



Pig Hearts and Onion Skins

Science Experiments and Activities for GED Students



*Lesson plans written and experiments and activities collected by Valene S. Lyons-Brady,
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PIG HEARTS AND ONION SKINS: Forward to the "ON LINE VERSION"

In an effort to liven up my GED classes, I attempted a few science activities and experiments. They seemed to work very well and the students loved them. Most of the GED students didn't stay in high school long enough to get involved in science labs and this was a whole new thing to them. It also was a very nice (and welcomed) change of pace from bookwork. I followed a 12-week format, teaching Science 2 hours per week, and that covered all the material in the Steck-Vaughn's *Complete GED Preparation* (2002) quite nicely. I also used the Steck-Vaughn *GED Science* (2002) book. The Life and Physical science units lent themselves to more activities and experiments than the Earth Science. The more the instructor knows about science, the more activities and experiments are available. I tried to keep the activities simple enough to fit into a ½ hour format and as unmessy as possible. I am not a science teacher, so I tried to do things that non-scientific people could do successfully.

I've included my whole lesson plan here, but if you just want the experiments, feel free to use them. I've also included my notes as to what worked and what didn't on my lesson plans. I included the experiments/activities as I found them on the Internet and most are free for classroom use. Please go directly to the Web site (all are listed) and print from there, following whatever instructions are listed. In addition, you'll find some other experiments listed on some of the Web sites. I've also listed a few additional experiments and activities and some additional Web sites you may find useful.

Materials and supplies

Most materials and supplies are very simple and can be found in grocery or hardware stores. Other than the few perishables, the supplies last forever. About the only expensive item is the microscope and that was a big bonus. It would have worked ever so much better if we had more than one microscope, and you might check with the local high

Pig hearts were obtained (free) from the local slaughterhouse and I found it was nice to work with fresh ones (I froze some for future use) instead of ones preserved in formaldehyde. They smelled much better, too!

school to see if they have older models they have replaced. Another thought would be to have a microscope that projects on a screen so everyone could see at the same time. The cost for this would be less than purchasing several microscopes.

Course Information

Organization: State of Nevada, Adult Basic Education

Instructional Level: GED

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Inception Date: February 1, 2004

Types of Instruction: Class demonstration, experiments, and activities

Target Population: GED students

Notes on the experiments

- √ The best by far was the dissection of the pig hearts. Even those squeamish students couldn't resist a peek or a squeeze. I was fortunate to have a cardiac tech in both my classes so we had some expertise. I met with a local doctor who walked me through the dissection. I also had instruction and guidance from my daughter (a Science Teacher) in this and other activities.
 - √ The ecosystems (terrariums) were also great fun and the students enjoyed having something to take home with them.
- All the diagrams went well; students love to color and label. They are all from Enchanted Learning (www.enchantedlearning.com). **Nevada's State Literacy Resource Center has purchased a state license that can be used by Nevada educators to access this site. Contact the SLRC (800-445-9673 or 775- 684-3340) to obtain the password.**
- √ The biggest failure was the lab notebook. I think this could be done well, and would be an excellent activity in many ways, but I would certainly need to plan it out better.
 - √ Another point of interest (or dismay) was that there didn't seem to be a whole lot of transfer from the book to the activity or vice versa. The students had trouble relating one to the other. I've learned this is common with most science classes in the public schools.

RETENTION AND OUTCOMES

I found that attendance did increase on the days we did activities, especially if the activities were announced well in advance. Enthusiasm and enjoyment of the class certainly did. Even if the activity or experiment was less than successful, the students thought it was great!

The grades on the Science Practice tests did improve, although not significantly. I don't know that I could use this as a justification for continuing the activities, but certainly the attendance and enthusiasm factors are justification enough. Providing meaningful educational experiences for our students is also excellent justification.

There are many books and tons of information on the Internet if an instructor wants to pursue or expand this program. I found even doing a few activities/experiments was enough and I'm ever on the lookout for more or better ones.

I will continue doing the experiments/activities in the classroom as time and student need allow. I think they add much to the students' interest, enthusiasm and curiosity. Several students expressed a desire to take science courses in college.

Feel free to contact me at vbrady@tmcc.edu or through Truckee Meadows Community College, 5270 Neil Road, Reno, NV 89502, 775-829-9050.

Note: In this "on-line" version, I cited only the Web site of the activities and experiments. You may borrow the entire 100-page notebook that contains the complete printed experiments and activities from the State Literacy Resource Center, Nevada Literacy Coalition, 800-445-9673, 775-684-3340.

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Life Science	Lesson Plan	Week 1 Page 7
	Poem	Blind Men and Elephant: www.wordfocus.com/word-act-blindmen.html
	Experiment	Steel Wool http://www.floridatechnet.org/lessons.asp then click on 3.05
	Article	Just the Facts; Scientific Investigation www.nps.gov/cave/teacherguide/fs.science.htm
	Activity	Peanut Observation Sherry Shelly, Science Teacher, Wilmington, IL Page 9
	Article	Short History of the Microscope www.omni-optical.com/micro/sm101.htm
	Diagram	Parts of the Microscope www.Enchantedlearning.com Then click on the appropriate diagram
	Diagram	Animal Cell www.Enchantedlearning.com Then click on the appropriate diagram
	Diagram	Plant Cell www.Enchantedlearning.com Then click on the appropriate diagram
	Lesson Plan	Week 2 Page 10
	Activity	Onion skin slides http://www.carolina.com/calendar_activities/2001/0111.asp See activity 3
	Article	Cloning www.pets.ca/forum In their site search box, type keyword "cloning" for articles.
	Diagram	Respiratory System www.Enchantedlearning.com Then click on the appropriate diagram
	Diagram	Digestive System www.Enchantedlearning.com Then click on the appropriate diagram
	Lesson Plan	Week 3 Page 12
	Diagram	Heart www.Enchantedlearning.com Then click on the appropriate diagram
	Activity	Pig Heart Dissection www.heartlab.robarts.ca/dissect/dissection.html http://www.ymca-coll.edu.hk/biology/Photos/heart_dissection/

Nevadans may contact the SLRC (800-445-9673 or 775-684-3340) to obtain the password to access [Enchantedlearning.com](http://www.Enchantedlearning.com)

UNIT	Title		Source
	Diagram	Brain	www.Enchantedlearning.com Then click on the appropriate diagram
	Diagram	Nerve cell	www.Enchantedlearning.com Then click on the appropriate diagram
	Lesson Plan	Week 4	Page 13
	Computer Game	Food Chain	http://www.gould.edu.au/foodwebs/kids_web/aus_web.html
	Activity	Ecosystem (terrarium)	http://marsville.enoreo.on.ca/mission/challenges/ecosystem.htm
Earth Science	Lesson Plan	Week 5	Page 14
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	Activity	Building a Volcano	http://chemistry.about.com/cs/howtos/ht/buildavolcano.htm
	Lesson Plan	Week 6	Page 15
	Activity	Making Lightning	http://www.ucar.edu/40th/webweather/lightng/light.htm
	Activity	Making Fog	www.funology.com/laboratory/lab015.cfm
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	Diagram	Solar System	www.Enchantedlearning.com Then click on the appropriate diagram
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Physical Science	Lesson Plan	Week 8	Page 17
	Activity	Outrageous Ooze	www.exploratorium.edu Type in "ooze" in their site search engine
	Experiment	Separating Sand and Salt	http://www.primaryresources.co.uk/science/saltandsand.htm
	Activity	Making Lava Lights	www.exploratorium.edu/science_explorer/volcano.html
	Experiment	Density	http://aa.uncwil.edu/reeves/onlinelabs/density/density_exp.htm
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Nevadans may contact the SLRC (800-445-9673 or 775-684-3340) to obtain the password to access [Enchantedlearning.com](http://www.Enchantedlearning.com)

UNIT	Title	Source
Activity	Making Molecules	www.cheminst.ca/ncw/experiments/eatoms.html
Experiment	Fizzing and Foaming	http://scifun.chem.wisc.edu/HOMEEXPTS/FIZZFOAM.html
Experiment	Making Copper Shine	www.chatham.edu/PTI/Kitchen_Chem/Bcleveland_01.htm Scroll down to #3, Making Copper Shine
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Article/Pictures	Simple Machines	http://www.mikids.com/Smachines.htm
Activity	Repairing a House	http://tlc.ousd.k12.ca.us/~acody/machines.html
Story	Unfortunate Bricklayer	Linked from above
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Experiment	Potato Battery	www.quantumscientific.com/pclock.html
Experiment	Lemon Battery	www.hilaroad.com/camp/projects/lemon/lemon_battery.html
Lesson Plan	Week 12	Page 22
Article	Sound	http://www.tomsnyder.com/products/productextras/SCISCI/ Click on "Hands on Activities" Click on Sound
Experiment	Can Sound Travel Through Things?	http://www.tomsnyder.com/products/productextras/SCISCI/ Click on "Hands on Activities" Click on Sound
Experiment	Sound in space	http://www.tomsnyder.com/products/productextras/SCISCI/ Click on "Hands on Activities" Click on Sound
Activity	Making a Kaleidoscope	http://micro.magnet.fsu.edu/optics/activities/teachers/scopes.html

UNIT	Title	Source
Other Activities And Experiments		www.microsoft.com/education/?ID=IceCreamScience www.mrsstewart.com/pages/msbframe.htm
Excellent Web sites for further activities		www.floridatechnet.org/PreGEDScience/sciencechecklist.pdf www.floridatechnet.org/GED/LessonPlans/Lessons.htm http://az-aall.org/AALL/Pages?lessons?Support www.krampf.com
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GED SCIENCE LESSON PLANS, EXPERIMENTS, AND ACTIVITY SCHEDULE

Week/Day	Lesson	Book Pages or Supplemental Material	Experiment/Activity	Needed Supplies
Students are expected to do all reading not covered in class.				
Week 1	Scientific Process and Microscope			
Day 1 Vocabulary: Problem, research, hypothesis, experiment, conclusion	Scientific Process	Download copy of "Blind Men and Elephant" Poem from: www.wordfocus.com/word-act-blindmen.html	Discuss what the scientific process is and how we can understand it. Why is observation important? Give each student (group) one verse of the poem. Ask for explanation and discussions. Develop worksheet using vocabulary words. Set up Science Notebook with Worksheets for Experiments and Diagrams.	A copy of the poem cut into six pieces. Notes: Science Notebooks were a big flop. This was probably due to my failure to set them up properly. Poem worked well.
Day 2 Vocabulary: Control, data collection, hypothesis, relevant, irrelevant, prediction, scientific data	Practice in using Scientific Process	Download article on Scientific Investigation from: www.nps.gov/cave/teacherguide/fs.science.htm See Web site for Steel Wool Experiment http://www.floridatechnet.org/lessons.asp Click on 3.05	Read article on Scientific Investigation. Discuss. Why is it important to follow procedure? Do Steel Wool Experiment. Do Observation Practice: Pick Your Peanut (Page 9)	4 large steel wool scouring pads 3 identical toys 1 cup water 1 cup vinegar 3 paper plates This worked very well. Use plain steel wool. Peanut observation is huge.

Week/Day	Lesson	Book Pages or Supplemental Material	Experiment/Activity	Needed Supplies
Day 3 Vocabulary: See diagram glossary	Diagram of Microscope	Download history of the microscope from: www.omni-optical.com/micro/sm101.htm Download diagram and glossary for parts of the microscope from: www.Enchantedlearning.com . Click on the appropriate diagram and glossary.	Read and discuss history of microscopes. Diagram parts of a microscope.	Copies of microscope history Diagram sheets Microscope Nevadans may contact the SLRC (800-445-9673 or 775-684-3340) to obtain the password to access Enchantedlearning.com.
Day 4 Vocabulary: See diagram glossary	Animal & Plant Cells	Download diagrams and glossaries of plant and animal cells from: www.Enchantedlearning.com Click on the appropriate diagrams and glossaries.	Read and discuss plant and animal cells. Do questions. Label plant and animal cells.	Diagrams of plant and Animal Cells Nevadans may contact the SLRC (800-445-9673 or 775-684-3340) to obtain the password to access Enchantedlearning.com.

OBSERVATION PRACTICE: PICK YOUR PEANUT

This exercise was suggested by Sherry Shelley, 8th grade science teacher, Wilmington, IL.

- √ Buy a big pack of peanuts in the shell.
- √ Dump all the peanuts into a big bowl and have each student select a peanut. Don't tell them why because this will influence their decision.
- √ Ask each student to record as many identifying features about his/her peanut as he/she can find. No marks are to be placed on the peanut.
- √ Each student then places his/her peanut back in the bowl and the bowl is shaken.
- √ The next day students try to identify their peanuts.

This works really well, especially when the students can eat the peanuts afterward.

BIG NOTE OF CAUTION:

Make sure no student is allergic to peanuts.

Week/Day	Lesson	Book Pages	Experiment/Activity	Needed Supplies
Week 2	Cells and Genetics. Will require reading on their own			
Day 1	Read Plant and Animal Cells	Steck-Vaughn <i>Complete GED Prep</i> , Pp 294-302 Steck-Vaughn <i>GED Science</i> , Pp 40-43 Download article and procedure for making slides from: http://www.carolina.com/calendar_activities/2001/0111.asp See activity 3 Note: A video for using the microscope and making slides came with the microscope I purchased.	Discuss procedure for making slides Make and view slides of onion skin cells and cheek cells.	Microscope Slide kit Onion skins Diagrams of cells Iodine Gloves Safety glasses
Day 2	Life cycles Reproduction and Respiration Vocabulary: Mitosis, interphase, prophase, metaphase, anaphase, telophase, cellular respiration, photosynthesis, anabolism, catabolism, starches, carbohydrates, molecules	Steck-Vaughn <i>Complete GED Prep</i> , Pp 294-297 Steck-Vaughn <i>GED Science</i> , pp 40-49	Read and Discuss cell reproduction and respiration. Very tough vocabulary here.	
Day 3	Genetics and Cloning Vocabulary: Purebred, hybrid, generation, gene, dominant trait, recessive trait, punnet, phenotype, DNA	Steck-Vaughn <i>Complete GED Prep</i> , Pp 298-299 Steck-Vaughn <i>GED Science</i> , Pp 50-57 Download a current article on cloning.	Read and discuss animals cloning and genetics. Note: Good essay topic here. Spend time on Punnet Squares.	Articles on Cloning

Week/Day	Lesson	Book Pages	Experiment/Activity	Needed Supplies
Day 4 Vocabulary: See diagram glossary	Body Systems Respiration and Digestion	Steck-Vaughn <i>Complete GED Prep</i> , Pp300-305 Steck-Vaughn <i>GED Science</i> , Pp 58-61 Download diagrams and glossaries from: www.Enchantedlearning.com Click on appropriate diagrams and glossaries.	Read and discuss respiratory and digestive systems. Diagram respiratory and digestive systems.	Diagrams of respiratory and digestive systems Nevadans may contact the SLRC (800-445-9673 or 775-684-3340) to obtain the password to access Enchantedlearnin g.com.

This worked VERY well.
I pricked my finger so we could look at blood cells, too.

Week/Day	Lesson	Book Pages	Experiment/Activity	Needed Supplies
Week 3	Hearts and Brains			
Day 1 Vocabulary: See diagram glossary	Heart	Steck-Vaughn <i>GED Science</i> , p 62 Download diagram and glossary from: www.Enchantedlearning.com Click on appropriate diagram and glossary.	Read and discuss the heart. Label diagram of the heart.	Diagram of heart Nevadans may contact the SLRC (800-445-9673 or 775- 684-3340) to obtain the password to access Enchantedlearning.com.
Day 2	Heart	For procedure, pictures and explanation go to: www.heartlab.robarts.ca/dissect/dissection.html and www.ymca-coll.edu.hk/biology/Photos/heart_dissection/	Dissection of Pig Heart This is huge; spend lots of time here.	Pig Hearts Gloves Dissection kit Lab report sheets
Day 3 Vocabulary: See diagram glossary	Brains	Steck-Vaughn <i>Complete GED Prep</i> , pp 304-5 Steck-Vaughn <i>GED Science</i> , Pp 66-74 Download diagram and glossary from: www.Enchantedlearning.com Click on appropriate diagram and glossary.	Read and discuss the human brain. Label diagram of the brain.	Diagram of brain Nevadans may contact the SLRC (800-445-9673 or 775- 684-3340) to obtain the password to access Enchantedlearning.com.
Day 4 Vocabulary: See diagram glossary	Nervous System	Steck-Vaughn <i>Complete GED Prep</i> , P 304 Steck-Vaughn <i>GED Science</i> , Pp 68-71 Download diagram and glossary from: www.Enchantedlearning.com Click on appropriate diagram and glossary.	Read and discuss the brain cells. Label diagram of the neuron.	Diagram of a neuron Nevadans may contact the SLRC (800-445-9673 or 775- 684-3340) to obtain the password to access Enchantedlearning.com.

This works very well. Pig Hearts are easily obtained from a local slaughterhouse, and usually for free. The dissection always goes well. Students are given the option of participating, observing, or not. It's good to practice before attempting this in class. Wonderful diagrams are available on the net. About all one can hope to see are the four main chambers of the heart, the aorta, and some of the valves. I learned it is good for me (not a student) to do the cutting as students sometimes get carried away. One time I got three hearts and divided the students into groups to do the dissection. Worked well for those groups who cut discerningly. Virtual dissections are available on the 'net if you don't want to do real dissection. Note: The beef hearts obtained from the grocery store are not suitable for dissection.

Week/Day	Lesson	Book Pages	Experiment/Activity	Needed Supplies
Week 4	Evolution and Ecosystems			
Day 1 Vocabulary: Evolution, natural selection, homologous structures	Evolution	Steck-Vaughn <i>Complete GED Prep</i> , Pp 306-308 Steck-Vaughn <i>GED Science</i> , Pp 76- 81	Read and discuss evolution.	<ul style="list-style-type: none"> • terrarium or large glass jar • potting soil • clean sand • gravel • water • small dish • small desert plants, small desert animals (optional) food for animals • plastic 2 litre bottle • scissors • potting soil • plant or plant cutting • water
Day 2 Vocabulary: Herbivore, carnivore, omnivore, decomposers, food web, ecosystem trophic levels, biomass, chart on p 89	Ecosystems	Steck-Vaughn <i>Complete GED Prep</i> , Pp 309-314 Steck-Vaughn <i>GED Science</i> , Pp 82-98 Download game from: http://www.gould.edu.au/foodwebs/kids_web/us_web.html	Read and discuss food chain. Play computer game if computers are available. Otherwise print out playing pieces and play that way.	
Day 3	Ecosystems	Download instructions from: http://marsville.enoreo.on.ca/mission/challenges/ecosystem.htm	Construct individual ecosystems.	
Day 4	Unit Review	Steck-Vaughn <i>Complete GED Prep</i> , Pp 314-315 Steck-Vaughn <i>GED Science</i> , Pp 98-107	Take Unit Test. Complete Lab Workbook.	

This worked VERY well. I had each student bring in a glass jar (the bigger, the better). We punched holes in the lids and filled jars (sideways) with potting soil. I brought in cactus plants (it was winter time), rocks, and tiny snowmen for decoration. Some students brought in little knick-knacks. In springtime, plants will be much more numerous and varied. Surprisingly, most students did not want to take them home, so we had them in the classroom for observation. In the spring and summer, small critters could be added. (Appoint a student to make sure they have food and water.) A little bowl could be added for a pond, or a mirror makes a nice "lake."

Week/Day	Lesson	Book Pages	Experiment/Activity	Needed Supplies
Week 5	Earth			
Day 1 Vocabulary: Implication, crust, mantle, core, tectonic plates, continental drift	Structure	Steck-Vaughn <i>Complete GED Prep</i> , Pp 316-320 Steck-Vaughn <i>GED Science</i> , Pp 110-117 Download diagram of the earth from: www.Enchantedlearning.com . Click on appropriate diagram.	Read and discuss book pages. Diagram parts of the earth. Use DRI Kit if appropriate.	DRI Kit Diagram of earth. Nevadans may contact the SLRC (800-445-9673 or 775-684-3340) to obtain the password to access Enchantedlearning.com .
Day 2 Vocabulary: Cause, effect, relationship, lava, volcano, molten	Volcanoes	Download instructions for making volcano from: http://chemistry.about.com/cs/howtos/ht/buildavolcano.htm	Read pages first. Make volcano.	<ul style="list-style-type: none"> • 6 cups flour • 2 cups salt • 4 tablespoons cooking oil • warm water • plastic soda bottle • dishwashing detergent • food coloring • vinegar • baking dish or other pan
Day 3 Vocabulary: Fault, Richter scale, seismic	Earthquakes	Steck-Vaughn <i>GED Science</i> , Pp 120-126	Read and answer questions. Discuss personal earthquake experiences.	
Day 4	Review	Steck-Vaughn <i>GED Science</i> , Pp 124-126	Answer questions orally or in writing.	

We didn't get the DRI (Desert Research Institute) kit as it has to be ordered way in advance.

The volcano wasn't very dramatic. The vinegar and soda just oozed out. I'd like to find something that really explodes (safely, of course). I don't know that I'd do this again unless I could find something better.

Week/Day	Lesson	Book Pages	Experiment/Activity	Needed Supplies
Week 6	Weather			
Day 1 Vocabulary: Assess, adequacy, revolve, rotate, hemisphere, climate, air mass	Climate	<i>Complete GED Prep</i> , Pp 323-325 <i>Steck-Vaughn GED Science</i> , Pp 126-133	Using the map on p 132 of the Steck-Vaughn <i>GED Science</i> book, read and discuss the various climates of the world. Discuss climate in places students have lived. Good essay material.	
Day 2	Weather		Use the newspaper weather page to discuss the various types of weather in the United States and other countries.	Newspapers for all This is a popular activity.
Day 3	Fog and Lightning	Download the lightning experiment from: http://www.ucar.edu/40th/webweather/lightning/light.htm Download the fog experiment from: www.funology.com/laboratory/lab015.cfm	Do the lightning and fog experiments. Fill in lab log.	❖ Styrofoam plate ❖ Thumbtack, ❖ Pencil with new eraser ❖ Aluminum pie pan ❖ Small piece of wool ❖ large jar, water, ❖ ice cubes, ❖ strainer
Day 4	Earth's Resources	<i>Steck-Vaughn Complete GED Prep</i> , Pp 326-328 <i>Steck-Vaughn GED Science</i> , Pp 134-141	Read and discuss the earth's resources.	

The lightning experiment was a total bust. I think the problem was I couldn't get any real wool. I tried felt and that didn't work.

The fog worked but was quite unspectacular.

Week/Day	Lesson	Book Pages	Experiment/Activity	Needed Supplies
Week 7	Space			
Day 1 Vocabulary: Galaxy, infer, Milky Way, solar system, planet, asteroid, eclipse	Solar System	Complete GED Prep, Pp 329-331 Steck-Vaughn GED Science, pp 144-145 Download the diagram of the solar system from: www.Enchantedlearning.com Click on the appropriate diagrams.	Read t and discuss the solar system and label the diagram.	Diagram of the solar system, Colored pencils. Nevadans may contact the SLRC (800-445-9673 or 775- 684-3340) to obtain the password to access Enchantedlearning.com.
Day 2	Planets	Download a research from: www.windows.ucar.edu Enter the site; go to Teacher, Intermediate Classroom Activities, Solar System, "I Don't Know My Solar System."	Go to the computer lab and research one planet. Take notes.	
Day 3	Planets		Present research from yesterday.	
Day 4	Cumulative Review	Steck-Vaughn GED Science, Pp 151-154	Take test in writing.	

The labeling always goes well. Students like to color. Some students do not do well with computer research and/or reports. Use your best judgment here.

Week/Day	Lesson	Book Pages	Experiment/Activity	Needed Supplies
Week 8	Physical Science			
Day 1 Vocabulary: Compare, contrast, solid, liquid, gas, density	Matter Solid, Liquid or Gas	Download the Ooze Experiment from: www.exploratorium.edu Type in "ooze" in their site search engine	Do the Ooze Experiment Don't forget the lab notebook.	Newspaper, measuring cups, cornstarch, bowl, food coloring, water
Day 2	Matter Solid, Liquid or Gas	Steck-Vaughn <i>Complete GED Prep</i> , Pp 334-337 Steck-Vaughn <i>GED Science</i> , Pp 158-161 Download the Experiment in separating sand and salt from: http://www.primaryresources.co.uk/science/saltandsand.htm	Read pages applying info from yesterday's experiment to knowledge. Make Venn diagram. Do the experiment in separating sand and salt	Sand, salt, water, filter, dish, pan, heater
Day 3	Separation of solids	Download the directions for making Lava Lights from: www.exploratorium.edu/science_explorer/volcano.html	Make the Lava Lights	<ul style="list-style-type: none"> • A glass jar or clear drinking glass • Vegetable oil • Salt • Water • Food coloring (if you want)
Day 4	Density	Download the directions for the Density Experiment from: http://aa.uncwil.edu/reeves/onlinelabs/density/density_exp.htm	Do the Density Experiment	Measuring cup, measuring spoons, canola oil, corn syrup, balance or scale

The ooze was moderately successful.

The lava lights were great fun.

The separating sand and salt worked very well, both as a demonstration and as a group project. We didn't heat or weigh anything. Do NOT add food coloring to the oil/syrup/water mixture.

Week/Day	Lesson	Book Pages	Experiment/Activity	Needed Supplies
Week 9	Physical Science			
Day 1 Vocabulary: Atom, molecule, atomic number, atomic mass, periodic table, ion, ionic bond, covalent bond	Atoms and Molecules	Steck-Vaughn <i>Complete GED Prep</i> , Pp 338-340 Steck-Vaughn <i>GED Science</i> , Pp 166-167	Read the pages and discuss atoms and molecules	
Day 2	Atoms and Molecules	Download the instructions for making molecules from: www.cheminst.ca/ncw/experiments/eatoms.html	Do the Atom and molecule activity	<ul style="list-style-type: none"> • Different colored gum drops (DOTS are the best, but colored marshmallows also will do.) • Toothpicks
Day 3	Periodic Table	Steck-Vaughn <i>GED Science</i> pp 168-173	Read and discuss the Periodic Table	
Day 4	Chemical Reactions	Steck-Vaughn <i>Complete GED Prep</i> , Pp 341-344 Steck-Vaughn <i>GED Science</i> , Pp 176-182 Download the instructions for Fizzing and Foaming from: http://scifun.chem.wisc.edu/HOMEEXPTS/FIZZFOAM.html Download the instructions for Making Copper Shine from: www.chatham.edu/PTI/Kitchen_Chem/Bcleveland_01.htm Scroll down to #3, Making Copper Shine	Do the Fizzing and Foaming and Making Copper Shine activities.	<ul style="list-style-type: none"> ▪ 15 cm³ (1 tablespoon) of baking soda (sodium bicarbonate) ▪ 15 cm³ (1 tablespoon) of laundry detergent ▪ about 180 milliliters (3/4 cup) of water ▪ about 60 milliliters (1/4 cup) of vinegar ▪ several drops of food coloring (optional) ▪ a 400-milliliter (12-ounce) drinking glass ▪ a waterproof (plastic or metal) tray ▪ a teaspoon ▪ Several dull copper pennies ▪ paper towels

Week/Day	Lesson	Book Pages	Experiment/Activity	Needed Supplies
				<ul style="list-style-type: none"> ▪ table salt ▪ vinegar ▪ medicine dropper

The atom activity was really dumb. Hard to keep the students from eating the gumdrops. It probably gave them the idea, but until they got to building the crystal, it was just dumb.

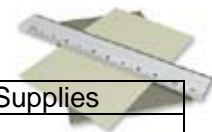
Fizzing and Forming was wonderful. Simple, dramatic and got the point across. The penny cleaning was a great success.

Week/Day	Lesson	Book Pages	Experiment/Activity	Needed Supplies
Week 10	Physical Science			
Day 1 Vocabulary: Force, laws of motion, assumption, gravity, friction, energy	Motion and Forces	Steck-Vaughn <i>Complete GED Prep</i> , Pp 344-346 Steck-Vaughn <i>GED Science</i> , Pp 182-187	Read and discuss motion and forces.	
Day 2	Motion and Forces	Steck-Vaughn <i>Complete GED Prep</i> , Pp 344-346 Steck-Vaughn <i>GED Science</i> , Pp 182-187	Demonstrate Newton's laws with skateboard. Add to lab workbook.	Skateboard
Day 3	Simple Machines	Download a chart of simple machines from: http://www.mikids.com/Smachines.htm Download the activities sheets from: http://tlc.ousd.k12.ca.us/~acody/machines.html	Look over simple machine chart. Divide the class into small groups and do the activity sheets located on website.	Chart of Simple Machines. This makes a neat overhead. Activity sheets
Day 4	Work & Energy	Steck-Vaughn <i>Complete GED Prep</i> , Pp 347-350 Steck-Vaughn <i>GED Science</i> , Pp 192-198	Read and discuss work and energy.	

**So far I haven't had a student bring in a skateboard.
The house repair activity always goes well.**

Week/Day	Lesson	Book Pages	Experiment/Activity	Needed Supplies
Week 11	Physical Science			
Day 1 Vocabulary: Electric field, electric current, voltage, circuit, electromagnet- ism	Electricity	Steck-Vaughn <i>Complete GED Prep</i> , Pp 350-352 Steck-Vaughn <i>GED Science</i> , Pp 200-206	Read and discuss Electricity and its uses.	<u>DRI kit</u> This kit, which must be ordered well in advance, has more stuff than you'll ever need to teach this unit. If you understand physics, you'll love this and can find all sorts of stuff to do. There is enough material for small group work. I tried some of the experiments with fair to middling success.
Day 2	Batteries	Download the directions for making a potato battery from: www.quantumscientific.com/pclock.html Download the directions for making a lemon battery from: www.hilaroad.com/camp/projects/lemon/lemon_battery.html	Make a Potato or Lemon Battery Activity.	<ul style="list-style-type: none"> • Large Raw Potato • Lemon • Pennies (2 ea) • Large Galvanized Nails (2 ea) • 6" long wire (3 pieces) • LED lamps (tiny bulbs) <p>Small Digital Clock (Radio Shack - "Stick-on Timer" - \$4.99)</p>
Day 3	Motors	Use Steck-Vaughn <i>GED Science</i> , p 205	Ask students to explain how a simple motor works.	
Day 4 Vocabulary: Wave, crest, amplitude, trough, wavelength	Waves	Steck-Vaughn <i>Complete GED Prep</i> , Pp 353-355 Steck-Vaughn <i>GED Science</i> , Pp 206-208	Read and discuss waves.	

Lemons worked much better than potatoes and only a several-lemon series was enough to light the clock. We also used little tiny light bulbs and they worked dimly but o.k. Given enough supplies, this works very well in small groups. If you order the DRI kit, it has everything you need, except the potatoes and lemons.



Week/Day	Lesson	Book Pages	Experiment/Activity	Needed Supplies
Week 12	Physical Science			
Day 1	Waves	http://www.tomsnyder.com/products/productextras/SCISCI/ Click on "Hands on Activities" Click on Sound http://www.tomsnyder.com/products/productextras/SCISCI/ Click on "Hands on Activities" Click on Sound http://www.tomsnyder.com/products/productextras/SCISCI/ Click on "Hands on Activities" Click on Sound	Do wave/sound experiments.	<ul style="list-style-type: none"> • Metal spoon, • string, empty soup can • can opener • large balloon • flashlight • small mirror • scissors • rubber band • glue
Day 2	Kaleidoscope	Download the instructions for making kaleidoscopes from: http://micro.magnet.fsu.edu/optics/activities/teachers/scopes.html	Make kaleidoscopes.	<ul style="list-style-type: none"> • Paper towel rolls • Masking tape and glue • Pens and rulers • Black construction paper • Transparency film • File folders • Scissors and compass • Glass beads
Day 3	Cumulative Review		Do review orally.	
Day 4	Science Pre Test GED	GED Practice Test	Take Test.	

We ran out of time and did neither of these. I couldn't find the material needed to make the kaleidoscopes, although if you could, I think they'd be fun. There are lots of directions on the net. I bought small kaleidoscopes (love the Dollar Store) and took some apart to show the students how they were made.

Materials and Equipment List

Check the items necessary for each experiment. It is not necessary to purchase all the materials if you're not doing all the experiments. Many of the items you can bring from home.

Item	Supplier	Cost
Microscope and supplies	Microscopeworld.com (seewhat?)	\$250.00 + shipping estimated \$12.00
Dissection kit	Indigo.com (seewhat?)	\$9.60 + shipping estimated \$3.40
Other supplies, such as glasses, jars, strainer, measuring cups, scissors, pie tins, black plastic, wire, nails, small clock, etc.	Local Wal-Mart	\$75.00
Consumables, such as steel wool pads, vinegar sand, paper plates, vegetable oil, salt, food coloring balloons, cornstarch, straws, Styrofoam trays, tape, bubble solution, potting soil, plants, potatoes lemons, lab gloves	Local grocery store or Wal-Mart	\$150.00
Paper, ink, zip disk, binders	Quill or Wal-Mart	\$ 100.00
Special kits: Energy /Matter Heredit/Diversity Cycles of Matter Solar Energy	Desert Research Institute. See Page 24	Free
Total Supplies		\$600.00

Science Box Traveling Kits

Resources to Enhance Science Instruction

Desert Research Institute

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The following matrix includes the available Desert Research Institute Science Box Traveling Kits. They are listed by content strands, content standards within each strand, and grade levels. Please use the reference number (#) when ordering boxes.

4-6	Forces/Motion (18)		Earth Structures (20)	
	Energy/Matter (19)		Solar System (21)	
6-8	Energy/Matter (22) Energy/Matter (28) Energy/Matter (37)	Heredity/ Diversity (23)	Cycles of Matter (25) Solar Energy (32)	

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