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CSCOPE

E-Newsletter

Mathematics, First Six Weeks, 2009

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Question-Signal-Stem-Share

Question-Signal-Stem-Share is a strategy that helps to actively engage all students in thinking and allows teachers opportunities to listen for student understanding, misconceptions, and use of academic vocabulary. It is simple to implement and stimulates discussion.

Q

Pose a **question** to students. This question should a thought provoking question that requires more than a one word answer. Write the question on the board or on a PowerPoint slide so that students can read the question and refer back to it while they are thinking. Sources for questions might include released TAKS items, TEKS, textbooks, curriculum documents and /or CSCOPE Guiding Questions found in the Exemplar Lessons.

S

Give students a **signal** that indicates they have thought about the question and are ready to share. For example, say, “When you can answer the following question, please stand up.” Signals might also include raise/lower hands, , sit down, pencils up/down, hand on chin, tap nose. Signals provide for wait time for all students. They allow ELL students time to translate information, if necessary, think, and formulate their answers. The result is higher level answers and students with more confidence in their answers. Wait time can also be used to allow students to write their responses in their journals.

S

Provide students with sentence **stems** as a framework to jump start their answers. Sentence stems provide grammatically correct models, thus allowing students to grapple with and focus on the content. This increases student confidence. When you expect student responses to be in complete sentences, providing a stem is essential.
Write stems on the board or in a PowerPoint. Provide word walls that include the major vocabulary used in the current topic of study. Prompt students to reference the wall as needed.

S

Students **share** their responses with a partner. In this way, each and every student has an opportunity to verbalize a response. Walk around the room and listen as students talk; check for understanding and listen for misconceptions.
After partners have shared, select several students at random to share either their responses or their partners’ responses. (This allows for more student confidence and eases stress.)

Based on the work of John Siedlitz

CSCOPE™ Texas Education Service Center Curriculum Collaborative (TESCCC)

Technology Corner: Tools for an Engaging *Engage*

Integrating new information with prior knowledge is key to comprehension and aides in the metacognitive process. When students participate in activities that activate background knowledge they become authentically engaged and motivated to explore. Furthermore, engaging students to elicit background knowledge allows teachers a unique window into what students already know, and more importantly, where misconceptions might exist. The CSCOPE Instructional Focus Documents (IFDs) each begin with a section that provides insight into commonly held misconceptions and underdeveloped concepts. Teachers can expand this and identify localized misconceptions, which will vary from student to student. Many of these localized misconceptions are the result of students' prior experience with instruction that was not a component of an aligned curriculum and did not include specificity to the TEKS. In short, teachers throughout student academic careers may have inadvertently introduced misconceptions and these must be identified prior to continuing in a lesson.

Considering the importance of engaging learners from the start, it is critical that teachers identify and use tools and strategies that accommodate a wide range of student backgrounds and experiences, while at the same time, continuing to target the concepts and key understandings outlined in the IFD. Fortunately, certain technology tools can be integrated into the "engage" activities that provide for relevant and exciting experiences that transform teaching and learning in ways not otherwise possible. The following table provides columns to explain the high-level roles and responsibilities of students and teachers in the "engage" activities of a 5-E CSCOPE Lesson. On the following page, you will find classroom applications and corresponding resources that suggest strategies and practices teachers can adopt. (For more information about any of these resources and how to get started, visit http://www5.esc13.net/instructionaltech.)

Article contributed by Lannon Heflin
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Developing Academic English for English Language Learners using the English Language Proficiency Standards (ELPS)

Imagine that you are a student in the grade level that you teach. You are expected to follow written and oral instructions, interpret words with multiple meanings, learn hundreds to thousands of abstract vocabulary words related to content-area concepts, write essays in response to literature and expository texts, and use comprehension strategies and prior knowledge to interpret what you are reading. Now imagine that you are must accomplish all of these tasks in a language that you don't know very well. Sound exhausting? Welcome to the world of an English language learner. English language learners (ELL) face the daunting task of being responsible for making progress in content area classes while simultaneously learning academic English, an abstract, complex form of English specific to content area subjects. In order to support ELL ability to produce academic English both orally and in writing, teachers should align their instruction with the English Language Proficiency Standards (ELPS).

The ELPS charge educators with integrating second language acquisition techniques with quality content area instruction in order to ensure that ELLs acquire social and academic language proficiency in English, learn the knowledge and skills in the TEKS, and reach their full academic potential. The English Language Proficiency Standards (ELPS) specifically outline the student expectations for using language in the classroom to develop fluency in the areas of learning strategies, listening, speaking, reading and writing. The ELPS also outline the English language proficiency level descriptors that ELLs may exhibit within the language domains of listening, speaking, reading, and writing for the levels of for the levels beginning, intermediate, advanced, and advanced high. These proficiency level descriptors show the progression of second language acquisition from one proficiency level to the next and serve as a road map to help content area teachers provide linguistic accommodations to instruct ELLs commensurate with students' linguistic needs.

Using Language Objectives to Develop Academic English

Instruction for English learners must incorporate activities that support students' language devel-

(continued on page 6)

The Student…	*Engage* Activities…	The Teacher…
Asks questions. Why did this happen? What do I already know about this? What can I find out about this? How can this problem be solved? Shows interest in topic. Responds to questions demonstrating their own entry point of understanding	Initiate the learning task. The activity should make connections between past and present learning experiences, and anticipate activities and organize students' thinking toward the learning outcomes of current activities. Generate interest Access prior knowledge Connect to past knowledge Set parameters of the focus Frame the idea	Raises questions and problems. Elicits responses that uncover students' current knowledge about the concept/topic. Generates interest. Generates curiosity.
Integrated Technology Strategy	**Integrated Technology Strategy**	**Integrated Technology Strategy**
What – Peer Collaborative Discussion – Online Learning Community **Why –** Students need to participate in two way conversations with both teachers and peers. These discussions, although facilitated, are intended to be structured around open ended questions that require a personal response. Furthermore, each response should inspire feedback and "banter" about the subject. The more each student participates in discussing and defending their contribution, the more background knowledge and misconceptions are revealed. **When –** It is often difficult or impossible to ensure that every learner has equal opportunity to participate in this level of engaging discussion. Large classes, introverted/reluctant learners, and limited time continue to inhibit all-inclusive meaningful class discussions. Structure an online community of learners so that limited, flexible class time is needed to initiate the dialogue, and the conversations can continue anytime-anywhere. **How –** Fortunately for educators there are many free and easy online resources for building effective collaborative learning communities. Although the purpose of an online community of learners includes much more than discussion, the opportunity for learners to participate in a variety of discussion formats is an extremely important factor. The following tools are examples that represent tools teachers have used with students. It is important to understand the subtle and obvious differences, the pros and cons (such as sign up processes and front-loaded time) and the implications for security and legal concerns. PBWiki Wikispaces Ning-- Google Apps/Docs/Sites Moodle ELGG VoiceThread OfficeLive	**What –** Pre and Post Learning Maps (Mind Mapping) **Why –** Activating background knowledge is most valuable when learners can visually represent connections to existing information and new information. One strategy is to have students create graphic organizers such as mind maps. **When –** Creating dynamic pre and post learning maps should begin before any formal instruction. The idea is to have students use graphics and connecting lines with annotation to scribe everything they know, or believe they know. Teachers might consider having students begin with KWL charts to collect initial thoughts. Consider the pre learning map as a draft that will transform as learning takes place. **How –** Using the IFD as a guide, the teacher should provide students with the Key Understandings for Learning and the Concepts. Students then make a list, create a Venn diagram, KWL chart, or any form of note taking to record everything they know or believe they know about the information. Teachers review these informally and note any misconceptions that will need attention. Compare these with the ones listed in the IFD.* Students then use any one of the following technology tools to create a draft pre learning map, making connections and comments. As learning occurs, students are given time to return to the saved versions of their graphics and add, remove, adjust, and modify accordingly. Teachers can formatively assess student learning through interaction with students and their learning maps. Inspiration Kidspiration Gliffy CMAP	**What –** Teacher facilitated blog with comments – problem based **Why –** When learners are confronted with messy, real-world problems, they must activate multiple problem-solving strategies simultaneously and draw heavily on what they already know. Teachers engage students early in the CSCOPE unit by posing open-ended, problematic situations related to each Exemplar Lesson. **When –** At the beginning of each Exemplar Lesson, there are Key Understandings and Guiding Questions. Teachers can open each exemplar lesson by crafting a real-world, messy (no clear answer) problem or using the Guiding Questions. **How –** A major challenge in a classroom setting is allowing for each student to participate and contribute to ongoing problem-solving. Using technology tools such as a blog or wiki, teachers can craft and post the problem statements and questions. Students then access these and comment, dialogue and document as a way of contributing their input. Young elementary aged students should write their responses in a way that is developmentally appropriate. The teacher can then compile these into a class blog and share the class's collective wisdom. Older students can participate by commenting directly to the prompts in the chosen tool. The result will be a collection of student generated common understandings and comments that can add to the *Explore*, *Explain*, *Elaborate* and *Evaluate* sections of the lesson. Some recommended tools are: Blogspot PBWiki Wikispaces Google Moodle Ning

Grouping Strategies

The lesson calls for you to assign the students into groups of 4-5. Now… you have some choices to make. Should you limit the size to 4? Should the students be heterogeneous or homogeneously mixed? Should you assign roles? The root of these questions exists as "What structures do I need to use?" In addition, reflecting on the goal(s) of the group learning experience is important.

Laurie and Spencer have many publications regarding Cooperative Learning. In the **Cooperative Learning Course Workbook** (2000), these goals are listed as "domains." The "domains" include: class building, teambuilding, mastery of content, thinking skills, communication skills, information sharing, and decision making. When you decide on the goals of the group learning experience, you can then plan the "structure" of the group.

Structure, according to Kagan & Kagan, is the "how" of teaching or the directions. Within each particular grouping strategy (examples: Carousel Feedback, Mix Pair Share, Inside-Outside Circle, and Numbered Heads Together), the teacher should consider positive interdependence of students, individual accountability, equal participation, and simultaneous interaction.

In **How to Differentiate Instruction in Mixed-Ability Classrooms** (2001), Carol Ann Tomlinson, illustrates a user-friendly chart for teachers as they prepare for any grouping strategy. (See sidebar.)

Cooperative grouping of students is essential to create an effective learning community. One key aspect of creating this environment is for the teacher and students to collaborate for mutual growth and success (Tomlinson, 2001). In addition, cooperative learning should be applied consistently and systematically (Marzano, et al., 2001). As with all instructional strategies, the success of cooperative learning is directly proportionate to the teacher's planning of the structure of the groups.

Teacher Checklist for Group Work

- Students understand the task goals.
- Students understand what's expected of individuals to make the group work well.
- The task matches the goals (leads students to what they should know, understand, and be able to do)
- Most students should find the task interesting.
- The task requires an important contribution from each group member based on the student's skills and interests.
- The task is likely to be demanding of the group and its members.
- The task requires genuine collaboration to achieve shared understanding.
- Time lines are brisk (but not rigid).
- Individuals are accountable for their own understanding of all facets of the task.
- There's a "way out" for students who are not succeeding within the group.
- There is an opportunity for teacher or peer coaching and in-process quality checks.
- Students understand what to do next after they complete their work at a high level of quality.

Sources.

Kagan, Laurie, and Spencer Kagan. Cooperative Learning Course Workbook. San Clemente: Kagan Publishing, 2000.

Marzano, Robert J., Debra Pickering, and Jane E. Pollock. Classroom Instruction That Works: Research-Based Strategies for Increasing Student Achievement. Alexandria, VA: Association for Supervision & Curriculum Development, 2001.

Tomlinson, Carol Ann. How to Differentiate Instruction in Mixed-Ability Classrooms. Alexandria, VA: Association for Supervision & Curriculum Development, 2001.

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CSCOPE Doc Spot

When planning instruction, remember to start with the **Instructional Focus Document.** It contains several useful sections.

State Resources. Links to other state resources and training and websites are listed, thus providing reminders and a "container" for state trainings that relate to the unit.

Rationale. Explains which TEKS are bundled in the unit and why. Makes reference to previous and future learning ties.

Misconceptions and Underdeveloped Concepts. Identifies where previous inaccurate or imprecise student learning may become a barrier to accurate current learning. Listen for these during instruction so they can be addressed and corrected.

Performance Indicators. Defines the content to be mastered by the end of the unit and a process for demonstrating that mastery. ELPS choices are suggested.

Concepts and Key Understandings for Learners. Overarching ideas and essential understandings that students should have by the end of the unit. Unit instructional activities should each tie to these concepts and key understandings. Guiding Questions which lead to these understandings can be found in the Exemplar Lessons.

Key Academic Vocabulary Supporting Conceptual. Identifies the vocabulary that carries the weight of the unit content load and that will be used across grade levels. Vocabulary of instruction that ties to this vocabulary and unit concepts is found in the Exemplar Lessons.

TEKS and Specificity. Lists unit TEKS and specificity; also found in the Vertical Alignment Documents. Clearly defines what each student expectation looks like for the grade level. Crossed out portions of the TEKS have been/will be addressed in other units and are not the focus for the current unit. Specificity comes from TAKS and other state resources, the ELA/R glossary, and the College and Career Readiness Standards.

Submitting Unit Feedback

To submit feedback for a specific unit, you must be working in the unit first.

1. Open a unit.
2. Select **View/Edit Unit**. (This is the first tab on the right side of the screen.)
3. Select **Collaborative Feedback**. (This is the third tab from the left.) You will be able to see all of the feedback from your district.
4. Select **Submit Feedback** on the far right side of the screen.
5. Enter feedback or comments. Be very specific, using unit number, lesson number, page number and problem numbers.
6. Choose the category of feedback. You may enter different kinds of feedback:
   - Grammatical/Punctuation/Format Errors
   - Developer Issues/Bad Web Links/Attachment Issues/Other Tech Issues
   - Content-related suggestions or recommendations
   - Assessment Issues
7. Select **Submit**.

Once you submit feedback, the response to that feedback will be placed on your home page under the Feedback tab. Select the unit title to view the feedback and the response.

(Continued from page 2)

opment. The English Language Proficiency Standards (ELPS), section C, outline the student expectations for developing language fluency in the areas of using learning strategies, listening, speaking, reading and writing.

Educators have long known the importance of clearly setting content objectives for students at the beginning of a lesson. These objectives should be aligned to the TEKS student expectations for the subject area. In addition to content objectives, teachers of English learners must establish *language* objectives in every lesson. Language objectives are aligned to the ELPS.

To craft language objectives for English learners, follow these easy steps:

1. Identify the content objective using the TEKS.
2. Determine what type of language skills the student will use to participate in the lesson and process the learning specified by the content objective (i.e. using learning strategies, listening, speaking, reading, and/or writing).
3. Choose the appropriate objective from the cross-curricular second language acquisition essential knowledge and skills sub-section C of the ELPS.
4. Craft a specific language objective for the lesson the ELPS. In the language objective, the teacher may want students to use specific content-area vocabulary words, sentence stems and/ or paragraph frames to help students scaffold language.

Example:

TEKS 8.7(C) Use pictures or models to demonstrate the Pythagorean theorem;	Content Objective: Students will use manipulatives to explain the Pythagorean theorem.
ELPS: 3(D) speak using grade level vocabulary in context to internalize new English words and build academic language proficiency.	Language Objective: Students will use the vocabulary terms "Pythagorean theorem" and "model" and "demonstrates while giving an oral explanation of the Pythagorean theorem.

To successfully implement language objectives for ELL, follow these simple guidelines. Language objectives should be:

- ✦ Stated orally and posted in writing
- ✦ Discussed by the teacher and students at the start of the lesson
- ✦ Reinforced with explicit instruction during the lesson
- ✦ Practiced and assessed during the lesson

Reference: **ELPS Toolkit**, First Edition, Education Service Center Region XIII, 2008

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1st Six Weeks Preview

Mathematics

Kindergarten.

Unit 1 Our Journey Begins focuses on orally counting to 20 and introduces the first tool used to help students gain an understanding of the passage of time- a calendar. The unit concentrates on days of the week. The purpose of counting to 20 and investigating a calendar in the same unit is to begin to establish the developmental sequence of number within the calendar as well as introduce the meaning of a number.

During Unit 2 Counting through 5 will begin the process of connecting the numbers 1-5 to an object in a set with a number word and name the cardinality of the set.

Unit 3 Repeating Patterns 1 focuses on similarities, repetition, and order of patterns. Centers will be used throughout the unit to provide repetition and practice for concepts already introduced. A variety of events will provide the opportunity to recognize and extend patterns.

1st Grade.

Unit 1 Calendar and Tools addresses the concept of measurement and sub-concept of time in order to develop an awareness of the duration involved within the units: days, weeks, and months.

Unit 2 Numbers and Place Value provides opportunities for student to view quantities or numerals from 0-20 in a variety of ways, including the terms "tens" and "ones". Using various concrete model representations, students will begin to connect the quantity to the representation and communicate the relationship between two sets using comparative language.

During **Unit 3 Story Problems 1**, students will develop meaning for the operations of addition and subtraction through contextual problems or story problems through composing and decomposing numbers and the comparison of the parts.

Unit 4 Identify and Extend Patterns lessons rely primarily on physical objects to strengthen student communication skills through oral descriptions of a patterns and comparisons of many different representations of the same pattern.

In **Unit 5 Two-Dimensional Figures 1**, students investigate relationships among two-dimensional figures and describe distinctive attributes of a circle, triangle, rectangle and square using formal geometric language.

2nd Grade.

In **Unit 1 Number Strategies**, students develop efficient basic fact retrieval and apply the strategies to solve problems. **Unit 2 Quantitative Reasoning** requires students to compare and order numbers through 99 using concrete manipulatives and record the results symbolically and in words. Money skills such as coin recognition, values of coins, and skip counting of like coins will be reinforced, however students will not counts coins until Unit 5.

3rd Grade.

Unit 1 Place Value to 999,999 extends student knowledge of the set of whole numbers through 999,999. Place value will continue to be revisited up to the thousands place in the following unit.

Unit 2 Comparing and Ordering Whole Numbers to 9,999 includes using place value to compare and order whole numbers up to 9,999. In **Unit 3 Addition and Subtraction**, students use estimation strategies for addition and subtraction, including rounding and compatible numbers. Students also model both addition and subtraction and connect those models to each operational procedure. Through modeling these operations, students build upon their understanding of place value and the role it plays in operational procedures.

4th Grade.

Unit 1 Place Value—Whole Numbers and Decimals contains student expectations that extend student knowledge of the set of whole numbers through 999,999,999.

Unit 2 Operations—Addition and Subtraction including Measurement (Perimeter only) begins with the use of estimation and compatible numbers in addition and subtraction to facilitate operational fluency. Perimeter problems are introduced and used as context in various addition/subtraction problem-solving situations.

In **Unit 3 Operations—Multiplication Models**, students build arrays and area models to enhance their understanding of multiplication and division. These models help students develop fluency with efficient procedures for multiplying and dividing whole numbers, understand why the procedures work and use them to solve problems.

5th Grade

Unit 1 Place Value—Whole Numbers and Decimals extends student of the set of whole numbers through 999,999,999,999. Unit **2 Developing Operational Procedures** bundles student expectations that address numerical operations. Students will develop fluency with efficient procedures for multiplying and dividing whole numbers, understand why the procedures work and use them to solve problems. Estimation and compatible numbers are also used to facilitate operational fluency including appropriate measurement concepts as applicable.

1st Six Weeks Preview

Mathematics

6th Grade

In **Unit 1 Rational Numbers**, students generate equivalent forms of rational numbers through a variety of models. They represent percents with concrete models, fractions, and decimals in order to compare and order rational numbers in a variety of equivalent forms. **Unit 2 Factors and Multiples** addresses prime factorization with exponents, factors including common factors and greatest common factor (GCF), and multiples including common multiples and least common multiples (LCM).

7th Grade

Unit 1 Comparing and Ordering Positive Rational Numbers and Integers addresses equivalence between positive rational numbers and percents, and the location of positive rational numbers and integers on a number line in order to connect these representations as part of the set of rational numbers.

In **Unit 2 Integer Operations and Graphing**, students add, subtract, multiply, and divide integers through the use of models. Unit 2 also addresses the graphing of integers in a coordinate plane.

Unit 3 Estimation with Decimals and Percents includes estimation to determine a reasonable solution for problems involving addition, subtraction, multiplication, and division of decimals based on an understanding of place value.

8th Grade

In **Unit 1 Rational Numbers**, students name, compare, order, and write equivalent forms of rational numbers and then display them on horizontal and vertical number lines.

In **Unit 2 Operations with Rational Numbers Including Measurement (Perimeter, Area, Circumference and Volume)**, students review and combine operations with rational numbers and connect various representations of data such as a table, an equation, and a verbal description. This understanding will be applied to various problem situations including real-world situations, applications of percents, circumference, perimeter, area, and volume.

Unit 3 Real Numbers addresses irrational numbers and scientific notation in order to complete the formal introduction of the real number system. This unit contains the new TEKS 8.1E.

Algebra 1

Unit 1 The Study of Functions involves collection and analysis of data gathered from real-world problem situations. Data relationships are examined to determine functionality. Characteristics of functions are identified and representations are used to make predictions and critical judgments. Graphing calculator technology is incorporated to collect and analyze data.

Functions are the basis of algebra and will be the focus of Algebra 1 the entire year. In order to understand a function as a dependence of one quantity on another, students need experience in collecting data, organizing data, representing data in multiple ways, and making inferences from both the relationship and the ways in which the relationship is represented. As students compare and contrast the characteristics and representations, they are building the foundation for the next units of study and subsequent mathematics courses.

Geometry

Unit 1 Foundations of Geometry addresses connections between the roles of undefined terms, definitions, postulates, and theorems in Euclidean geometry. Geometric conjectures are tested to help students develop an awareness and understanding of geometry as a mathematical system built from a foundation of undefined terms, definitions, and postulates.

In **Unit 2 Functions and the Coordinate Plane**, students connect algebra and geometry through the geometric explorations of distance, midpoint, slope, and parallel and perpendicular lines. Explorations involve multiple representations including concrete, pictorial, graphical, verbal, and/or symbolic representations.

Unit 3 Geometric Patterns connects patterns in algebra and geometry through investigation of numeric and geometric patterns using various representations, including tables, graphs, verbal descriptions, and algebraic representations. Algebraic representations are then used to model geometric properties of figures.

In **Unit 4 Transformations**, students develop the properties of transformations in the coordinate plane using geometric and numeric patterns.
Isometric transformations are compared and contrasted with dilations. Tessellations and compositions of isometric transformations are generated and investigated.

1st Six Weeks Preview

Mathematics

Math Models with Applications

In **Unit 1 Probability**, students incorporate use of probability models to compare theoretical and empirical probability in situations involving chance. Students also analyze the reasonableness of theoretical models such as binomial and geometric probability in real-world situations. Math Models with Applications is the only high school course where probability is addressed in the TEKS.

In **Unit 2 Statistics: Univariate Data**, students incorporate the use of graphical and numerical analysis of the patterns in univariate (one variable) data for interpretation, validation, and making inferences in real-world problem situations. In this unit, students collect univariate data and represent the data in tables and graphs. Students also complete the numerical analysis by finding and interpreting the meaning of the measures of central tendency and the variability around the measures of central tendency.

Algebra 2

Unit 1 Introduction to Functions involves collection and analysis of data gathered from real-world problem situations. Data relationships are examined to determine functionality. Characteristics of functions are identified and representations are used to make predictions and critical judgments. Graphing calculator technology is incorporated to collect and analyze data.

Unit 2 Foundations of Functions bundles student expectations that involve connections between functions and their characteristics, and between parent functions and their transformations. In this unit students analyze functions by investigating their characteristics and representing functions using various models. They determine the domain and range and independent and dependent variables. Students identify functions as continuous or discrete and increasing or decreasing. Transformations are identified and applied to various parent functions. Student knowledge of transformations on parent functions is extended while providing a sneak preview of all the functions that will be introduced in Algebra 2.

In **Unit 3 Investigating Inverses**, students are introduced to the concept of inverse relations, investigating inverses through graphing and table. They also investigate interchanging the variables x and y in a linear equation and solving for y. In subsequent units in Algebra 2, when studying quadratic and square root functions and exponential and logarithmic functions, the parent functions and their inverses will be studied in depth. This unit is strictly introductory.

Precalculus

In **Unit 1 Characteristics and Applications of Functions** students describe the characteristics of functions, and use these functions to solve meaningful problems. To be "meaningful" problems must be based in real-world contexts or involve the collection of real data. From these concrete examples, students will develop vocabulary and skills that can be applied to abstract functions in general.

In **Unit 2 Transformations, Compositions, and inverses of Functions** students will combine functions, simplify expressions, and solve equations. Students analyze compositions of functions in graphical and tabular form as well as algebraically. These skills are applied to solve equations with inverse operations (since $f(f\text{-}1(x)) = x$). Likewise, compositions of functions can be used as a tool to transform graphs in an effort to model situations and data. The importance of these skills is emphasized in the state's *College Readiness Standards*, which calls for students to be able to "understand and analyze features of a function" to "model real world situations."

Have questions about the newsletter? Contact your Education Service Center.

Want to submit a newsletter article? Contact Cindy Hamilton (cindy.hamilton@esc13.txed.net).

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