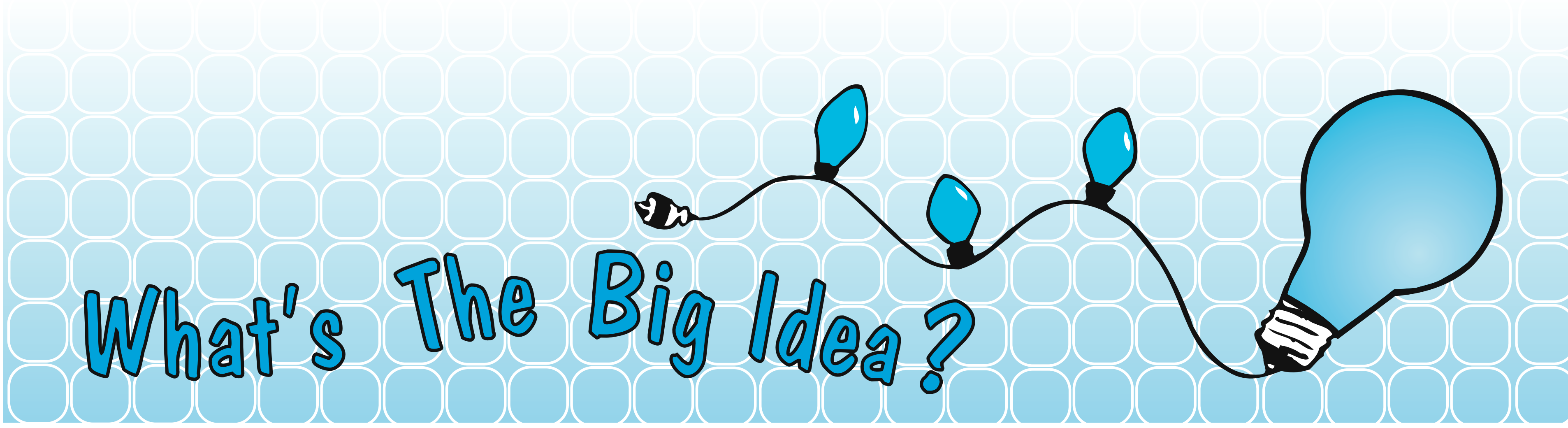

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The TLC is a PLC!
Fostering a Culture of Collaboration in Classrooms

Editor's note: Professional Learning Communities (PLCs) is a new movement in many districts. This year, we present a series of lead articles about how the Teaching Learning Collaborative (TLC) engages and supports teachers as they develop PLCs.

In this article, we provide an overview of the TLC as a PLC. In future issues, we will explore the impact of the TLC on lesson design (e.g., types of questions, order of activities, use of prior knowledge) to maximize student learning and on changes in teacher practice. We will also share how the TLC is being used to address ELD through the 5E learning sequence.

"I used to let myself get stuck on what my students don't know instead of asking how I connect with what they do know. Every student has his or her own understanding and knowing where each student is at is challenging. Now I know that I have a responsibility in orchestrating student understanding. Working with my colleagues increases the effectiveness of my lesson design, my teaching practice, and my student learning." — TLC participant

To understand the transformation of the veteran teacher who made this statement is to understand the evolution of a professional development strategy that changes the way teachers practice their craft to focus on learning, not simply teaching.

This strategy, the Teaching Learning Collaborative (TLC), is based on the knowledge that effective professional development for teachers focuses on developing understanding of content, provides opportunities for professional dialogue and critical reflection, occurs closest to the classroom and impacts student learning (Loucks-Horsley 2003, Weiss, et al., 1999; Cohen & Hill, 1998).

The TLC began 13 years ago as a result of analyzing evaluation data. At that time, the K-12 Alliance was recognized as a premier professional development provider for science education in California. Teacher participants enjoyed the content institutes and the pedagogy sessions. Yet despite their enthusiasm for what they were learning, evaluation data (Loucks Horsley, 1995) indicated only moderate changes in the participants' classroom practice.

In response to these data, the K-12 Alliance designed the TLC as a way for teams of teachers who attended institutes to apply their learning in the classroom. TLCs focus on identifying specific learning goals (content) that students should know and understand, and designing a learning sequence which helps students produce quality work.

Working in TLC teams and guided by a facilitator, teachers participate in an iterative process of "polishing the stone" as noted in Figure 1 (see below).

Teams bring their experiences and understanding about teaching and learning to the collaboration. They first plan for student learning by design a learning sequence. They then team-teach the lesson. This is followed by a debrief of the effectiveness of the lesson. Here, the team analyzes student work and transcriptions of teacher practice to determine whether the learning sequence design had an impact on student learning.

The learning sequence is then redesigned for student learning based on evidence from the classroom and then taught to another group of students. The process of looking at student work is repeated and the learning sequence is refined for future use in other TLC experiences or in the teachers' individual classrooms.

How is the TLC related to a PLC?

Overall, many characteristics of PLCs (Hord, 1997; 2003; Little, 1993; Kruse, Louis and Bryk, 1995) resonate with the TLC design. In particular, the TLC process helps teachers identify shared values and vision about conceptual teaching, student-centered instruction and quality student work for all students.

By collaborative planning, team-teaching and debriefing the effectiveness of the learning sequence design, TLC participants share their practice and engage in reflective dialogue. The focus on what students should know and understand is measured by quality of student work generated in the lesson. The entire process creates a culture of collaboration that is supportive and self-sustaining. As noted by a TLC teacher, "The TLC is a PLC!"

TLC teams are designed to accomplish many PLC goals: diminish isolation, encourage collaboration and enable professional discourse to blossom and flourish. Facilitators monitor and assist beginning teams; more experienced teams rotate the facilitator role, thus sharing leadership duties.

Teacher team compositions can be varied; successful teams include specific grade level teams, cross grade level teams and mixing veteran and new teachers. Successful teams are those that foster openness, trust, mutual respect, supportive leadership, flexibility and a willingness to embrace ambiguity.

The power of collaboration: A TLC vignette

To understand the power of a TLC as a PLC, observe an eighth grade team who recently participated in a two-day TLC session that involved one day planning the learning sequence and one day teaching the sequence twice, debriefing both teaching experiences. The following vignette is representative of TLCs from elementary, middle and high school teams.

It is mid-morning

Four eighth grade teachers have just taught their learning sequence that they designed earlier in the week with their facilitator. The focus of the lesson was on density and involved floating and sinking cans of diet and regular coke in a tub of tap water.

During the planning, most teachers revealed they had taught density to their students the year before. Based on the questions and the activities they de- signed, the teachers were confident that students would understand density as the relationship between mass and volume. They also expected the students to discuss the density of the soda cans relative to each other and to the water in the tub.

During the team-teaching of the lesson, the facilitator documented the learning sequence by transcribing teacher and student talk. Having team-taught the lesson, it was now time to debrief. With the facilitator, the team used two sources to examine the effectiveness of the learning sequence: the facilitator's transcription of the lesson and student work.

The following is an excerpt from the facilitator's transcription of the "explain" stage of the first lesson:

Teacher: What did your team predict?
Student 1: Both cans will sink.
Student 2: Both cans will float.
Student 3: Diet will float. Regular will sink.
Student 4: The diet coke will sink and the regular coke will float.

Teacher: What did your team observe?
All students: The diet coke sank and the regular coke floated.

Teacher: Why do you think the diet coke sank and the regular coke floated?
Student: The regular coke is heavier than the diet coke.

Teacher: What do mean by heavier?

TLC IS PLC, CONTINUED ON PAGE 2

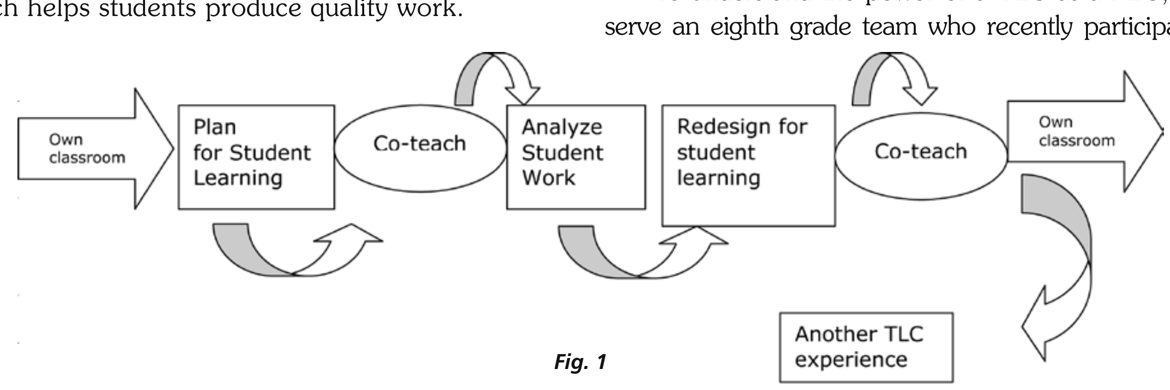

Fig. 1

IN THIS ISSUE...

DIRECTOR'S COLUMN

Change We Can Believe in

BY KATHY DIRANNA

Change. Now. A new president, new educational advisors and maybe even new policies. One can hope.

In this time of change, I found it interesting to be at the CAESL conference in October where the closing speaker, Dr. Mark Wilson from UC Berkeley, shared information about high stakes testing and the impact of NCLB from a survey conducted by the Teacher Network (www.teachernetwork.org).

According to its website, "the Teacher Network is a non-profit organization—by teachers, for teachers—with a 26-year track record of success, dedicated to improving student learning in public schools nationally and internationally….Over the years, the Teacher Network has directly impacted over 1.5 million teachers and nearly 40 million students."

The Teacher's Network conducted a survey in 2007 with more than 5,600 teachers representing grades K-12. These teachers ranged in experience from 1 to 25 and more years: 17.2 percent had 1-3 years experience in teaching, 20 percent with 6-10 years and 16.5 percent had 25 years or more of experience.

Their survey findings say it best: for the majority of teachers the emphasis of NCLB on high-stakes testing is not working. Only 37 percent of respondents found standardized tests "somewhat useful" but 42 percent deemed them "not at all" helpful to their teaching. More than 40 percent claim that these tests are encouraging them to use rote drill, and 44 percent report that the tests are pushing them to eliminate curriculum material not tested.

Talk about a need for a change!

More than 40 percent believe that NCLB does not result in teachers making instructional decisions that are best for their students or that it's helping to reduce the achievement gap in education-its primary goal. And fewer (3 percent) agree that it encourages them to improve their teaching effectiveness with all students. Fewer still (1 percent) find it is an effective way to assess the quality of schools.

Talk about a need for a change!

NCLB has also contributed to teacher burnout, stress and retention: 69 percent of survey respondents "strongly agree" that NCLB with its Adequate Yearly Progress (AYP) goals has contributed to teacher burnout. Dedicated, caring and smart teachers are leaving the profession they love because they are being held to pacing schedules and remediation. Gone is the love of teaching and the joy of learning.

Talk about a need for a change!

Pressure to do well on the tests has increased resulting in more time spent on literacy and mathematics. For some students, their whole day in spent in these two subjects (and PE because it is mandated). No art, no music, no history, no science. And we want them to be competitive?

Talk about a need for a change!

We at the K-12 Alliance welcome the possibility that under new leadership, the government will consider education a top priority that brings meaningful learning to all students. We will continue to encourage instructional strategies that help students construct understanding on their pathway to life long learning.

Change – let us embrace the notion of a new day for education.

■

TLC IS PLC, CONTINUED FROM PAGE 1

Student 1: The regular coke has 39 grams of sugar.
Student 2: The diet coke doesn't have sugar.
Student 3: We put the cans on the balance and regular coke is more than the diet coke.

Teacher: So in science we say that when something has more "stuff" it has more mass. How did you find out about the "stuff" or ingredients in the soda?
Student: We looked at the label.

Teacher: What information did you get form the label?
Student: Regular coke has sugar. Diet coke has aspartame.

Teacher: What do know about the amount of sugar it takes to make something sweet and the amount of aspartame it takes to make something sweet?
Student: It takes more sugar to make something sweet.

Teacher; Now, think about the sugar in the regular coke and aspartame in the diet coke. Think about the cans. Are they identical? What is the volume of cans?
Student: 12 ounces.

Teacher: Yes, that's the volume of the liquid in the cans. Think about the can itself and the amount of space it takes up. Look at the empty 12- pack container from the diet coke, from the regular coke. Would you be able to put 12 diet coke cans in the regular coke package? Would you be able to put 12 regular coke cans in the diet coke package? Talk to your elbow partner. What can you say about the space the can takes up?
Student: It is the same.

Teacher: Now let's put the two ideas together. Since both of the cans take up the same space, what can you say about their volume?
Student: It is the same.

Teacher: Which can had more stuff in the same volume? Which can had less stuff in the same volume?
Student: Regular coke had the most stuff; diet coke had less

Teacher: Using this reasoning, which of the cans has a greater density?
Student: The regular coke.

Teacher: In your science notebook answer the following prompt: Explain why the can of regular coke sank and the can of diet coke did not sink in the tub of water. Include a drawing to support your explanation.

The team decided from their analysis of the transcript that some students understood the mass/volume relationship of the coke cans.

Now they wanted to examine the answers students gave in their science notebooks.

The team noticed that most students were able to compare the densities of the two soda cans to explain why one sank and the other did not. The students drew pictures that accurately showed the regular coke on the bottom of the tub with the diet coke floating near the surface. However, none of the students mentioned the density of the water, nor did the students mention the density of the cans relative to the density of the water.

The team re-examined the lesson transcript and realized that their questions had neither emphasized the density of the water, nor had they provided experiences that allowed students to connect sinking and floating to relative densities of objects.

With the help of the facilitator, the team redesigned their questions to include questions that the teachers thought would help students clarify or refine their thinking, as well as questions that would help students summa-

TLC IS PLC, CONTINUED ON PAGE 4

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LEADERSHIP

Imagining the Possibilities

BY ART NAVAR

I never intended to be a teacher – that calling found me and, for countless reasons, I am sure glad it did.

After receiving a degree in Business Administration at Holy Names College in Oakland, California, I planned to have my own business, but after struggling to find my niche, my family encouraged me to become a substitute teacher.

After working for the El Rancho Unified and Montebello Unified School Districts, I discovered that teaching was a blast. I gained a genuine appreciation for the profession and once I had substituted all grades, I took a third grade long-term class to learn more about precise lesson planning.

In 1999, Principal Jerry Jepsen at Wilcox Elementary offered me a third grade teaching position. It was a thrilling experience and I will never forget one particular moment near the end of that school year. I walked into the teachers' lounge and both Jerry and Jorge DelaHoya, a teacher in the K-12 Alliance, looked right at me and said, "He can do it."

Once again, another unforeseen career opportunity that I never expected prompted me to act and discover.

Jerry and Jorge's "It" was an invitation to join in a summer institute with the K-12 Alliance at Diamond Ranch High School. Looking back, my first institute was intense but I found myself intrigued by the relationships and respect that everyone had for each other and their love of science. Being around Jo Topps, Kathy DiRanna, Doris Waters, Karen Cerwin, Diane Carnahan and Rita Starnes fanned the flames of my attraction to science. I was hooked!

About that time, John Myers, project manager for Montebello USD and a strong supporter of science education and a person who understood the importance of developing teacher leaders, got me more involved in the K-12 Alliance which led to opportunities in the assessment program, CAESL. John was also responsible for getting me to participate in the Society for the Advancement of Chicano and Native Americans in Science (SACNAS).

Through my participation in these science leadership partnerships, I met new professional and dedicated individuals in science. Eventually, I learned that true teaching efforts can only be realized when there is a passion for making a difference in the lives of children.

My confidence strengthened with my first TLC and each one thereafter. I jumped on career opportunities which eventually led me to becoming a Teacher on Special Assignment (TOSA).

Today, I face new challenges by working with a new CPEC grant involving three, possibly five, elementary schools. I currently provide support to teachers, administrators and students in areas of curriculum development, lesson planning, materials support, assessment administration to name a few.

Now, it's my turn to thank the K-12 Alliance and all those who I met on my journey. Thank you to all who had faith that I could learn and help others. And finally, I thank my wife Luisa, my boys, my sister and my mother for their tremendous support and understanding for all the late hours and travel away from home.

The work is hard and challenging, but the rewards are many. We are making a difference for the thousands of students who come to us every year looking for guidance and inspiration. Every day, we continue to blaze new trails in education. And I am proud to be a part of it! ■

Art Navar is a Teacher on Special Assignment (TOSA) in MUSD working on the K-2 CPEC grant to build literacy through science. The grant is a collaboration between California State University Long Beach, the district and the K-12 Alliance.

TEACHING & LEARNING

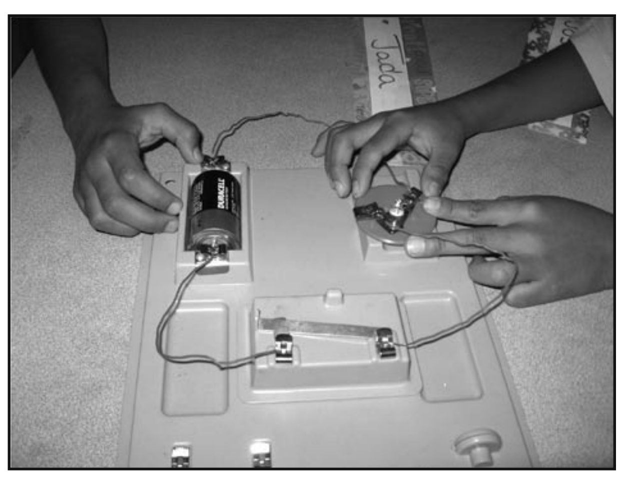
Targeting Interventions

BY JANA GENTRY

Every teacher has experienced a moment when we have to begrudgingly admit to ourselves that the "perfect" lesson we just taught wasn't quite so perfect, and that intervention is necessary. While it's natural to wonder what went wrong, a more important question to ask is "What do I do now?"

I recently had this experience when I taught a lesson on electric circuits. I was preparing a presentation for the CSTA conference and needed samples of student work. So, I planned, I prepped and I taught the "perfect" lesson, but the student work I got was not exactly what I had hoped for. It was clear I would have to re-teach the lesson.

I knew if I simply taught the lesson as I had before, I would get the same results. Knowing how to target the intervention lessons would be crucial.



BUILDING CIRCUITS — Hands-on experiments, carefully targeted, allow students to discover science content on their own.

As I evaluated the student work, I noticed definite trends emerging. Through drawings and writings, it was evident that some students were missing key points or had misconceptions regarding content. For this group, my goal would be to build the necessary content knowledge.

A second group of students were able to draw complete circuits, but could not communicate their knowledge of the subject through writing. This group was lacking either the academic language or the metacognitive skills necessary to tell me what they had learned. I would target my intervention with this group toward improving their ability to communicate their knowledge.

A third, yet smaller group, had difficulties that were harder to identify. Their drawings were incorrect or incomplete, and they simply restated the question as their answer. For this group I would target both content and communication.

I planned two lessons to re-teach the content portion. One involved building circuits with switches and the other involved examining burned-out light bulbs. The learning goal of both of these lessons was to get students to realize that an open switch or a missing filament created an incomplete circuit and electricity would not flow.

During these activities, I had clipboard in hand to remind me which students I was targeting for content. I was able to make informal assessments and quickly address any misconceptions the students had.

To help build communication, students participated in a number of writing activities. To provide scaffolds, I started by modeling the writing process, along with "think aloud' techniques to aid in metacognition. Students moved onto activities that encouraged "student-to-student talk" and group writing, and finally

TARGETING INTERVENTIONS, CONTINUED ON PAGE 4

COLLABORATION

Temecula Gets Technical

BY KAREN VOST

Using technology to enhance science education in fourth and fifth grade classrooms becomes more of a reality in the Temecula Valley Unified School District (TVUSD), thanks to a two-year Round 6 Enhancing Education Through Technology (EETT) grant.

Awarded more than $530,000, the district has begun to implement the Classrooms Advancing Scientific and Technologic Literacy in Education (CASTLE) program at seven district schools and two private schools with 34 participating teachers.

One of the goals of the grant is to provide high-quality professional development which combines science teaching strategies with effective uses of technology.

To accomplish this, TVUSD partnered with the K-12 Alliance and CTAP Region 10 to offer professional development. A cadre from the K-12 Alliance provided several days of science training for fourth and fifth grade teachers. These teachers are now completing three sets of Teaching Learning Collaboratives (TLCs).

Seven teachers (one at each school) are being trained as TLC facilitators. Last spring, they were "learners" in the process and they had an opportunity to shadow Karen Cerwin, K-12 Alliance Regional Director, as she facilitated the TLC teams.

This fall, trainees are facilitating teams, working closely with Karen. Talk about on the job professional development! In the spring, trainees will be full-fledged facilitators, and will continue to work with their teams after the grant has ended.

In addition, teachers participated in 10 days of technology integration training, focusing on how that relates to science teaching. Two teachers at each site received additional training to become site science and technology coaches.

Another goal of the grant includes expanding access to electronic learning resources, modern infrastructure and equipment. CASTLE classrooms received four laptop computers, a digital projector, a digital pen tablet, a document camera, productivity software and a subscription to united streaming.

CASTLE classrooms will all be running on fiber optics by the end of 2008. Students will have access to technology during school hours and at regular hours after school.

Finally, another goal is to provide improved communication and collaboration between home, school and the community.

The district expanded a partnership with the City of Temecula and the Temecula Public Library. Student Technology Mentors (one student from each CASTLE classroom) are being trained to learn the equipment and software that teachers use in their classrooms so they can provide assistance.

Parents of CASTLE students will also be trained. Set to take place in 2009 at the library as well, this training teaches parents the programs used in the classrooms so they can help their children with class assignments at home.

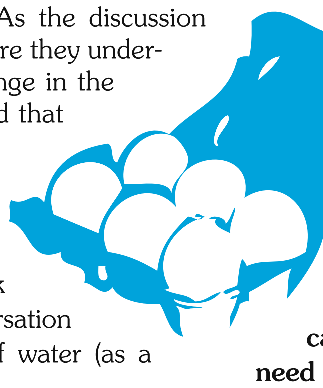
There are high hopes for this grant. Training teachers on how to use technology tools and providing more access to technology for students and teachers alike, the program has the power to promote learning not only in sciences classes, but in all academic areas.

CASTLE teachers have already commented on how the professional development and access to technology tools have positively changed the way they teach and how their students are learning. And this is just the beginning…! ■

Karen Vost is project director for the CASTLE progam.

Ask A Cadre: Is it a Chemical or Physical Change?

Recently, a team of four fifth-grade teachers was planning their TLC. They wanted their students to explore the differences between chemical and physical changes. As the discussion began, the teachers were pretty sure they understood a physical change as a change in the substance, but that it still remained that substance.



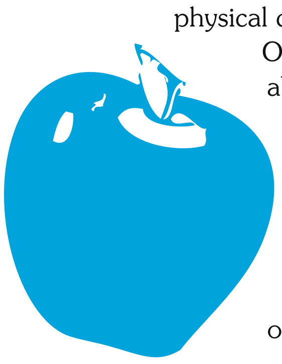
Then someone said, "It can be a change in the properties of the substance, but it is still the same substance." This conversation took the group into a heated conversation about properties. The example of water (as a solid, liquid and a gas) helped.

The group recognized that the properties of ice were different than liquid water and different than water vapor, but that it was still water. The group agreed that a whole apple, chopped apple, or (non-cooked) applesauce were other examples of a physical change that still revealed an apple.

Then came the question of cooking an egg. Most agreed that it was a chemical change except for that idea of it still being the substance….an egg! So was it chemical or physical? How do you know?

The conversation continued. What about Kool-Aid? Everyone said you could mix water and the powder and get something new as evidenced by the color, but that if you evaporated it, the water and powder could be reformed. Was that a physical change?

Then someone asked, "What about cabbage juice in an acid? Is the color change a chemical or physical change?"



Other questions popped up. What about a change in temperature? The textbook suggested putting Alka Seltzer in water. Is it just dissolving like the Kool-Aid? Are the bubbles/fizz a chemical change? What does the drop in temperature indicate—chemical or physical?

And most importantly, when we teachers are so confused, how can our fifth grade students understand?!

So we opted for a lifeline, and called a friend, Dr. Jodye Selco, science educator for the Center for Education and Equity in Mathematics, Science and Technology at Cal Poly Pomona. Jodye has served on several cadres for the MSP grant in Rialto and has provided extensive science content professional development to elementary teachers. Here are her thoughts on chemical and physical change.

Physical and chemical changes can be confusing for a fifth grader because to really understand them, the students need to know about molecular structure (which is not grade level appropriate). The classic definition of a chemical change is one in which there is a change composition of the substance. At the molecular level, a chemical change involves a reorganization of atoms; molecules break apart and new molecules are formed.

If there is no change in composition of the original substance, then it is called a physical change. For physical changes, the atoms/molecules remain intact; they simply move apart (e.g. the change of a liquid into a gas, or tearing paper), or move closer together (e.g. the change from a gas to a liquid).

To help fifth grade students with these ideas, you need to be clear about what is happening. Let's look at these cases one at a time:

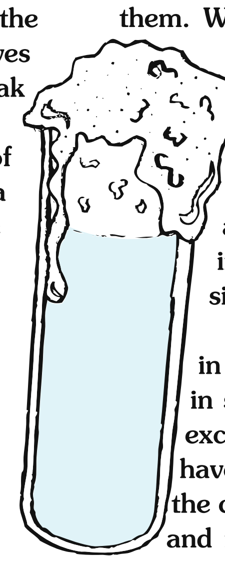
Thinking of a physical change as a change in which the original substance does not change works when you have a specific chemical such as water that does not change its chemical composition upon freezing, melting or boiling is correct. The apple being divided and not cooked is also an example of a physical not chemical change.

When an egg is cooked, however, we have a chemical change. Although it is "still an egg," the proteins in the egg change upon cooking. The egg contains many different compounds that combine together chemically when the egg is cooked.

Color changes are always indications of a chemical change occurring, unless you are just mixing two different colored things together (such as adding yellow and blue food coloring to get green food coloring. So the acid/base indicator color change is an indication of a chemical change.

However, the change in color of Kool-Aid, does not indicate a chemical change—it just mixes clear with the color of the Kool-Aid powder. Additionally, Kool-Aid, as in the case of sugar dissolved in water, is not a chemical change since the sugar does not change when it is dissolved in water. Getting the original material back when the water evaporates is usually a sign that the change is physical not chemical.

A change in temperature may or may not be an indicator of chemical change, but all chemical changes have energy changes associated with them. When Epsom salts dissolve in water, the temperature drops, but this is not a chemical change.



Gas production is a sure sign of a chemical change. When Alka Seltzer is dissolved in water (causing the fizzing), a gas (carbon dioxide) is released. Baking soda mixed with vinegar produces a similar reaction.

Most chemists would probably not think in terms of physical and chemical changes in simplistic terms because there are many exceptions to the "rules." But since you have to teach it, you need to observe all of the changes that occur, take them as a whole and make your best guess as to whether or not a chemical reaction has occurred.

If the starting and ending material is the same (even if it looks different), it is a physical change. For example if you begin with a "pure" substance such as water – if it stays as water but changes state, it is a physical change.

However, if you have difficulty figuring out what the chemical actually is (e.g. egg) and you observe changes (especially upon heating) then you can safely bet that a chemical change has occurred. Chemical changes make a substance that wasn't there before. ■

TLC IS PLC, CONTINUED FROM PAGE 2

rize their thoughts. They also added another "explore" activity to help students understand relative density.

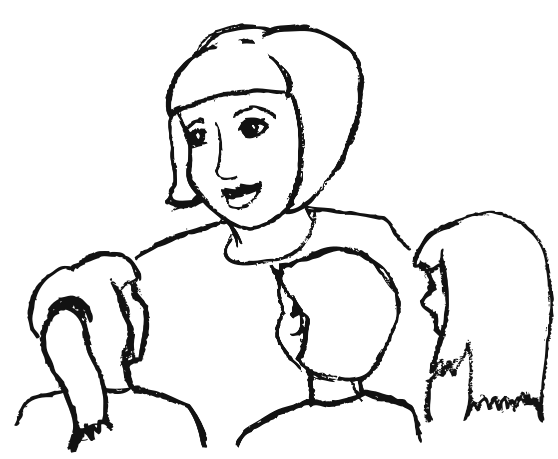
During the debrief of the re-designed learning sequence, the team once again analyzed the transcript and examined student work. As in the first lesson, the students drew pictures that accurately showed the regular coke on the bottom of the tub with the diet coke floating near the surface.

Unlike the first lesson, this student work indicated that most of the students mentioned the density of the water, and not only compared the can to each other but to the density of the water. The teachers agreed that by adding another "explore" activity and by recrafting and adding questions to focus on the densities of all components of the activity, (i.e., the water and the cans) students were able to give a more accurate explanation for their observations.

It is now late afternoon.

The team and facilitator have collaboratively planned, team-taught and debriefed two lessons focusing the interaction of teaching and learning. Their reflections centered on how to design for student learning by the carefully crafting questions and activities based on expected student responses, actual student work and rubrics that provide constructive feedback to students to improve the quality of their work.

Our teachers will repeat the TLC experience 3-9 times during a school year. With each experience,



teams mature as PLCs. Deprivatizing their practice as they team-teach, TLC teams expand their use of student learning evidence to include the notes of teacher and student interactions, as well as artifacts of student work.

TLCs offer time for collaborative reflective discussions that focuses on the quality of the engagement (e.g., how many students, at what level), the quality of the questions (how did the questions probe and encourage deep student thinking); and the quality/effectiveness of the activities that link student prior knowledge to the learning goals or link student understanding.

The results of strategies selected for the lesson can be used in other classrooms so that students can continue learning beyond the TLC lesson.

As one TLC participant noted, "This experience proves the effectiveness of collaboration in teaching. When strong educational professionals put their minds together, the product becomes a tool for the advancement of student understanding. I look forward to using the same techniques and methods in future lessons. AWESOME!" ■

Next issue: We will explore lessons learned about which components of the learning sequence design most impact student understanding.

CONCEPTUALLY SPEAKING, CONTINUED FROM PAGE 3

progressed to writing independent learning reflections in their journals.

When the time came to re-assess, I was pleased with the student responses. Using a 4 point rubric I had created, all but five of my students received a score of 3 or 4. By examining what trends were evident in the original students work, I was able answer the "What do I do now?" question. I knew what the learning needs of my students were, and I knew how to target my intervention lessons to meet those needs. ■

Jana Gentry is a fourth grade teacher in Coachella Valley Unified School District and has served as a