplinary and multi-agency collaborations for research in this area. The current projects in the University (OPHI tobacco grants, the Missouri Health Foundation grant to address health of Hispanics</p>

<p>research and/or learning as well as linkages to the University's existing and emerging research strengths</p>	<p>in Monett, and the Department of Health and Senior Services grant for newborn screening) all are examples of fertile fields for research. Faculty in dietetics and psychology and Taylor Health Center are working on the benefits of a program for weight loss and management. The current discussion about general wellness and how it may fit in with future faculty/staff benefits has significant potential for research. Also, the many healthcare agencies and organizations in the area provide fertile areas for collaboration and research in the areas of practice and health systems</p> <p>The HPER Department has many research collaborations that are ongoing in the community (LIFE, Body Walk, the Step Club) and funded by the public school system, local hospitals, and the Springfield-Greene County Park Board. There are several labs involved in these initiatives, including the Biomechanics Laboratory, Exercise Science Laboratory, Perceptual Motor Development Laboratory.</p> <p>The promotion of international collaborations for health promotion research would be beneficial.</p>
<p>STRENGTHS: Examples of building on existing strengths</p>	<p>Departments in the University have a history of being involved in the community and community agencies (nursing, public health, social work, CSD, sports medicine, PA, PT, Health Services Administration). Missouri State has a history of external funding from federal, state, and local state agencies. The Division of Statistics and Research collaborates with other Department and organizations within Missouri State and external to Missouri State. Faculty in the University have research agendas in many areas of health promotion, to include: the exploration of anger as a treatment modality, hearing, language acquisition, diabetes, obesity, wellness, the evaluation of interventions affecting health and wellness, and health literacy and education, to name a few. Faculty have success in interdisciplinary funding.</p>
<p>MISSION FIT: Examples of compatibility with the University's statewide mission in public affairs</p>	<p>Research involving the promotion of health is unquestionably valued by society and is aligned with the public affairs mission of the university. The promotion of health and reduction of factors that contribute to disease and illness are a societal concern evidenced by the many local, regional, state, national, and global initiatives. The research collaboration of disciplines and agencies to address areas of health promotion will allow projects that provide a broader view of health and yield advances that will add to the growing body of knowledge in the area of risk reduction and disease prevention.</p>
<p>EDUCATION FIT: Examples of contributions to superior undergraduate, graduate, and professional education</p>	<p>Expanding and promoting the current health-related programs in the university will contribute to excellence and continued professional education. The current Doctorate of Audiology is the only state-supported AuD program in the state. Graduate programs in Speech-Language Pathology, Clinical Psychology, Nursing, Social Work, Physician Assistant Studies, and Physical Therapy Sports Medicine and Athletic Training, all afford students valuable practicum opportunities in the community directed at health promotion. Multiple clinical programs and laboratories across campus serve as potential vehicles for collaborative student, faculty, and community based research.</p> <p>New programs may also include the Doctorate of Public Health, and the Doctorate of Nursing Practice, which draw on faculty and existing courses from throughout the University.</p> <p>Many of the health programs at Missouri State have national accreditation (audiology, dietetics, nursing, nurse anesthesia, physician assistant studies, physical therapy, social work, speech-language pathology, sports medicine and athletic training, and HPER).</p>
<p>SUSTAINABILITY:</p>	<p>Health promotion is a major concern of the region, state, nation, and world, and will continue to be so. The need for health promotion is highlighted in the US Department of Health and Human Services initiative, <i>Healthy People 2010</i>. The Health of individuals, primarily the underserved, is targeted in many local, state, and federal</p>

grants which are fertile for funding. The promotion of health in undeveloped nations continues to be a major world problem. The response of the health care system to public health concerns, as evidenced by the bioterrorism, the recent flu and SARS epidemics, increasing antibiotic resistance will be elevated in the future.

Recommendations stated in the *Research Task Force Statement for the New Five-Year Plan (2/2/05)* should be operationalized in order to sustain and expand research efforts including public awareness initiatives to support faculty recruitment, incentives and rewards for faculty in line with record of productivity, recognition and support for faculty supervision of student research, teaching loads commensurate with research outcomes. There is a need to enhance the infrastructure in many areas to enhance success in receiving funding for federal grants (e.g. NIH, NSF, AHRQ, CDC). Areas in need of enhancing are: faculty, especially senior faculty with federally-funded research programs; resources available from the Office of Sponsored Research and Programs; and faculty workload issues across campus to accommodate research.

¹ The Cochrane Collaboration (2006). *Cochrane health promotion and public health field*. Obtained January 12, 2006 at <http://www.vichealth.vic.gov.au/cochrane/overview/definitions.htm>.

² US Department of Health and Human Services (2000). *Healthy People 2010*, (Conference Edition in 2 volumes, Washington, DC: Author.

Human Development

Concept: Human Development promotes collaboration among diverse disciplines and supports research regarding populations with and without disabilities from conception through the final stages of life. The research includes the study of individual and developmental differences in human behavior and cognition. Research goals include basic and applied studies. Examples of current and potential research include descriptions of typical and atypical behavioral and cognitive processes, evaluating treatment outcomes of experimental interventions at various age levels, and functional assessments of independence and behavior-motor skills of individuals at various age levels.

<p>FUNDING: Examples of major trends and opportunities in extramural funding</p>	<p>National Institute of Mental Health (NIMH); Department of Education, Office of Special Education Programs (OSEP); National Alliance for Autism Research (NARR); Department of Health and Human Services (HHS), National Institute of Nursing Research (NINR), National Institute of Child Health and Human Development, National Institute for Literacy, Missouri Department of Higher Education (MODESE), National Institute of Deafness and Other Communication Disorders (NIDCD), Center for Disease Control (CDC), and Community Foundation of the Ozarks.</p>
<p>GROWTH: Examples of areas of knowledge you anticipate will experience the most dramatic growth</p>	<p>NIH is currently emphasizing research in infant categorization, particularly as related to language development, and encouraging proposals in this area. The Missouri Preschool Project for at risk children and Early Childhood education research initiatives address these and other needs. Neurologically-based disorders, including a range of pervasive developmental disabilities, have experienced a significant increase in prevalence with a subsequent emphasis on research that explores developmental changes in these populations over time.</p>
<p>UNIQUE RESOURCES: Examples of unique existing resources, as well as current needs in Missouri, the Ozarks, and/or Springfield, regarding economic development, technological advances, cultural enrichment, physical well-being, and/or social prosperity</p>	<p>Existing Resources: Numerous resources exist to support research on human development; representative examples follow. Missouri State faculty have a record of research in the area of family studies, gender issues, literacy, and the aging. Nationally recognized programs in Visual Impairment and Orientation and Mobility are unique to Missouri and Kansas, and support multidisciplinary clinical research goals. Missouri State serves as a field site, or sends students to related field sites, that support faculty research including the Adaptive Physical Educational lab, Learning Diagnostic Clinic, Speech and Audiology Clinics, Child Development Lab, Biomechanics Laboratory, Exercise Science Laboratory, Perceptual Motor Development Laboratory, Physical Therapy Clinic, and the Infant Perception Learning Lab, and various community based settings. Additionally, Greenwood Laboratory School (Grades K-12) offers unique opportunities for longitudinal research studies with children due to a high retention rate, and the commitment of faculty, students, and families to research. Faculty research across disciplines including Communication, Counseling, and multiple others, focuses on issues of aging and gender as well as family communication systems across developmental stages.</p> <p>New Resources: Missouri State faculty from multiple disciplines including Counseling, English, Communication, Social Work, Nursing, Religious Studies, Gerontology, Physician Assistant, Physical Education, Recreation and others have developed a collaborative structure to examine methods for strengthening research outcomes in women's studies including acquiring funding and infrastructure supports for collaborative research. Community safety initiatives within the local Early Childhood Resource Center (WIC, PAT, Medical and Behavioral Healthcare) provide a site that supports applied child development research. The proposed Graduate Certificate in Autism Spectrum Disorders is unique to the state and with the regional DESE certification option for Severely Developmentally Delayed, will support clinical research goals regarding development in these populations across disciplines.</p>

<p>COLLABORATIONS: Examples of new collaborations in research and/or learning as well as linkages to the University's existing and emerging research strengths</p>	<p>The following represent examples of collaborative research in the area of research on human development. The Early Learning Opportunities Act (2004, HHS) has 14 community partners and supports early literacy, families, and childcare providers. Missouri State has a strong record of productivity in infant perceptual categorization, as well as research regarding language development. The current initiatives at NIH offer a special opportunity to combine these lines of research.</p>
<p>STRENGTHS: Examples of building on existing strengths</p>	<p>There are numerous strengths within the University specific to research on human development; examples follow. Early Childhood faculty have received a DESE award that supports research for at risk children. Missouri State has the potential to address research questions specific to cognitive, social, communication, motor, and exercise physiology with populations from conception through the final stages of life.</p>
<p>MISSION FIT: Examples of compatibility with the University's statewide mission in public affairs</p>	<p>The social validity of collaborative research goals in research on human development is aligned to the University's mission. Research on human development responds to societal needs in that the related goals address issues specific to an increasing prevalence in aging populations, individuals with disabilities, and those who are at risk for learning and emotional problems. Multidisciplinary research on human development efforts can promote scientific progress and, as a result, accelerate the transition of basic research findings to the practical application for individuals and families who are in need of assistance.</p>
<p>EDUCATION FIT: Examples of contributions to superior undergraduate, graduate, and professional education</p>	<p>Field experiences associated with HHS Early Childhood Federal grants support professional development as well as student/faculty research goals in family, literacy, child development, and disability studies, and gerontology contribute to program outcomes that support multiple undergraduate and graduate emphasis areas. The Doctorate of Audiology is Missouri State's first independent doctoral degree. The Audiology program, along with graduate programs across campus, encourages and supports developmental research conducted by graduate students..</p>
<p>SUSTAINABILITY:</p>	<p>Established clinics/labs generate limited revenues with services for clients and populations that also support developmental research goals. Review of clinical services, faculty, existing centers, and facilities is needed to enhance collaborative and individual research agendas across disciplines. Faculty within disciplines associated with research on human development have a strong record of extramural funding with research agendas that support continued acquisition. However, careful consideration must be given to ensure that faculty with similar research agendas are supported in both collaborative and individual endeavors beyond traditional departmental and program barriers. Currently, there appears to be inconsistencies in the availability of clinical and laboratory space and disparities in regard to the level of infrastructure support among disciplines that emphasize research on human development. Recommendations stated in the <i>Research Task Force Statement for the New Five-Year Plan</i> (March 2005) should be operationalized in order to sustain and expand research efforts including public awareness initiatives to support faculty recruitment, incentives and rewards for faculty in line with record of productivity, recognition and support for faculty supervision of student research, teaching loads commensurate with research outcomes, and other related supports.</p>

Materials Science

Concept: The general field of Materials Science involves the examination of all classes of materials from an interdisciplinary viewpoint with an emphasis on making connections between the underlying structure and the processing, properties, and performance of a material. Advances in materials science have resulted in “made to order” materials where exacting control of the most fundamental microscopic processes (referred to as nanotechnology) result in unique applications. Economic development based on the application of materials science to nanotechnological challenges and new product development has led to the creation of Missouri State’s Center for Applied Science and Engineering (CASE). CASE’s focus is to apply materials science technologies to product development for corporate affiliates and for interdisciplinary learning experiences.

Missouri State’s emphasis in Materials Science is on discovering and applying new nanotechnologies driven by commercial interest with a focus on remediation materials, electronic materials, and biomaterials that have unique properties when exposed to the Biological, Chemical, Physical, and FAR IR spectrums through hardening, particle detection, and collective response mechanisms. In addition to the traditional sciences, many opportunities in applying new materials science nanotechnologies involve novel manufacturing, management, and marketing approaches.

<p>FUNDING: Examples of major trends and opportunities in extramural funding</p>	<p>Opportunities for funding in this area are excellent as a result of new demands for advanced technology materials manufacturers to develop new burgeoning defense, homeland security, and biomedical applications. This need is amplified from an economic development perspective by the vacuum caused by the offshore relocation of computer materials and electronics manufacturers.</p> <p>For example, CASE has received commitments for \$25,352,395 in external grants, contracts, lease agreements, and affiliate agreements in the past three years. Furthermore CASE has been authorized to receive an additional \$36,900,000 in the FY06 Department of Defense authorization bill. (Typically CASE receives about 20% of the authorized amount due to budget cuts.) In addition, the Materials Science faculty in Department of Physics, Astronomy, and, Materials Science has received over \$320,000 in external grants in the past three years. Many other faculty members from the Departments of Industrial Management, Chemistry, and Biology have also received funding for Materials Science related projects.</p>
<p>GROWTH: Examples of areas of knowledge you anticipate will experience the most dramatic growth</p>	<p>Nanotechnology remediation materials, electronic materials, and biomaterials and their application in advanced technology equipment are driving economic growth in terms of new high value, low volume manufacturing opportunities.</p> <p>“Nanotechnology is expected to have an impact on nearly every industry. The U.S. National Science Foundation has predicted that the global market for nanotechnologies will reach \$1 trillion or more within 20 years. The research community is actively pursuing hundreds of applications in nanomaterials, nanoelectronics, and bionanotechnology. Most near term (1-5 years) applications of nanotechnology are in the form of nanomaterials. These include materials such as lighter and stronger nanocomposites, antibacterial nanoparticles, and nanostructured catalysts. Nanodevices and nanoelectronics are farther off, perhaps 5-15 years, and will have applications in medical treatments and diagnostics, faster computers, and in sensors.” – from American Elements Inc.</p> <p>Most of these new business opportunities are in small research and development companies created to eventually transfer the technology to advanced manufacturers. The advanced manufacturers will create most of the new jobs that will fuel the nation’s economy for the next generation. For example, some of the initial corporate affiliates of CASE have been acquired by much larger manufacturing companies (to the great financial benefit of the relatively few original employees) to move the product development process to actual production.</p>

<p>UNIQUE RESOURCES: Examples of unique existing resources as well as current needs in Missouri, the Ozarks, and/or Springfield regarding economic development, technological advances, cultural enrichment, physical well-being, and/or social prosperity</p>	<p>Much of the internal and external funding that Missouri State's materials science and nanotechnology projects have received has gone into developing a very unique and state of the art infrastructure. This infrastructure includes renovated space in Kemper and Temple Halls, new equipment facilities in CASE and the departments of Biology, Biomedical Sciences, Chemistry, Industrial Management and Physics, Astronomy, and Materials Science, and funding for a new academic/corporate research and development building in downtown Springfield called the Jordan Valley Innovation Center (JVIC).</p> <p>Equipment facilities include very unique systems for the synthesis and characterization of materials that can be used in high value applications. A few specific examples include Class 10,000, 1,000, and 100 clean rooms, micro-device fabrication facilities, a wide range of advanced technology microscopy equipment including atomic force microscopy, and scanning electron microscopy, a state of the art nuclear magnetic resonance system, and new types machine tool equipment including wire EDM and laser cutting systems.</p> <p>With these unique facilities Missouri State is positioned to claim a program or programs in materials science that, when combined with the proper faculty expertise could reasonably be characterized as world class. Faculty retention and depth in these areas continues to be an issue.</p>
<p>COLLABORATIONS: Examples of new collaborations in research and/or learning as well as linkages to the University's existing and emerging research strengths</p>	<p>Missouri State's collaboration programs in materials science have, to date, been concentrated through CASE. These include both internal and external collaboration.</p> <p>External collaboration has involved elements from the community for example MOU's with the Springfield Chamber of Commerce, the Springfield Business Development Corporation, and the City of Springfield, the state, with support for corporate affiliates located within southwest Missouri, Kansas City, and St. Louis areas, and the country with additional corporate affiliates and a new teaming agreement with New Mexico Tech.</p> <p>Internal collaboration is a requirement. Materials Science is by definition an interdisciplinary field which involves many classical sciences and business. Some of the departments that CASE collaborates with are mentioned above. But interdisciplinary collaboration across departmental and college boundaries is a challenge at any academic institution and Missouri State is no exception.</p>
<p>STRENGTHS: Examples of building on existing strengths</p>	<p>There are a number of policies and support groups that have made Missouri State's Materials Science programs a success. First, are policies adopted by CASE that are extremely business friendly. These include fast contract negotiation, corporate retention of project associated intellectual property, and research focused on applied product development. Support groups include legislators at the city, state, and national level that recognize that Springfield is at the right time and place for programs supporting advanced technology industry. Many other cities the size of Springfield have business incubator programs that attempt to accomplish similar goals.</p>
<p>MISSION FIT: Examples of compatibility with the University's statewide mission in public affairs</p>	<p>The development of the Materials Science programs across campus will have a significant impact on the economic development of our community. CASE is designed to work with our community to use Materials Science technologies and infrastructure as a magnet to draw advanced technology industry to the Springfield Area and create new jobs. In communicating with many of our federal, state, and local representatives, the message that we have received is that CASE is a model for how a university should interact with a community for the benefit of the state. Unfortunately, many state funded programs at academic institutions have little or no direct benefit for the local community or state.</p>

<p>EDUCATION FIT: Examples of contributions to superior undergraduate, graduate, and professional education</p>	<p>Part of the opportunity for Materials Science interdisciplinary programs (including CASE) is that these efforts will educate individuals so that they can efficiently perform the tasks which make companies competitive in a rapidly changing advanced technology world. We will give our students experience in using complex industrial and research equipment and in techniques in order to minimize differences between corporate employment and academic preparation.</p> <p>Many of our students are first generation college students who will benefit greatly from this applied approach to education, where advanced technology skills are added to core theoretical knowledge. Most students have a strong desire to witness the theory applied to “real world” applications. For many of them, the question is: “What’s it good for?” We will answer this question while training the students in advanced laboratory environments. Our graduates will have the ability to work in the commercial and industrial laboratories which require practical experience in nanotech materials synthesis, preparation and characterization. Graduates will be able to operate instruments and design materials to enhance commercial or industrial capabilities.</p>
<p>SUSTAINABILITY:</p>	<p>Sustainability and sustained funding depends on three parameters: keeping our facilities up to date, building faculty depth and expertise in the relevant fields, and finding ways to support interdisciplinary programs within traditional university management. With the addition of the Jordan Valley Innovation Center the facilities for Materials Science scholarship should remain superior for at least ten years. Faculty depth and expertise remain a challenge since compensation is generally not sufficient to retain expert faculty. Interdisciplinary programs continue to be a low priority for colleges where the bottom line is CHP/FTE and resources are jealously protected by individual units for their “own” programs and students.</p>

Performing and Creative Arts

Concept: The Performing and Creative Arts represent disciplines that intersect with music, dance, theatre and the visual arts. The Performing and Creative Arts emphasis would initiate dialog among research/creative activities from various areas and focus on the interaction of those areas with the ultimate goal of establishing excellence in artistic activity. Areas would include theatre, dance, music, musical theatre, visual arts, speech, and creative writing. Media would serve as a means of recording and disseminating live performance. In addition to maintaining a high level of artistic activity in traditional settings, potential creative/research projects could include oral performance of literature in cooperation with creative writing, modern dance interpretations of literature and/or music, collaborative presentations within new visual arts genres and media/sound design connecting to performing and creative arts.

<p>FUNDING: Examples of major trends and opportunities in extramural funding</p>	<ul style="list-style-type: none"> • The Kennedy Center/American College Theatre Festival • National Endowment for the Arts • Missouri Film Alliance • Missouri Arts Council • Corporations within Entertainment Industry • Individual Donors and Private Foundations
<p>GROWTH: Examples of areas of knowledge you anticipate will experience the most dramatic growth</p>	<p>Performances of recently composed musical theatre pieces, interdisciplinary productions of dance, theatrical innovations, new directions in jazz, performance art and installations as presented within museum and gallery settings, theatrically staged operatic performances, historically informed performances of classical music and theatre, performances of works by American composers and playwrights.</p>
<p>UNIQUE RESOURCES: Examples of unique existing resources as well as current needs in Missouri, the Ozarks, and/or Springfield regarding economic development, technological advances, cultural enrichment, physical well-being, and/or social prosperity</p>	<p>Hammons Hall, on the campus of Missouri State University, is a performing arts hall that rivals facilities in major metropolitan areas. The technical and acoustical characteristics allow faculty and students to offer first-rate performances. The Art and Design Gallery is a major cultural center for the visual arts within the Springfield Metropolitan area which presents a variety of exhibitions that are made possible, in part, through grant assistance from the Missouri Arts Council.</p> <p>Springfield is unique in that it offers a substantial number of performance and creative arts venues. These venues afford faculty and students a wide variety of opportunities to present and apply their performance and creative research. Examples of these settings include:</p> <ul style="list-style-type: none"> • Springfield Art Museum • Springfield Symphony • Ozark Festival Orchestra • Chamber Orchestra of the Ozarks • Mozark Regional Orchestra • Springfield Regional Orchestra • Springfield Little Theatre • The Vandivort Center Theatre • Silver Dollar City Corporation • Gillioz Theatre Center • Branson Theatres • Hammons Hall for the Performing Arts • Coger Theatre • Tent Theatre • Art and Design Gallery • Ellis Recital Hall

<p>COLLABORATIONS: Examples of new collaborations in research and/or learning as well as linkages to the University's existing and emerging research strengths</p>	<p>Missouri State University has already established relationships with nearly every performing and creative arts organization in the region. Due to the expertise of current faculty and students, new collaborations could entail partnerships with organizations on a national and international level.</p> <p>The Missouri Fine Arts Academy is a three-week summer residential program for artistically gifted high-school students. Funds to support the Missouri Fine Arts Academy are appropriated by the Missouri Legislature. The Missouri Fine Arts Academy is conducted by the Department of Elementary and Secondary Education in cooperation with Missouri State University.</p> <p>Missouri State University has taken part in a musical exchange in which members of the MSU faculty and the Concert Chorale performed at the Chopin Academy of Music in Warsaw (one of Europe's leading conservatories) and faculty of that institution performed on the Missouri State campus. Missouri State University currently has an exchange program with the Belgian Carillon School. Dance faculty have participated in international theatrical collaborations in music and film.</p> <p>The Art and Design Department has collaborated in exhibitions with the Springfield Art Museum, the Visual Arts Alliance, private galleries and is an integral component of the "First Friday Art Walk." Visual arts faculty have been represented in collaborations with community organizations addressing social issues such as women and violence; and at a national level, the poverty within the Mississippi Delta has been addressed through the art of photography. The talents of visual arts faculty and students have provided the City of Springfield visualization constructs applied to new planning initiatives.</p> <p>Collaborations with the Springfield Symphony Orchestra, Chamber Orchestra of the Ozarks, Ozark Festival Orchestra, Springfield Little Theatre, the Vandivort Center, the Messiah Project and the many churches in the area which have active music programs provide invaluable professional experience for our students in the areas of music, theatre, and dance.</p> <p>Such a wide range of experiences are rare within in university settings and lend the artistic areas of Missouri State University great distinction.</p>
<p>STRENGTHS: Examples of building on existing strengths</p>	<p>Many of Missouri State University's music faculty have performed nationally and internationally. A great majority of individual faculty members and 3 faculty ensembles have toured Europe and Asia. Several individual faculty members have produced commercially-distributed compact-disc recordings. Ten music faculty hold principal positions with the Springfield Symphony Orchestra. In addition to the faculty accomplishments, student ensembles have toured regionally, nationally, and internationally (in ten European countries), performed on regional and state conferences, and appeared on national public television.</p> <p>Numerous theatre and dance faculty have performed nationally and internationally. Faculty in lighting and stage design have participated in productions in Asia, and costume design faculty have received press reviews in metropolitan theatrical venues. Theatre and dance graduates have achieved international recognition for more than 30 years. Alumni currently perform on Broadway and in television and film. They are nationally active in the fields of arts management, design, dance and education. Graduates include the vice presidents and directors of major networks, producers for entertainment companies in Los Angeles and Las Vegas, and young directors and actors in every major marketplace.</p> <p>The Art and Design Department is the largest visual arts program within the state system offering the greatest number of degree programs. The faculty of the Art and Design Department are active professional artists, designers, and scholars, many of whom have established national and international reputations based on excellence of the their creative work and scholarly research. Awards and citations for their work span all creative discipline</p>

	<p>areas and provide constant inspiration for students within their creative interests. Numerous articles within national journals have been written about faculty, their research and the accomplishments of their students.</p> <p>The Musical Theatre program, which is an interdisciplinary program of music, theatre and dance, continues to attract international attention for Missouri State University.</p>
<p>MISSION FIT: Examples of compatibility with the University's statewide mission in public affairs</p>	<p>The Performing and Creative Arts nurture the growth of the human spirit. On campus and in venues throughout the community, the students and faculty of Missouri State University engage in performing and creative arts which enrich the lives of the residents of the region. Performing groups in music and dance (Opera Workshop, Inertia Dance Company) have enhanced the learning experience of over 40 thousand pre-college students over the past decade through live performance. Many artistic events attended by the general public are made possible or supported by the performing and creative arts activities of faculty and students of Missouri State University. The Art and Design Gallery and Student Exhibition Center engage community members in a wide range of visual arts experiences and enrich their cultural lives. University cultural historians provide scholarly symposia which engage faculty, students, and the public in a renewed cultural curiosity. The Student Photographic Society has been providing its creative skills to the homeless of Springfield for over 13 years.</p>
<p>EDUCATION FIT: Examples of contributions to superior undergraduate, graduate, and professional education</p>	<p>In the area of Musical Theatre, 4 students have performed with internationally touring companies (Europe and Japan), 16 have toured nationally, 8 have performed on Broadway and 3 regionally in New York. In music, 6 students have placed in national and international competitions and many others are employed in orchestras and other professional venues throughout the region.</p> <p>Graduates from the visual arts are accepted into major graduate degree programs based on their exceptional portfolios and are employed by respected visual communications firms across the country. Countless graduates from the visual arts have received fellowships and awards at the national level and have established themselves as active professional artists.</p> <p>In the fields of music, theatre and dance, the receipt of graduate assistantships and entry into competitive graduate programs is based on a live performance audition. Many students have been awarded assistantships or full fellowships at top level universities and others have successfully completed competitive graduate programs. The Theatre Program is accredited by the National Association of Schools of Theatre.</p>
<p>SUSTAINABILITY:</p>	<p>The performing and creative arts faculty at Missouri State have established and will continue a tradition of artistic activities on campus, regionally, nationally, and internationally. Student ensembles, visual artists and performing companies have maintained a regional, national, and international presence. Missouri State University has established itself as regional center for the performing and creative arts and will continue to recruit the highest level of students and faculty.</p>

Research on Learning, Teaching, and Intervention

Concept: Research on Learning, Teaching, and Intervention requires systematic analysis of the learning process and identification of instructional methods and modalities that best facilitate learning in typical and atypical populations. Included is an analysis of instructional content, pedagogy, and the relationship of teaching practices and clinical interventions to learner outcomes. Studies in this area involve critical evaluation of instructional practices that have a significant impact on students at all levels of ability, from preschool through adult education. This research also includes an evaluation of how students learn and the social and moral context of the learning and teaching process.

<p>FUNDING: Examples of major trends and opportunities in extramural funding</p>	<p>Faculty at Missouri State University currently receive funding from a variety of external agencies for educational and intervention programs, including the U.S. Department of Education, the Missouri Department of Education, Missouri Department of Higher Education, National Endowment for the Arts, and several school districts in southwest Missouri. The majority of these funds currently support efforts in education and service; however, many of these efforts have the potential to be used for research activities.</p> <p>Many agencies support research on improving learning and the effectiveness of related teaching practices. For example, there are three National Science Foundation initiatives for the science of teaching and learning in college students. Passage of the No Child Left Behind (NCLB, 2001) resulted in an increase in federal and foundation funding for studies regarding optimal literacy instruction and intervention for preschool children and school-age students.</p> <p>Additional sources include the Association of American Colleges and Universities, the U.S. Department of Education, the National Institutes of Health, the National Alliance for Autism Research (NARR), the National Institute for Literacy, the Missouri Department of Higher Education (MDHE), Performance Funding (Funding for results); DESE (federal pass through funds), the MDHE Improving Teacher Quality Grants, the Rand Corporation's Council for Aid to Education, the Kaufmann Foundation, the Lilly Foundation, the Kellogg Foundation, the Missouri Foundation for Health, the Missouri Department of Transportation, the Center for Disease Control and Prevention, and the Carol M. White Foundation.</p>
<p>GROWTH: Examples of areas of knowledge we anticipate will experience the most dramatic growth</p>	<p>Growth in effective practice research for PK-12 schools is anticipated based upon mandates within No Child Left Behind (NCLB, 2001) and the individuals with Disabilities Act (IDEA, 2004), which mandate school accountability and evidence of research-based practice. Regionally and nationally, there are demands to evaluate the efficacy of early childhood home care providers.</p> <p>Emphasis on validated treatments for individuals with disabilities or who are at risk for social and learning problems is emphasized in Federal mandates (IDEA, 2004 & NCLB, 2001). The current era of increased accountability offers significant potential for research that focuses on optimal services for individuals with disabilities, the aging, and other growing populations.</p> <p>Dramatic growth will occur in issues surrounding the classroom such as violence, the need for alternative schools with effective programs (reducing violence), management of diverse populations of students, conflict management, school democracy, social justice, and social responsibility, optimal instructional methods working with children with special needs, teacher/student retention, home schooling, distance learning and the science of teaching and learning relates to all of these.</p> <p>Missouri State has exhibited leadership in the development and implementation of two graduate level alternative teacher certification programs that have demonstrated significant growth in the last three years. Nationally recognized programs in Visual Impairment and Orientation and Mobility are unique to Missouri and Kansas, and support multidisciplinary clinical intervention goals. The Institute of School Improvement is directing an ongoing study specific to the alternative certification option, Master of Arts in Teaching (MAT). An IRB proposal specific to the Special Education Alternative</p>

	<p>Certification Track (SEACT) is under review. In addition, an alternative certification program in Severe Developmental Disabilities is under review by University governance with University and MODESE approval anticipated by May 2006. It will be important to continually evaluate the efficacy of these alternative teacher certification options.</p>
<p>UNIQUE RESOURCES: Examples of unique existing resources as well as current needs in Missouri, the Ozarks, and/or Springfield regarding economic development, technological advances, cultural enrichment, physical well-being, and/or social prosperity</p>	<p><i>Existing Resources:</i> Missouri State is home to Greenwood Laboratory School, which includes kindergarten through Grade 12. Among the factors that promote research in this area are a commitment to research on the part of the faculty, staff, students, and their families and a high rate of student retention, which makes longitudinal research regarding educational practices feasible.</p> <p>The Academy of Educational Studies was initiated June 2005, to provide a forum for MAT Graduate Program Research and professional development and associated faculty research initiatives are in progress. The Institute for School Improvement (ISI) conducts research and program evaluation and develops special projects that connect communities with schools. ISI contributed to recent NCATE/DESE accreditation efforts by completing policy briefs, research summaries, and a variety of statistical analyses and reports from student, faculty, departmental, college and PEU data. The Child Development Laboratory also offers opportunities for collaborative faculty research across programs.</p> <p>Missouri State has several partnerships with K-12 and sister institutions in place and there are several community agencies that may partner in research on teaching and learning including the ARC of the Ozarks, the Council of Churches, the Literacy Council, the Health Collaborative of the Community Task Force, the Community Foundation of the Ozarks, and the Governor’s Council for Physical Fitness and Health.</p> <p>The Academic Development Center (ADC) and its Faculty represent another unique resource at Missouri State. ADC sponsors the Teaching Showcase and funds the Missouri State Teaching Fellowship Program. Approximately sixty faculty have participated in the latter program.</p> <p>ADC houses and provides a searchable database of over 1,100 journal articles related to research on learning and teaching. The ADC Director and the ADC Faculty Associates constitute the Professional and Organizational Development Network in Higher Education. They are currently conducting a pre-conference workshop in which they will network with other interested conference attendees. They also are soliciting other faculty interested in research on learning and teaching. Faculty Associates of the ADC have presented a number of papers at national and international conferences regarding their research on learning and teaching.</p> <p>The Carnegie Association for the Scholarship of Teaching and Learning (CASTL) at Missouri State has developed a five-year plan to foster research on learning and teaching that includes hosting a regional conference on that topic in 2008/2009. Our Integrated Learning Program explores empirical questions related to the research on learning and teaching. There is a strong record of related grant acquisition (COE, CNAS, and Institute for School Improvement). The successful Funding For Results program that has promoted creative teaching.</p> <p><i>Needs:</i> There is a need to coordinate the research on learning and teaching currently conducted by faculty in departments and colleges across the campus. Further, considerable faculty- and administrative time is spent evaluating programs for national and state accreditation. There is a need to encourage faculty (through providing appropriate resources) to utilize data collected in teaching and program evaluation for publishable research. There also is a need to continue an established line of faculty research that focuses on student learning outcomes associated with various alternative course delivery formats (on-line, distance education, short courses, lectures, discussions, debates, etc.).</p>

<p>COLLABORATIONS: Examples of new collaborations in research and/or learning as well as linkages to the University's existing and emerging research strengths</p>	<p>Representatives from Mathematics, Business, and Consumer and Family Studies are discussing a collaborative approach to addressing the personal finance mandate for K-12 students. The ISI coordinates a number of collaborative efforts with Missouri Public Schools and the Missouri Department of Elementary and Secondary Education. Currently the Department of Counseling is implementing a Federal Safe Schools grant in collaboration with Springfield Public Schools. Faculty in teacher education across the Professional Education Unit (PEU) participate in a number of site-based program efforts that yield opportunities for applied research and program evaluation.</p> <p>There is a record of corporate and DESE support in the form of software and hardware awards that facilitate clinical and academic clinical intervention projects. Disciplines participating in research regarding intervention for atypical populations have received national recognition with examples that include, but are not limited to Gerontology and Visual Impairment programs.</p> <p>Missouri State collaborates with the University of Missouri in the implementation of an Educational Leadership program that leads to an Ed.D. The cooperative doctorate supports professional development research with outcomes that contribute to the professional literature in education, government, and industry. Professional preparation initiatives in Special Education and the Area of Visual Impairment support collaborative efforts within Missouri and Kansas and are funded through DESE and Federal awards.</p> <p>Missouri State is a prime location for hosting conferences on Learning and Teaching - the Lilly Conference on College Teaching has a north, south, east, west, and a national conference each year). Sponsoring a mid-west division meeting could support multiple disciplines and be attractive to many faculty and researchers in education who study the science of learning and teaching.</p> <p>Faculty service learning initiatives provide additional examples of collaborations between the university and the community and may yield additional research opportunities. The new Missouri State Community and Social Issues Institute (Office of Research and Economic Development) is seeking funding for collaborative efforts between Missouri State faculty and the community. Related Missouri State faculty efforts could address numerous social needs within area schools.</p>
<p>STRENGTHS: Examples of building on existing strengths</p>	<p>Missouri State faculty have a record of research in the area of effective instructional practices that yield achievement gains for public school students with examples found in CNAS, COE, CHHS, the ISI, and others as evidenced by a series of Eisenhower , Department of Education, and MODESE Grants and related publications. It is important to note that review of Sponsored Research data indicate extramural funding for learning and teaching initiatives are near the top of the University rankings. In addition to ongoing acquisition of Federal awards yield opportunities for field based research. Subcontracts with the Missouri Assistive Technology Council and DESE sponsored programs (Project ACCESS, Blind Skills Specialist) are only two examples.</p> <p>Two Federal OSEP grants and numerous DESE awards focus on evaluation of field based outcomes for public school students with disabilities. Long range research plans that focus on enhancing clinical experiences to ensure applied research opportunities of a multidisciplinary nature with emphasis on the aging, disabilities, gender issues, and families are evident across disciplines. Research underway in language and literacy for children with and without communication disorders has been funded by corporate software and equipment grants and has resulted in a state-of-the-art laboratory of augmentative and alternative communication devices and technology supports for literacy as well as numerous national presentations and publications. Faculty in the Missouri State College of Education (COE) have established research agendas investigating teacher supply and demand, teacher retention, distance education, curricula issues, gender issues, collaborative teaming, and professional development in health and social issues specific to educators (HIV and medical management within the IEP, teen pregnancy, behavioral supports, and character education).</p>

	<p>Regional and international Hispanic initiatives in COE, as well as site based educational programs, support applied research goals specific to diversity and literacy. Early Childhood has recently obtained a MODESE award that supports pre-school education and research for at risk children. The Academy of Educational Studies provides a forum to support student research in a rapidly growing MAT program.</p>
<p>MISSION FIT: Examples of compatibility with the University's statewide mission in public affairs</p>	<p>The "incubation of new ideas" is one of the five key elements of the University's public affairs mission. To incubate new ideas we must have an effective learning environment. Research on learning informs the teaching process and helps better assure that our students can both grasp existing knowledge and incubate new ideas.</p> <p>Another key element of the public affairs mission is "modeling ethical behavior," much of which may be modeled in the classroom. Research on learning and teaching addresses this key element.</p> <p>The university's purpose is to graduate educated persons. Education means learning and research on learning and teaching should then produce educated persons, including faculty who will benefit from such research.</p>
<p>EDUCATION FIT: Examples of contributions to superior undergraduate, graduate, and professional education</p>	<p>Field experiences and research requirements associated with HHS Early Childhood Federal grants, the Doctoral Program in Educational Leadership, the site based Elementary Education Program, rural Reading Program Initiatives, the Mathematics Education Program and many other areas support research in learning and teaching. All programs in teacher education are routinely evaluated and accredited at the state and national levels and as a component of accreditation, documentation of effective practice outcomes with PK-12 students is required.</p> <p>An understanding of teachers, their role in the learning/teaching process, as well as an evaluation of the teaching process and associated learning outcomes is integral to superior graduate, undergraduate and professional education at Missouri State and has relevance for all learning/teaching institutions and organizations.</p>
<p>SUSTAINABILITY:</p>	<p>Current faculty teaching, advising and service loads, and the lack of available infrastructure to support grant acquisition and implementation, significantly limit the ability of faculty to participate in expanding their research on learning and teaching. As existing research efforts in learning and teaching expand (as they are through the ADC and its Faculty Associates, COE, PEU programs, and others), it is anticipated that external funding opportunities from sources identified in the "Funding" category above will become more readily available.</p> <p>The development of a graduate program of study in the science of learning and teaching (masters and PhD) could provide additional enrollment income and, simultaneously, make Missouri State an attractive institution for receiving related external funding. With our name change and enhanced infrastructure supports, Missouri State has the potential of being more successful in obtaining funding for research on learning and teaching, particularly if the research has national applicability (relevance to other learning and teaching organizations). It appears that considerable data exist related to PEU student and program evaluation. A review of how data collection within the PEU can facilitate faculty research is warranted.</p> <p>Recommendations stated in the <i>Research Task Force Statement for the New Five-Year Plan (2/2/05)</i> should be implemented in order to sustain and expand research efforts including public awareness initiatives to support faculty recruitment, incentives and rewards for faculty in line with record of productivity, recognition and support for faculty supervision of student research, careful examination of teaching and service loads to ensure opportunities to conduct research, and other related supports. Several faculty and academic programs share an interest in research on learning and teaching. It will be important to investigate the potential for enhanced collaboration among cost centers to facilitate research outcomes specific to this area.</p>

Technology and Emerging Art Forms

Concept: The creation of new art forms and the development of new technologies are both driven by creative problem solving. Creative practitioners within the arts have become increasingly more involved in the application of new technologies to the development of new art forms. This transition has eliminated many of the traditional boundaries that have separated various forms of artistic exploration. The Technology and Emerging Art Forms initiative would coordinate faculty and students from various disciplines and focus research on emerging arts technologies and their interaction with artists and the public. Areas would include, but are not limited to, visual arts and design, media film production, communications, biomedical sciences, computer sciences, dance and music. Examples of current and potential research include digital applications in photography, printmaking, graphic design and animation, musical/video collaborations, musical composition, dance/video interactive performances, and the study of vocal production through collaboration of science and theatre disciplines.

<p>FUNDING: Examples of major trends and opportunities in extramural funding</p>	<ul style="list-style-type: none"> • Possible corporate sponsorship from the entertainment industry (e.g., movie studios, hardware/software developers, video game companies). • Private Foundations • Missouri film Alliance • Arts Council of the Ozarks • Missouri Arts Council • National Endowment for the Arts
<p>GROWTH: Examples of areas of knowledge you anticipate will experience the most dramatic growth</p>	<p>Computer Animation (Artistic Works, Visualization for Educational and Commercial Purposes, Applications within Entertainment Industry), Performance Arts (Creation of New Genres of Art), Film Production, Multimedia, Computer Music Composition, Digital Manipulation of Audio Content (Sound and Music).</p>
<p>UNIQUE RESOURCES: Examples of unique existing resources as well as current needs in Missouri, the Ozarks, and/or Springfield regarding economic development, technological advances, cultural enrichment, physical well-being, and/or social prosperity</p>	<p><i>Existing Resources:</i> Building on the current strong program in electronic arts, Missouri State University has the potential to become a leader in media and animation technology. Available resources on campus and within the community include KSMU, Ozarks Public Television Station, commercial stations, and the Missouri State University Art and Design Gallery. The College of Arts and Letters Odyssey Project has already served as a venue of artistic interdisciplinary collaboration using technology. On-campus collaborations have resulted in the international presentation of video artwork. The integration of science and the physiological aspect of vocal production has resulted in published research. Research has been conducted in multimedia educational resources for human anatomy.</p> <p><i>New Resources:</i> Outsourcing to local, state, and regional constituents within the fields of animation, web design, and media; Functional professional-level recording studio available to Missouri State University, faculty and students as well as the regional community.</p>
<p>COLLABORATIONS: Examples of new collaborations in research and/or learning as well as linkages to the University's existing and emerging research strengths</p>	<p>Production of documentaries for various University departments, centers, and institutes, as well as community organizations; Possible collaborations due to burgeoning interest and demand in animation technology in Asia; Possible partnerships with other institutions of higher education due to current expertise in integrating Technology and Emerging Art Forms at Missouri State University.</p>

<p>STRENGTHS: Examples of building on existing strengths</p>	<p>Strengths of Missouri State University include: Computer Animation, Digital Art, Web-Design, Graphic Design, Photography, Theatre Performance, Stage and Lighting Design, Dance Collaboration, Music Composition and Performance. Graphic Design faculty and students are consistently recognized for their design work at the international and national level. The works of Music Department composition faculty have been performed internationally. Music Department composition students have won national awards. Students in media have presented works in national and international conferences. Theatre and Dance students and faculty and have been included in national and international productions.</p>
<p>MISSION FIT: Examples of compatibility with the University's statewide mission in public affairs</p>	<p>The changing environment of Springfield necessitates that Missouri State fulfill its civic duty by providing cutting-edge artistic resources that contribute to the overall cultural landscape of the community and region.</p>
<p>EDUCATION FIT: Examples of contributions to superior undergraduate, graduate, and professional education</p>	<p>The possibility of hosting exhibitions and performances that highlight the intersection of arts and technology; Possible internships in music and entertainment industry nationally and regionally; Creating a learning environment within the arts on campus where technology becomes more of an available resource within the creative process.</p>
<p>SUSTAINABILITY:</p>	<p>The current and incoming student population will have the technological experience and interest to sustain this initiative. Incorporating the arts and technology will attract students with a wider range of educational goals and offer more possibilities for financial support and for the dissemination of creative works.</p>