

The Little Falls City School District is very proud of its many STEAM initiatives.



The Engineering by Design Program is a program that is for our K-8 Students.
The K-5 Program will be housed in our new BHA STEAM Center



The Engineering byDesign™ Program is built on the belief that the ingenuity of children is untapped, unrealized potential that, when properly motivated, will lead to the next generation of technologists, innovators, designers, and engineers.

The International Technology and Engineering Educators Association's (ITEEA) STEM Center for Teaching and Learning™ has developed the only standards-based national model for Grades K-12 that delivers technological literacy in a STEM context.

Using constructivist models, students participating in the program learn concepts and principles in an authentic, problem/project-based environment. Through an integrative STEM environment, EbD™ uses all four content areas as well as English-Language Arts to help students understand the complexities of tomorrow.

The ITEEA STEM Center for Teaching and Learning preK-6 elementary STEM curriculum unit sequence is delivered through a hands-on Technology, Engineering, Environment, Mathematics, and Science (TEEMS) thematic interdisciplinary approach using an engaging, Integrative STEM Education lessons.

Each course for preK-6 focuses on a different environmental theme. These themes tie into The Global Goals for Sustainable Development. In 2015 world leaders identified 17 global goals which include: clean water and sanitation, affordable and clean energy, life below water, life on land, etc. Below are brief descriptions for the 8 grade levels offered within EbD TEEMS.

Kindergarten- ***A Home for All Seasons*** engages young learners in hands-on inquiry and design as they explore animal homes. It integrates concepts of STEM as students create various animal homes. The design challenge provided an opportunity for the students to apply knowledge and skills in a meaningful way as they designed and built a birdhouse modeling how an elementary student may experience the lesson.

First- **Can You Hear Me?** allows exploration of how we are able to hear and process sounds. It integrates concepts of STEM through the environmental context of noise pollution. The design challenge provided an opportunity for students to apply knowledge and skills as they designed and created a device that had to protect their ears from noise pollution.

Second Grade- **From Nature to Me** guides learners to explore biomimicry and how we can obtain from nature the tools necessary for scientific discovery. It integrates concepts of STEM through the environmental context of learning about bees and researching why they seem to be disappearing. Students collaboratively begin to explore how animals spread seeds and how their environment is then suitable for habitation. A design challenge allows students to create a device that will travel on land or air to disperse seeds.

Third Grade- **Natural Hazards** engages young learners in hands-on inquiry and design as they explore natural hazards that occur on the Earth such as earthquakes, fires, blizzards. Students are challenged to create an earthquake resistant home that could withstand three shakes of a shake table.

Fourth Grade- **The Power of Solar** develops students' understanding of energy systems and related technologies, temperature, electricity, and sustainable sources of energy. Science and mathematics concepts that are reinforced include the solar system, energy transfer, temperature, electricity, decimals, perimeter, area, angles, points, lines, rays, and symmetry. Students collaboratively investigate solar energy as a global issue and learn that stewardship and innovation can make a difference in solving the world's problems.

Fifth Grade- **Our Water, Our World** informs students about universal access to clean water. STEM is integrated through the environmental context of water resource management and conservation. Students collaboratively investigate global water issues and learn that stewardship and innovation can make a difference in solving the world's problems.

Please keep your eyes out for our next edition of the Newsletter which will include details for Grades Six through Eight.

Tracy Young is the STEAM Specialist at Benton Hall Academy. She delivers the EbD curriculum to the students in grades Kindergarten through grade 5. We are just starting our fifth year using the Engineering by Design program. In those 5 years, the program has flourished. In 2018, the Engineering by Design program in Little Falls City School District was honored by The Genesis Group as a 2018 Outstanding Program. In 2018, three Benton hall Academy students were also awarded the ITEEA Elementary STEM Council's National Grand Design Challenge. Tracy Young was then able to attend the ITEEA National Conference in Kansas City to showcase the students' winning design. The Benton Hall Academy EbD program has gained some national notoriety in the past five years. The students at BHA have been featured in the ITEEA Elementary STEM Journal numerous times, have had the opportunity to present webinars about their success in the program as well as participating with undergraduate students at Purdue University. Mrs. Young co-teaches a virtual EbD course at Purdue University. Students at Benton Hall Academy have had the opportunity to have lessons taught "virtually" from the Purdue University students! In the month of October, students from the University of Nebraska will also follow suit, carrying out virtual lessons in the EbD classroom at Benton Hall Academy. The Engineering by Design program has tremendous support from ITEEA as well as the Elementary STEM Council as Mrs. Young has become a large part of the association in the past 5 years. Mrs. Young is a National EbD trainer, ITEEA National Conference presenter, participates in the writing of the EbD curriculum, as well as holding the position of secretary of the Elementary STEM Council.

Students at BHA were a large part of the idea behind the STEAM Center at BHA. Students from grades kindergarten through grade 5 participated in a 21st Century Learning Fair at the Little Falls High School. The idea was to let the public know how important the STEAM Center would be for the students. During the budget vote a few years ago, about 30 students from various grade levels presented their Engineering by Design projects and Grand Challenges as people attended the learning Fair. They were available to answer questions to curious city residents about what they did, why they did it and most importantly, how they struggled and problem solved to succeed in their designs. As the STEAM Center nears completion, students are getting excited to get back to "building". In the meantime, Mrs. Young will be wheeling a cart (or multiple carts) full of EbD supplies, to start EbD lessons right in the classrooms.