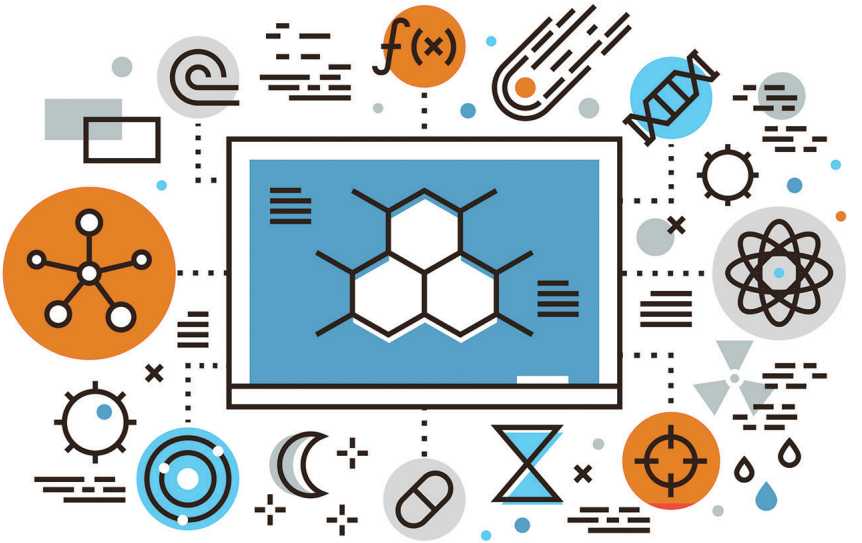
RESOURCES PROFILE:

Selected Resources on Science, Technology, Engineering, and Mathematics (STEM)



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September 2018

About the Resource Center

The Resource Center for CareerTech Advancement is a division of the Oklahoma Department of Career and Technology Education, located in Stillwater, Oklahoma. The staff of the Center research educational materials and best practices to disseminate throughout the state CareerTech system. The Resource Center also provides support in identifying curriculum, assessments, professional development and other instructional delivery resources on request.

https://www.okcareertech.org/educators/resource-center

WEBSITES & DOCUMENTS

1. **Women and Men in STEM Report**

   http://www.pewsocialtrends.org/2018/01/09/women-and-men-in-stem-often-at-odds-over-workplace-equity/

   A January 2018 report of the Pew Research Center that presents findings of a survey of men and women in STEM careers about workplace equity.

2. ***STEM Education in the US: Where We Are and What We Can Do***

   https://www.act.org/content/dam/act/unsecured/documents/STEM/2017/STEM-Education-in-the-US-2017.pdf
   A 2017 report of findings from ACT.

3. **Science & Engineering Indicators 2018**

   https://www.nsf.gov/statistics/2018/nsb20181/assets/nsb20181.pdf

   This congressionally mandated report from the National Science Foundation provides quantitative information on the U.S. and international science and engineering (S&E) enterprise. The report uses a variety of presentation styles—such as narrative text, data tables and figures—to make the data accessible to readers with different information needs and different information-processing preferences. The data are "indicators"—quantitative summary information on the scope, quality, and vitality of the S&E enterprise or its change over time. The indicators in this report are intended to contribute to an understanding of the current environment and to inform the development of future policies. Contents include:

   — Overview of the State of the U.S. S&E Enterprise in a Global Context
   — Elementary and Secondary Mathematics and Science Education
   — Higher Education in Science and Engineering

— Science and Engineering Labor Force
— Research and Development: U.S. Trends and International Comparisons
— Academic Research and Development
— Industry, Technology, and the Global Marketplace
— Science and Technology: Public Attitudes and Understanding
— Invention, Knowledge Transfer, and Innovation

4. Labor Market Tool

https://www.cna.org/centers/ipr/education/STEMwire/labor-market-tool

An interactive tool from CNA Analysis & Solutions that allows you to create a list of high-wage, high-demand jobs that matches your interests, education level, and salary requirements using BLS national job projections to 2024.

5. Building the STEM-Capable Workforce of the Future

https://spectrum.mit.edu/winter-2018/building-the-stem-capable-workforce-of-the-future/

Excerpt of testimony delivered on March 21, 2017, by Maria T. Zuber before the Subcommittee on Research and Technology for the Committee on Science, Space, and Technology in the U.S. House of Representatives. Zuber, who is MIT's vice president for research, presented these remarks in her role as the chair of the National Science Board (NSB), which acts as the governing body of the National Science Foundation and as nonpartisan advisors to the President and Congress on matters related to science and education.

6. **Work To Do**

   http://www.carnegiesciencecenter.org/csc_content/stemcenter/pdf/Work_to_Do_The_Role_of_STEM_Education_in_Improving_the_Tri-State_Regions_Workforce.pdf

   Findings of research on the rural perspective of STEM education, conducted by the Carnegie Science Center

7. **STEAM Toolkit**

   http://www.ala.org/yalsa/steam-toolkit

   Created by a task force of the Young Adult Library Services Association (YALSA), the purpose of this toolkit is to provide library professionals and library workers who work with and for tweens and teens with materials and resources for professional development, outreach, collections, and programs to successfully integrate science, technology, engineering, arts, and mathematics (STEAM) into programs and services.

8. **Enhancing Today's STEM Workforce to Ensure Tomorrow's New Medicines**

   http://phrma-docs.phrma.org/files/dmfile/TEConomy-PhRMA-STEM-Report-Final.pdf

   A June 2017 report from TEConomy Partners, LLC and The Pharmaceutical Research and Manufacturers of America (PhRMA) that presents findings of an assessment of industry-collegiate education and training partnerships.

9. **National PTA STEM + Families**

   https://www.pta.org/home/programs/stem

   Website of the STEM initiative of the National PTA; includes information and resources about science festivals, math nights, game nights, tech nights, and more

10. CITGO Fueling Education website

https://www.fuelingeducation.com/

STEM resources from CITGO at multiple grade levels.

11. 7 Facts About the STEM Workforce

http://www.pewresearch.org/fact-tank/2018/01/09/7-facts-about-the-stem-workforce/

Seven facts about the STEM workforce and STEM training based on Pew Research Center analysis of U.S. Census Bureau data from 1990-2016.

12. Women, Minorities, and Persons with Disabilities in Science and Engineering 2017

https://www.nsf.gov/statistics/2017/nsf17310/static/downloads/nsf17310-digest.pdf

Statistical information about the participation of these three groups in science and engineering education and employment, from the National Science Foundation.

13. Are Math Assignments Measuring Up?

https://edtrust.org/resource/checking-math-assignments-measuring/

Results of an analysis by The Education Trust of more than 1,800 math assignments given to middle-school students from six districts — urban, suburban, and rural — across the country. Assignments were collected from 63 sixth-, seventh- and eighth-grade teachers teaching math courses, ranging from math 6 through geometry.

14. High School Course Access and Postsecondary STEM Enrollment and Attainment

https://caldercenter.org/publications/high-school-course-access-and-postsecondary-stem-enrollment-and-attainment

A February 2018 report of a study of the effects of access to high school math and science courses on postsecondary STEM enrollment and degree attainment, from the American Institutes for Research.

15. Diversity Gaps in Computer Science

http://news.gallup.com/reports/196331/diversity-gaps-computer-science.aspx?g_source=link_NEWSV9&g_medium=&g_campaign=item_&g_content=Diversity%2520Gaps%2520in%2520Computer%2520Science

A 2016 research report of the Google-Gallup partnership.

16. Network Literacy: Essential Concepts and Core Ideas

https://sites.google.com/a/binghamton.edu/netscied/teaching-learning/network-concepts

Concepts that every person in the 21st Century should know about networks by the time they complete their secondary school education.

17. Design for Success: Developing a STEM Ecosystem

http://stemecosystems.org/resource/design-success-developing-stem-ecosystem/

Researchers at the University of San Diego's Institute for Entrepreneurship in Education asked the question, "How do partners building and running a STEM learning ecosystem define the parameters of an "effective" ecosystem?" This November 2016 report presents the findings from the year-one study.

18. Genetics Lesson Plan Database

http://www.ashg.org/cgi-bin/gena/glesson.pl

From the American Society of Human Genetics.

19. I Think I Can't

https://all4ed.org/i-think-i-cant-lack-of-confidence-in-math-keeps-girls-out-of-lucrative-stem-careers/

A 2017 blog post from the Alliance for Excellent Education about research into girls' lack of confidence in math.

20. STEM 101

https://www.bls.gov/careeroutlook/2014/spring/art01.pdf

A 2014 feature from *Occupational Outlook Quarterly.*

21. Science and Engineering Degree Completion by Gender

https://nscresearchcenter.org/snapshotreport-science-and-engineering-degree-completion-by-gender/

Data tables from the National Student Clearinghouse Research Center.

22. A State Policymaker's STEM Playbook

https://www.ecs.org/a-state-policymakers-stem-playbook/

This *Promising Practices in Education* report highlights the Utah STEM Action Center as a case study of legislation that includes three essential elements of a successful STEM program: statewide coordination, adequate funding and evaluation. This report also identifies elements that contributed to the passage and implementation of this STEM legislation. From the Education Commission of the States (2016).

23. Math Assignment Analysis Guide

https://1k9gl1yevnfp2lpq1dhrqe17-wpengine.netdna-ssl.com/wp-content/uploads/2014/09/Math-Assignment-Analysis-Guide.FINAL-4-18.pdf

A resource from The Education Trust for analyzing sets of assignments across multiple days or weeks within a classroom, school, or district. It can also be used to call out important features to consider during the assignment formation process.

24. STEM Education Coalition Resources

http://www.stemedcoalition.org/reports/

Fact sheets, presentations, and other resources.

25. STEMconnector Publications & Resources

https://www.stemconnector.com/publications/publications-resources/

A variety of resources from STEMconnector, "a consortium of companies, nonprofit associations and professional societies, STEM-related research & policy organizations, government entities, universities and academic institutions concerned with STEM education and the future of human capital in the United States." Resource titles include the following:

— Creating Digital Fluency, State by State, City by City
— Big Data, Big Needs
— Focus on Employability Skills for STEM Workers
— Scaling STEM Success
— STEM 2.0

26. Oklahoma STEM Periodic Table

https://ok.gov/oesc/Labor_Market/Labor_Market_Publications/index.html

This 2016 poster provides information on STEM occupations, including physics and astronomy, computer science, environmental science, engineering, mathematics, chemistry, geoscience, and life science. The poster looks at the 2024 projected employment, average annual wage, and typical education for these occupations. Charts compare average annual wages and long-term projections for non-STEM and STEM occupations in Oklahoma and nationwide. The charts also compare the typical education needed for entry into non-STEM and STEM occupations.

27. Robots and Jobs: Evidence from U.S. Labor Markets

http://www.nber.org/papers/w23285

A March 2017 working paper from the National Bureau of Economic Research.

28. hundrED Innovations Toolkit

https://hundred.org/en/collections/hundred-2017

100 innovations changing the face of K-12 education today.

29. Is technology missing an X chromosome?

https://betterworkingworld.ey.com/workforce/gender-gap-technology

Insight from Ernst & Young.

30. STEM Learning and Research Center (stelar)

http://stelar.edc.org/

Available publications include:

- *Increasing Engagement and Building a Sense of STEM Identity and Agency*
- *Promising Approaches to Broadening Youth Participation in STEM*
- *Students on STEM*
- *Principal Investigator's Guide: Managing Evaluation in Informal STEM Education Projects*

31. Teaching Strategies That Promote Science Career Awareness

https://www.nwabr.org/sites/default/files/pagefiles/science-careers-teaching-strategies-PRINT.pdf

From Northwest Association for Biomedical Research.

32. STEM Career Lab

https://oeta.pbslearningmedia.org/collection/stem-career-labs/#.W4AE8ZMnZ9M

Through this collection of videos from PBS LearningMedia, hear from STEM professionals about their educational pathway, what it is they love about their jobs, and how they really do use that math and science they learned in high school.

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