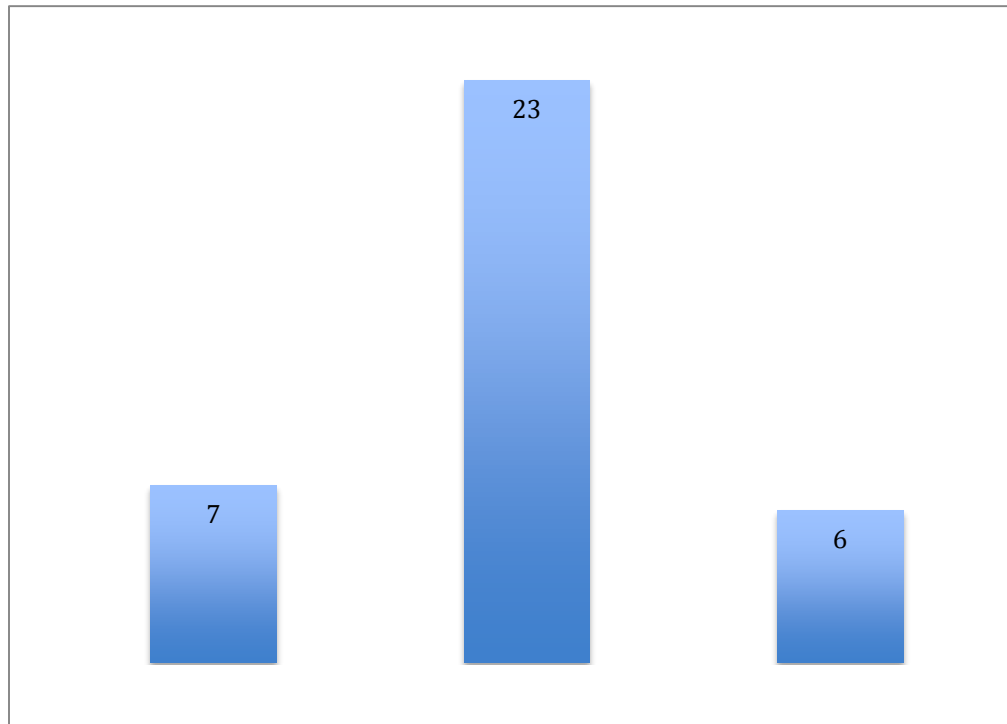


Implementation Activity

December 2013 – May 2014



Ideas Talent Companies

Number of Implementation Activities

2020 Vision: The South Dakota Science and Innovation Strategy

December 2013 – May 2014

2020 Vision Management – Strategy Areas

<u>INITIATIVE</u>	<u>ACTION</u>	<u>RESPONSIBILITY</u>	<u>OUTCOME</u>
Strategic Area: IDEAS			
Development of STEM education facilities to support training of teachers in STEM disciplines and engagement of K-12 students in STEM topics.	Renovate the Jonas Science Hall at Black Hills State University (BHSU) to support the training of teachers in STEM disciplines.	BHSU and South Dakota Science and Technology Authority (SDSTA)	Unique facility to prepare K-12 educators. Increased teacher readiness and proficiency in teaching STEM. Jonas Science Hall facility designs completed April 2014. First of the three planned construction phases to begin summer 2014 at BHSU.
Development of STEM education facilities to support training of teachers in STEM disciplines and engagement of K-12 students in STEM topics.	Construct a new Sanford Lab Homestake Visitor Center in Lead, SD to feature the science of the Sanford Lab to engage all age levels in STEM topics.	Lead Area Chamber of Commerce / Homestake Visitor Center, South Dakota Science and Technology Authority (SDSTA), and Black Hills State University	Facility to engage general public including K-12 students in STEM topics. Generate excitement for STEM in general public including K-12. Facility designs to be completed in June 2014. Facility construction start set for July 2014 with a May 2015 completion.
Development of a BHSU multidisciplinary science facility deep underground at the Sanford Lab.	Supporting Black Hills State University (BHSU) proposal to SD Board of Regents (SDBoR) for a new cleanroom facility to be hosted by on the 4850L of	BHSU and SDSTA	Expansion of science facility capacity deep underground to support multidisciplinary research for SD universities.

	the Sanford Lab. South Dakota Science and Technology Authority (SDSTA) committed \$500K to prepare underground space to host the cleanroom.		Facility will lead to additional opportunities for undergraduate and graduate STEM research. SDSTA commenced rehabilitation of underground laboratory space in spring 2014. Facility outfitting designs underway and planned to complete in fall 2014. BHSU seeking funding for cleanroom and support systems.
Governor's Research Centers	3 Funded—by 2014 June 4, 2014 annual review	GOED-BOR-RCC	Five year funding for four Research Centers ending in 2014 Two Governor's Centers entering second year of 5 years of funding in July 2014.
Building SD State-wide data base	Expand successful launch of the data base system among Informal STEM programs State wide and increase critical data points to track students into post-secondary education.	SDBOR SD EPSCoR	Ability to cross reference SDDOE, SDBOR data to determine impact of student participation in Informal STEM programs with student achievement, STEM career choices, enrollment in Post-Secondary STEM degree programs, and placement in industry.
Building SD State-wide website of Informal STEM programs and activities	To develop a website (page) that allows individuals to review informal STEM educational opportunities across the state.	SDBOR SD EPSCoR	A web page that gives overview of state-wide STEM programs and direct links for participation. This site would also link to the data base system to monitor who accesses and eventually participates in listed programs.
Expand Diversity Consortium efforts	Selectively increase industry participation and manage academic involvement.	SDBOR SD EPSCoR	Increases number of students entering into and completing degrees in STEM fields.

Strategic Area: TALENT			
Create two additional STEM summer internships at the Sanford Lab using South Dakota Science and Technology Authority (SDSTA) and private funding sources in 2014.	Create two engineering internships for the summer 2014 and beyond.	SDSTA	Additional opportunities for STEM real world experiences for SD university students. Two STEM summer internships in place and were filled with SD university students in May 2014.
On-Campus Policies, Training & Systems to Facilitate Entrepreneurship, Commercialization, & Intellectual Property Development	Host Commercialization Conference in Sioux Falls.	Board of Regents	Conference held on April 15 in Sioux Falls. In excess of 85 individuals from across the state participated in the conference.
Entrepreneurs in Residence	Development of an Entrepreneur in Residence program with competitive funds available at the System level for Entrepreneurs. Entrepreneurs in Residence program was included in GOED Small Business Administration FAST proposal for FY 2015.	GOED in conjunction with BOR and RAC GOED	GOED approved funding for an Entrepreneur in Residence program. GOED, BOR and RAC are in the process of developing the program requirements and parameters. Program implementation is expected in July. Proposal under review by SBA.
Develop new Ph.D. programs and Enhance Activity in Existing Ph.D. Programs	Develop Ph.D. programs in Civil and Environmental Engineering (SDSU & SDSM&T) and Agricultural, Biosystems, and Mechanical Engineering (SDSU).	Board of Regents in conjunction with Regental Institutions	The Board of Regents will take action at their June meeting on the proposed Ph.D. programs in Civil and Environmental Engineering (SDSU & SDSM&T) and Agricultural, Biosystems, and Mechanical Engineering (SDSU).
Dakota Seeds	Dakota Seeds internship program continued and expanded by state.	GOED	GOED committed \$200,000 annually to support the Dakota Seeds program and expanded it

			to include high school students and some manufacturing occupations.
IT Certificate	GOED sponsored summer IT Certificate program	GOED—BOR	36 participants enrolled in the 12 credit IT certificate program during the summer of 2014. Forms the basis of IT/analytics program in EPSCoR proposal.
Technical Education	Technical Education Initiative/funding	GOED---Dept. of Education	GOED committed \$14 million to update technical institute equipment and support STEM and technical education programs.
SD Robotics	Assist the SDRA in re-structuring their association to build participation, program quality, and sustainability	SDBOR SDRA and Board	Establish a sustainable Robotics Association that builds student participation and project quality.
Expand research opportunities for students in Tribal communities	Assist in the re-development of the Timber Lake Regional Science Fair that serves the Cheyenne Eagle Butte Reservation and Standing Rock Reservation communities.	SDBOR SD EPSCoR Timber Lake School District Cheyenne Eagle Butte Tribal Community	Increase the number of underrepresented students from tribal and rural communities in relevant research opportunities.
Partner with the State's AISES Professional chapter to build membership across the State and establish programs to serve university and HS chapters	Assist in the organization of a State-wide effort to establish the SD AISES professional Chapter.	SDBOR SD EPSCoR AISES Professional Chapter	Increase the number of AISES Professional chapter membership and activities that serve students in STEM efforts.
Middle School STEM Programs	Implement new programs at the middle school level. These programs are focused on an engineering curriculum	South Dakota Department of Education	Successfully implemented two Middle School Programs in Brookings and Burke. We will implement two additional programs in Spearfish and in Todd County (Governors Grant) and Watertown MS (Fall 2015).

High School STEM Programs	Implement new programs in Engineering and Biomedical Sciences.	South Dakota Department of Education	We have successfully implemented an Engineering program in Mitchell, Harding Co. and Sisseton. We will expand Engineering in: Harding Co. Aberdeen (3M and Governors Grant in fall of 2015) Biomedical Programs will begin in Alcester- Hudson, Madison, Kadoka, and Burke (Governors Grant)
Middle School STEM Camps	Implement weeklong engineering camps at the middle school level for grades 6-8.	South Dakota Department of Education	To date, we have had 6 events: 1 camp in Canton and 5 camps in Sioux Falls Impact on 124 individuals
STEM Teacher Professional Development	Offer professional development to teachers from around the state in engineering and biomedical sciences.	South Dakota Department of Education	We have developed an agreement with Sanford Research as an affiliate. They are offering training in the Biomedical Sciences for PBS (Principles of Biomedical Science and Human Body Systems). Trainings begin June 2014 for teachers in South Dakota and from across the nation.
STEM Wise Conference	Host 2014 event for teachers, counselors, administration, business & industry, and post-secondary institutions on internships, STEM program development, student recruitment, and best practices	South Dakota Department of Education	Successfully held the conference in May 2014. 24 Attendees from Schools, Business and Industry, and Post-secondary
VEX Robotic Events	Host 2013/2014 events. This set of activities encourages robotic education and competition	South Dakota Department of Education	Successfully held 4 events in winter 2014 <ul style="list-style-type: none"> • Harrisburg • Groton

	for middle school and high school students from around the state.		<ul style="list-style-type: none"> • Mitchell • Sioux Falls <p>Estimated Impact of 130 students</p>
Elementary Science Academies	Integrating Science, Engineering, Math, and Literacy into instruction planning for K-5 teachers. This work is used to build instructional capacity in our existing teacher population.	Sam Shaw – Department of Education	At the end of this training, up to 800 K-5 teachers will realize the vision for science education and understand the shift in instruction to have students perform science and engineering.
Middle and High School Science Academies	A training heavily founded in the science and engineering practices. This work is used to build instructional capacity in our existing teacher population.	Sam Shaw – Department of Education	At the end of this training, up to 400 6-12 teachers will realize the vision for science education and understand the shift in instruction to have students perform science and engineering.
Postsecondary preparation for high school students	Providing free online AP courses for students across the state via Learning Power, free exams for 400 low-income students not involved in learning power, training 180 teachers (60 Math, 60 Science, and 60 ELA) in delivering face to face AP courses, and providing a free AP exam preparatory tool for all public school students in South Dakota.	Sam Shaw – Department of Education	Strong performance in AP classes allow students to get a head start on their postsecondary career, transition smoothly to postsecondary academic expectations, and save thousands of dollars in postsecondary costs, minimizing student loan debt.
NSF Tribal Colleges and Universities Program (TCUP)	Partnership between OLC/SDSU/SDSMT Pre-Engineering Education Collaborative (OSSPEEC) and the native-led Thunder Valley Community	All partners involved: OLC SDSU SDSMT Thunder Valley Community Development Corporation (TVCDC)	Planned community of final 800-person net-zero regenerative community on the Pine Ridge Indian Reservation to be incorporated into the Capstone Design course at SDSMT and will be completed in stages

	Development Corp (TVCDC).		<p>2012-2013</p> <p>1a. SDSMT capstone completed</p> <p>1b. Paper published in Frontiers in Education</p> <p>2. SDSU capstone completed</p> <p>2013-2014</p> <p>1a. SDSMT capstone completed</p> <p>1b. Greenhouse @ Thunder Valley</p> <p>2. SDSMT received grant to build greenhouse prototype @ OLC Kyle Campus</p>
NSF TCUP, NSF PEEC, NSF EPSCOR RII T1, USDA NIFA Tribal Research program, NSF RIG, NIH BRIN, NSF EPSCoR Biofuels, NASA EPSCoR Wireless	Adopted a constructivist pedagogy in Math, Science, and Technology (MST) Department for BS degrees in Natural Science and an AA degrees in Life Sciences and Pre-engineering.	OLC Math, Science, and Technology Department	<p>Retention rate has risen from 20% to 60%; quadrupled its number of annual graduates (2 to 8), and placed 96% of its students in jobs on the reservation or in grad school.</p> <p>2013</p> <p>1. Abstract published Geological Society of America Annual meeting in Denver</p> <p>2014</p> <p>1. Abstract published Geological Society of America North-Central Section in Lincoln</p> <p>2. Abstract published South Dakota Academy of Sciences</p> <p>3. Paper accepted South Dakota Academy of Sciences</p> <p>4. Program-level outcomes assessment in progress</p>
NSF TCUPS Phase III	Using LIDAR to monitor Missouri River bank erosion	Two OLC research students	The LiDAR data assists the tribe in evaluating the effectiveness of the current mitigation measures used to control erosion and helps the USGS demonstrate

			<p>other strategies to delay or stop the erosion in the future.</p> <p>2013 1. Abstract published Geological Society of America Annual meeting in Denver 2014. 1. Pilot project with CU Boulder Archeology planned for summer</p>
NSF TCUPS/PEEC	Collaborative Project-based service learning/research to determine if culvert under the road to the planned community will sustain a 100-year flood.	Two OLC research students	<p>Research is in process.</p> <p>2013 1. Abstract published Geological Society of America Annual meeting in Denver.</p>
Strategic Area: COMPANIES			
Proof of Concept Program	Expand program to address market analysis and patent costs incurred by universities.	GOED in conjunction with BOR and RAC	<p>Proof of Concept Program expanded in May to provide funding to universities for market analysis and patent costs.</p> <p>9 projects funded 5 completed—all successful 4 in progress 2 declined 4 applications administratively screened out—referred to other GOED programs.</p>
Technology Business Accelerator	Program enhanced	GOED—SD Tech. Bus. Center & Black Hills Business Center	<p>21 applicants with 8 participants selected for the May 2014 program. 7 participants completed the 2013 program. Nanofiber Separations an accelerator participant and Proof of Concept awardee won</p>

			the Governor's Giant Vision Business Plan Competition.
Manufacturing innovation support	Innovator in Residence program	GOED—Manufacturing Technology Solutions	Funding for an Innovator in Residence to work in SD manufacturing firms was included in the SBA FAST proposal that is currently in review.
Fostering Growth Management	CEO Peer Councils	Manufacturing Technology Solutions	3 councils have been established in Sioux Falls and Rapid City. Additional councils throughout SD are being developed.
Increase awareness and build industry collaboration of STEM programs in communities throughout South Dakota.	Utilizing Database and Partnership activities help provide awareness of STEM programs within industries geographical area and State-wide initiatives.	SDBOR	More participation by industry in STTEM programs and increase opportunities for students
Support industry with training to maximize their return in STEM efforts including internships and research collaboration with students.	Design a guide and provide workshops that assist industry in maximizing collaboration with students through internships and research opportunities that give value to the student as well.	SDBOR SDEPSCoR SD Gov. Office of Economic Development	Increase internship opportunities in STEM. Increase Research opportunities for students. Increase number of students employed in SD STEM companies.

Submission by:	Color Code
Pat Lebrun - SDSTA	Rust
Mel Ustad - GOED	Red
Phillip Huebner - BOR STEM	Gray
Ray Tracy - Dept. of Ed.	Green
Hannan LaGarry - OLC	Purple