



LIGHT UP ROTARY Through Vocational Service

THE IMPORTANCE OF STEM EDUCATION AND WORKFORCE DEVELOPMENT:

Science, Technology, Engineering, Mathematics will Drive this Country Forward

RI President Gary C.K. Huang challenges us to energize our communities and strengthen our membership, fellowship, and service efforts by lighting up Rotary. Through vocational service initiatives, we can be champions for high ethical standards in our workplaces, use our professional expertise to serve others, and have a positive impact on local and international communities. Your club can practice vocational service in a variety of ways, from small-scale events such as recognizing people in your community for their work, to large international initiatives such as microcredit programs and vocational training sessions.

District 5710's vocational initiative for 2014-2015 is STEM education. As part of a national effort to attract more girls and underrepresented minority students to science, technology, engineering and math careers, the Rotary Clubs in District 5710 can have a significant impact on the future of Northeast and North Central Kansas through their vocational projects.

STEM (Science, Technology, Engineering and Math) education is vital to the futures of the youth in our community and is not exclusive to STEM focused careers. No matter what field of endeavor is chosen by our youth, knowledge of STEM basics will be essential for their future. The need to revamp American education, especially in STEM focus areas, has been widely reported for over half a century. In fact, the United States Department of Labor listed the ten most wanted occupations, and eight of those ten were with degrees in STEM fields. The U. S. Department of Commerce reports that STEM occupations are growing at 17%, while others are growing at 9.8%. Health care workers with associate degrees to doctors of medicine

will average 20% more in life time earnings than peers with similar degrees in non-health care. A glance at 2010 starting salaries for engineers with \$47,145 for civil engineers to \$60,054 for chemical engineers is strong evidence that STEM related jobs can be financially rewarding careers for our children.

STEM careers are truly “helping” professions that build communities and transform nations. These professionals are in charge of solving the complex problems of today’s world and its future. They are working to find solutions for global warming, cancer, third world hunger, disappearing habitats, and an interdependent world economy.

STEM workers drive our nation’s innovation and competitiveness by generating new ideas, new companies and new industries. However, U.S. businesses frequently voice concerns over the supply and availability of STEM workers. Over the past 10 years, growth in STEM jobs was three times as fast as growth in non-STEM jobs. By supporting STEM (Science, Technology, Engineering, Mathematics) education, Rotary can help increase the number of high school and college students who pursue STEM careers.

What vocational projects focusing on STEM education and workforce development can your local Rotary club embrace?

- Sponsor a hands-on biotechnology and/or biomedical school-to-career program for high-school and community-college students, engaging STEM professionals to participate and invite non-Rotarian community members to attend. Program ideas include:
 - Sponsor a STEM career day.
 - Collaborate with K- 12 school districts to sponsor Lego Robotics Teams, Science Olympiad Teams, Science fairs, and/or summer camps.
 - Sponsor a workshop designed for students to experience STEM careers through hands-on, interactive sessions led by local business and community leaders.

- Coordinate with STEM professionals to schedule classroom visits or offer tours of their facilities.
- Coordinate with STEM professionals to establish job shadowing and internship opportunities.
- Collect donations of used lab coats, new calculators and other equipment for school STEM projects.
- Establish an education fund to ensure that all students, regardless of their economic means, have the opportunity to participate in and take full advantage of the STEM programs.
 - Focus on Hispanics, African-Americans, and other underrepresented groups in the STEM fields—including women, people with disabilities, and first-generation Americans.

RESOURCES:

Job Search Resources

- 1) Job Search Workbook- Kansasworks Contact: workforcesvcs@kansasworks.com
<http://www.kansascommerce.com/DocumentCenter/Home/View/607>

Educational and Career Development Resources

Through your Rotary club's vocational STEM project you may end up creating the types of collaborative programs that are already happening in the Kansas City metropolitan region.

- 1) The **KC STEM Alliance** partners with organizations who share the vision of creation a robust and sustainable STEM workforce. KC STEM Alliance provides human capital and fiscal assets to support K-12 science, technology, engineering and math education during and after school, raising the overall level of education and increasing college and career readiness. By identifying underserved neighborhoods and schools, KC STEM Alliance provides additional resources where they're needed most.

Project Lead the Way® transforms classrooms into spaces where content comes to life. With more than **30% regional growth in 2014-2015**, 114 schools in 27 districts, plus metro-wide private and charter schools will participate in PLTW's hands-on, project-based curriculum and nationally recognized teacher professional development. Students and teachers will benefit from real world experience through regional industry partnerships and professional mentors. To learn more contact Martha McCabe at mccabemb@kcstem.org or visit pltw.org.

KC FIRST® Robotics inspires innovation, builds STEM skills and fosters self-confidence, communication and leadership. Through the full suite of mentor-based, after school *FIRST* programs, 200+ metro area teams will participate in *FIRST* Robotics Competition, *FIRST* Tech Challenge, *FIRST* LEGO® League and Jr. *FIRST* LEGO® League. To learn more about *FIRST* and starting your own team, talk with your school principal or youth organization leader and visit usfirst.org.

KC Girls in STEM Initiative intentionally works to increase the participation of girls in science, technology, engineering and math through education and career exploration. Formal and informal activities include building mentoring relationships, supporting weekend workshops and summer camps, and opening doors to job shadows and internships. The primary focus in 2014-2015 is inspiring interest in the fields of technology and computer science. To learn more contact Martha McCabe at mccabemb@kcstem.org or visit kcstem.org/events.

<http://www.kcstem.org/partners/affiliates/>

- 4) The **KCP&L Exploring Post** is an initiative designed for high school students, boys and girls, who wish to explore future careers as they progress through their educational pathways and determine what they want to be when they grow up. This Post is for high school students ages 14-20 who want to know more about a variety of careers associated with Energy. To register, visit exploringkc.org/registration.

5) Burns & McDonnell works to spark interest in engineering, architecture, science and construction through mentoring and educational programs. Their employee-owners bring their expertise and energy directly into the classroom and work one-on-one with students, introducing them to engineering concepts and careers and helping them design and build robots.

<http://www.burnsmcd.com/Company/Educational-Outreach#sthash.AB8odtpX.dpuf>

6) Black & Veatch supports STEM (Science, Technology, Engineering, Mathematics) education to help increase the number of high school and college students pursuing STEM careers. Black & Veatch partners with the KC STEM Alliance to promote education in Kansas City. With this partnership, funds support Project Lead the Way (PLTW) and FIRST Robotics to schools and teams across the KC metro area. PLTW is a leading provider of STEM education to middle and high schools across the United States. Black & Veatch supports PLTW in the classroom by providing mentors and speakers to classes. Beyond the classroom, Black & Veatch U.S. offices also support the following programs that equip tomorrow's leaders with the critical reasoning skills to solve problems.

- Future City is a project-based learning experience for middle school students. Participants use SimCity™ planning software as they compete in designing model cities. They learn from teachers and engineer mentors in a team setting.
- FIRST Robotics is an international high school robotics competition. Each year, student teams compete by building robots that can complete tasks. It enables students to develop project management and communication skills.
- Black & Veatch's Explorer Post gives high school students the chance to learn about the world of engineering. Find out if it's the right career field

for you. And you can do it all in one evening a month. To find out more about Explorer Post activities, contact them at explorers@bv.com.

<http://bv.com/Home/company/culture/philanthropy/stem>

7) Cerner supports students from all over the Kansas City area through our K-12 and university partnerships and programs such as Cerner Scholars, Robotics, and Project Lead the Way. Associates also lend their time to *job shadow programs, educational externships, eMentoring* and more.

https://www.cerner.com/About_Cerner/Community_Impact/Community_Contributions/

8) PBS Teachers STEM Education Resource Center

PBS offers all Americans the opportunity to explore new ideas and new worlds related to science, technology, engineering, and mathematics (STEM) learning through television and online content. The PBS Teachers STEM Education Resource Center is here to introduce you to selected STEM education resources. To find more, search our database of nearly 4,000 science, technology, engineering and math resources for grades preK-12. <http://www.pbs.org/teachers/stem/>

Additional Resources

PBS, public television stations and content producers rely on organizations like the following to help us stay informed about STEM initiatives.

- **International Society for Technology in Education:** ISTE is the premier membership association for educators and education leaders engaged in improving learning and teaching by advancing the effective use of technology in PK-12 and higher education.
- **National Science Foundation:** The National Science Foundation (NSF) is an independent federal agency created by Congress in 1950 "to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense..."

- **National Science Teachers Association:** The National Science Teachers Association (NSTA) is the largest organization in the world committed to promoting excellence and innovation in science teaching and learning for all. NSTA's current membership of 60,000 includes science teachers, science supervisors, administrators, scientists, business and industry representatives, and others involved in and committed to science education.
- **Stem Education Coalition:** The Science, Technology, Engineering, and Mathematics (STEM) Education Coalition works to support STEM programs for teachers and students at the U. S. Department of Education, the National Science Foundation, and other agencies that offer STEM related programs.
- **NASA Webcasts:** NASA's Digital Learning Network presents a series of videoconferences to assist educators in staying current on NASA education resources and related products. Topics to include: Exploring Space Through Math, Robotics, NASA Fit Explorers, NASA eProfessional Development Network -- Robotics Course, MoonWorld, and On the Moon. Questions about these events should be directed to Caryn Long at caryn.long@nasa.gov.

Funding Resources

- 1) **District Grants (DG)** are managed by the district with funding received from the Rotary Foundation Based on a portion of the Annual Program Fund (AFP) giving from three years prior. The donations from district Rotarians are invested by The Rotary Foundation for three years at which time one-half of the donations are placed in the World Fund of the Foundation for Global Grants and other Foundation programs. The other half of the donations come back to the districts as District Designated Funds (DDF). A portion of the DDF can be allocated for DGs. DGs are intended for short term projects completed within the current Rotary Year and are limited in funding from \$200

to \$14,667. An application, report and guidelines are located on the DG page in the left column. Grants are matched according to the formula outlined in the application as District Grant Funding is available. Contact Gregory Shondell (Kansas City, Kansas Rotary Club) at gas@heathwoodoil.com.

<http://www.clubrunner.ca/Portal/SitePages/SitePage.aspx?did=5710&pid=30212>

- 2) **The Bayer USA Foundation** is interested in receiving grant proposals that for hands-on, inquiry-based science, technology, engineering, and math (STEM) education programs and initiatives that provide innovative solutions to encourage more female and minority students to pursue a career in STEM.

<http://www.bayerus.com/foundation/guidelines/Giving.aspx>

- 3) **Cerner Foundation** supports innovative learning in science, technology, engineering & math and opportunities to strengthen economic development by supporting entrepreneurship, life sciences, innovation and health in our region. Priority is given to non-profit organizations that establish new or continue existing programs that result in measurable impact to the community.

https://www.cerner.com/About_Cerner/Community_Impact/

- 4) **AT&T Aspire** is committed to supporting organizations implementing verifiable, evidenced-based interventions focused on improving high school retention rates and preparing students – especially those most at-risk – for college or career. AT&T Aspire supports both nationally and locally-based programs. AT&T seeks to fund programs utilizing socially innovative approaches that impact students in more effective and efficient ways, such as using technology to create unique learning experiences. <http://about.att.com/content/csr/home/people/aspire/local-community-investments/at-t-aspire-survey.html>