



C² Pipeline



Enrichment Lesson Plans Overview

Enrichment Title	Chemical Engineering
Enrichment Objective	To introduce students to the idea of chemical manipulation and chemical processes
Grant Alignments & Objectives Addressed	<ul style="list-style-type: none"> • 48.5% of regularly attending students will improve their reading grade by half a letter grade • 48.5% of regularly attending students will improve their math grade by half a letter grade • 77% of regularly attending students will improve in teacher-rated homework completion and class participation • 85% of regularly participating students will report improvements in other school subjects
Partner Alignment	<ul style="list-style-type: none"> • College of Engineering
Academic Subjects	<p>Core Academic Subjects: Science (Chemistry) and Math</p> <p>Auxiliary Academic Subjects: Technology and Engineering</p>
Standards to Address	<p>Next Generation Science Standards</p> <p>HS – PS1 – 1 HS – PS2 – 6 HS – PS1 – 2 HS – PS1 – 6</p> <p>Common Core State Standards – Math</p> <p>HSN – Q.A.1 HSN – Q.A.2 HSN – Q.A.3</p>
College & Career Readiness Skills Addressed	<p>[X] Technology & Tools</p> <p>[] Argument & Reasoning</p> <p>[X] Communication & Collaboration</p> <p>[X] Problem Solving</p>
Personal Enrichment Categories	<p>Students will learn about chemical manipulation and combinations while being enriched in areas consistent with the 21st CCLC federal legislation, including:</p> <ol style="list-style-type: none"> 1. Character Education

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Life Skills Identify and describe how these will be utilized	<ul style="list-style-type: none"> • Collaboration will be used as students will work in teams or groups • Communication is an large part of the curriculum as the students will be learning the basics of programming • Critical Thinking and Problem Solving Skills will be used in the development of products
Duration of Enrichment	8 weeks
# of Students & Staff Involved	15 students: 1 staff
Frequency of Enrichment	Meets 1 time per week
SUGGESTED ACTIVITIES If an activity is used that is not listed, please turn in the lesson plan with the ARS to the Site Coordinator who will forward it to the C2 office.	Activity: Chemical Engineering Icebreakers – Chemical Bond Simon Says and Find Your Chemical Match Activity: Fun with Polymers Activity: Make Your Own Crystals Activity: Make Your Own Natural Paint Activity: Chemistry Mystery Activity: Rocket Power Activity: Make a Super Ball Activity: Simply Salts Activity: Holiday Chemistry Mystery Activity: Cosmetic Chemistry Activity: Build a Fizz Inflator Activity: Clean Pennies with Vinegar Activity: Make Plastic Milk Activity: Try Some Lava in a Cup Activity: Color Symphony Activity: Make a Paperclip Float Activity: The Exploding Lunch Bag Activity: Make Your Own Rock Candy Activity: Cabbage Chemistry Activity: Bubble-ology Activity: Are You Gellin? Activity: Rapid Color Changing Chemistry Activity: Foamy Fountain Activity: Blobs in a Bottle Activity: Boiling Points

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	Activity: Redox Chemistry
Expected End Result/Product	Heightened awareness of chemical manipulation and combinations Heightened awareness of the responsibilities of a chemical engineer
Connection(s) to Regular School Day	**See specific School Improvement Plans and Building Collaboration Guides to observe how this enrichment connects to the regular school day in each site This enrichment plan is directly aligned to the Math Common Core State Standards and the Next Generation Science Standards
Adult Family Member Literacy and Involvement	<ul style="list-style-type: none"> • Each site will be encourage to invite families into programming to observe what is going on it the enrichment • Designs from the enrichment will be displayed at each of the sites during open houses and family events
Educational Research	
Additional Resources	www.sciencebob.com http://www.thediscovery.org/PDF/Borax%20Mineral%20Activity.pdf http://chemistry.about.com/cs/howtos/ht/boraxsnowflake.htm https://www.youtube.com/watch?v=cmohpgtppba https://www.youtube.com/watch?v=Ydplh2myE08 www.sciencenetlinks.com http://www.cooks.com/rec/doc/prt/0,1829,158179-243195,00.htm https://acs.org/content/acs/en/education/whatischemistry/everywhere.html https://www.youtube.com/watch?v=rQB4Hwi40-M https://www.youtube.com/watch?v=Jd9C40Svt5g&app=desktop http://www.ducksters.com/science/crystals.php https://youtu.be/VdzPix9CKck http://www.stevespanglerscience.com/lab/experiments/acid-base-rocket https://www.youtube.com/watch?v=vD3uCRKPC0o http://youtu.be/i8bf3vAW8SQ http://www.instructables.com/id/How-to-make-Boraz-crystal-decorations-to-impress-a/

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