There’s Strength in Numbers

Data Driven Decisions made visual with DMAC and CSCOPE

Alpine Independent School District
704 W. Sul Ross
Alpine, Texas  79830
Data disaggregation is not a problem **solving** opportunity…

Data disaggregation is a problem **finding** opportunity!
Questions…

• What’s wrong with what I am doing now?

• Why should I look at data if CSCOPE is our curriculum?
• Why are we not getting the scores we want?

• How can we catch all our students before they fail?

• How can we be sure to repeat our successes?
Answers

- It’s the kids!
- It’s last year’s teacher!
- It’s the sequence!
- It’s the curriculum!
- It’s the calendar!
- It’s the materials!
The Real Answer

A meta-analysis of 35 years of educational research indicates “a guaranteed and viable curriculum” is the school level factor with the most impact on student achievement.

--Robert Marzano
Data Driven Decision Rooms!
WAR Room Agenda
1/28/2010
1. C-Scope Evaluation Tool
2. Consensus gram
3. Using the YAG to see when tested TEK was taught
Using DMAC data from benchmark to see how students did on ‘At-Risk’ TEKS
TUDE is as important as ABILITY.

Developed by the Texas Education Service Center Curriculum Collaborative (TESCCC)
1st space: name;

2nd space: TAKS version (K=TAKS, A=accommodated, M=modified)
3rd space: % mastery on 2009 TAKS

Color:
blue=commended,
green=90% to commended,
yellow = met standard - 90%,
red= less than 70%

Color strip: INOVA
level of concern

%= % mastery on 09-10 benchmarks
<table>
<thead>
<tr>
<th></th>
<th>Reading</th>
<th>Math</th>
<th>Science</th>
<th>Social Studies</th>
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The "V"

SE Master 80% - 90%

SE Mastery between 50% and 80%

SE Master <50%

>90% SE Mastery
Answers

• It’s the kids!
• It’s last year’s teacher!
• It’s the sequence!
• It’s the curriculum!
• It’s the calendar!
• It’s the materials!
Curriculum Storyboards provide the “story” of the curriculum.

Components of “story” can be...
- 6 weeks taught
- If this is 1st time TEKS is taught
- If TEK is imbedded or directly taught
- Benchmark % mastery
- Highlight key vocabulary/verb in TEKS
- TAKS tested – 1st time
- If tested on benchmark
CSCOPE Component

• Vertical Alignment Document
  – Is this the first time this concept has been taught?
  – Is it tested on TAKS?
  – Was it tested last year?
  – Differences in depth and complexity
  – New vocabulary
<table>
<thead>
<tr>
<th>THIRD</th>
<th>FOURTH</th>
<th>FIFTH</th>
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</thead>
</table>
| • twenty minutes until five  
  • forty minutes after four  
  
  Note:  
  • 2nd grade reads and writes time in five minute increments on both analog and digital clocks.  
  • Kindergarten introduces calendar. Grades 1 – 3 can continue the content to develop the various components of this tool. | • geared clock or stop watch  
  • concrete (clock) and pictorial models (drawing of clocks) to explain the process of solving an elapsed time situation  
  
  Note:  
  • Kindergarten introduces calendar. Grades 1 – 3 can continue calendar to develop the various components of this tool. Grades 4 and 5 can use this tool to develop the concept of elapsed time. | watch.  
  • 5th grade learns elapsed time on an abstract level – no tool provided.  
  • Kindergarten introduces calendar. Grades 1 – 3 can continue calendar to develop the various components of this tool. Grades 4 and 5 can use this tool to develop the concept of elapsed time. |

3.13 Probability and statistics. The student solves problems by collecting, organizing, displaying, and interpreting sets of data. The student is expected to:  

4.13 Probability and statistics. The student solves problems by collecting, organizing, displaying, and interpreting sets of data. The student is expected to:  

5.13 Probability and statistics. The student solves problems by collecting, organizing, displaying, and interpreting sets of data. The student is expected to:  

3.13A Collect, organize, record, and display data in pictographs and bar graphs where each picture or cell might represent more than one piece of data. Solve, Interpret, Collect, Organize, Record, Display  

DATA ANALYSIS  
Including, but not limited to:  
• hands-on experimental activities  
• using appropriate labels of collected data displayed vertically and horizontally with space in between bars  
• missing information needed to complete a graph  

5.13A Use tables of related number pairs to make line graphs.  
Solve, Interpret, Use, Collect, Organize, Display  
LINE GRAPHS  
Including, but not limited to:  
• real world problems to create tables of related number pairs (vertical or horizontal) with appropriate labels  
• points from table as \((x, y)\) and relate the points on the graph labeled with a capital letter  
• a line graph to represent the related number pairs with appropriate labels
CSCOPE Connections

• Year at a Glance
  – What 6 weeks is the SE taught?
    • Early or late in the year?
    • During a busy part of the year?
  – Is it an imbedded SE?
## Year at a Glance

### Fifth Grade – Mathematics

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
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</thead>
<tbody>
<tr>
<td><strong>1st Six Weeks</strong></td>
<td><strong>4th Six Weeks</strong></td>
</tr>
<tr>
<td>Unit 01: Place Value – Whole Numbers and Decimals (7 days) 5.1AB</td>
<td>Unit 08: Probability (8 days) 5.12BC</td>
</tr>
<tr>
<td>Unit 02: Developing Operational Procedures (18 days) 5.3ABC; 5.4; 5.10C</td>
<td>Unit 09: Measurement (19 days) 5.10ABC; 5.11AB</td>
</tr>
<tr>
<td><strong>2nd Six Weeks</strong></td>
<td><strong>5th Six Weeks</strong></td>
</tr>
<tr>
<td>Unit 03: Operations and Operations with Measurement (7 days) 5.3C; 5.4; 5.10C</td>
<td>Unit 10: Geometry (7 days) 5.7; 5.8AB</td>
</tr>
<tr>
<td>Unit 04: Relationships – Factors and Primes (7 days) 5.3A; 5.3B</td>
<td>Unit 11: Statistics (8 days) 5.5; 5.13ABC</td>
</tr>
<tr>
<td>Unit 05: Relationships – Equations and Data Organizers (11 days) 5.5A; 5.6</td>
<td>Unit 12: Data Collection and Analysis (5 days) 5.9; 5.13ABC</td>
</tr>
<tr>
<td><strong>3rd Six Weeks</strong></td>
<td><strong>6th Six Weeks</strong></td>
</tr>
<tr>
<td>Unit 06: Fractions (21 days) 5.2ABCD; 5.3E</td>
<td>Unit 13: Fraction Connections (9 days) 5.2ABC; 5.3E</td>
</tr>
<tr>
<td>Unit 07: Fractions and Probability (4 days) 5.12A</td>
<td>Unit 14: All Operations (5 days) 5.3ABC</td>
</tr>
<tr>
<td></td>
<td>Unit 15: Measurement Connections (6 days) 5.10ABC</td>
</tr>
</tbody>
</table>

Note: Underlying processes and mathematical tools TEKS are identified on IFDs.
Instructional Focus Document - IFD

• Depth
• Complexity
  – Were we true to the verbs in the TEKS?
• Vocabulary
  – Did we use appropriate vocabulary?
• Specificity
  – Did we leave something out?
• Fidelity
INSTRUCTIONAL FOCUS DOCUMENT
Fifth Grade/Mathematics

UNIT: 04 TITLE: Relationships – Factors and Primes

SUGGESTED DURATION: 7 days

Exemplar Lesson 01: Factors and Primes

State Resources:
Mathematics TEKS Toolkit: TEKS Clarifying Activity/Lesson/Assessment
http://www.utdanacenter.org/mathtoolkit/index.php
TEXTEAMS: Rethinking Elementary Mathematics Part I: Multiple Towers;
What’s in Each Box?, Marissa’s Garden, Marissa’s Garden Again

RATIONALE:

This unit bundles student expectations for finding factors and prime numbers to support numerical understanding and operations. The concepts of factors and primes are addressed, including using various representations such as arrays, area models and patterns in factors.

Prior units addressed operations including multiplication and its connection to division. This unit will draw on the prior unit operational skills of multiplication and the role of factors in multiplication to make the connection to finding factor pairs and prime numbers. The ability to understand and identify factors helps students throughout the year and at subsequent grade levels to develop operational fluency as well as setting the foundation for fraction concepts.

According to Principles and Standards for School Mathematics by NCTM (2000), “students should understand numbers, ways of representing numbers, relationships among numbers, and number systems. If students understand the structure of numbers and the relationships among numbers, they can work with numbers flexibly (Fuson, 1992)” (p.149).


MISCONCEPTIONS/UNDERDEVELOPED CONCEPTS:

- Some students may not realize that factor pairs can be represented in multiple forms such as: list form, pairs and multiplication.
- When finding common factors of two numbers, students may not complete the list of factors for each number.
- Many students will classify all odd numbers as prime.

<table>
<thead>
<tr>
<th>PERFORMANCE INDICATORS</th>
<th>CONCEPTS</th>
<th>KEY UNDERSTANDINGS FOR LEARNERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify factors and factor pairs given various whole numbers. Select two different prime numbers greater than 10 and create a pictorial model demonstrating that the numbers chosen are prime. (5.5D) *(5.5B)</td>
<td>Number – Factors, Prime, Composite</td>
<td>Sets of whole numbers have common factors that can be identified. Prime and composite numbers can be identified using concrete objects, pictorial models, and patterns in factor pairs</td>
</tr>
</tbody>
</table>

ELPS: 1C, 1E, 2E, 2I, 3D, 4E, 5G
## INSTRUCTIONAL FOCUS DOCUMENT

**Fifth Grade/Mathematics**

**UNIT: 04**  **TITLE: Relationships – Factors and Primes**  **SUGGESTED DURATION: 7 days**

### KEY ACADEMIC VOCABULARY SUPPORTING CONCEPTUAL DEVELOPMENT

- **Factor** – a number multiplied by another number to find a product
- **Prime number** – a number with exactly two factors, 1 and the number itself
- **Composite number** – a number with more than two factors
- **Divisibility** – the ability to be divided without a remainder

### TEKS

<table>
<thead>
<tr>
<th>TEKS</th>
<th>SPECIFICITY</th>
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<tbody>
<tr>
<td><strong>5.3D</strong> Identify common factors of a set of whole numbers.</td>
<td>Multiply, identify COMMON FACTORS Including, but not limited to: - common factors of whole numbers - whole numbers include 0 - If 0 is not a factor, then the factors are part of the set of only positive integers (1, 2, 3,...) - methods or strategies for finding common factors of the set - arrays - area models - diagrams Note: - 4th Grade introduces the area model. - 5th Grade is the first grade to identify common factors of a set of whole numbers. - 6th Grade continues finding common factors but will include greatest common factor and least common multiple given a set of positive integers.</td>
</tr>
<tr>
<td><strong>5.5</strong> Patterns, relationships, and algebraic thinking. The student makes generalizations based on observed patterns and relationships.</td>
<td>Make, Identify PRIME, COMPOSITE NUMBERS Including, but not limited to: - prime numbers - concrete objects - pictorial models - patterns in factor pairs - composite numbers - concrete objects - pictorial models</td>
</tr>
</tbody>
</table>
Lessons

• If we used the lessons, did we skip anything?

• If we used our own lessons, were they to the depth and complexity of the CSCOPE lessons?
GETTING READY FOR INSTRUCTION SUPPLEMENTAL PLANNING DOCUMENT

Instructors are encouraged to supplement, differentiate and substitute resources, materials, and activities to address the needs of learners. The Exemplar Lessons are one approach to teaching and reaching the Performance Indicators and Specificity in the Instructional Focus Document for this unit. A Microsoft Word template for this Planning document is located at www.oscope.us/sup_plan_temp.doc. If a supplement is created electronically, users are encouraged to upload the document to their Lesson Plans as a Lesson Plan Resource for future reference.

INSTRUCTIONAL PROCEDURES

Instructional Procedures

ENGAGE

1. Write the following numbers on the board or overhead: 1, 2, 3, 6, 9, 18. Prompt students to find out what these numbers have in common and write their answers in their math journals. (They are all factors of 18.) Discuss answers as a class.
   - How did you know these numbers were factors of 18? Answers may vary. They all divide evenly into 18; when I multiply certain pairs, I get 18, etc.
   - What do you know about factors? What does it mean to find the factors of a number? Answers may vary. A factor is a number multiplied by another number to find a product. To find the factors of a number means to find numbers that can be multiplied together to get that product, etc.

2. List on the board all the pairs of factors for 18. Example:
   
   \[
   \begin{array}{ccc}
   1 \times 18 & 2 \times 9 & 3 \times 6 \\
   \end{array}
   \]

   Point out that 2 x 9 and 9 x 2 are not both listed in this situation. Let the students know that each pair is called a factor pair. Ask:
   - How do you know that there are not more pairs of whole numbers whose product is 18? Answers may vary. Whole numbers between 1 and 18 were checked until factors began to repeat: \(1 \times 18, 2 \times 9, 3 \times 6, 4 \times 6, 5 \times 3\) \(\rightarrow\) factors are now repeating.

Notes for Teacher

NOTE: 1 Day = 50 minutes
Suggested Day 1

SPIRALING REVIEW

MATERIALS
- math journal (1 per student)

TEACHER NOTE
Development of factor vocabulary has taken place in the previous operations units. Remind students that the word “factor” discussed in these lessons is the same as what has been defined and discussed in the multiplication and division operations units.

VOCABULARY
Factor: a number multiplied by another number to find a product
Factor Pair: two numbers that multiply to produce a given product
Assessments

• Are our students able to transfer knowledge – Assessments!
11. Mr. Huyan wanted to find the common factors of 54 and 126 so he could divide two packages of colored notepads among his employees. How many whole number factors do 54 and 126 have in common?

15. One multiplication array for the number 12 is shown below.

[Array representation]

A. Are there any additional multiplication arrays for the number 12? If so, show them. Is the number 12 prime or composite? Show or explain how you know your answer is correct.

16. The table below shows the number of items purchased at a grocery store by 4 different families.

<table>
<thead>
<tr>
<th>Family</th>
<th>Number of Items</th>
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<tbody>
<tr>
<td>Garcia</td>
<td>19</td>
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<td>Henley</td>
<td>29</td>
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<tr>
<td>Childress</td>
<td>32</td>
</tr>
<tr>
<td>Gregory</td>
<td>37</td>
</tr>
</tbody>
</table>

Which family’s number of items is a composite number?

A. Garcia  
B. Henley  
C. Childress  
D. Gregory
Kilgo Binders, Student Assessment
Binders and INOVA data
No more Random Acts of Improvement
Tell me and I'll forget.
Show me and I may remember.
Involve me and I'll understand.
Questions? Contact Us!

- Jose A. Cervantes, AISD Superintendent  
  jcervantes@alpine.esc18.net

- Nancy Roll, Alpine ISD, Programs Director  
  nroll@alpine.esc18.net

- Panchi Scown, Alpine Middle School Principal  
  pscown@alpine.esc18.net

- Verl O’Bryant, Alpine High School Principal  
  vobryant@alpine.esc18.net

- Amy Serafini, Alpine Elem. School Principal  
  serafini@alpine.esc18.net