



RESOURCES FOR ENGINEERING PROJECTS AND SKILLS

Sources for Active Learning in STEM

<http://www.physicscentral.com/> From the American Physical Society. Great source for applications.

<http://www.physics.indiana.edu/~sdi/> Good site for more traditional labs that incorporate Socratic dialogue. Worksheets provided.

<http://gallery.carnegiefoundation.org/collections/keep/jbelcher/index2.html> Information on MIT TEAL (Technology Enhanced Active Learning) approach.

<http://www.compadre.org/> Great source for all kinds of resources. Backed by NSF, AAPT, AIP, APS

<http://www.youtube.com/watch?gl=SG&hl=en-GB&v=tn1DLFnbGOo> Video of Eric Mazur discussing the theory and use of peer instruction.

<http://mazur.harvard.edu/> The main site of all things about peer instruction

<http://modeling.asu.edu/modeling-HS.html> The mother ship for modeling

http://www.teachersdomain.org/asset/npe11_vid_modapp/ Good video about modelling

<http://pedagogy.merlot.org/index.html> A site about active learning for all subjects. Designed for college but easily applied with younger students.

http://my.aspb.org/members/group_content_view.asp?group=80400&id=99877 Inquiry based biology lab activities from the American Society of Plant Biologists

<http://www.brynmawr.edu/biology/franklin/InquiryBasedScience.html> A simple summary of inquiry based lab theory from Bryn Mawr College. Scroll to the bottom of the page for some great links. Mostly biology, some general.

<http://www.acs.org/content/acs/en/greenchemistry/education/resources.html> American Chemical Society educational outreach and resources site. Inquiry based labs and links to chemistry resources

<http://undsci.berkeley.edu/> Understanding Science. Lots of resources for all things science. University of California, NSF, National Biology Teachers Association sponsored.

<http://www.teachthought.com/trends/what-100-experts-think-about-the-future-of-learning/> Links to 100 thought provoking ideas about the future of education

<http://www.aaas.org/programs/education/> American Academy for the Advancement of Science. Lots of resources. Project 2061 site has info on common student misconceptions in various areas of science.

<http://flippedlearning.org/site/default.aspx?PageID=1> Popular website for flipped learning resources.

<http://www.ascd.org/research-a-topic/understanding-by-design-resources.aspx> ASCD links to Understanding by Design resource

GENERAL RESOURCES FOR ENGINEERING LESSON PLANS AND PROJECTS

1. American Society for Engineering Education (ASEE) Engineering Go For It website. Lesson plans, additional resources, links. <http://teachers.egfi-k12.org/>
2. Engineering the Future Boston Museum of Science and National Center for Technological Literacy (NCTL). Full year curriculum, reasonably priced training, mapped to standards. Good basic textbooks and workbooks. <http://www.mos.org/etf/>
3. Teach Engineering The *TeachEngineering* digital library provides teacher-tested, standards-based engineering content for K-12 teachers. Engineering lessons connect real-world experiences with curricular content already taught in K-12 classrooms. Mapped to educational content standards. <http://www.teachengineering.com/index.php>
4. National Center for Engineering and Technology Education (NCETE) NSF funded collaboration of technology and engineering resources. <http://ncete.org/flash/index.php>
5. International Technology and Engineering Education Association (ITEEA) Lots of resources and publications. ITEEA has developed the Engineering by Design curriculum units which are available on CDs from their website. Conference in March has a wide range of presentations, workshops and resources available. <http://www.iteaconnect.org/>
6. Try Engineering IBM and IEEE have collaborated to develop this site designed to introduce engineering careers, skills and projects to pre-college students. Lesson plans, interactive and student information are all well thought out. <http://www.tryengineering.org/>
7. Copper-Hewitt National Design Museum (part of the Smithsonian) Terrific site for educator resources focused on engineering design. Appeals to the creative part on many students.
<http://www.educatorresourcecenter.org/index.aspx>

8. American Society of Mechanical Engineers (ASME) educational outreach. Links to activities, plans, lots of background material.
<http://www.asme.org/Education/PreCollege/TeacherResources/>

9. Stanford D lab K-12 resource site <http://www.k12lab.org/>

10. Download Bootcamp Bootleg from Stanford D- School. Lots of great ideas for idea generation. Easy to follow. <http://dschool.stanford.edu/use-our-methods/>

Links for Engineering Based Projects/Units

Math

Pollution http://www.ciese.org/curriculum/vectors/project_information.html

Geodesics

<http://wveis.k12.wv.us/teach21/public/project/Guide.cfm?upid=3483&tsele1=2&tsele2=117>

Architecture

<http://wveis.k12.wv.us/teach21/public/project/Guide.cfm?upid=3621&tsele1=2&tsele2=195>

Packaging http://www.wepan.org/associations/5413/files/MTCpackaging9_10d.pdf

GPS/Coordinate Systems

http://www.teachengineering.org/view_activity.php?url=collection/uoh_/activities/uoh_dig_mapping_activity1/uoh_dig_mapping_activity1.xml

Mapping GIS

http://www.teachengineering.org/view_curricularunit.php?url=collection/uoh_/curricular_units/uoh_dig_mapping_curricularunit/uoh_dig_mapping_curricularunit.xml

Linear Functions Engineers use

http://www.teachengineering.org/view_curricularunit.php?url=collection/van_/curricular_units/van_linear_eqn/van_linear_eqn_currunit.xml

Chemistry

Materials <http://www.tryengineering.org/lessons/nanowaterproofing.pdf>

Plastics http://www.tryengineering.org/lesson_detail.php?lesson=2

Adhesives <http://www.tryengineering.org/lessons/stickyengineering.pdf>

Biology

Biomimicry

http://www.teachengineering.org/view_curricularunit.php?url=collection/van_/curricular_units/van_biomimicry_curricularunit/van_biomimicry_curricularunit.xml

MIT BioBuilder

<http://www.biobuilder.org/about/>

Miscellaneous Topics

Math, Chem, Environmental; Fuel Economy <http://www.discoveryeducation.com/teachers/free-lesson-plans/energy-and-cars-what-does-the-future-hold.cfm>

Sustainability (Energy, Green Chemistry)

<http://www.naturaledgeproject.net/TNEPHighSchoolEducation.aspx#SLCLesson9>

Appropriate Technologies

MIT D Lab <http://d-lab.mit.edu/about>

<http://www.omick.net/>

http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=4&cad=rja&ved=0CEUQFjAD&url=http%3A%2F%2Focw.mit.edu%2Fcourses%2Fspecial-programs%2Fsp-721-d-lab-i-development-fall-2009%2Fcourse-notes%2FMITSP_721F09_lec04_notes.pdf&ei=PAJAUbg8NIWKrgfh-IEw&usq=AFQjCNE9jYyJ_5Azu29U-Rtt75ViZuDfw&bvm=bv.43287494,d.bmk

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