

C₃ BONDS

VOLUME 2, ISSUE 1

FALL 2003, YEAR 1



C₃ Welcomes A New Group During June!

With one full year of its project completed, the C₃ team eagerly welcomed the newest group of teachers to join this professional development opportunity on the Louisiana Tech University campus. Participants taking part in the National Science Foundation funded program during the 2003 summer institute included the following:



Chris Baker, Choudrant High School
Jimmie Bond, Rayville High School
Jessica Brock, Pre-Service
Andrew Coleman, Northwood High School
Jan Cosey, Thurgood Marshall Middle School
Marilyn Cox, La. Tech University
Lamar Cranston, Pinecrest Middle School
Steve Gann, Airline High School
Chris Hightower, Summerfield High School
Christina Istre, Breaux Bridge High School
Melvin Landry, Woodlawn High School
Brenda Lofton, A.E. Phillips Lab School
Cathy McCartney, West Feliciana High School
Tommy McFarland, Woodlawn Junior High School
Judy Madden, Bossier High School
Lulu Martin, C.E. Byrd High School
Helen Odita, Green Oaks High School
Nola Schmidt, Nacogdoches High School
Michelle Hopkins, Ruston High School
Katie Stagg, Opelousas High School
Mike Strange, El Dorado High School
Trisha Tidwell, Dan F. Long Middle School
Cindy Tolliver, Airline High School
Susan Tucker, Barton Junior High School
Oretha Whitley, Lincoln Elementary School
Michelle Woodruff, Huntington High School

The group spent the second two weeks of June engaged in studies that inte-

grated instruction in chemical concepts with how to effectively implement reform based strategies in their students' classes. The study was developed around the Hindenburg disaster. Topics included renewable



energy sources, buoyancy, density, properties of gases, gas laws, molecular theory, electrolysis of water, molarity, conservation of mass, atomic theory, balancing equations, stoichiometry, and thermodynamics, among others. In addition, emphasis was placed on the history of science and key figures involved in the development of scientific information. As part of the instructional process, the participants engaged in hands-on/minds-on learning experiences that involved use of the scientific method, experimental design, process skills, and inquiry. Various aspects of the science reform movement (teaching strategies such as cooperative learning, learning cycle, alternative assessment, and constructivism) were modeled, discussed, and assessed. During the academic year, these educators will attend four weekend workshops, participate in an electronic learning community, and host project staff for multiple classroom observations and visits. Each participant returns to Tech during the summer of 2004 for the second phase of the project. During Year 2, participants continue their training with chemistry and focus on their role as leaders in science education. C₃ congratulates these teachers on a **JOB WELL DONE** and looks forward to continuing this partnership in the year to come!



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C₃ YEAR 1 CELEBRATES A RECORD BREAKING FALL



The C₃ Team is proud to salute its Year 1 participants as they make their way into the record books with their outstanding performance. As of October 19, 2003, the 25 teachers comprising the group became the first professional development program to achieve 100% completion status on its Blackboard component. The electronic learning community was implemented as part of the academic year follow-up in professional development projects in 1998 and the C₃ team has worked to strengthen it with each subsequent year and program.



Therefore, it is with great pride that we recognize the achievement of this hard working group of teachers. As part of the celebration, Program Coordinator Cathi Cox treated the group to lunch when participants assembled for the first full workshop week-end of the academic year. Certainly this is only the tip of the iceberg for an exceptional group of educators who continue to set the bar high and rise to the occasion each and every time. Great job everyone—we can't wait to see how you dazzle us next!!!



C₃ Gets on the Board!



During the August Reflective Reunion meeting with C₃ teachers, Program Coordinator Cathi Cox instructed the group on the use of Blackboard, the electronic on-line learning tool that will be used throughout the academic year. As a means of maintaining the sense of community that was established during the summer program and to facilitate the on-going instruction of the group, Blackboard is being used to post assignments that each teacher completes and submits on line. In addition, it is used as a communication tool so that each teacher can respond to their colleagues and maintain a discussion concerning the issues and concepts that have been addressed in the course or introduced



during this on-line component. As noted in the previous segment, the participants have already jumped in and enthusiastically embraced this unique program. All signs point to an exciting on-line learning experience for everyone involved! Assignment #1 focused on the learning cycle and how the teachers' work with constructing learning cycle lessons was evolving. Assignment #2 is already up and running with a lively discussion about the implementation of videotaping classroom lessons for personal critique. The reflections have been wonderful! All C₃ participants are reminded that they have until the end of October to get the second assignment completed. Visit the Tech Blackboard site at <<http://blackboard.latech.edu>>.



GET READY CRESCENT CITY—C₃ IS COMING!

C₃ is delighted to once again be able to offer the opportunity for its teachers to attend and participate in the 2003 Louisiana Science Teachers Association Convention, "CSI :New Orleans". Held in New Orleans, December 4-6, 2003, short courses will be offered the first day with breakout sessions and work-



shops following on the next two days. All C₃ teachers will be provided registration, two nights hotel stay, and a travel allotment in an effort to facilitate their attendance at this typically outstanding meeting. The C₃ team will be presenting an inquiry based session from its summer course on Friday while the CATALYST staff will offer a

short course on Thursday, with two other sessions on Friday: Pondering the Pen, a writing in science presentation, and Who Gets It and Why?, a life science experience. Then both C₃ groups, Years 1 and 2, will meet together on Saturday, the 6th, for a mandatory session from 9:00-12:00. It should be an exciting time of professional development as well as lots of fun for everyone involved as we experience the tastes and sounds of the Crescent City. We look forward to having the entire C₃ family together during this time and remind everyone to register and make room reservations ASAP in order to be ready when the convention begins. For more information, contact Cathi immediately and get ready for a road trip!



REMEMBERING THE REFLECTIVE REUNION



Year 1 C₃ participants kicked off the academic year program with a special one-day session held on the Louisiana Tech campus Saturday, August 18, 2003. Before leaving the course in June, the teachers were challenged to develop a project that utilized the learning cycle and focused on a content unit from the physical sciences that would be covered in their classroom during the 2003-04 school year. The project was to include learning experiences that engaged the student, allowed an exploration phase, developed concepts, had an application component and an assessment. During a three-hour morning session, Project Co-Directors Linda Ramsey and Bill Deese, along with team member Donna White, guided the teachers as they individually presented their project to the group and discussed how it could be implemented. In addition, each participant made copies of their project for everyone else in the group so that each teacher was able to return to the classroom with more than 20 new ideas and strategies



to use when planning throughout the academic year.

Program Coordinator Cathi Cox facilitated an afternoon session that focused on the specific components of the upcoming academic year follow-up. After having fun organizing themselves in teams of three, the teachers worked together to first reflect on the gains experienced during the morning session followed by group presentations and discussion. Each teacher was then guided through guidelines for video lessons, classroom observations, the learning cycle, portfolio construction, and further implementation of C₃ during the year. By the end of the day, the group had strengthened its bond and left with a renewed dedication for the tasks ahead.



The day proved to be a wonderful time of reflection and sharing. Project Staff appreciate the hard work that our teachers put into their roles as effective educators and leaders. You're doing a fantastic job!!!

PERIODICALLY PLAYING WITH ATOMIC STRUCTURE

The Year 1 C₃ gang gathered for its first full academic year weekend workshop on October 18-19, 2003, to "Periodically Play With Atomic Structure". Beginning by assembling into cooperative groups using parts of the atom, the teachers continued by exercising their creative muscles with group presentations that partnered pop culture and their atomic component. This definitely got things going with lots of laughs! Following this fun "warm up", the participants used everyday items and information to explore the periodic table of elements. The session followed the learning cycle and featured the following learning experiences: Periodic Palate, It's In The Cards, Plastic Periodic Table, The Element Shuffle, Missing Person, and Tackling Trends. From designing a chart of favorite foods and discovering characteristics of the periodic table through playing cards, to organizing the early periodic table using Lego blocks and developing three dimensional graphical models of periodic trends, the teachers worked cooperatively to fully explore the different components of something that is certainly a staple in every high school classroom. By the end of day one, the Year 1 group had fully engaged in playing with the periodic table!



Day 2 began with a recap of the periodic table through each group's development of a card sort and corresponding concept map. From there, the teachers were challenged with The Black Box Dem-

onstration before diving right into atomic structure. Following each group's development of initial atomic models, the topic was explored using the following learning experiences: Atomic Theory Logic Puzzle, Journey Through Time Jigsaw, Making Raisin Pudding, Reliving Rutherford, and Making Waves About Light. Using common objects such as play dough, bb's, ping pong balls, cardboard, and various craft supplies, each teacher explored concepts connected to atomic structure that are sometimes too abstract for students to grasp. Classroom demonstrations were presented by both participants and project staff. A strong history component was incorporated as a classroom timeline was constructed throughout the workshop. And by the end of the weekend experience, all kinds of waves had been made by the following:



Chris Baker, Jimmie Bond, Andrew Coleman, Marilyn Cox, Lamar Cranston, Steve Gann, Chris Hightower, Christina Istre, Melvin Landry, Brenda Lofton, Cathy McCartney, Tommy McFarland, Judy Madden, Lulu Martin, Helen Odita, Nola Schmidt, Michelle Hopkins, Katie Stagg, Mike Strange, Trish Tidwell, Cindy Tolliver, Susan Tucker, Oretha Whitley, and Michelle Woodruff.

Once again, the C₃ teachers rose to the occasion and did a fantastic job while sharing their precious weekend time with their colleagues and leaders. Your efforts are appreciated more than you can know—super job everyone and keep up the good work!





SPOTLIGHT ON C₃ SUCCESS



Trish Tidwell, Dan F. Long Middle School, shares that she has placed a historical timeline in the hall of her school for ALL students to observe and learn from. Super! . . . **Katie Stagg,**



Opelousas High School, reports that she has posters all over the walls of her classroom from the students' work with "What's In The Beaker" and "Cooperative Consensus". Terri-



fic! . . . **Brenda Lofton, A.E. Phillips Lab School**, also did "What's In The Beaker" and posted her class rules with the actual items used beside each rule. **Brenda's** students also engaged in long term observations using eggs and created molecular level drawings to go with them. Fantastic! . . . **Mi-**



chelle Hopkins, Ruston High School, developed a full learning cycle lesson that "cycled within the cycle" to facilitate her students' review for the midterm exam. Wonderful! . . . **Chris Baker,**

Choudrant High School, is constructing ALL of his lessons using the learning cycle. In order to include a technology component for his students, he developed a web quest for "Why Do Atoms Combine" as the exploration for one of those lessons. Wonderful! . . . **Cathy**



McCartney, West Feliciana High School, is also displaying LOTS of student work in her classroom. She has organized her cooperative group stations so that each group's "name" can be changed at the end of one class and ready for the next period. She simply has a paper clip hook that card stock group names are added to in order to "personalize" each class. How



creative! . . . **Jan Cosey, Thurgood Marshall Middle School**, developed an inquiry lesson for her students as they searched for the answer to "What is the Density of Your Box?" Students worked in their groups with different types of boxes. Great! . . . **Lamar Cranston, Pinecrest**



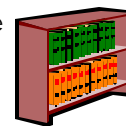
Middle School, has students using learning logs, making long term observations, collecting data, graphing and analyzing the data, and engaging in experimental design. Fantastic! . . . **Tommy**



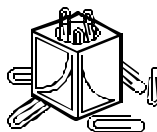
McFarland, Woodlawn Junior High School, alhas student graphs displayed in his room along with concept maps. **Tommy** also focuses on using strong higher level questions and history as part of his lessons with the students. Super! . . . **Oretha Whitley, Lincoln Elementary School**, developed an original learning experience that connected energy flow through a food web with the



students' own experiences at school and in the community. Wonderful! . . . **Jimmie Bond, Rayville High School**, has established a "resource area" for his students' use that is full of all types of books and other periodicals. Great! . . .



Chris Hightower, Summerfield High School, engaged his students in the "Colorful Clips" learning experience and shares that it went great!



Even his Physical Science students were mastering it. Fantastic! . . . **Mike Strange, El Dorado High School**, developed a learning experience for a chromatography lab using the strategy of creating cards for students to put in logical order for the procedure. **Mike** is emphasizing the need for improved writing skills with lab reports and shares that this is helping. Awesome! . . . **Susan Tucker, Barton Junior**



High School, developed a way to assign tasks within cooperative groups that is working well in her classroom. In each supply box is a set of cards with a specific color dot on each. Students are instructed to draw a card at the beginning of class, then **Susan** posts the tasks according to color. Super! . . . And it looks



like we're off to a super start with the super teachers in Year 1 session of C₃. We look forward to seeing what other exciting things they have up their sleeve as the year progresses—keep up the good work!



STUDENTS SPEAK . . .

On September 9, 2003, a diverse group of students was assembled in Baton Rouge, LA. The 39 student panel from 8 different parishes joined forces during **teen chat** to formulate action items to improve the current education and workforce situation. Their top three positions were:



1. Enhance educators' teaching methods to be more effective and meet more learning styles
2. Incorporate more relevant career guidance into schools
3. Establish a medium for student input

Students want their educational experience to be as effective as possible. Career Builders already has the wheels turning to create an organization for student input into the educational process. But it is up to educators to tackle the first two items. All C₃ teachers are challenged to remain focused on the need to work diligently to provide the best possible learning experience possible for all students. Their future (and ours!) depends on it!!



C₃ Teachers Pave the Way With Professional Development

In addition to working hard in C₃, many of our teachers have been involved in additional professional development opportunities. **Tommy McFarland, Woodlawn Junior High School**, is participating in a special Integrated Science class designed specifically for Ouachita Parish middle grades teachers and things are going great! **Chris**



Hightower, Sumnerfield High School, and **Chris Baker, Choudrant High School**, are taking other classes at Louisiana Tech and continuing their education. Terrific work guys. No doubt you will have lots to share with your colleagues when you all get back together!



LOOK AT OUR LEADERS!

Melvin Landry, Woodlawn High School, is serving as Science Department Head and has been busy getting his team ready for SACHS accreditation. Congratulations to everyone at Woodlawn for acing the assessment and beginning the year with such an excellent report. **Lulu**



Martin, C.E. Byrd High School, is handling the responsibilities of disseminating each LASL Newsletter and keeps folks across the state up to date on all kinds of great opportunities in science education.



We are proud of the outstanding work that each of these educators continues to do to improve science education for their colleagues and students. **Katie Stagg, Opelousas High School**, was selected to present a workshop for St. Landry Parish and used concepts and strategies from her summer C₃ experience. Terrific work everyone—



C₃ is proud of the work you do for your colleagues both in and out of your school! Keep up the good work!



C₃ YEAR 1 PARTICIPANTS WORKSHOP WEEKEND #2: FEBRUARY 21-22

Don't have a large plastic container for "Magic Popcorn"? **Katie Stagg, Opelousas High School**, shares that a 1000 mL beaker works great!



CONGRATULATIONS

C₃ congratulates **Trish Tidwell, Dan F. Long Middle School** on being nominated for the Disney Teacher Award. **Cindy Tolliver, Airline High School**, recently passed her PRAXIS Test for



Chemistry, Physics, and General Science. Outstanding!! We are proud of these ladies and the outstanding work of ALL our fantastic C₃ participants!

WE DO EXTRA CURRICULAR, TOO!!



When not exciting students in their chemistry labs, C₃ teachers are also engaged in the lives of their students outside the classroom. **Chris**



Baker, Choudrant High School, serves as Cross Country Coach for both the girls' and boys' program and this year held the first CHS Aggie Cross Country Invitational. And he is doing an excellent job as his teams continue to bring home the gold, most recently with a boys' 1st place finish and girls' 2nd place trophy at Menard in Alexandria. **Lamar Cranston, Pinecrest**

Middle School, also coaches and directed the basketball team he coaches to a first place finish in its first tournament play. Although he doesn't coach, **Mike Strange, El**



Dorado High School, is connected to athletics through his role as Key Club Sponsor. **Mike** is in charge of firing the cannon at each home football game, marking each point the team scores. His Key Club is also involved in the Adopt-a-Highway project on Hwy 82. Looks like this group of C₃ folks is in for a busy year in ALL areas of school life!



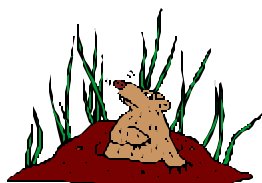
Congratulations to Michelle Shipley Hopkins, who discovered the real meaning of "chemistry" AFTER C₃ AND MARRIED HER BEAU, ANDREW COLEMAN, NORTHWOOD HIGH SCHOOL, also tied the knot following the summer session. And Lamar Cranston, Pinecrest middle school, will have the joy of performing the marriage of his daughter later in the year. Best wishes to everyone!!



HAPPY HALLOWEEN FROM YOUR C₃ GHOSTS AND GOBLINS!!



MOLE MADNESS: OCTOBER 23



Will you and your students plan anything special for Mole Day, 2003? C₃ would like to know! Let Cathi know how you and your classes celebrate Mole Day and you could win a fabulous prize. The deadline for submissions is November 1, 2003. And don't forget to share all the festive details; your plan may be copied by others next year!

AS THE CAMERA ROLLS . . .

Words of wisdom worth repeating as the first round of video lessons gets underway:



“Talk about trying to facilitate learning and making sure the camera captures the good things you are doing and minimizing what needs correcting. This is a task for the term “lost on the cutting room floor.” **Judy Madden, Bossier High School;** “Be sure to check out your video equipment before you use it. 1. The audio was difficult to understand at times because the soundtrack kept speeding up real fast and then repeating itself several times. 2. There seemed to be a problem with the lens too. I noticed every time I turned my back to the camera to write on the chalk board, you couldn't see half the things on the board. 3. There seemed to be a depth perception difficulty as well. That camera made me look a lot bigger than anyone else in the room! 4. And when I accidentally bent over in front of the camera...oh, never mind!” **Lamar Cranston, Pinecrest Middle School;** “It is sad to think that I have a Master's in Audiovisual Technology Curriculum Development and I forgot to take the camera off of “pause”. So instead of taping a class I paused a class.” **Trisha Tidwell, Dan F. Long Middle School;** “I did pick up a few things I need to stop. Hit me up side the head if I say O.K. more than one time a day, O.K.? Ouch!!! That hurt!” **Steve Gann, Airline High School;** “The camera I used films on a minicassette; in transferring the tape the first time I wound up with a hour of Scooby Doo because I had the VCRs hooked up wrong.” **Chris Hightower, Summerfield High School;** “As far as my feelings about the lesson during the filming, I felt like I was in a controlled out-of-control (does that make sense?) crazy movie during the activ-

IT'S ALL ABOUT ATTITUDE!

Ever wonder about those people who say they are giving more than 100%?

We have all been to those meetings where someone wants over 100%.

How about achieving 103%? Here's a little math that might prove helpful. What makes life 100%?

If:

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

is represented as:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
21 22 23 24 25 26.

Then:

K N O W L E D G E

11 14 15 23 12 5 4 7 5 = 96%

H A R D W O R K

8 1 18 4 23 15 18 11 = 98%

But,

A T T I T U D E

1 20 20 9 20 21 4 5 = 100%

ity part. During the discussion phase, I felt like we were moving through syrup to extract thinking.” **Brenda Lofton, A.E. Phillips Lab School;** “Expect the unexpected. About five minutes before the lab began the father of one of my students showed up at my door. He wanted to observe the class. So my video has several shots of a gentleman in scrubs and a lab coat.” **Michelle Hopkins, Ruston High School;** “Go For It!!! It is a little uncomfortable to watch yourself -don't do it with your spouse/significant-other until you have watched it once. They have LOTS of helpful advice that will not be appreciated the first time through!” **Susan Tucker, Barton Junior High School**

BULLETIN BOARD

Annenberg/CPB Offers Free Professional Development
http://www.learner.org/about/news/news_profdev.html#science
The Annenberg/CPB Channel offers free professional development and instructional programs for K-12 teachers of science. Topics include Learning Science Through Inquiry, Private Universe Project in Science, Reactions in Chemistry, and the Science in Focus series. Participants can earn certificates for in-service and recertification credit, or graduate credit at reasonable cost. Register now at 1-800-LEARNER or Channel@learner.org to receive free support materials.

Focus on Lesson Study
Eisenhower National Clearinghouse
<http://www.enc.org/features/focus/archive/lessonstudy/>
The Eisenhower National Clearinghouse (ENC) weekly online feature, Focus, provides information on lesson study for K-12 educators. Topics include Improving Learning, Teachers' Perspective and Collaboration. The site also includes additional articles from the National Staff Development Council, among others, as well as additional resources from the ENC catalogue.

NATIONAL MOLE DAY IS OCTOBER 23; MARK YOUR CALENDAR AND CELEBRATE!
Check out <<http://moleday.org>> as you make your preparations!

Enter the Team America Rocketry Challenge
<http://www.rocketcontest.org/>
The Aerospace Industries Association (AIA) and the National Association of Rocketry (NAR) are sponsoring the second national model rocket competition for U.S. high school and junior high school students. Teams must design, build, and fly a model rocket carrying two raw eggs to exactly 1250 feet. The top ten teams will share a grand prize pool of over \$50,000 in cash and savings bonds. The finals will be held on May 15, 2004 at Great Meadow, The Plains, Virginia. Applications must be postmarked by November 15, 2003.

www.coolcosmos.ipac.caltech.edu --- This site is all about infrared. There are activities, videos, images, background information, etc. Not only is it great for you, but it is also great for your students. There are LOTS of things for them to do!

Looking for interactive multimedia simulations? Check out www.ExploreScience.com It's free to join and you get a free web page to set up for **you!**

Explore the NWREL Science Inquiry Model
http://www.nwrel.org/msec/science_inq/index.html
The Northwest Regional Educational Laboratory (NWREL) Mathematics and Science Education Center created a science inquiry model to help k-12 teachers introduce inquiry into their instruction and curriculum. The model includes standards-based classroom tasks, a scoring guide for assessing students' performance of the essential traits of inquiry, and an intensive professional development component. The site also includes a primer on science inquiry, teaching strategies, additional resources and links to external sites.

New forensic science units are now available online, and they are FREE! Developed by Court TV in cooperation with NSTA, these units can help you bring this hot topic into your classroom today. To view units visit: http://www.courtvtv.com/forensics_curriculum

A new website designed by TERC, the Space Science Institute, and NASA's Jet Propulsion Laboratory brings the adventure of the Mars exploration to any computer with an Internet connection. MarsQuest Online (www.marsquestonline.org) contains 34 interactive experiences that highlight interesting Martian features and take up compelling Mars questions. The site also serves as a portal to Mars information, images, data, and resources. Check it out!

Lego produces easily used robotics kits. PITSCO is the official distributor for educational Lego products. Contact them at 1-800-362-4308 or www.plestore.com *Robolab* (P900062-012) is the software used for programming the robots; the *Team ChallengeSet* (P979794-009) contains a variety of sensors, motors, Lego parts, and programmable RCX bricks in a carrying case.

Did you know you can enhance your lessons with 20,000 video clips—RIGHT NOW?!? Louisiana Public Broadcasting is now providing teachers with *unitedstreaming*—a web-based digital video delivery system from United Learning. Log on to the LPB-unitedstreaming web site with your own user name and password and search for the video title you wish to view. Choose to stream the video clip or you can download it for later use; view segments or an entire video. Visit: www.unitedstreaming.com

The 9th Annual "Sharing the Vision" Environmental Education Symposium is scheduled for February 27-26, 2004. Exhibits and sessions will be held at the Holiday Inn South, 9940 Airline Highway, Baton Rouge, LA. For more information or to present as session, call 1-877-523-6833.

Laboratory Safety Carousel

Developed by Terrie Johnson, Airline High School, C₃ Session 2 2002-03

Purpose: To identify safety rules in the lab and justify the necessity for them.

Students will explore safety issues. Students must follow established guidelines, which include wearing lab aprons, and safety goggles during the entire lab exploration and clean up.

Students will spend 8 – 10 minutes at each lab station. Students will move to the next lab station at the instruction of the teacher.

At each lab station, follow the instructions, answer the questions and make observations.

Lab Stations:

Station 1: Acid on clothing (Concentrated HCl in drop bottle and nylon fabric as in panty hose or pajamas)

Wear gloves. Cut a small square of nylon from the sample, no more than one-inch square. Use the eyedropper and drop 1 – 2 drops of the acid on to the nylon in the culture glass.

Record observations.

Questions:

1. What would you predict would be the effect of spilling acid on your clothing?

Station 2: Danger of acid on living tissue

Use gloves. Obtain a small sample of egg white in a culture dish using an eye dropper. Drop 2 – 3 drops of concentrated HCl on the egg white. Record your observations, use a wash bottle and squirt water on the egg and acid, record your observations.

Questions:

1. An egg white contains a protein similar to the one found in the eye, what is the effect of acid on the eye? What safety precautions should you take?
2. What is the effect of the water? Will using an eye wash remedy an chemical spill in the eye? Explain your answer.
3. Based on your observations, would you say that this reaction is reversible?

Station 3: All clear liquids look the same

(prepare several test tubes with clear liquids, one with water, also use alcohol, hydrogen peroxide, sodium hydroxide, and acetic acid—or others)

Observe the test tube rack. What can you say about their appearance, odor and consistency. Record your observations.

Questions:

1. From your initial observations can the three liquids be distinguished? Explain.
2. What conclusions can you draw from litmus test?
3. What safety rule should be followed concerning liquids? Describe a situation where not following this safety rule could result in the loss of life, limb or money.

Station 4: Contact Lenses

Cut two one-inch squares of acetate film (transparency material). Place one "lens" in a dish. Place one or two drops of food coloring on the edge of the film. Make observations. Place the second "lens" over the first. Record observations. Use the wash bottle to wash the color out--do not touch the lenses. Observe. Blot with a paper towel, observe.

Questions:

1. What safety rule does this simulation illustrate?
2. What do you think would happen if an individual wearing contact lenses got a splash of a chemical in their eye? Would the eyewash undo the problem? Why or why not?

Station 5: Hot glass looks the same as cold glass.

(two identical Erlenmeyer flasks, ring stand, iron ring, wire gauze, two thermometers, tongs)

Use two Erlenmeyer flasks. Fill one with water about half full, and heat it on the ring stand with the Bunsen burner until it boils. Fill the second flask with water and leave it on the lab desk. Using the tongs, remove the flask and empty the water in the sink. Empty the second flask. Use the two thermometers to measure the temperatures of the air in each flask. Record the temperatures.

Questions:

1. Compare the appearances of the two flasks. Without touching them, or using the thermometers, can you tell which flask is hot? Explain.
2. If a thermometer is not available, what is a good way to determine if a piece of glassware is too hot to touch?

Station 6: Fire Extinguishers

(Small pieces of paper, dry ice to generate CO₂, or use baking soda and vinegar, a spray bottle, thick towels, sand)

Light one of the small pieces of paper and place it in the thick glass specimen dish. Pour the carbon dioxide over it. Observe. Light a second piece of paper; cover the mouth of the dish with a damp thick towel. Observe. Light a third piece of paper; spray a mist of water over it. Observe. Light a fourth piece of paper and pour sand directly on it. Observe.

Questions:

1. Write your recommendation on the construction of fire extinguishers based on your findings at this station.
2. Which procedure above extinguished the flame fastest and most efficiently?
3. If a fire extinguisher were not available, what materials readily available in this room could you use to extinguish a fire, justify your answer with observations from this lab.