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Message from the Executive Director
Dr. Laura Munski

Let me first thank the volunteers, program sponsors, programming partners, and generous contributors who enable us to fulfill the mission of the Dakota Science Center (DSC). Without the dedicated members of the board of directors we could not continue as an organization providing science programming to NE ND and NW MN. DSC is a volunteer based organization. Programs are funded by donations and grants.

The Dakota Science Center is a non-profit organization - incorporated in April 1993. Our expertise is in hands-on science, technology, engineering and math (STEM) programming for youth. We are a resource center for the community with outreach STEM programs delivered by qualified volunteers. Through outreach programs we build the confidence of young people and invite them to envision futures where STEM plays a significant role in their lives. DSC works with university faculty and K-12 educators to develop learning experiences for youth and resources for teachers. Our activities encourage active participation that allows students to handle, deconstruct, build, watch and set in motion objects that illustrate STEM concepts and relationships.

The Dakota Science Center works behind the scenes with many partners to bring STEM education to youth. Our grassroots effort has led to the development of many educational projects. Highlights can be found on the DSC web site under the STEM Outreach Education tab. DSC has a long history of community engagement. A timeline is provided on the DSC web page under the About DSC tab.
Since 2011 DSC programs have been field tested at the Grand Forks Public Library (GFPL). These programs are now being used by many teachers.

**STEM in the Library Program**

A partnership of the Grand Forks Library and the Dakota Science Center

One-Hour Sunday Afternoon Program

- Educators, university students and faculty share STEM education with the children at the STEM in the Library sessions which are part of the summer and winter reading programs.
- Hands-on activities are provided at each session.
- Activities are parent directed which means that the instructions are provided so that the parents can do the activities with their children. The volunteers are at the activity stations to provide information that puts the activity in context and to inspire the children to take an interest in the STEM fields.
- The library provides the needed consumable supplies and a book/dvd list for parents.
- Dakota Science Center provides the lesson plans for the volunteers and extended learning take-home handouts.

**2018 Stem in the Library Schedule**

- January 7, 2018 2-3 pm Robotics
- February 4, 2018 2-3 pm Chemistry
- March 11, 2018 2-3 pm Coding
- June 14, 2018 NASA Train Like an Astronaut
- June 21, 2018 NASA Lunar Rock exhibit, NASA Asteroid exhibit, & NASA@MyLibrary activities
- June 28, 2018 Force & Motion
- July 12, 2018 Frankenstein Anniversary (National Science Foundation)
- July 19, 2019 Music & Science
- August 2, 2018 Community Garden Party
- September 9, 2018 Space Studies
- October 14, 2018 Earth Systems
- November 18, 2018 Geosciences
- December 9, 2018 Hour of Code

**Grand Forks Schools Early Out NASA @ My Library Program**

As part of the NASA at My Library program, the Grand Forks Public Library and the Dakota Science Center provide STEM activities for families on the days that school is dismissed early.

- September 19, 2018
- October 3, 2018
- November 7, 2018
- December 12, 2018
GFPL STEM Kids
Classes are offered as one-hour topic-based sessions. The library STEM Coordinator develops lesson plans for the STEM classes. The lesson plans include grade level, instruction time, material list, objectives, teacher’s introduction, student instruction, skills, and vocabulary. Engineering process worksheets are developed for any activity where students are expected to design and redesign. The lessons plans are posted on the DSC web site.

STEM Camp Grades 1-4 10am-noon
- Train Like an Astronaut June 11-13, 2018
- Earth Rocks/Space Rocks June 18-20, 2018
- Big Machines; ND Highway Department June 25-27, 2018
- Robotics July 16-18, 2018
- Electricity July 23-26, 2018
- Scratch Class – 6 summer sessions
- Robotics Club – 7 summer sessions

GFPL Children's Garden Club
The club meets once a week at the library during the summer. Agricultural science inquiry-based lesson plans for the program spark an interest in gardening, nutrition, and the environment. DSC provides exhibits for a garden club table that shares what the children are learning with the public; e.g. root view and composting view containers, bulb vases to watch both roots and leaf growth. DSC provides hands-on ag-science activities for the community Garden Party.

GFPL Exhibits
DSC helped GFPL write a proposal to host the NASA STAR_Net Discover Space Exhibit. The exhibit: Space Exploration and Research - help us answer the age-old questions: Where did we come from and are we alone? NSF and NASA research programs are helping humanity understand the origin and evolution of galaxies, stars, and planets, and defining the conditions necessary to support life beyond Earth. The four exhibit areas are: A. SPACE – The Final Frontier, B. Electric Space, C. Exploring Our Solar System, and D. Cosmic Journey. The Dakota Science Center developed inquiry-based activities to augment the exhibit.

The NASA @ My Library is a STEM education initiative to increase and enhance STEM learning opportunities for library patrons throughout the nation. GFPL and DSC became NASA @ My Library partners in 2017. The Dakota Science Center uses the NASA materials to develop new lesson plans for the other library programs.

National Weather Ready Nation 2018 Ambassadors of Excellence!
North Dakota – Dakota Science Center
“The Dakota Science Center partners with the National Weather Service Grand Forks office numerous times a year to provide a quality hands-on weather, water, and climate education to young and old alike. In the past year they have hosted or co-hosted Super Science Day/Earth Day activities, the Grand Forks Area Water Festival, the Science Café’ (at the local library), and various area Science Fairs and STEM activities. They continue to work closely with the NWS Grand Forks office and the UND Atmospheric Sciences Department to promote weather preparedness & awareness, as well as a positive learning environment for the youth of the area”.

Super Science Day April Annual Event
Through multiple partnerships the Dakota Science Center (DSC) has developed a regional family event with hands-on activities for youth. Since 2006, this annual free family event has provided hands-on science activities and informational exhibits for children in grades 1-6. STEM activities are provided by university faculty, graduate students, undergraduate students, student organizations, government agencies, businesses and adult volunteers. Families with children enjoy hands-on activities designed to spark an interest in the sciences. Super Science Day is a registered National Environmental Education Week event.

Water Festival
DSC held its annual Water Festival at the East Grand Forks Heritage Village on May 1-2, 2018. The purpose of the annual Water Festival is to help youth in the region understand the vital importance of water resources to our region’s future. The North Dakota Water Commission’s Project Wet was once again a major sponsor of this year’s event. Other financial and in-kind included: Grand Forks Water Resource District, Grand Forks Soil Conservation District, ND Section of the American Water Works Association, and the East Grand Forks High School.

Annual Haunted Heritage Village
October 27, 2018 11am-2 PM For families with children pre-K to grade 3
Trick or Treating and fun, indoor/outdoor activities, Dakota Science Center activities, Hay rides weather permitting.
No Admission Fees - Canned goods are collected for the local food cupboard.
Explore the Night Sky 7 PM Hosted by the UND Northern Sky Astronomical Society

Heritage Village Happy Holidays
Dec 1, 2018 10 a.m. - 2 p.m.
Come and enjoy family activities. Bake Sale all day. Free and open to the public. Canned goods will be collected for the local food cupboard.
10 am Railroad Museum opens
11 am Pancake Breakfast (free will donation)
11 am fun activities start
10 am - noon Reindeer weather permitting
10:30 Santa
11 am - 1 pm Sleigh Rides/Hay Rides
11 am - 2 pm Music in the Church Dakota Science Center winter science fun in the Amundson Building
2 pm event closes

DSC is a member of the Gateway to Science Advisory Council. Established by the Gateway to Science Board of Directors in 2016, it is charged with providing a broad-based perspective of the science, engineering, math and technology needs, opportunities and resources across North Dakota.
PowerOn! - a STEM educational outreach program In 2007 the UND School of Engineering and Mines and the Sustainable Energy Research Initiative (SUNRISE) in association with the Dakota Science Center established a multi-dimensional learning model that engages students more fully in STEM. Each year the PowerOn! program provides STEM education at the Rydell car show.

Science and Engineering Fair
Participating in a Science and Engineering fair allows students to explore a topic of interest, identify a question to investigate, choose the tools needed to complete the project and discover the rewards of self-initiative. Once the project is completed, the student has strengthened a variety of skills including reading, writing, spelling, grammar, math, statistics, ethics, logic, critical thinking, computer science, graphic arts, scientific methodology, and public speaking. The Dakota Science Center assists with the planning and implementation of 4 Science and Engineering Fairs; the Grand Forks School District, the Northeast North Dakota Region and the North Dakota State.

Globe Learning and Observations to Benefit the Environment (GLOBE)
The University of North Dakota is a GLOBE Partner institution, with Atmospheric Sciences as the lead department. Dr. Matt Gilmore is the Department of Atmospheric Sciences GLOBE Partner Coordinator. DSC is the outreach education facilitator for the program. Drs. Gilmore and Munski became certified trainers in 2013 and began raising awareness in the state.

GLOBE improves student understanding by taking measurements, analyzing data, and participating in research with other students and scientists. The GLOBE investigation areas include; atmosphere, Earth as a system, hydrology, land cover/biology and soil. GLOBE provides students with a more integrated view of the various subjects they study and supports curricula interconnections in all areas. GLOBE encourages teachers to collaborate between disciplines and motivates students by showing the interconnections and meaningfulness in what they are studying.

Since 2012, DSC has been a certified trainer for the pre-school education program Growing Up WILD: Exploring Nature with Young Children developed by Project WILD and the U.S. Council for Environmental Education. It is designed to help early childhood educators and primary teachers develop children’s sense of wonder for wildlife and nature. Its activity/lessons are developmentally appropriate. A major strength of this resource is that it integrates nature education with art, math, language, social skills, nutrition, history and music. Lesson plans based on Growing Up Wild were posted on the DSC web site and were used at STEM in the Library family events.
DSC became a FIRST® LEGO® League (FLL®) team sponsor in 2004. GFPL became a team sponsor in 2011. DSC, GFPL and the Heritage Village (East Grand Forks, MN) have partnered to support the Greater Grand Forks Robotics Club for elementary through high school aged youth. The Greater Grand Forks Robotics Club (GGFRC) was formed in partnership with the Grand Forks Public Library, the University of North Dakota Computer Science Dept., and the Dakota Science Center. It is a non-profit, volunteer-led organization focused on STEM exposure to students of all ages in the Greater Grand Forks area. The club strives to offer this at no cost to students. The Greater Grand Forks Robotics Club has 2 program components, the FLL® teams for elementary and middle school aged youth (ages 9-14), and the off-season club with separate elementary and middle school levels.

The off-season robotics club program provides engineering and technology experience to youth who were not able to be on the team, and those honing their skills for next year. The club also provides leadership opportunities to team members who help teach the computer programming to younger children. A qualified teacher is hired to lead the off-season summer robotics club.

DSC has partnered with the UND College of Engineering and Mines since 2004 to provide the youth with competition opportunities. January 20, 2018 Robotics Qualifying Tournament UND Memorial Union and February 10, 2018 Robotics ND State Tournament UND Memorial Union

The Dakota Science Center has partnered with the 21st Century Community Learning Center based at the North Valley Career and Technology Center, Grafton North Dakota to provide teacher support for inquiry-based learning. The 21st Century Community Learning Center program provides academic enrichment opportunities during non-school hours for children, particularly students who attend high-poverty and low-performing schools. The program helps students meet state and local student standards in core academic subjects, such as reading and math; offers students a broad array of enrichment activities that can complement their regular academic programs; and offers literacy and other educational services to the families of participating children. Each year the Dakota Science Center provides a teacher workshop, assists with the development of summer programming and shares new lesson plans.

Verizon STEM Program

The Dakota Science Center and the GFPL received a grant from the Verizon Foundation to train librarians across the state. Librarians from eastern ND and NW MN attended a one-day workshop to receive the materials needed to offer coding/computational thinking skills and STEM sessions at their libraries. These libraries are now part of the Dakota Science Center STEM network.

University of North Dakota, American Indian Science and Engineering Society (A.I.S.E.S.)

The focus of this organization is to increase the involvement and representation of American Indians and Alaskan Natives in the STEM fields, as well as other related fields. AISES provides a Family Science Night at the UND Indian Association Time Out Wacipi event. Each year the Dakota Science Center joins AISES to provide STEM activities.
Community Astronomy Events
Hosted by the UND Northern Sky Astronomical Society. Held at the Dakota Science Center Amundson Classroom, Heritage Village, East Grand Forks.
Summer 2018-Look through telescopes, see craters on the Moon, view the moons of Jupiter, the rings of Saturn and more. May 4th, 2018 8pm presentation (May the 4th be with you), May 18th, 2018 9pm, June 15th, 2018 9pm, July 20th, 2018 9pm, August 17th, 2018 9pm

Astronomy Adult Education Class
Place: Amundson Classroom, Heritage Village 219 20 Street NE, East Grand Forks, MN
Instructor: Chris R. Milly Milford (NASA-Jet Propulsion Laboratory)
12 sessions Tuesdays, February 6th- April 24th Time: 7:00-9:00 PM
6 sessions Wednesdays, Nov 7-Dec 10, 2018

Young Scientists and Engineers Academy
The Young Scientists and Engineers Academy is a four-day program held at the University of North Dakota; sponsored by the College of Engineering and Mines. The academy is focused on hands-on learning in the sciences and engineering for youth in grades 1-8. Academy participants complete activities in a variety of science and engineering disciplines. The Dakota Science Center is an academy partner.

Professional Presentations


ND Coalition for Conservation and Environmental Education
The Dakota Science Center renewed its’ memorandum of understanding with C2E2. “The environmental concerns that face North Dakota now demand that we collaborate on how to maintain a future that is sustainable, healthy, prosperous, and equitable for this generation and generations to come. Developing and implementing solutions to these challenges requires an environmentally literate citizenry that has the skills to understand, think critically about, and address existing and future natural and cultural resource issues.”

• Providing information, curriculum, resources, and experiences-indoors and outdoors relative to natural and cultural resources in North Dakota,

• Increasing a culturally sensitive understanding of the diversity and interdependence of people, animals, minerals, energy, plants, soils, water, and air,

• Fostering stewards of all ages with the knowledge that everyone has a responsible role in the conservation and wise use of all natural and cultural resources,

• Collaborating on joint educational opportunities and leadership to facilitate the development and coordination of environmental education programs and activities, and

• Supporting the efforts of C2E2 by designating a liaison to the membership. No member shall be compensated or reimbursed for their efforts or activities.
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