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Utah State University
Science, Technology, Engineering, Education and Mathematics (STE²M) Center

Section I: Request

Utah State University proposes to establish a university-wide center that builds on institutional strengths in both the STEM disciplines and in Education. The Science, Technology, Engineering, Education and Mathematics (STE²M) Center will be dedicated to achieving three objectives: (1) to increase the number of quality STEM professionals; (2) to increase the number of quality STEM educators; and (3) to conduct innovative research on best practices in STEM education.

Section II: Need

For over thirty years the United States has recognized the need for improvement and innovation in Science, Technology, Engineering, and Mathematics (STEM) education. Repeatedly, studies and reports suggest that test scores of American students in science and mathematics are steadily declining and fewer numbers of US citizens are choosing to pursue STEM careers. Many challenges contribute to these realities, including shortages of highly qualified teachers in K-12 mathematics and science education; few opportunities for students to be involved in meaningful ways with scientists and their research; and minimal articulation between researchers/employers and educational organizations on respective needs. During the next decade, U.S. demand for scientists and engineers is expected to increase at four times the rate for all other occupations. Scientists and engineers from the Apollo and Cold War eras are now retiring, and the pipeline of STEM-trained workers will not replace the aging workforce, nor meet the escalating demands of an ever-increasing technological world. Additionally, the nation's diversity makeup is changing, and all STEM disciplines must make significant strides at diversifying the cohort of students who pursue STEM careers if we are to capitalize on the available intellectual talent that resides in our diverse nation.

Utah State University is strong in both Education and the STEM disciplines, and the proposed STE²M Center will facilitate collaborations among faculty in STEM *as well as* faculty in Education to address the national and state needs articulated above. The creation of a USU STE²M Center aligns with the mission of Utah State University and is consistent with the economic development goals of the State of Utah, which include a focus on STEM workforce needs. The Utah Governor's economic development plan has an explicit goal to "Prioritize Education to Develop the Workforce of the Future" (Utah Economic Development Plan, Office of the Governor), and development of the STEM workforce is a priority of the Governor's office, the Utah State Legislature and with Utah's business owners, as articulated in the Salt Lake Chamber of Commerce's Prosperity 2020 document.

Section III: Institutional Impact

Utah State University employs strong faculty and graduates students in science, technology, engineering and mathematics disciplines from four academic colleges: Agriculture, Engineering, Natural Resources, and Science. In addition, the USU Emma Eccles Jones College of Education and Human Services is ranked in the top 2% of graduate schools of education (currently 24th in a field of 1200; *U.S. News and World Report*) and is home to a research-active group of STEM-

educators. With these intellectual assets as a foundation, USU is well positioned to develop a university-wide STEM initiative intended to achieve three objectives: (1) increase the number of quality STEM professionals; (2) increase the number of quality STEM educators; and (3) conduct innovative research on best practices in STEM education.

A STE²M Center at Utah State University will help address needs in Science, Technology, Engineering and Mathematics education by coordinating the STEM efforts of the campus to maximize interdisciplinary activity and collaboration across STEM areas. The University has existing expertise in STEM education research, with over \$19 Million in competitive research awards. Established strengths at USU, such as the National Center for Engineering and Technology Education (NCETE) funded by the National Science Foundation, provide a base of discipline expertise around which the STE²M Center will facilitate cross-disciplinary partnerships to address complex issues in STEM education. By creating an environment in which to collaborate, the STE²M Center will facilitate interdisciplinary opportunities among researchers and educators presently conducting innovative work in STEM areas. Collaborators from all colleges and departments on campus will be encouraged to continue to build upon the many synergistic activities already in existence throughout different parts of the university campus, while also leveraging STE²M Center collaborations to develop future activities.

Section IV: Finances

The Utah State University Foundation Board had made the establishment of the STE²M Center their number one philanthropic priority and has raised nearly \$500,000 in start-up funds to help operate the center for the academic years 2012-2013 and 2013-2014. By July 1, 2014, the university will have in place a commitment of ongoing salary and operating funds (\$250,000) to support the long-term success of the new center. In addition, through the generosity of the Emma Eccles Jones College of Education and Human Services, space has been identified in which the STEM Center will be located. As a result of this progress, a national search for the founding director of the STEM Center has been launched with the goal of recruiting a director to begin Summer 2012.