

**Training for the New Georgia  
Performance Standards**  
Days 3 and 4: Making Instructional Decisions

**Content Facilitator's Guide  
Science Grades K-2, 8**

*We will lead the nation in improving student achievement.*

## ***Acknowledgements***

This training program was developed by the Georgia Department of Education as part of a series of professional development opportunities to help teachers increase student achievement through the use of the Georgia Performance Standards.

For more information on this or other GPS training, contact Dr. Sue Snow. Phone: (404) 657-7838, Email: [ssnow@doe.k12.ga.us](mailto:ssnow@doe.k12.ga.us)

## ***Use of This Guide***

The module materials, including a Content Facilitator's Guide, PowerPoint Presentation, and supplementary materials, are available to designated trainers throughout the state of Georgia who have successfully completed a Train-the-Trainer course offered through the Georgia Department of Education.

Materials (guides, presentations, etc.) will be available electronically on <http://www.georgiastandards.org> under the training tab after all trainings of Days 3 and 4 have occurred. Consult trainer for availability.

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## Overview

### Objectives

By the end of day four of training, participants will be able to:

1. Explain why designing instruction is stage three in the standards-based education process
2. Explain different ways of curriculum mapping.
3. Describe the WHERETO method of identifying the purpose of instructional strategies.
4. Identify a variety of instructional strategies for different achievement targets.
5. Evaluate a unit plan, focusing on the instructional plan detailed on the unit calendar, and develop a balanced plan for instruction, one that includes strategies appropriate to achievement targets and content.

### Module Sequence

Prior Preparation—Participants

- Unpack several standards to create Stages One and Two for a unit of study

Introduction to Stage Three (3 hours)

- Quotation Hook
- Review of Stages One and Two
- Overview of Stage Three
- Matching Strategies to Achievement Targets
- Identifying the Purpose of Instructional Strategies
- (WHERETO method)

Curriculum Mapping (1 hour)

- Basic Principles for Curriculum Mapping
- Creating a Sample Map

Designing an Instructional Unit (7 hours)

- Hook Activity
- Evaluating and Instructional Plan
- Selecting Appropriate and Balanced Instructional Strategies for a Unit

**Module  
Materials****Content Facilitator's Kit contents:**

- Content Facilitator's Guide (one for each leader)
- Complete set of slides (PowerPoint)
- Sample unit plan that includes unpacked standards, assessment plan with timeline, sample assessment tasks/assessment items

## Other materials needed:

- Name tags
- Easel chart paper and stand
- Chart paper and stand
- A number of colored markers for flipchart
- Sticky notes
- Masking tape to post flipcharts
- Highlighter markers, one per participant

## Equipment:

- Overhead projector or computer and LCD projector

## **Recommended Readings/Viewings: Instruction**

**Note:** A more general list of resources for the standards-based education process is contained in the materials for Day one of training.

Examining Student Work. Alexandria, VA: ASCD, 2002.

This excellent resource includes four VHS tapes and a Facilitator's Guide that thoroughly illustrate a number of collaboration protocols for examining student work in order to improve student achievement. One set of these materials is being sent to each local system.

Hayes Jacobs, Heidi. *Mapping the Big Picture: Integrating Curriculum and Assessment K-12*. Alexandria, VA: ASCD, 1997.

In this step-by-step description of the process for creating and working with curriculum maps from data collection to ongoing curriculum review, Jacobs discusses the importance of "essential questions," as well as assessment design that reflects what teachers know about the students they teach. The benefits of this kind of mapping are obvious for integrating curriculum. Through the development of curriculum maps, educators can see not only where subjects already come together but also any gaps that may be present.

*Literacy Across the Curriculum: Setting and Implementing Goals for Grades Six through Twelve*. SREB, 2004.

This volume is essential for state, district, and school leaders who plan to implement school wide literacy programs. It provides concrete, research-based steps not only to raise reading and writing achievement but also to help students learn more in every class by using literacy skills. The guide focuses on five literacy goals: reading 25 books across the curriculum; writing weekly in all classes; using reading and writing strategies; writing research papers; and taking rigorous language arts classes.

Marzano, Robert J., Debra J. Pickering, and Jane E. Pollock. *Classroom Instruction That Works: Research-Based Strategies for Increasing Student Achievement*. Alexandria, VA: ASCD, 2001.

Using a meta-analysis of thousands of research studies, Marzano, et al., clearly answers the question, "Which instructional techniques are *proven* to work?" They provide 13 proven strategies that all teachers can use, and they explain the research in a clear, practical manner.

Marzano, R., et al. *A Handbook for Classroom Instruction That Works*. Alexandria, VA: ASCD, 2001. A perfect resource for self-help or school study groups, this handbook makes it much easier to apply the teaching practices outlined in *Classroom Instruction That Works*. The authors guide the reader through the nine categories of instructional strategies that are most likely

to maximize student achievement and provide everything needed to use the strategies quickly in classrooms. The book includes the following: exercises to check understanding; brief questionnaires to reflect on current beliefs and practices; tips and recommendations to implement the strategies; samples, worksheets, and other tools to help plan classroom activities; and rubrics to assess the effectiveness of the strategies with students.

Marzano, Robert J. *Classroom Management That Works: Research-Based Strategies for Every Teacher*. Alexandria, VA: ASCD, 2003.

The author analyzes research from more than 100 studies on classroom management to answer the questions, "How does classroom management affect student achievement?" and "What techniques do teachers find most effective?" The author provide action steps, along with real stories of teachers and students, to guide teachers in implementing the research findings.

Strong, R., H. Silver, and M. Perini. *Teaching What Matters Most: Standards and Strategies for Raising Student Achievement*. Alexandria, VA: ASCD, 2001.

This practical book about the responsibility educators have to teach what matters most includes many examples of educators throughout the nation who have been successful in increasing student performance on state and national assessments. The authors also explore three changes that must take place to achieve this goal: responsible standards, responsible strategies, and responsible assessment practices.

Wiggins, Grant, and Jay McTighe. *Understanding by Design*. Alexandria, VA: ASCD, 1998.

This book explains the "backward design" process that is the backbone of standards based education. The book explains both the underlying principles and the process teachers can use to put them into practice.

Wiggins, Grant, and Jay McTighe. *Understanding by Design Study Guide*. Alexandria, VA: ASCD, 2000.

This companion book to *Understanding by Design* provides discussion questions, graphic organizers, and summaries to support faculty study groups that are exploring *Understanding by Design*.

Wiggins, Grant, and Jay McTighe. *Understanding by Design Professional Development Workbook*. Alexandria, VA: ASCD, 2004.

This companion book to *Understanding by Design* is chock-full of templates and examples to help teachers put the process into place.

## **Suggested Web Sites for Instruction**

<http://ims.ode.state.oh.us/ODE/IMS/Lessons/Default.asp>

This web site, created by the Ohio Department of Education, provides guidelines for planning standards-based instruction and for designing standards-based units and lessons.

<http://pareonline.net>

*Practical Assessment, Research and Evaluation* (PARE) is an on-line journal supported, in part, by the Department of Measurement, Statistics, and Evaluation at the University of Maryland. Its purpose is to provide education professionals access to refereed articles that can have a positive impact on assessment, research, evaluation, and teaching practice.

[http://users.edte.utwente.nl/lanzing/cm\\_home.htm](http://users.edte.utwente.nl/lanzing/cm_home.htm)

This web site provides an overview of concept mapping that might be useful for determining those concepts and processes that fit together for units of instruction.

<http://www.greece.k12.ny.us/instruction/ela/6-12/BackwardDesign/Overview.htm>

This page on the Greece Central School District of New York web site offers multiple resources related to instructional planning using the Standards-Based Education process.

<http://www.greece.k12.ny.us/instruction/ela/6-12/Curriculum%20Mapping/Index.htm>

This page on the Greece Central School District of New York web site offers multiple templates that can be modified and used to assist in mapping concepts into units of instruction.

<http://currmap.ncrel.org/default.htm>

This web site is an interactive site designed to assist districts in their efforts to map out new mathematics and science curricula. Available to users for comparisons are rich international mathematics and science curriculum maps from top-achieving nations.

<http://www.learn-line.nrw.de/angebote/greenline/lernen/downloads/nine.pdf>

This article lists, explains, and provides examples of nine instructional strategies, identified by Marzano, Pickering, and Pollock, that improve student achievement across all content areas and grade levels.

<http://www.pbs.org/pbsyou/about.html>

This PBS web site provides information about free televised, adult education courses in everything from dramatic literature to cooking. Anyone teaching a new course or just wanting to revisit particular content topics might find this site useful.

<http://www.rmcdenver.com/useguide/lessons/examples.htm?>

This site provides sample lessons/units based on the Texas state standards.

<http://www.sasked.gov.sk.ca/docs/policy/approach/instrapp05.html>

This excellent article from Curriculum and Instruction Branch Saskatchewan Education, 2220 College Avenue, Regina, Saskatchewan, provides information teachers may find helpful about matching instructional strategies to desired learning goals.

<http://64.233.179.104/search?q=cache:FWPY3QS1C6wJ:www.pls.uni.edu/tws/rubricsamples/IDM2.pdf+Making+Instructional+Decisions&hl=en>

This web site provides two anecdotal examples of teachers using assessment of student learning to make instructional decisions.

<http://www.techtrekers.com/>

This site provides information about simulations, web quests, and other strategies and activities that can provide students with the opportunity to learn.

[www.pals.sri.com](http://www.pals.sri.com)

PALS is an on-line, standards-based, continually updated resource bank of science performance tasks indexed via the National Science Education Standards (NSES) and various other standards frameworks.

[www.teachersbridge.org](http://www.teachersbridge.org)

This excellent site, created by a consortium of Georgia educators and other professionals in education, provides teaching resources, online learning communities, and much more.

<http://www.sasked.gov.sk.ca/docs/policy/approach/instrapp02.html>

This article provides an overview of four foundations for instructional decision making, as well as information on appropriate teacher reflection about the practice of instructional decision making in the classroom.

## **Agenda**

This is a two-day course, with approximately 11 hours of instructional time.

### Prior Preparation—Participants

- Unpack several standards to create Stages One and Two for a unit of study

Introduction to Stage Three ..... 3 hours

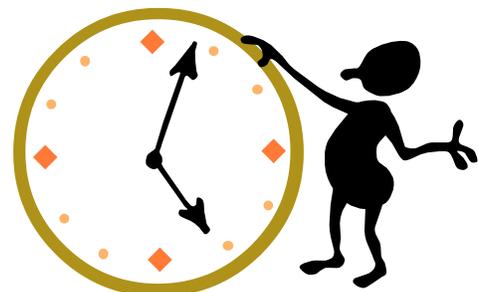
- Quotation Hook
- Review of Stages One and Two
- Overview of the Training
- Overview of Stage Three
- Matching Strategies to Achievement Targets
- Identifying the Purpose of Instructional Strategies (WHERE TO method)

Curriculum Mapping ..... 1 hour

- Basic Principles of Curriculum Mapping
- Creating a Sample Map

Designing an Instructional Unit ..... 7 hours

- Hook Activity
- Evaluating an Instructional Plan
- Selecting Appropriate and Balanced Instructional Strategies for a Unit



## **Introduction to Stage Three**

**Time** 3 hours

**Overview** In the introduction, the participants review key points from stages one and two in the standards-based education process. Then, the group investigates the purpose of stage three and the WHERETO acronym, which describes the purposes of various instructional strategies.

**Objectives**

- Explain why instruction is stage three in the standards-based education process.
- Describe the WHERETO method of identifying the purposes and uses of instructional strategies.
- Identify a variety of instructional strategies for different achievement targets

**Activities**

- Quotation Hook Activity
- Review of Stages One and Two
- Overview of the Training
- Overview of Stage Three
- Matching Strategies to Achievement Targets

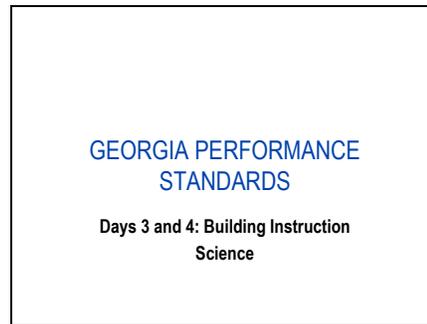
**Materials**

- Overhead projector or computer and LCD projector
- Transparencies or PowerPoint presentation
- Agenda flipchart (create before class)
- Parking Lot flipchart (create before class)

## Quotation Hook Activity

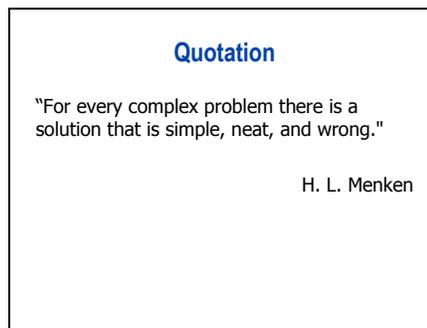
Title Slide

1. All participants will be working in grade level groups to write curriculum maps and design units. Everyone should choose a grade level topic even if they do not work with a specific grade.
2. Show title slide and welcome participants to training.



Slide: *Quotation*

3. Show slide, *Quotation*.



4. Present:
  - **This statement by writer and philosopher H. L. Menken seems *à propos* as we begin.**
  - **Keeping this quotation in mind, take a minute or two in your table groups to reflect on the GPS training—from where we started in the fall to where we are today. How does Menken's aphorism relate to the implementation of the Georgia Performance Standards?**

5. Allow participants a couple of minutes to discuss at their tables, and then ask: **What do you think? Does Menken provide any insights for us?** Expect (or work to solicit) comments such as:
  - The new GPS are very complex
  - Implementing the GPS is a complex process
  - We can't expect to accomplish this complex task without effort
  - There are no "quick fixes" to unpacking the GPS, developing assessments, or planning units of instruction.
  
6. Present: **In his discussion of *What Works in Schools*, Bob Marzano discusses two types of change that occurs in schools: First Order Change and Second Order Change. First Order Change involves those things that make our lives easier or make us feel better about ourselves, our schools, our jobs, etc. Eliminating those annoying interruptions during class time might be an example of a First Order Change. But Second Order Change is very different.**

Slide: *Second Order Change*

7. Show slide, *Second Order Change*. Reveal each bulleted point one at a time as you present the following information:

**Second Order Change**

- Shakes up the status quo
- Holds everyone's feet to the fire
- Proposes new and often revolutionary ideas
- Involves a change in mindset
- Causes moments of frustration
- Invites ambiguity and dissent
- Involves research and theory

- **Second Order Change isn't easily "implemented"—does that word sound familiar! Second Order Change necessitates a change in mindset; it takes time and effort and often causes periods of frustration. Second Order Change isn't easy, but as Marzano's work illustrates, it is Second Order Change that leads to improved student achievement, our goal in Georgia.**
  
- **We've all experienced moments of frustration as we've gone through this process leading up to the implementation of the GPS, and it's important to remember that we will have more of these moments. But achieving our goal of improving student achievement is worth it.**

- **To put everything back into the context of Menken's aphorism, implementing the GPS is a "complex" process. No "simple and neat" solution to this process exists; and if we attempt to address this "complex" process with "a simple and neat" solution, we run the risk of reducing the Second Order Change to a First Order Change, something that may make us feel better and/or alleviate our moments of frustration but at the potential cost of any real and substantive change; and that wouldn't be the right solution to this complex problem.**
- **Before we begin today, let's take a second and pat ourselves on the back. We've come a long way since Day 1 of GPS training. With each subsequent day of training, we've moved closer to our goal of implementing the Georgia Performance Standards in order to improve student achievement; and with each day of training we've all become less anxious and more confident about what we're doing. These feelings of increased confidence will continue in these final two days of training for this academic year, but we shouldn't become discouraged if we still have difficult moments. If there are no difficult moments, we aren't really attempting Second Order Change.**
- **As part of this training today and tomorrow, we will spend time discussing the importance of collaboration. The process of standards-based education does not end with the GPS training. Nor will it end as we implement the GPS next year. The second unit of instruction that we design will be better than the first. And we will become better and better at utilizing the standards-based education process and the Georgia Performance Standards each year. By supporting each other as we experience this Second Order Change, by working together and collaborating in our schools, our systems, our regions, and throughout the state, we can lead the nation in improving student achievement.**

Chart Paper  
Marker

### **Reflections on Redelivery**

8. Ask participants about Redelivery. Be aware that some participants combined Days 1 and 2 during professional development time, and others have not yet redelivered.
- **On chart paper have each group brainstorm a list of successes, questions and concerns OR compile a whole group list.**
  - **Highlight the ones to address and work on during this session.**

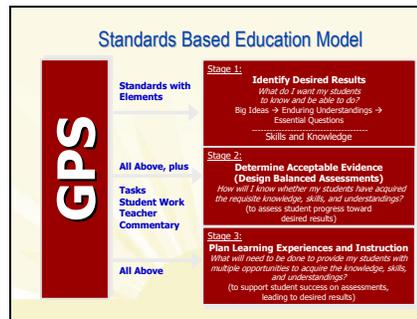
9. Transition: **To begin today, we will briefly review the first two stages of the standards-based education process.**

## Review of Stages One and Two

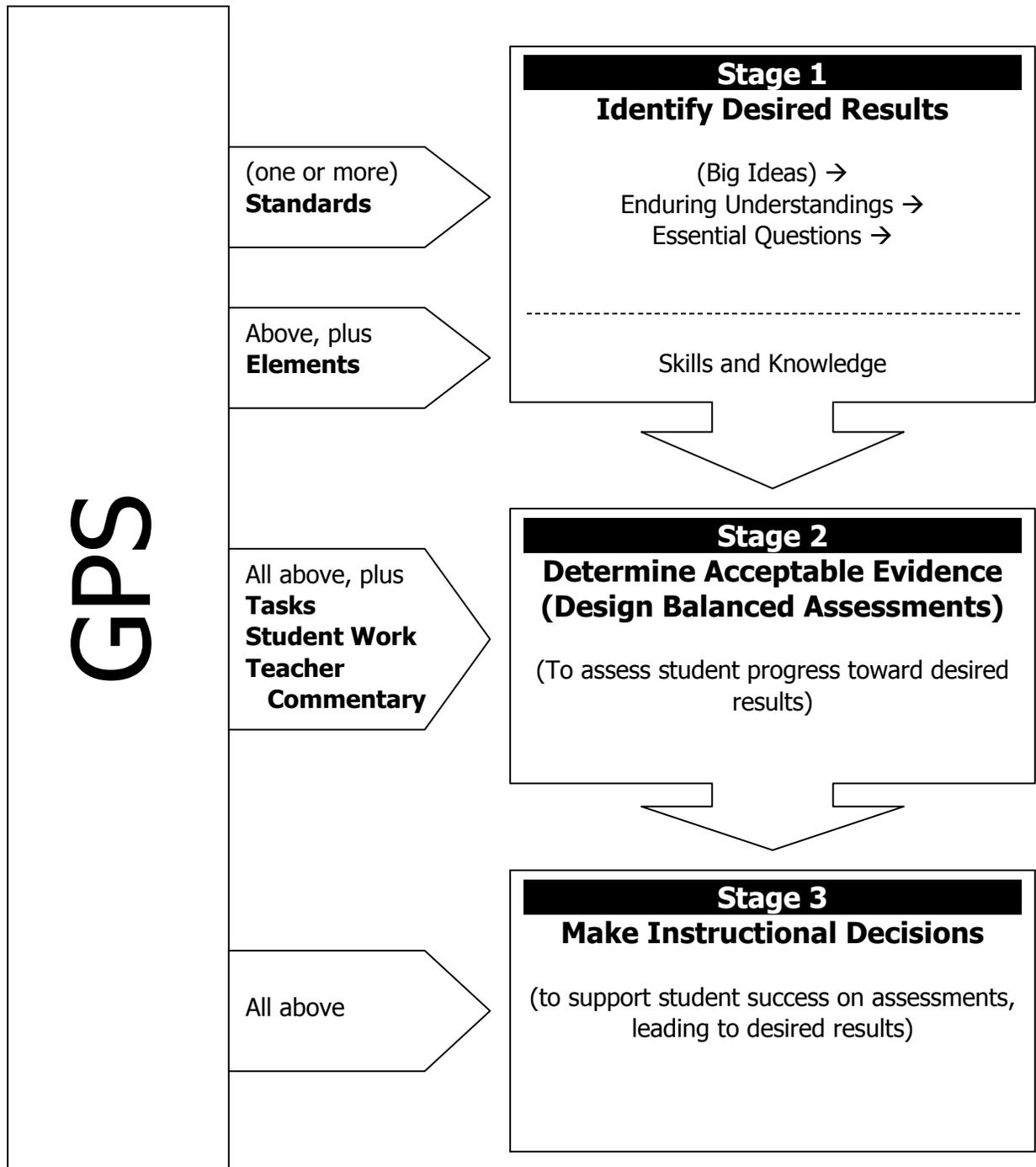
10. Refer participants to *GPS and the Standards-Based Education Process*. Say: **In our previous workshops, we worked extensively on understanding and applying Stages 1 and 2. In this workshop, we're going to focus on stage 3.**
11. Discuss: **We're going to discuss instruction shortly, but first, I'd like you to recall key points from stages 1 and 2.**

Slide: Stages of Standards-based Education Model

12. Show slide.



## **GPS and the Standards-Based Education Process**



Slide: *Review of Stage 1*

13. Show slide, *Review of Stage 1*. Present: **The purpose of this activity is for you to think critically about stages 1 and 2 in the standards-based education process.**

**Review of Stage 1**

- Where do the Big Ideas and/or Established Goals originate?
- How are Enduring Understandings formed?
- Why do we need to formulate Essential Questions?
- Why do we need to identify Key Knowledge and Skills in Stage 1 of the SBE process?
- How might our unpacked standards be similar?  
How might they be different?

14. Ask each question on this slide and allow participants time to share responses before going on to the next question. Answers will vary, but expect and/or elicit such responses as
- “the Big Ideas/Established Goals are in the standards themselves”;
  - “enduring understandings are formed by grouping or relating core concepts and processes specified in the standards, either explicitly or implicitly; but these understandings specify the kinds of conceptual learning that students will retain beyond the unit and the course”;
  - “by using a variety of modalities to answer essential questions via different tasks, activities, and/or assessments, students will provide evidence of learning”;
  - “the knowledge and skill statements specify what students need to know and be able to do in order to provide evidence of learning, so this helps teachers design appropriate assessments in Stage 2”;
  - “the core concepts and processes are consistent because they are specified in the standards, so our unpacked standards should be similar, if not identical in terms of the big ideas and established goals that we determine; however, because these core concepts and processes may be combined differently in different units, the standards we unpack for a unit may look different.”

Slide: *Review of Stage 2*

15. Show slide, *Review of Stage 2*. Ask each question on this slide and allow participants time to share responses before going on to the next question. Answers will vary, but expect and/or elicit such responses as:

**Review of Stage 2**

- Why should we develop an assessment plan before Stage 3, before we make instructional decisions?
- What questions might we want to consider as we develop an assessment plan?
- How can we tell if an assessment plan is balanced?
- Why is assessment for learning our goal?

- **We need to determine the assessments that will provide the best and most complete evidence of the desired learning goals from Stage 1 before we can plan the tasks and activities that will provide students with the best and most effective opportunities to learn.**
- **What learning goals have we determined for this unit? What are our achievement targets? Will this assessment generate evidence of learning appropriate to this achievement target? Is this the best assessment format for this achievement target? Will this assessment plan allow multiple opportunities for students to provide evidence of learning? Will students be able to use different modalities to provide evidence of learning?**
- **By predetermining a list of assessment formats to include throughout the course and using this list as a preparation guide, and by working collaboratively with other teachers to evaluate our assessment plans.**
- **Classroom assessment for learning allows us to use assessment to guide instruction and to obtain a complete and ongoing record of student growth so that we can intervene whenever necessary in order to provide students with more practice, remediation, extension, or alternate means of understanding.**

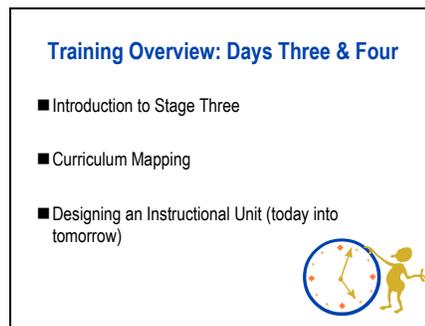
16. Present: **We also need to recall that:**

- **The Georgia Performance Standards provide year-long learning goals.**
- **Units of study typically involve multiple standards and elements, and many standards and elements will be addressed throughout a grade or course.**
- **Units of study often take weeks to complete.**
  
- **Transition: Now that we have recalled our prior knowledge, let's look at what this workshop holds for us.**

### Overview of the Training

Slide, *Training Overview: Days 3 and 4*

17. Show slide, *Training Overview: Days 3 and 4*. Present:



- **We'll begin with a discussion of some different ways of mapping curriculum.**
- **We're going to look at an overview of stage three and the **WHERE**TO acronym, which address the purposes of various instructional strategies.**
- **The second section, *Designing an Instructional Unit*, forms the heart of this workshop, and will take the majority of our time. In it, we'll focus on how to select and design a balance of instructional activities, in much the same way as we looked at balanced assessment. In this section, you'll work on applying what you learn in order to design a unit of instruction.**

Slide, *Days 3 & 4 Objectives*

18. Show slide, *Days 3 & 4 Objectives*.

**Days 3 & 4 Objectives** 

1. Describe why instruction is stage three in the standards-based education process.
2. Demonstrate how to use mapping to calendarize units throughout the year.
3. Describe the WHERE TO method of identifying the purpose of instructional strategies.
4. Identify a variety of instructional strategies for different achievement targets.
5. Develop a balanced plan for instruction that includes strategies appropriate to achievement targets and content.

19. Ask participants to read the objectives and jot down one specific thing that they hope to get from the workshop. Suggest that they refer back to this before leaving at the end of Day 4.

20. Ask: Are there any questions about the overview for Days 3 and 4?

### Previewing Stage Three

Slide, *Essential Question 1*

21. Show slide, *Essential Question 1*. Present: **This is the first question we'll be answering. You probably already have a good idea of the answer.**

**Essential Question 1**

- Why is instruction stage 3 in the backward design process?



22. Ask: **What is stage three in standards-based education?**

➤ Making instructional decisions

23. Ask: **Why does this stage follow unpacking and assessment?**

➤ By getting a clear picture of the standards/elements and the evidence required, we can better plan our instruction to ensure that every student is given the opportunity to achieve the learning goals.

24. Present: **As we work to implement the new GPS, teachers, administrators, and other stakeholders often want to know how they can manage to “get through everything.” Wiggins and McTighe acknowledge that teachers often worry about “covering” all the material, but they suggest that rather than thinking in terms of “covering” the material, we should focus on “uncovering.” What does this mean to you?**

Slide, *Uncovering vs. Covering*

- See slide, *Covering vs. Uncovering: What does it mean to “uncover”* for sample answers?

**Covering vs. Uncovering:  
What does it mean to “uncover?”**

- Bringing the “big ideas” to life
- Focusing on learning, rather than teaching
- Helping students to understand, not just remember the understanding of others
- Incorporating a number of different teaching strategies that are driven by the achievement targets
- Teaching for breadth and depth

Slide, *Teaching for Breadth and Depth*

25. Ask: **Wiggins and McTighe also advocate teaching for depth and for breadth. What does this mean to you?**

- See slide, *Teaching for Breadth and Depth* for sample answers.  
 ➤ Explain that more information on each of these points is included on the next page.

**Teaching for Breadth and Depth**

<u>Depth</u>	<u>Breadth</u>
■ Unearth it	■ Connect it
■ Analyze it	■ Picture it
■ Question it	■ Extend it
■ Prove it	
■ Generalize it	

26. Present: **As you can see, designing instruction that allows students to “uncover” the depth of a topic or concept in order to reach understanding involves a number of different kinds of strategies.**

## Teaching for Breadth and Depth

For Depth	Breadth
<p><i>Unearth it</i></p> <ul style="list-style-type: none"> <li>➤ Make assumptions explicit</li> <li>➤ Clarify points of view</li> <li>➤ Bring light to the subtle, the misunderstood, the not obvious, the controversial, the obscure, the problematic, the missing, and the lost.</li> </ul> <p><i>Analyze it</i></p> <ul style="list-style-type: none"> <li>➤ Separate into parts</li> <li>➤ Inspect and examine</li> <li>➤ Dissect, refine, and qualify</li> <li>➤ Question</li> <li>➤ Test</li> <li>➤ Challenge</li> <li>➤ Doubt</li> <li>➤ Critique</li> </ul> <p><i>Prove it</i></p> <ul style="list-style-type: none"> <li>➤ Argue</li> <li>➤ Support</li> <li>➤ Verify</li> <li>➤ Justify</li> </ul> <p><i>Generalize it</i></p> <ul style="list-style-type: none"> <li>➤ Subsume specifics under a more encompassing idea</li> <li>➤ Compare and contrast</li> </ul>	<p><i>Connect it</i></p> <ul style="list-style-type: none"> <li>➤ Link discrete and diverse ideas, facts, and experiences</li> </ul> <p><i>Picture it</i></p> <ul style="list-style-type: none"> <li>➤ Make concrete and simple</li> <li>➤ Represent or model in different ways</li> </ul> <p><i>Extend it</i></p> <ul style="list-style-type: none"> <li>➤ Go beyond the given to implications</li> <li>➤ Imagine "what if?"</li> </ul>

Adapted from Wiggins, Grant, and Jay McTighe. *Understanding by Design*. ASCD. 1998. 102.

## ***Curriculum Mapping***

**Time** 1 hour

**Overview** In this brief section, participants begin to think about the formats and processes that they would like to use to map out their instructional units throughout the school year.

**Objective** ➤ Explain different ways to map curricula.

**Activities** ➤ Basic Principles of Curriculum Mapping  
➤ Creating a Sample Map

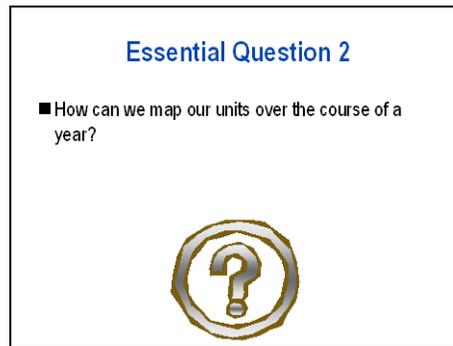
**Materials** ➤ Chart paper  
➤ Transparencies or PowerPoint presentation  
➤ Sample maps

***Trainer's Note:*** *The Heidi Hayes Jacobs book, Mapping the Big Picture, contains 17 sample curriculum maps in the appendix. You should choose a sample from those or from others that you have, to show the participants. Because different types of maps might appeal differently to teachers in various subjects and at various grade levels, we are not prescribing a specific set of samples for you to use, but the Hayes Jacobs book is a great starting point. Also, you should provide a variety of maps to show the many ways that they can be used.*

## Basic Principles for Curriculum Mapping

Slide, *Essential Question 2*

1. Show slide, *Essential Question 2*.



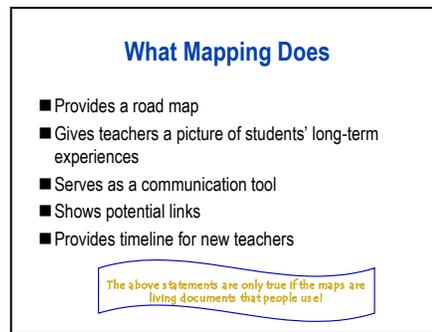
2. Ask: **How is mapping like planning a group tour for 100 people in Europe? Jot down your thoughts, and then share with your table partners.**
3. Lead a discussion of the similarities. Make the following points if they do not come from the participants:
  - **You need a master itinerary that shows where everyone will be at all times.**
  - **You want everyone to see the really important sites.**
  - **Without a plan, many group members could wander off on side trips or stay too long in "favorite places."**
  - **You need a way to communicate all the events to the tour group members.**
  - **You need some flexibility to allow for special needs and interests.**
  - **If you are to have a common assessment at the end of the trip [CRCT, EOCT, GHS GT], you need a common itinerary.**
4. Present: **Teachers often work in isolation, or in what we have come to refer to as "private practice," to plan the scope and sequence of their instructional units. Mapping, by contrast, is a collegial or collaborative approach.**

Emphasize

5. **In Heidi Jacobs Hayes' book, Mapping the Big Picture, page 8, she explains,**
- **"It is critical that each teacher completes a calendar-based map. No one can complete a map for anyone else; otherwise, the data are false. The only professional person who knows what is taught in the classroom is the teacher. Coordinators cannot fill out maps; principals cannot; department chairs cannot fill them out for everyone for the simple reason that they are not in each classroom."**

Slide, What Mapping Does

6. Show slide, What Mapping Does, and go over the following points, revealing each bullet on the slide to correspond with the discussion points below:



- **Maps work just like itineraries or road maps to show teachers where they are in a particular scope and sequence, what their students have been learning, and where their students need to be by the end of the unit, year, or grade level. They simply show where students have been and where they are going. Teachers need each other's maps to see the bigger, K-12 curriculum perspective.**

- **Individual teachers use maps to get a picture of what students experience from grade to grade. Though teachers work in the same building, they may have sketchy knowledge about what goes on in other classrooms. If gaps exist among teachers within buildings, there are chasms among buildings in a district. When this is true, transient students experience a happenstance curriculum.**
  - **There may be gaps between a standard and what is actually taught. These curriculum gaps negatively impact student learning. Maps may indicate missing pieces in vertical and horizontal articulation.**
  - **Maps may also reveal repetitions. Too often teachers assume that they are introducing a concept, or even a book, for the first time, and students are subjected to repetitious instruction.**
  - **Maps provide a calendar-based timeline for teachers. This is most helpful for new teachers not experienced in planning for an entire course.**
7. **Present: The map should be viewed as a "living" document that plays an integral part in teacher planning each day. For that reason, many of our schools need to redo old maps, especially if they do not reflect the new GPS.**

Sample Maps

8. Distribute sample maps or refer participants to sample maps in Mapping the Big Picture.

Trainer's Note: *You should have chosen several from the Heidi Hayes Jacob book (or from your own files). See note on previous page.*

9. Discuss the maps, pointing out that they are not free from error but represent efforts by these schools/systems.

Slides (2), Grade Level Content Maps

10. Show slide with sample maps, Grade Level Content Maps. Explain that these are just two types of examples.

Grade		Subject Area			
Aug	Sep	Oct	Nov	Dec	

**Grade Level Content Map 2**

Grade	Subject Area		
	Content	Skills	Assessment
Aug			
Sep			
Oct			
Nov			
Dec			

Slide-  
Sample Timeline  
Map

Month	Aug.	Sept.	Oct.	Nov.	Dec.
School Events					
Science Topic					
Standards Elements					
Literature					
Connections					
Assessment					
Skills					
References/ Resources					

11. Present: **The samples you have may differ, and the variations on the curriculum maps are limited only by your imagination. As we've discussed, you can:**
- **Use them to map out textbooks, technology, and other resources to units.**
  - **Use them to show relationships from subject to subject (horizontal) or from year to year in the same subject (vertical).**
  - **Create them on large butcher paper, index cards, standard 8½ X 11 sheets of paper, or on a computer.**
  - **Organize them by the months of the school year down the side or across the top.**
  - **Create both "macro" level maps that show the high level curriculum throughout the K-12 experience and "micro" level maps that explain in detail what happens in one subject in one grade level in one year, and various combinations of the two.**

Slide, What types of maps would serve you well?

12. Show slide, "What types of maps would serve you well?"
13. Read the directions.

**What types of maps would serve you well?**

- Work in small groups.
- Generate some possible map formats.
- For each one:
  - Identify its purpose and audience
  - Tell what type of information it would contain
  - Identify the relative level of detail (high, medium, low)
  - Show what it might look like
  - Create a one-page description and thumbnail drawing to post on the wall.
  - Put any new units that you have created into the map.



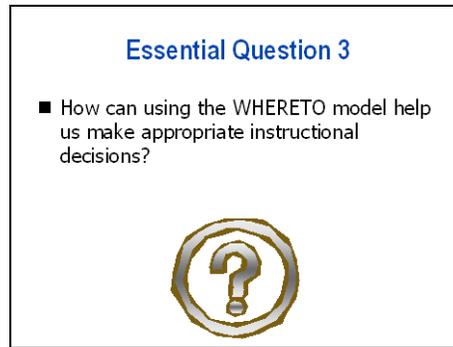
Chart paper  
Markers  
Cards of standards and elements

14. Divide the class into groups of 3 – 5. Provide each group with chart paper and markers to display each idea they have. Encourage creativity.
15. An index card template of the standards and elements for Science grades K-2 and 8 are included in this guide. Each card contains the bold standard and an element from that standard so participants can make decisions on how to group the elements based on instructional decisions rather than sequence.
16. Allow 15 minutes for small group work.
17. Ask each group to post their work. Invite all participants to walk around the room and see what each team has developed.
18. Debrief: **Were there any "Aha's--revelations" during this activity? What were they?**

## WHERETO Model of Instructional Design

1. Show slide, Essential Question 3.

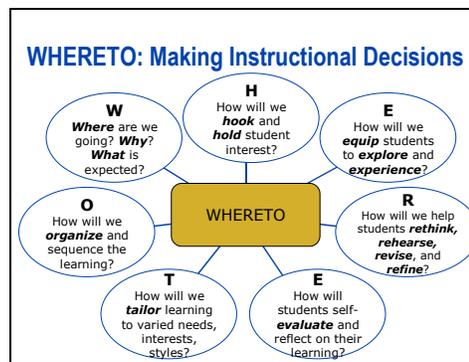
Slide



2. Present: **Let's consider one more model as we start to make decisions about instruction. This is the WHERETO model.**

Slide

3. Show slide, *WHERETO: Making Instructional Decisions*. Present: **This model provides some questions that we can use as we begin to consider appropriate instructional strategies for a unit.**



4. Ask: **What is the value of using WHERETO?**

- It keeps us mindful of the criteria we hope to address through various learning tasks and activities.
- It focuses on student learning and all that entails: engaging the students, designing instruction to meet the needs of the students, and encouraging students to become independent learners. In other words, even when the teacher is making the instructional decisions, the focus is on the student.

5. Present: **We're going to use a mini-jigsaw activity to explore the WHERETO model. By "mini," I mean that both the readings and the time will be very short. I'd like you to get a better idea of what each of the letters in the WHERETO model encompasses.**
6. Ask participants to count off by sevens and then form seven groups.
7. Copies of the pages from the UbD Professional Development Workbook are included in the appendix.

Slide, *Mini-Jigsaw*

8. Show slide, *Mini-Jigsaw*. Present: **Each group will focus on just one or two pages describing the WHERETO model. The pages assigned to each group are listed on this slide. I'd like you to take ten minutes to read and discuss the page or pages, and then present a one-minute summary of the information.**

**Mini-Jigsaw**

- Group 1: W: Pages 72-73
- Group 2: H: Page 74
- Group 3: E: Pages 75-76
- Group 4: R: Pages 77-78
- Group 5: E: Page 79
- Group 6: T: Page 80
- Group 7: O: Page 81

9. Ask each group to choose a recorder and a speaker.
10. Ask the participants to turn to the designated pages from the appendix.
11. Allow ten minutes for small group work. Provide two- and one-minute warnings.
12. Ask each group to present a one-minute summary.
13. Transition: **The WHERETO model applies to all the various types of achievement targets (Knowledge/ Information, Skills/Processes, Thinking & Reasoning, and Communication) that we discussed in earlier workshops. However, additional questions need to be considered to ensure that the strategies you use are appropriate for the achievement targets.**

Slide, *Essential Question 4*

14. Show slide, *Essential Question 4*. Explain: **In Day 2 of training, we matched assessment formats to different achievement targets in order to determine the most effective means of obtaining appropriate and meaningful evidence of student learning. Today we will use a similar process to match instructional strategies to achievement targets.**



15. **Let's begin by reviewing *General Categories of Instructional Strategies* included in the Facilitator's Guide.**
16. **If any of these are unfamiliar to you, a glossary is included in the appendix.**

Slide, *Matching Strategies to Achievement Targets*

17. Show slide, *Matching Strategies to Achievement Targets*. Refer to the general types of strategies listed across the top of the chart and say:
- **This slide is very similar to the one we used to match assessment formats to achievement targets. As you can see, the achievement targets in the first column are exactly the same.**
  - **If you look across the first row, however, you'll see five categories of instructional strategies listed.**
  - **For our training purposes, we will be using five categories of instructional strategies—direct instruction, experiential learning, independent learning, indirect instruction, and interactive learning—but there's not a single correct way of categorizing instructional strategies. You may choose to categorize differently in your school or system.**
  - **Placing different instructional strategies into categories can, however, help ensure that we select the best types of strategies for particular achievement targets.**

Achievement Target	Direct Instruction	Experiential Learning	Independent Learning	Indirect Instruction	Interactive Instruction
Knowledge/Information					
Skills/Processes					
Thinking & Reasoning					
Communication					

18. Ask participants to turn to the chart on the next page. Information about each strategy is included in the Appendix also.
19. Note: **The strategies with asterisks can improve student achievement across all content areas and grade levels according to studies by Marzano, Pickering, and Pollock.**

## **General Categories of Instructional Strategies**

**Direct Instruction:** Instructional strategies that involve a high degree of teacher control.

Compare & Contrast	Explicit Teaching	Reinforcing Effort & Providing Recognition*
Cues, Questions, & Advance Organizers*	Graphic Organizers	Setting Objectives & Providing Feedback*
Demonstrations	Guides for Reading, Listening, Viewing	Summarizing & Note Taking*
Didactic Questions	Identifying Similarities and Differences*	Structured Overview
Drill and Practice	Mastery Lecture	

**Experiential Learning:** Instructional strategies where students learn by doing or experiencing authentic or simulated situations.

Conducting Experiments	Model Building	Role Playing
Field Observations	Surveys	Games
Field Trips	Modeling	Simulations
	Nonlinguistic Representations*	Synecotics

**Independent Learning:** Instructional strategies during which students work independently, sometimes at their own rate on self-selected assignments or topics.

Assigned Questions	Graphic Organizers	Learning Contracts
Computer Assisted Instruction	Homework and Practice*	Reports
Correspondence Lessons	Learning Activity Package	Research Projects
Essays	Learning Centers	Summarizing and Note Taking*

**Indirect Instruction:** Instructional strategies where the teacher establishes the learning situation or task, but the students determine the direction and/or solution.

Case Studies	Cloze Procedures	Problem Solving
Concept Attainment	Generating & Testing Hypotheses*	Reading for Meaning
Concept Formation	Graphic Organizers	Reciprocal Teaching
Concept Mapping	Inquiry	Reflective Discussion

**Interactive Instruction:** Instructional strategies that involve students working with other students and/or the teacher to move toward the learning goals.

Brainstorming	Interviewing	Problem Solving
Circle of Knowledge	Laboratory Groups	Role Playing
Cooperative Learning*	Panels	Socratic Seminars
Debates	Peer Practice	Tutorial Groups

\* Marzano, Pickering, and Pollock note that incorporating these nine strategies into instruction can improve student achievement across all content areas and grade levels. <http://www.learn-line.nrw.de/angebote/greenline/lernen/downloads/nine.pdf>

20. Present:

- **As you read over the different categories with their lists of instructional strategies, mark those that you use frequently with a plus (+), those that you use sometimes with a checkmark (✓), and those that you use rarely or never with a minus (-).**

21. Allow participants a few minutes to read over the list of instructional strategies, then say:

- **Now look over your marked list. What does this tell you about your classroom practice?**
- **How might you use this list as you make instructional decisions?**

22. Allow participants to share responses, then say:

- **It's not enough, though, merely to pick instructional strategies from a list; we need to make sure that we're using the best strategies for particular achievement targets.**

Four slides on matching strategies to achievement targets

23. Show the four slides that correspond to the five types of achievement targets. For each one, refer to the instructional strategy category and ask, "Would this type of strategy be appropriate for this achievement target?" After discussion, click on the slide to reveal the contents of each table cell in turn.

***Trainer's Note:** The slides are set up to reveal the contents of each cell in turn, upon a mouse click (or other method of slide advancement).*

24. Say: **Responses other than those on the chart may be just as appropriate, or perhaps even more appropriate to particular teaching and learning situations. Furthermore, different strategies within a particular category may be more or less appropriate to a given situation; but it's important that we always examine the appropriateness of the instructional strategies for particular achievement targets.**

**Achievement Target:  
Knowledge and Information**

Direct Instruction	Experiential Learning	Independent Learning	Indirect Instruction	Interactive Instruction
Strategies such as direct instruction, graphic organizers, structured overview, etc., can convey facts or information to students.	Experiential strategies may be structured to allow students to arrive, inductively or deductively, at rules or principles.	Strategies such as assigned questions, learning activity packages or centers, reports, or research projects allow students to obtain facts, etc.	Strategies such as concept attainment or concept formation, reading for meaning, reciprocal teaching, and inquiry allow students to arrive at rules or principles.	Strategies such as discussion, interviewing, or tutorial groups can provide students with information or help them to review rules, etc.

**Achievement Target:  
Skills/Processes**

Direct Instruction	Experiential Learning	Independent Learning	Indirect Instruction	Interactive Instruction
Modeling can introduce or demonstrate skills or processes, but other, more student-directed strategies are needed as well.	Modeling, games, conducting experiments, etc., can introduce skills/processes or provide practice.	Essays, learning activity packages or centers, or research projects, etc., can provide opportunities for application or practice.	Instructional strategies that involve problem solving often provide the opportunity to acquire skills or practice processes.	Cooperative learning groups, debates, role playing, or laboratory groups, etc., work well.

**Achievement Target:  
Thinking and Reasoning**

Direct Instruction	Experiential Learning	Independent Learning	Indirect Instruction	Interactive Instruction
Modeling can introduce or demonstrate thinking and reasoning processes, but other, more student-directed strategies are needed as well.	Most experiential strategies work well here, especially role playing, games, experiments, and simulations.	Some, such as certain essay topics, learning activity packages or centers, or research projects, work better than others.	Strategies such as working with case studies, concept mapping, inquiry, problem solving, etc., work well with thinking and reasoning targets.	Most interactive instructional strategies work with these targets, but especially problem solving and Socratic Seminars.

**Achievement Target:  
Communication**

Direct Instruction	Experiential Learning	Independent Learning	Indirect Instruction	Interactive Instruction
Not the best strategies for providing students with opportunities to acquire or practice communication skills.	Good when oral, written, or other forms of expression are included, such as reporting field observations, role playing, or simulations.	Again, essays or other strategies that involve oral, written, or other forms of expression can provide the opportunity to learn communication skills.	Reciprocal teaching, reflective discussion, or other strategies that involve oral, written, or other forms of expression work well.	By definition, interactive instructional strategies include opportunities to learn or practice communication skills.

## ***Matching Instructional Formats to Achievement Targets***

	<b>Direct Instruction</b>	<b>Experiential Learning</b>	<b>Independent Learning</b>	<b>Indirect Instruction</b>	<b>Interactive Instruction</b>
<b>Knowledge/ Information</b>	Strategies such as direct instruction, graphic organizers, structured overview, etc., can convey facts or information to students.	Experiential strategies may be structured to allow students to arrive, inductively or deductively, at rules or principles.	Strategies such as assigned questions, learning activity packages or centers, reports, or research projects allow students to obtain facts, etc.	Strategies such as concept attainment or concept formation, reading for meaning, reciprocal teaching, and inquiry allow students to arrive at rules or principles.	Strategies such as discussion, interviewing, or tutorial groups can provide students with information or help them to review rules, etc.
<b>Skills/ Processes</b>	Modeling can introduce or demonstrate skills or processes, but other, more student-directed strategies are needed as well.	Modeling, games, conducting experiments, etc., can introduce skills/processes or provide practice.	Essays, learning activity packages or centers, or research projects, etc., can provide opportunities for application or practice.	Instructional strategies that involve problem solving often provide the opportunity to acquire skills or practice processes.	Cooperative learning groups, debates, role playing, or laboratory groups, etc., work well.
<b>Thinking &amp; Reasoning</b>	Modeling can introduce or demonstrate thinking and reasoning processes, but other, more student-directed strategies are needed as well.	Most experiential strategies work well here, especially roll playing, games, experiments, and simulations.	Some, such as certain essay topics, learning activity packages or centers, or research projects, work better than others.	Strategies such as working with case studies, concept mapping, inquiry, problem solving, etc., work well with thinking and reasoning targets.	Most interactive instructional strategies work with these targets, but especially problem solving and Socratic Seminars.
<b>Communication</b>	Not the best strategies for providing students with opportunities to acquire or practice communication skills.	Good when oral, written, or other forms of expression are included, such as reporting field observations, role playing, or simulations.	Again, essays or other strategies that involve oral, written, or other forms of expression can provide the opportunity to learn communication skills.	Reciprocal teaching, reflective discussion, or other strategies that involve oral, written, or other forms or expression work well.	By definition, interactive instructional strategies include opportunities to learn or practice communication skills.

## Matching Strategies to Achievement Targets

1. Present: **We've looked at a range of issues related to choosing appropriate instructional strategies:**
  - **The learning goals and the types of evidence we want to obtain**
  - **The importance of WHERE TO (having a range of strategies for getting attention, focusing the learning, facilitating learning, differentiating instruction, and providing for practice and feedback)**
  - **The need to match strategies to different achievement targets**
  
2. Transition:
  - **In the next section of the training, we're going to look more in-depth at developing instructional strategies for a unit and put our learning to work by making some instructional decisions for particular units.**

## ***Designing an Instructional Unit***

### **Time**

7 hours (extending to second day)

### **Overview**

In this section, participants focus on applying what they've learned in the first section. They evaluate an instructional plan and complete unit planning templates, including calendar templates for an instructional plan.

### **Objective**

- Evaluate a unit plan, focusing on the instructional plan detailed on the unit calendar, and develop a balanced plan for instruction, one that includes strategies appropriate to achievement targets and content.

### **Activities**

- Hook Activity
- Evaluating an Instructional Plan
- Selecting Appropriate and Balanced Instructional Strategies for a Unit

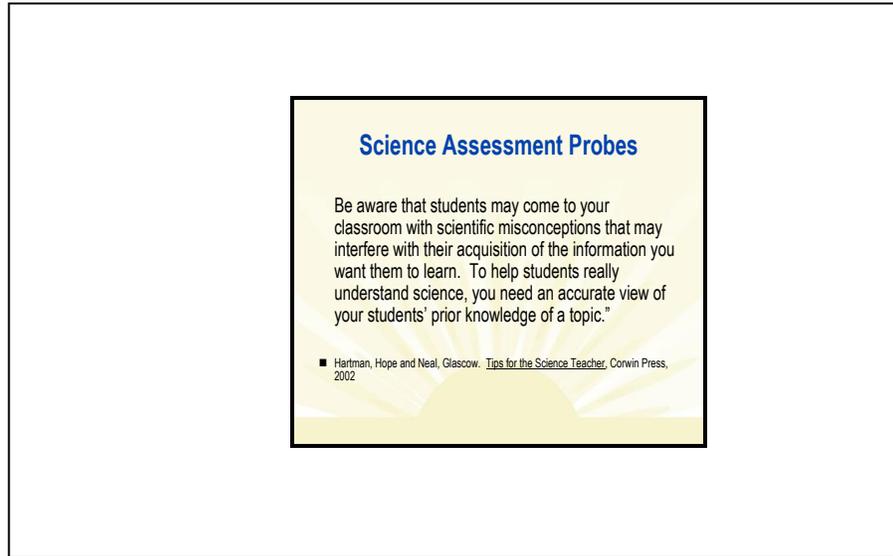
### **Materials**

- Chart paper
- Transparencies or PowerPoint presentation
- Highlighter markers
- Paper for folded "tent" to label table topic for unit

## Hook Activity

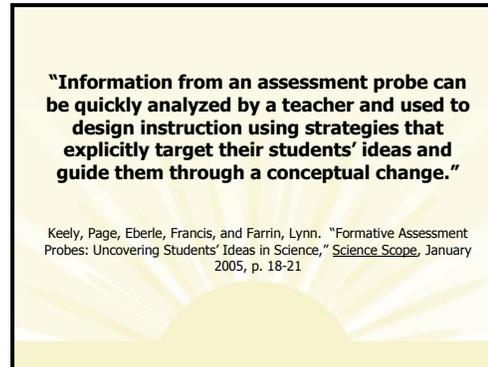
Strategy: Assessment Probes

1. Show slide.



2. Say:
  - **There has been a great deal of research in the study of "naïve theories," misinformation, preconceptions, or misconceptions about science topics that interfere with learning. Some of the information students bring is an emerging knowledge of the topic. This understanding is the foundation to build further learning.**
  - **Misconceptions can result from limited experience, incorrect generalizations, oversimplified generalizations, misinterpretations, or out-of-date information.**
  - **If the structure of knowledge is faulty, incomplete, or false, those parts must be revised or discarded.**
  - **A critical component for conceptual change is to check for misunderstandings of the student's prior knowledge. Situations that stimulate student thinking can modify prior knowledge.**
  - **You must first have an accurate idea of the students' prior knowledge as an instructional starting point.**

## 3. Show slide.



- **Give students a scenario to write their explanation of what is happening as a pre-assessment of what they know and understand. Use their explanations as a screen for possible misconceptions.**

Slide

Examples of an Elementary and Middle School Science Assessment Probes:

**Examples of Elementary School Science Assessment Probes in Physical Science**

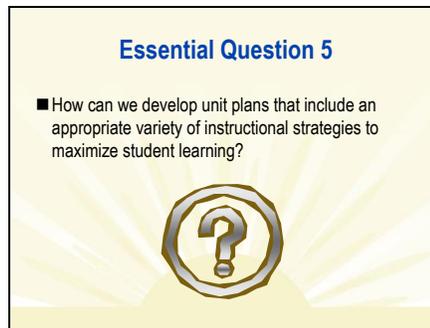
- Maria hung her wet jeans on the back of the chair. When she woke up the next morning, her jeans were dry. Where did the water go?
  - At what temperature does water evaporate?
- Joshua left a bowl of ice cream on the table. When he returned the bowl was filled with liquid. What happened?
  - What is the difference between melting and dissolving?

**Examples of Middle School Science Assessment Probes in Physical Science**

- Charles had a whole cookie that he decided to break up into tiny pieces and crumbs. How do you think the weight of the whole cookie compares to the weight of all the cookie crumbs?
  - Will there be a change in weight after the cookie is broken up into tiny pieces?
- sand, water, leaf, wood, soil, mild, red apple, dull metal, shiny metal, bed sheet, potato skin
  - Circle the objects or materials that reflect light?

## Evaluating an Instructional Plan

4. Show slide and present:
  - **Here is our essential question for this entire section of the workshop. This question is deceptively simple; but planning instruction is a complex process, and as you'll recall from this morning, correct solutions to complex problems are never simple.**



- **Before we try our hand at developing an instructional plan for a unit, we're going to evaluate an already existing instructional plan.**
- **But before we can evaluate an instructional plan, we need to examine both the learning goals and the assessment plan that have been developed for this unit.**



5. Show slide and say,
  - **Stage 3 is a direct connection to Stage 1 and 2. The process has no short cuts or quick fixes as we discussed at the beginning of this session.**

6. Show slide and say,
  - **Even those who love to cook do not plan gourmet meals every evening. Applying this design to everything at once is not feasible.**
  - **Let's begin with Unit 1, share our Unit 1's, and develop a wealth of delicious instruction. I'll go first.**



7. Ask, **If gourmet cooking is so good, why don't we eat it all of the time?**
8. **How is the difference between gourmet cooking and common cooking practices similar to designing a unit using Standards-based methods and just writing lesson plans?**

Have participants discuss their thinking about time, practicality, resources, etc.

Slide

Templates  
Sample Unit plan

9. Show slide and say,  
➤ **The workbook provides 3 versions of a unit design template.**

**Sample Unit– Stages 1, 2, and 3**

- This is an example of a unit designed using the standards-based education model.
- You may refer to the templates and sample units in the workbook pages.
- There are three versions provided:
  - 1-Page Template, page 31
  - 2-Page Template, page 36-37
  - 6-Page Template, pages 46-51
- This session will use a modification of the 6-Page Version.
- You use the one your system or school uses.

- **There are different versions of unit design templates. The workbook has template samples of 1, 2, and 6 page formats.**
- **Because of consistency in the training sessions, each content group will use the modified version. This is not a required template. This is a thorough template that sets the tone of the training session.**
- **If your school or system has developed a unit template, please use that one, but look for any additions or modifications that might add to the quality of the design.**

*Facilitator's note: Here you will use the unit you have chosen as a sample for the training session. Go through the Stage 1 and 2 process by "thinking aloud." Remind participants that these are samples to be used for talking points and not necessarily as exemplars. Keep the dialogue moving, but allow participants to give input.*

Sample units are included.

### Talking Points

- Refer to the sample unit.
- Brainstorm a list of criteria we can use to ensure the quality of a unit when designing the instruction.
- We will post the chart on the wall to refer to as we design our own units.
- Please add other ideas or modify the ones on the chart as the work continues.

10. Give participants time to discuss the sample unit plan and develop a list of criteria to post on the wall or create a unit rubric that details what a good unit includes.

Paper for Topic Tent

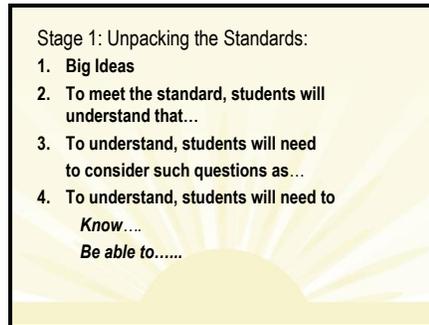
### Finding Order in the Chaos Identifying clear learning goals

- Let's begin at the beginning: Big Ideas (goals)
- Choose the Big Idea that shows your strength as a teacher. Choose your favorite topic.
- Choose the Big Idea that is so dear to your instruction that you will revisit it, reteach it, and your students will catch your enthusiasm.

11. Say

- **One of the difficult tasks in planning instruction is deciding sequence of Big Ideas/Learning Goals/Topics.**
- **We will focus on the first unit of the year today. Many of you have already designed units. If you brought those, you can get feedback and collaborate with your small group.**
- **We will divide into groups according to Grade Level and Topic chosen for the first unit of instruction.**
- **Let's brainstorm a list of topics you want to instruct first. Then we will break into groups according to similar topics.**
- **Make a "tent" label of the topic for your table so other groups will know who is working on what.**

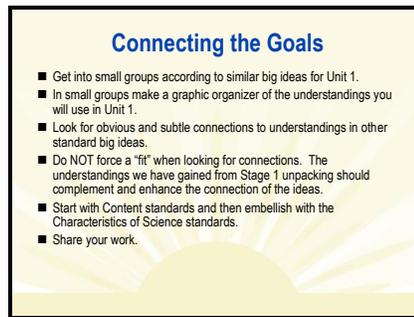
## Stage One



12. Remind participants of the process of Stage 1 in the Standards-based Education model.

Template for  
Unpacking

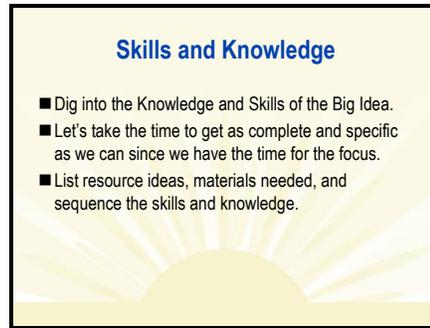
13. Encourage participants to use the template for unit design that their system or school uses. If they do not have a template currently, refer participants to the templates and have extras on hand for additional units. Give participants time to work on their stage 1 and share their ideas with each other.



Say

- **In your group, make a graphic organizer of the understandings you will use for Unit 1.**
  - **You have become very familiar with unpacking a standard and finding connections.**
  - **That is our starting point for unit design.**
  - **We begin with the Big Ideas or goals of the unit.**
  - **Remember that understandings are written specifically and in sentence form (Students will understand that....)**
  - **Look for obvious and subtle connections to understandings in other standard big ideas.**
  - **Do NOT force a "fit" when looking for connections. The understandings we have gained from Stage 1 unpacking should complement and enhance the connection of the ideas.**
  - **Start with Content standards and then continue with the Characteristics of Science standards.**
  - **Share your work.**
14. After an adequate amount of time, continue with the next step in the process:
- **Essential questions are different from key questions and daily questions. All of these questions are important and one is not better than the other. However the essential questions are more open-ended and thought provoking. The key and daily questions have answers to important points in the unit.**
  - **Work with your group to write essential questions for the unit.**
  - **Remember that essential questions are essential to the understanding of the concept. You may also wish to write key questions or daily questions as you develop your unit plan.**

## Vocabulary Ideas



15. Show slide and say,
- **The Skills and Knowledge statements tell what the students should know and be able to do.**
  - **Work on the knowledge and skills list. Remember that the more specific you are at this point, the clearer the path to choosing learning opportunities.**
  - While participants list the skills and knowledge, help them also keep note of resources and materials needed for students to do and know these things.
  - Have participants write a vocabulary list under the knowledge portion of the unit plan. A sample language list of terms used in science is in the Facilitator's Guide beginning on page 96.
  - Have them choose what has to happen first, next, and last to begin to sequence the unit plan.

16. Say,
- **Let's take a few minutes to look over this completed template.**
  - **In your own words, what would you say are the overall conceptual learning goals for this unit?**
  - Allow participants time to respond.

*Note: Responses may vary, but they should center on those things specified in the enduring understandings and the essential questions.*

- **Now let's look closely at the knowledge and skill statements. Are there any other knowledge statements that students will need to answer the essential questions or to attain understanding of the concepts in this unit?**

*Allow participants time to respond.*

### Stage 1: Unpacking the Standards

**Big Ideas:**

**To meet the standard, students will understand that...**

**To understand, students will need  
to consider such questions as**

**To understand, students will need to**

***Know...***

***Be able to.....***

## **Stage 2 of Unit Design**

1. Bring the small group back to a whole group setting for work on Stage 2—balanced assessment. This is the next step in the process.

Slide

- **It's also necessary to examine the assessment plan prior to evaluating an instructional plan.**

**Monitoring and Assessing**

Take the skills and knowledge list and match it to a balanced assessment plan. How will you know they know? What evidence will show understanding? What type of assessment best fits the achievement target types?

<b>Types of assessment</b>	<b>Achievement Targets</b>
■ Selected response	--Knowledge/Information
■ Constructed response	--Skills/Processes
■ Informal Assessment	--Thinking and Reasoning
■ Performance Task	--Communication

2. Review the match between types of assessment and achievement targets. Remind participants of the importance of a balanced assessment plan and refer to Day 2 materials on assessment if individuals need more direct information.

Refer to sample GRASPS and rubric information in the Day 2 materials on balanced assessment.

### G.R.A.S.P.S

- Work on your Performance Task.
- Remember that it produces a product or performance so you would include a rubric.
- A culminating unit performance task will give students a glimpse of the goal and set the standard of expectations.

- **Remember that the Performance Assessment requires a product or performance. A rubric accompanies the GRASPS activity.**

### Assessment

- Does the plan include assessments from all four of the assessment formats?
  - Selected Response
  - Constructed Response
  - Performance Tasks
  - Informal and Self-Assessment
- Will this assessment plan provide evidence of student learning for the predetermined learning goals for this unit?

- **Here is a chart with each type of assessment. I am posting these to start our "Graffiti Assessment Wall."**
- **Post ideas of exemplary and creative assessment ideas you use and can share with others.**
- **You may use sticky notes, tape up paper, or write on the chart.**
- **Visit the wall to get ideas and add ideas.**

### Balanced Assessment

Graffiti Assessment Wall

On these five charts write examples of exemplary assessment ideas you use and can share with others. (Questions, prompts, ideas, authentic assessments, etc.)

Visit the wall to get ideas if you get "writer's block" or need to "fill in the gaps."

*Refer to the assessment plan for the sample unit. Go over ideas for Stage 2.*

3. Present:

- **Let's take a few minutes to look over this completed template.**

4. Present:

- **Take 10 minutes in your table groups to examine this assessment plan.**
- **We don't have time for a complete evaluation of the plan, but consider the following two questions:**
- **Does the plan include assessments from all four of the assessment formats: Selected Response, Constructed Response, Performance Tasks, Informal and Self-Assessment?**
- **Will this assessment plan provide evidence of student learning for the predetermined learning goals for this unit?**

1. Allow participants 10 minutes, and then ask them to share their responses.

2. Ask: **Look back at the assessment plan again. What connections do you see between the assessment plan and instruction?**

*[Trainer's Note: Responses may vary, but they should indicate that many assessments are also tasks and activities that involve both assessment and instruction.]*

3. Say: **This becomes even clearer when we take a more detailed look at the performance tasks that are listed in the assessment plan.**

**Performance Task Blueprint**

**What understandings and goals will be assessed through this task?**

**What criteria are implied in the standards and understanding regardless of the task specifics?  
What qualities must student work demonstrate to signify that standards were met?**

**Through what authentic performance task will students demonstrate understanding?**

**What student products and performances will provide evidence of desired understandings?**

### Sequencing Assessment

- We are ready to get back in our groups to work on the balanced assessment plans.
- After you have worked on creating some of your assessments, you must plan when they will occur.
- Remember that this is a plan and be flexible.
- Let's practice with the sample unit before we begin the process.

Calendar charts

4. Refer to the sample unit assessment plan and model the process of using a calendar to put assessments in place.
5. Have sticky notes for each item on the sample unit assessment plan and a calendar template. Model the process of putting the sticky notes in place on the calendar until there is a good fit for all of them with enough room on the calendar for instruction between assessments. Talk out loud and ask for participant help with the process and answer questions.

### Calendar

- Get a calendar template and begin plotting your assessments. Do you give regular assessments?
- Write assessment ideas on a Post It and put it in a square.
- Look for the flow and find the balance.
- Share your plan with others in your group.
- Make refinements and pencil in the plan.

6. Return to small groups to work on the individual Units. Give participants time to work on their plans and have dialogue on the ideas. Remind participants to add ideas and get ideas from the Graffiti Assessment Wall.

7. When most groups have a workable assessment calendar, pull the group back together.

**Introducing, Practicing, Reviewing, and Applying Knowledge**

- Look at your assessment plan. What has to happen for students to show understanding and successfully pass the assessment?
- Begin planning the instruction that will take place by referring to the 9 categories of strategies that have a strong effect on student achievement. Use as many as possible, but keep a balance.

8. Say,  
**Instruction should flow and connect to the goals of the unit plan.**

**Step By Step**

Three phases:

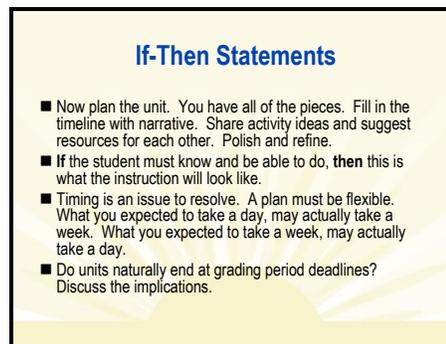
- At the beginning of a unit, include strategies for setting learning goals.
- During a unit, include strategies
  - For monitoring progress toward learning goals.
  - For introducing new knowledge.
  - For practicing, reviewing, and applying knowledge.
- At the end of a unit, include strategies for helping students determine how well they have achieved their goals.

Marzano, *Classroom Instruction That Works*

9. Say,
- **Refer to the chart on Categories of Instructional Strategies That Affect Student Achievement.**
  - **One of the goals of the McREL study was to identify strategies that have a high probability of enhancing student achievement for all students in all subject areas and at all grade levels.**
  - **As you work on your unit design, look for a balance of instructional strategies.**



10. Say:
- **As you work on the instruction plan of the Standards-based Education model, refer to this list of strategies.**



11. Say
- **Now work together to plan the units.**
  - **Remember to be collaborative and flexible in your planning.**
  - **Timing is an issue.**
  - **Determine your plan for grading period deadlines.**

*Facilitator's Note: Give participants time to work in small groups on the instructional plan.*

*Visit each group to ask and answer questions.*

*Model sharing good ideas with the rest of the groups.*

## Lesson Planners

12. When most groups have a workable plan or have come to a stopping point, focus the groups on the lesson planners.

**Repetition, Revisiting, and Review**

- Use the Lesson Planner to find other connections during the school year.
- If this was Unit 1, what is the logical flow into Unit 2?
- Is someone in the group developing that unit?
- How many units can your year comfortably hold?
- Have you used all of the Characteristics of Science Standards and all of the Content Standards?

13. Provide copies of the lesson planners for participants to use.

- **Use the lesson planners to find other connections during the school year.**

- 14. Present: Now, we need to consider one last thing before we actually evaluate the instructional plan—the criteria we should consider when we evaluate an instructional plan.**

**Evaluating an Instructional Plan**

Does the instructional plan:

- Focus on the learning goals for the unit?
- Address the questions posed in the WHERETO model?
- Provide a balanced range of strategies from the five categories?
- Match instructional strategies to the achievement targets for the unit?
- Offer students multiple opportunities to learn?
- Allow for students to learn using multiple modalities?

What other questions might we need to ask when evaluating an instructional plan?

15. Review the questions on the slide and list any additional questions on chart paper.

**Making Instructional Decisions**

1. Complete the first two stages of the standards-based education process.
2. Prepare the blueprint for at least one performance task.
3. Apply the WHERETO model to begin your instructional plan.
4. Refer to the five categories of instructional strategies to ensure balance.
5. Match instructional strategies to unit achievement targets.
6. Use the calendar templates to plot your instructional plan (in pencil!).
7. Provide multiple opportunities for students to learn using multiple modalities.
8. Check to ensure that the learning goals are the focus of the instructional plan.
9. Revise as needed to meet the needs of the students.

## 16. Present:

- **A Peer Review Checklist gives you a guide to how strong your unit design is and helps begin discussions on critical parts of a unit.**
- **There are sample checklists to use as a guide for instructional planning in Facilitator's Guide.**
- **You may wish to use a slightly different checklist from one of the books we've provided to your schools, or you may wish to create your own checklist for your department or your school.**
  
- **For most of the remainder of the time we have allotted for this section, you will be working on your instructional plan.**
- **Remember the importance of collaboration.**
- **I'll be walking around and listening to various groups as you plan, but don't hesitate to ask questions of me or one of your colleagues as you work through this task.**
- **Please visit other tables and groups to get ideas and see their work.**
- **About 15 minutes before we break, I'd like for you to begin posting your instructional plans around the room.**
- **We will share ideas, review plans, and update contact information for networking with each other.**
- **The last portion of the day will be devoted to redelivery and discussion of time, materials, and important points.**

## ***Stage: 1: Unpacking the Standards***

Big Ideas:

To meet the standard, students will understand that...

To understand, students will need to consider such questions as...

Unit:

To understand, students will need to...

Know...

Be able to...

## ***Stage 2: Determining Acceptable Evidence***

**What evidence will show that students understand?**

**Performance Tasks:**

**Other evidence (quizzes, tests, prompts, observations, dialogues, work samples):**

**Students Self-Assessment and Reflection:**

## *Performance Task Blueprint*

**What understandings and goals will be assessed through this task?**

**What criteria are implied in the standards and understanding regardless of the task specifics?**

**What qualities must student work demonstrate to signify that standards were met?**

**Through what authentic performance task will students demonstrate understanding?**

**What student products and performances will provide evidence of desired understandings?**

**By what criteria will student products and performances be evaluated?**

## August 2007

Mon	Tue	Wed	Thu	Fri
		1	2	3
6	7	8	9	10
13	14	15	16	17
20	21	22	23	24
27	28	29	30	31

**September 2007**

<b>Mon</b>	<b>Tue</b>	<b>Wed</b>	<b>Thu</b>	<b>Fri</b>
3	4	5	6	7
10	11	12	13	14
17	18	19	20	21
24	25	26	27	28

***Blank Calendar for Planning Sequences—6 Weeks***

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	27	28	29	30

## ***Checklist for Peer Reviewing Unit Plans***

- Addresses BIG ideas and topic
- Understandings are enduring, clear and give explicit expectations
- Concept Maps
- Strong Essential Questions
- Balanced Assessment Plan
- Selected Response
- Constructed Response
- Authentic Performance Tasks
- Differentiated Instruction with Lots of Options
- Opportunities for Student Self Evaluation—Reflect, Rethink, Reteach, Revise
- Standards-based
- Available Resources
- Makes Sense to Students
- Research-based
- Collaboration in Design
- Time for Plan is Manageable
- Grabbers/Hooks are Good and Appropriate to Standards.
- Well Organized and Sequenced
- Prior Knowledge is Assessed and Opportunities for Filling in Gaps are included.
- Engages Students
- Student Performance Based
- Evidence of Student Learning
- Incorporates WHERE TO



17. Keep participants informed regarding the time they have remaining for this task.
18. When approximately 15 minutes remain, say:
  - **If you'll remove your completed templates from your module notebook you can use the blue masking tape to display your instructional plans on the walls. You can take your instructional plans before you leave today and place them back in your notebook.**
  - **As the instructional plans are posted, please take time to examine those from the other groups and use the sticky notes to respond. You may wish to suggest additional or different strategies, suggest resources, or comment on something that has worked well for you.**
19. Transition: **We will take time to peruse what groups have accomplished and discuss the work so far.**

## Action Plan for Redelivery

Slides

1. **You will encounter predictable concerns (“yes, buts...” from colleagues. The following exercise is designed to help you prepare thoughtful responses to likely objections. These lists come from UbD Professional Learning Workbook page 264.**
2. Provide time for participants to select one of the following concerns (or add one of their own) and generate ideas for responding to that concern.

**I would like to teach and assess for understanding but...**

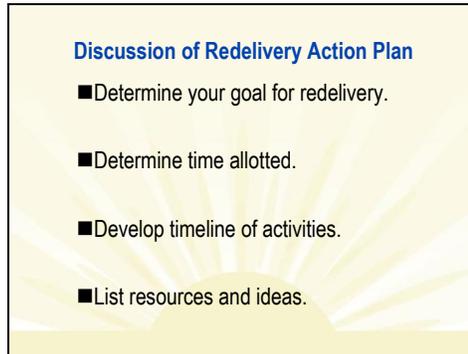
- I am expected to teach to state and district standards and benchmarks.
- This approach takes too much time. I have too much content to cover.
- I am being held accountable for student performance on superficial state tests.
- I am a “skills” teacher, and students need to master the basics first.

**I would like to design curriculum using a template, but...**

- This approach is too demanding. I couldn't possibly do this for everything I teach.
- It's not my job to develop curriculum. Besides, I already have a textbook.
- I don't know how to do this kind of design work.
- I already do this.

3. Allow time for participants to share responses.

4. After discussing concerns and appropriate responses, allow time for participants to plan their redelivery.



**Discussion of Redelivery Action Plan**

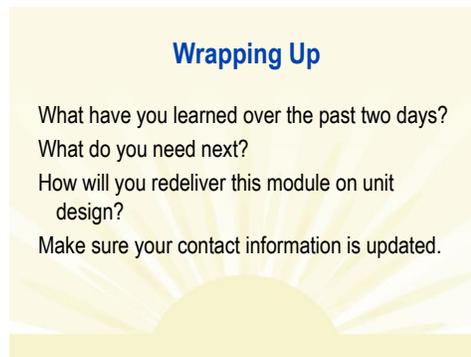
- Determine your goal for redelivery.
- Determine time allotted.
- Develop timeline of activities.
- List resources and ideas.

1. Summarize the workshop: Ask participants to volunteer one immediate and one long-term "to do" related to instruction.
2. Show slide, Wrapping Up.

Present:

Slide: Wrapping Up

- **At the beginning of this workshop, I asked you to think of one specific thing you hoped to get out of this training. I'd like for you to return to that at this time.**
- **Did you learn what you hoped to learn?**
- **Is there anything you still need to know before you leave today?**



3. Present: **This has been a challenging year for all of us, but I'm confident that you're ready to begin implementing the GPS. Please remember that the system curriculum personnel and the curriculum specialists at the DOE are available to answer questions or provide assistance.**
4. **We are currently planning next year's training schedule and locations. You will get updates as soon as the plans become available.**

<b>Month</b>	<b>August</b>	<b>September</b>	<b>October</b>	<b>November</b>	<b>December</b>	<b>January</b>	<b>February</b>	<b>March</b>	<b>April</b>	<b>May</b>
<b>School Events</b>										
<b>Science Topic</b>										
<b>Standards Elements</b>										
<b>Related Literature</b>										
<b>Connections to other subjects</b>										
<b>Assessment</b>										
<b>Skills</b>										
<b>Resources and References</b>										

## ***WHERE TO: Making Instructional Decisions***

### **Stage 3—Learning Plan**

#### **Teaching and Learning Activities:**

In Stage 3 we consider the instructional strategies and learning experiences needed to achieve the desired results (Stage 1) as reflected in the assessment evidence to be gathered (Stage 2). The activities are planned to develop the targeted understandings and the knowledge and skills identified in Stage 1 *and* to equip students for the performances of learning specified in Stage 2. The acronym WHERE TO summarizes key elements to consider when designing an effective and engaging learning plan.

#### **Design Standards for Stage 3**

*To what extent is the learning plan effective and engaging? Consider:  
Will the students...*

- W**        Know ***where*** they're going (the learning goals), ***why*** (reason for learning the content), and ***what*** is required of them (unit goal, performance requirements, and evaluative criteria)?
- H**        Be ***hooked***—engaged in digging into the Big Ideas (e.g., through inquiry, research, problem-solving, experimentation)?
- E**        Have adequate opportunities to ***explore*** and ***experience*** Big Ideas and receive instruction to ***equip*** them for the required performances?
- R**        Have sufficient opportunities to ***rethink***, ***rehearse***, ***revise***, and ***refine*** their work based upon timely feedback?
- E**        Have an opportunity to ***evaluate*** their work and set future goals?

*Consider the extent to which the learning plan is*

- T**        ***Tailored*** and flexible to address the interests and learning styles of all students.
- O**        ***Organized*** and sequenced to maximize engagement and effectiveness.

(Understanding by Design Professional Development Workbook, ASCD, 2004, p. 212)

## Questions to Consider for W

The W in WHERETO should be considered from the students' perspective. By working through backward design, designers should be clear about their goals and the evidence needed to show the extent that students have achieved them. Now, we seek to help the students become clear about the goals and expectations and the purpose and benefits of achieving them. Research and experience show that students are more likely to focus and put forth effort when they have clarity on the goals and expectations and see a purpose and value for intended learning.

### Goals

- ***Where are we going in this unit or course?***
- ***What are the goals or standards toward which we are working?***
- ***What will students be learning?***
- ***What resources and learning experiences will help us get there?***

### Expectations

- ***What is expected of students?***
- ***What are key assignments and assessments?***
- ***In what ways will students be expected to demonstrate learning?***
- ***Understanding?***
- ***What criteria and performance standards will be used for assessment?***

### Relevance and Value

- ***Why is this worth learning?***
- ***In what ways will this knowledge or these skills benefit students in school? In the future?***

### Diagnosis

- ***From where are students coming?***
- ***What prior knowledge, interests, learning styles, and talents do they bring?***
- ***What misconceptions may exist?***

(Understanding by Design Professional Development Workbook, ASCD, 2004, p. 215)

## WHERE TO Examples for W

### GOALS

- Directly state the desired results at the beginning of the unit.
- Present unit and course goals, syllabus, and schedule on first day.
- Post and discuss essential questions at the start of unit.
- Invite students to generate questions.
- Ask students to identify personal goals.

### Expectations

- Present the culminating performance task requirements.
- Review scoring rubrics.
- Show models and exemplars for expected products and performances.
- Involve students in identifying preliminary evaluation criteria.

### Relevance and Value

- Present the rationale for the unit and course goals.
- Discuss the benefits to students.
- Identify people and places beyond the classroom where this knowledge and these skills are applied.
- Use K-W-L to have students identify things they want to learn.

### Diagnosis

- Give a pretest on content knowledge.
- Give a diagnostic skills test.
- Use K-W-L to see what students already know (or think they know).
- Have students create a visual organizer to reveal their initial knowledge and understandings.
- Check for possible and probable misconceptions.

(Understanding by Design Professional Development Workbook, ASCD, 2004, p. 216)

## WHERE TO

### Hooking and Holding Students

Effective teachers recognize the importance of *hooking* students at the beginning of a new learning experience and *holding* their interest throughout. The *H* in WHERE TO directs designers to consider ways of engaging students in the topic and pointing toward Big Ideas, Essential Questions, and performance tasks—by design. Use the list below to brainstorm possible hooks for your unit design.

#### Hook

#### Hold

How will you hook and hold student interest?

- Odd fact, anomaly, counterintuitive example
- Provocative entry question
- Mystery
- Challenge
- Problem or issue
- Experiment—predict outcome
- Role-play or simulation
- Personal experiences
- Allow student choice for \_\_\_\_\_
- Emotional connections
- Humor

(Understanding by Design Professional Development Workbook, ASCD, 2004, p. 217)

## WHERE TO

### Equipping Students

The first E in WHERE TO prompts designers to think about (1) ways they will help students to *explore* the Big Ideas and Essential Questions, and (2) how they will *equip* students for their final performances. In order for students to come to an understanding of important ideas, they must engage in some inductive learning experiences that facilitate the “construction of meaning.” In addition, direct instruction and out-of-class activities can play a role in equipping students with the knowledge and skills needed to perform.

#### Experiential and Inductive Learning

- What **experiential** or inductive learning will help students to **explore** the big ideas and questions
  - to achieve desired understandings (Stage 1)?
  - for their expected performances (Stage 2)?

#### Direct Instruction

- What information or skills need to be taught explicitly to **equip** students
  - to achieve the desired results (Stage 1)?
  - for their expected performance (Stage 2)?

#### Homework and Other Out-of-Class Experiences

- What homework and other out-of-class **experiences** are needed to **equip** students
  - to achieve the desired results (Stage 1)?
  - for their expected performances (Stage 2)?

(Understanding by Design Professional Development Workbook, ASCD, 2004, p. 218)

## WHERE TO

### Equipping Students (page 2)

#### Experiential and Inductive Learning

Examples:

- Concept attainment
- Research/I Search project
- Historical Investigation
- Scientific experimentation
- Problem-based learning
- Creative expression
- Artistic or production
- Exploration of issues
- Construction project
- Socratic seminar
- Simulation

#### Direct Instruction

To help students:

- Compare ideas and information
- Find information (e.g., research)
- Evaluate information and ideas
- Generate and test hypotheses
- Communicate ideas
- Manage their time
- Monitor their understanding
- Organize information
- Persuade
- Review each other's work
- Revise their own work
- Use problem-solving strategies
- Self-evaluate
- Summarize key ideas

#### Homework and Other Out-of-Class Experiences

Examples:

- |  |
|--|
| ▪ Practicing skills  |
| ▪ Working on project or performance task                       |
| ▪ Reflecting on ideas, process, or product (journal entry)     |
| ▪ Studying and synthesizing information (create a concept map) |
| ▪ Revising work  |
| ▪ Reading with a purpose                                       |

(Understanding by Design Professional Development Workbook, ASCD, 2004, p. 219)

## WHERE TO

### Questions to Consider for R

The R in WHERE TO reminds us that understanding develops and deepens as a result of *rethinking* and *reflection*. Thus, we should build in such opportunities by design. Consider the following questions as you plan learning experiences and instruction to cause students to *rethink* and *reflect* (i.e., to dig deeper into the Big Ideas), and to *refine* and *revise* their work based on feedback.

#### Rethink

- *What Big Ideas do we want students to **rethink**?*
- *How will your design challenge students to revisit important ideas?*

#### Revise or Refine

- *What skills need to be practiced and rehearsed?*
- *How might student products and performances be improved?*

#### Reflect

- *How will you encourage students to **reflect** upon*  
*--their learning and thinking?*  
*--the evolution of their understanding?*  
*--their use of strategies?*
- *How will your design help students to become more metacognitive?*

(Understanding by Design Professional Development Workbook, ASCD, 2004, p. 221)

## WHERE TO

### Examples of R

#### Rethink

Help students rethink by having them

- Shift perspective
- Reconsider key assumptions
- Confront alternative versions
- Take the roles of...
- Play devil's advocate
- Reexamine the argument and evidence
- Conduct research
- Consider new information
- Rethink the naïve idea that...
- Argue and debate
- Confront surprises and anomalies

#### Revise or Refine

Provide opportunities for students to revise and refine their work through

- Drafting and editing sessions
- Peer critiques
- Rehearsals
- Peer response groups
- Practice sessions
- Self-assessment

#### Reflect

Encourage students to reflect through the use of

- Reflective journals and think logs
- Regular self-assessments
- Metacognitive prompts
- Think-alouds
- I-Search papers

(Understanding by Design Professional Development Workbook, ASCD, 2004, p. 222)

## WHERE TO

### Encouraging Self-Evaluation—E

Stage 2 of backward design specifies the assessment evidence needed for the desired results identified in Stage 1. The second E in WHERE TO asks the designer to build in opportunities for ongoing evaluation, including opportunities for students to *self-evaluate*. The following questions may be used as prompts to guide student self-evaluation and reflection. (Note: This step connects with the R in WHERE TO.)

- What do you really understand about \_\_\_\_\_?
- What questions and uncertainties do you still have about \_\_\_\_\_?
- What was most effective in \_\_\_\_\_?
- What was least effective in \_\_\_\_\_?
- How could you improve \_\_\_\_\_?
- What are your strengths in \_\_\_\_\_?
- What are your deficiencies in \_\_\_\_\_?
- How difficult was \_\_\_\_\_?
- How does your preferred learning style influence \_\_\_\_\_?
- What would you do differently next time \_\_\_\_\_?
- What are you most proud of? Why?
- What are you most disappointed in? Why?
- What grade or score do you deserve? Why?
- How does what you've learned connect to other learning?
- How has what you've learned changed your thinking?
- How does what you've learned relate to the present and future?
- What follow-up work is needed?
- Other: \_\_\_\_\_

(Understanding by Design Professional Development Workbook, ASCD, 2004, p. 223)

## WHERE TO

### Tailoring the Design for Diverse Learners

The T in WHERE TO refers to ways of *tailoring* the design to address student differences in background knowledge and experiences, skill levels, interests, talents, and learning styles. Designers consider ways in which lessons, activities, resources, and assessments might be personalized without sacrificing unit goals and standards. Appropriate differentiation of *content*, *process*, and *product* can accommodate diverse learners.

#### Content

- At the beginning of a unit, assess prior knowledge and skills, and develop differentiated activities to accommodate different knowledge and skill levels.
- Provide students with open-ended questions, activities, assignments, and assessments that enable students to give different but equally valid responses.
- Appeal to various modalities (e.g., present information orally, visually, and in writing).
- Use a variety of resource materials (e.g., multiple reading materials at different levels) to help students understand a difficult concept.

#### Process

- Accommodate students with different learning styles by providing opportunities for them to work alone and in groups.
- Encourage students to develop their own research questions for in-depth exploration of a key idea or question.

#### Product

- Allow students choices of products (e.g., visual, written, oral) for activities and assignments.
- Provide students with options for demonstrating understanding through various compromising the goals or standards.

(Understanding by Design Professional Development Workbook, ASCD, 2004, p. 224)

## WHERE TO

### Organizing the Learning

The O in WHERE TO relates to the organization and sequence of design. As they develop the learning plan, designers are encouraged to consider the following questions: How will the learning activities be *organized* to enable students to achieve the desired results? Given the desired results, what sequence will offer the most engaging and effective learning? How will the *work unfold in a natural progression so that new teaching and activities* seem appropriate, not arbitrary or meaningless, to students? Two broad organizational patterns are depicted below.

What is most appropriately and effectively covered in a linear and didactic fashion?

What is most appropriately and effectively “uncovered” in an inductive, inquiry-oriented, experiential manner?

#### The Logic of “Coverage”

- Present information in a logical, step-by-step fashion. (Teacher as tour guide)
- Follow the sequence of the textbook.
- Move from the facts and basic skills to the more advanced concepts and processes.
- Expose students to a breadth of material dictated by established goals.
- Use hands-on and other experiential activities selectively because these can take considerable time.
- Teach and test the discrete pieces before having students apply what they are learning.

#### The Logic of “Uncoverage”

- Think of the unit as an *unfolding story or problem* rather than as a guided tour or an encyclopedia article.
- Begin with a hook and *teach on an as-needed basis*. Don't front load all of the information before application.
- Make the sequence more surprising and less predictable.
- Ensure that there are ongoing cycles of *model, practice, feedback, and adjustment* built into the unit.
- Focus on transferable, Big Ideas.
- Move back and forth between the whole and the parts rather than reaching all the little bits first, out of context. (Think of sports, the arts, and vocational technical projects.)

(Understanding by Design Professional Development Workbook, ASCD, 2004, p. 225)

## WHERE TO—Sequencing the Learning

What sequence of teaching and learning experiences will equip students to engage with, develop, and demonstrate the desired understandings? The following calendar may be used to map the unit sequence. Use the small boxes to code each calendar entry with the appropriate initials of the WHERE TO elements.

<b>Monday</b>	<b>Tuesday</b>	<b>Wednesday</b>	<b>Thursday</b>	<b>Friday</b>
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	27	28	29	30

(Understanding by Design Professional Development Workbook, ASCD, 2004, p. 229)

## **Stage: 1: Unpacking the Standards**

Big Ideas:

To meet the standard, students will understand that...

To understand, students will need to consider such questions as...

Unit:

To understand, students will need to...

Know...

Be able to...

## ***Stage 2: Determining Acceptable Evidence***

**What evidence will show that students understand?**

**Performance Tasks:**

**Other evidence (quizzes, tests, prompts, observations, dialogues, work samples):**

**Students Self-Assessment and Reflection:**

## *Performance Task Blueprint for*

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**What understandings and goals will be assessed through this task?**

**What criteria are implied in the standards and understanding regardless of the task specifics?**

**What qualities must student work demonstrate to signify that standards were met?**

**Through what authentic performance task will students demonstrate understanding?**

**What student products and performances will provide evidence of desired understandings?**

**By what criteria will student products and performances be evaluated?**

**August 2007**

<b>Mon</b>	<b>Tue</b>	<b>Wed</b>	<b>Thu</b>	<b>Fri</b>
		1	2	3
6	7	8	9	10
13	14	15	16	17
20	21	22	23	24
27	28	29	30	31

**September 2007**

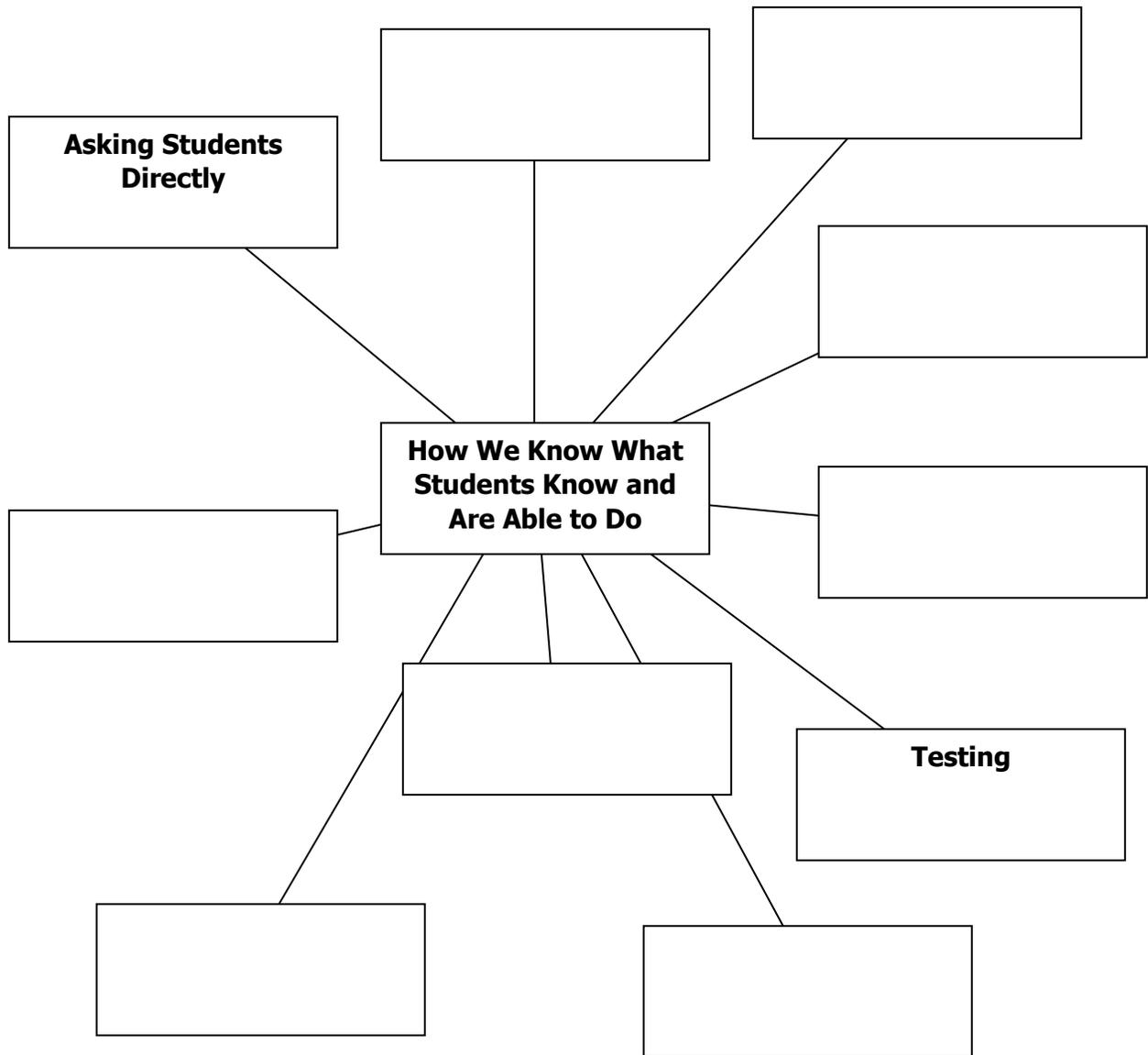
<b>Mon</b>	<b>Tue</b>	<b>Wed</b>	<b>Thu</b>	<b>Fri</b>
3	4	5	6	7
10	11	12	13	14
17	18	19	20	21
24	25	26	27	28

## ***Checklist for Peer Reviewing Unit Plans***

- Addresses BIG ideas and topic
- Understandings are enduring, clear and give explicit expectations
- Concept Maps
- Strong Essential Questions
- Balanced Assessment Plan
- Selected Response
- Constructed Response
- Authentic Performance Tasks
- Differentiated Instruction with Lots of Options
- Opportunities for Student Self Evaluation—Reflect, Rethink, Reteach, Revise
- Standards-based
- Available Resources
- Makes Sense to Students
- Research-based
- Collaboration in Design
- Time for Plan is Manageable
- Grabbers/Hooks are Good and Appropriate to Standards.
- Well Organized and Sequenced
- Prior Knowledge is Assessed and Opportunities for Filling in Gaps are included.
- Engages Students
- Student Performance Based
- Evidence of Student Learning
- Incorporates WHERE TO

## *How We Know What Students Know and Are Able to Do*

Identify ways we know what students know and are able to do. Use the map below to show relationships among the different methods.



From the Association for Supervision and Curriculum Development (ASCD)

## Glossary of Instructional Strategies

**Assigned Questions** - Assigned questions are those prepared by the teacher to be answered by individuals or small groups of students. Students discuss their responses with one another or with the teacher. Particular positions or points-of-view should be supported by evidence. In some instances, it may be desirable for students to generate their own set of questions.

**Brainstorming**- Brainstorming is a large or small group activity which encourages children to focus on a topic and contribute to the free flow of ideas. The teacher may begin by posing a question or a problem, or by introducing a topic. Students then express possible answers, relevant words and ideas. Contributions are accepted without criticism or judgment.

**Case Study** - Case studies are stories or scenarios, often in narrative form, created and used as a tool for analysis and discussion. Cases are often based on actual events which add a sense of urgency or reality. Case studies have elements of simulations but the students are observers rather than participants. A good case has sufficient detail to necessitate research and to stimulate analysis from a variety of viewpoints or perspectives. They place the learner in the position of problem solver. Students become actively engaged in the materials discovering underlying issues, dilemmas and conflict issues.

**Circle of Knowledge** - A circle of knowledge is a strategy that acts as a framework for effective discussions. The teacher poses a question to the whole class, and the students move into small groups to examine the issue before returning to the large group for further discussion.

**Cloze Procedures** - Cloze procedure is a technique in which words are deleted from a passage according to a word-count formula or various other criteria. The passage is presented to students, who insert words as they read to complete and construct meaning from the text. This procedure can be used as a diagnostic reading assessment technique.

**Computer Assisted Instruction** - Computer-assisted instruction (CAI) refers to any instructional program in which the computer performs, manages, or supports some or all of the teacher/provider functions.

**Concept Attainment** - Concept Attainment is an indirect instructional strategy that uses a structured inquiry process. It is based on the work of Jerome Bruner. In concept attainment, students figure out the attributes of a group or category that has already been formed by the teacher. To do so, students compare and contrast examples that contain the attributes of the concept with examples that do not contain those attributes. They then separate them into two groups. Concept attainment, then, is the search for and identification of attributes that can be used to distinguish examples of a given group or category from non-examples.

**Concept Mapping** - A concept map is a special form of a web diagram for exploring knowledge and gathering and sharing information. Concept mapping is the strategy employed to develop a concept map. A concept map consists of cells that contain a concept, item or question and links. The links are labeled and denote direction with an arrow symbol. The labeled links explain the relationship between the nodes. The arrow describes the direction of the relationship and reads like a sentence.

**Concept Formation** - Concept formation provides students with an opportunity to explore ideas by making connections and seeing relationships between items of information. This method can help students develop and refine their ability to recall and discriminate among key ideas, to see commonalities and identify relationships, to formulate concepts and generalizations, to explain how they have organized data, and to present evidence to support their organization of the data involved.

**Cooperative Learning** - Cooperative learning is an instructional strategy that simultaneously addresses academic and social skill learning by students. It is a well-researched instructional strategy and has been reported to be highly successful in the classroom.

**Correspondence Lessons** - Correspondence education has a long history. Before the advent of the computer age, correspondence schooling meant print correspondence. Today, however, correspondence education is delivered through a variety of technologies: audio, video and computer.

**Debates** - Debating is a structured contest of argumentation in which two opposing individuals or teams defend and attack a given proposition. The procedure is bound by rules that vary based on location and participants. The process is adjudicated and a winner is declared. Debating is a foundational aspect of a democratic society.

**Demonstrations** - A demonstration refers to a teacher activity and talk that shows students "how"; [demonstrations] apply primarily to skills and processes and are useful for helping students acquire procedural knowledge.

**Didactic Questions** - tend to be convergent, factual, and often begin with "what," "where," "when," and "how." They can be effectively used to diagnose recall and comprehension skills, to draw on prior learning experiences, to determine the extent to which lesson objectives were achieved, to provide practice, and to aid retention of information or processes. Teachers should remember that didactic questions can be simplistic, can encourage guessing, and can discourage insightful answers or creativity. However, effectiveness of this method can be increased by the appropriate addition of "why" questions, and the occasional use of "what if" questions.

**DIRECT INSTRUCTION** - a highly structured instructional approach.

**Drill and Practice** - promotes the acquisition of knowledge or skill through repetitive practice. It refers to small tasks such as the memorization of spelling or vocabulary words, or the practicing of arithmetic facts and may also be found in more suplicated learning tasks or physical education games and sports. Drill-and-practice, like memorization, involves repetition of specific skills, such as addition and subtraction, or spelling. To be meaningful to learners, the skills built through drill-and-practice should become the building blocks for more meaningful learning.

**Essays** - Essays are research-backed statements of opinion on arguable topics.

**Experiments** - Experiments involve creating a test of a hypothesis where variables have been identified and then specifically identifying one or more of those variables that causes the effect.

**EXPERIENTIAL LEARNING** - Experiential learning is inductive, learner centered, and activity oriented. Personalized reflection about an experience and the formulation of plans to apply learning to other contexts are critical factors in effective experiential learning. The emphasis in experiential learning is on the process of learning and not on the product.

**Explicit Teaching** - Explicit teaching involves "six teaching functions: daily review, presenting new material, conducting guided practice, provide feedback and correctives, conduct independent practice, weekly and monthly review.

**Field Observations** - Field observations refer to observations made of naturally occurring phenomena by students outside the classroom.

**Games** - Games are structured learning activities that include conflict, control, and rules for winning and terminating the activities.

**Guides for Reading, Listening, Viewing** - Guides for reading, listening, and viewing refer to providing leading questions, diagrams, or statements to assist students in focusing on the important ideas within text, lecture, media, or other presentations.

**INDEPENDENT LEARNING** - Independent study refers to the range of instructional methods which are purposefully provided to foster the development of individual student initiative, self-reliance, and self-improvement. In addition, independent study can include learning in partnership with another individual or as part of a small group.

**INDIRECT INSTRUCTION** - indirect instruction is mainly student-centered. Indirect instruction seeks a high level of student involvement in observing, investigating, drawing inferences from data, or forming hypotheses. It takes advantage of students' interest and curiosity, often encouraging them to generate alternatives or solve problems. In indirect instruction, the role of the teacher shifts from lecturer/director to that of facilitator, supporter, and resource person. The teacher arranges the learning environment, provides opportunity for student involvement, and, when appropriate, provides feedback to students while they conduct the inquiry (Martin, 1983).

**Interviewing** - Interviewing, a meeting during which information is obtained by one person from another, is an excellent means for students to gain an insight into another's worldview. Effective interviewing begins with the development of basic skills and thorough preparation. Students may be the interviewer or the interviewee, depending upon the skill set being developed and the information sought.

**Graphic Organizers** - A graphic organizer is a visual communication tool that uses visual symbols to express ideas and concepts, to convey meaning. A graphic organizer often depicts the relationships between facts, terms, and or ideas within a learning task. It is often referred to as a "map" because it can help teachers and students "map out" their ideas in a visual manner. There are many similar names for graphic organizers including: knowledge maps, concept maps, story maps, cognitive organizers, advance organizers, or concept diagrams.

**Inquiry** - Inquiry learning provides opportunities for students to experience and acquire processes through which they can gather information about the world. This requires a high level of interaction among the learner, the teacher, the area of study, available resources, and the learning environment.

**INTERACTIVE INSTRUCTION** - Interactive instruction relies heavily on discussion and sharing among participants. Students can learn from peers and teachers to develop social skills and abilities, to organize their thoughts, and to develop rational arguments. The interactive instruction strategy allows for a range of groupings and interactive methods. It is important for the teacher to outline the topic, the amount of discussion time, the composition and size of the groups, and reporting or sharing techniques. Interactive instruction requires the refinement of observation, listening, interpersonal, and intervention skills and abilities by both teacher and students.

**Lab Groups** - Lab groups are cooperative learning groups in an experimental setting.

**Learning Activity Pack** - A learning activity package (LAP) refers to a planned series of activities that involve the student in exploring a topic, skill, or concept.

**Learning Centers** - A classroom with learning centers offers various stations at which individuals or groups of students may complete selected tasks or activities. The activities are designed to accommodate a variety of learning styles and challenge the multiple intelligences.

**Learning Contracts** - Learning contracts provide a method of individualizing instruction and developing student responsibility. They permit individual pacing so that students may learn at the rate at which they are able to master the material. Learning contracts can be designed so that students function at the academic levels most suitable to them and work with resource materials containing concepts and knowledge that are appropriate to their abilities and experiences. Although this method focuses on the individual, learning contracts also provide an opportunity for students to work in small groups. The teacher may select this approach for some students to support them as they learn to work independently.

**Mastery Lecture** - Mastery lecture is a type of direct instruction. A significant amount of information can be communicated in a relatively short period of time. The quality of a lecture improves when audio and visual aids are incorporated and if interaction between the teacher and the students is facilitated.

**Model Building** - Model building involves the students in the design and construction of a theory, concept, or object.

**Nonlinguistic Representation** – an imagery mode of representation that is expressed as mental pictures and physical sensations such as smell, taste, touch, kinesthetic association, and sound, or in graphic, kinesthetic, or musical forms or products.

**Panel** - Several experts sit around a table and discuss a topic; they may field questions from an audience. Learners may prepare questions in advance for panelists.

**Peer Practice** - Peer practice involves each student rehearsing skills or conceptual information with a peer.

**Problem-Solving** - Learners start a topic by solving a problem that incorporates the concepts of the module. Have participants work in teams to solve a scenario. Begin the presentation with the problem-solving exercise and then debrief the exercise by highlighting important points in the presentation.

**Reading for Meaning** - To read for meaning, students must simultaneously utilize clues from all cueing systems. Readers bring knowledge and past experiences to the reading task to construct interpretations and to determine if the print makes sense to them. It is easier for readers to understand print when the content is relevant to their personal experiences. Familiar content and topics convey meaning or clues through the semantic cueing system. When students are comfortable and familiar with the content of a passage, they can predict upcoming text and take greater risks in reading. Research has repeatedly shown that fluent readers risk more guesses when interacting with unfamiliar print than poorer readers. They derive more meaning from passages than readers who frequently stop to sound or decode words by individual phonemes or letters.

**Reciprocal Teaching** - Reciprocal teaching refers to an instructional activity that takes place in the form of a dialogue between teachers and students regarding segments of text. The dialogue is structured by the use of four strategies: summarizing, question generating, clarifying, and predicting. The teacher and students take turns assuming the role of teacher in leading this dialogue.

**Reflective Discussion** - Reflective discussions encourage students to think and talk about what they have observed, heard or read. The teacher or student initiates the discussion by asking a question that requires students to reflect upon and interpret films, experiences, read or recorded stories, or illustrations. As students question and recreate information and events in a film or story, they clarify their thoughts and feelings. The questions posed should encourage students to relate story content to life experiences and to other stories. These questions will elicit personal interpretations and feelings. Interpretations will vary, but such variances demonstrate that differences of opinion are valuable.

**Research Projects** - Research projects are very effective for developing and extending language arts skills as students learn in all subject areas. While doing research, students practice reading for specific purposes, recording information, sequencing and organizing ideas, and using language to inform others.

**Role Playing** - Taking on roles and interacting in groups actively involves students in learning opportunities. By taking on a perspective other than their own, students begin to appreciate the beliefs, wants and needs, and motivations of others while trying to find creative and effective solutions to challenges.

**Simulation** - Simulations are instructional scenarios where the learner is placed in a "world" defined by the teacher. They represent a reality within which students interact. The teacher sets the parameters of this "world" in which students interact to acquire knowledge and understanding. Debriefing is an essential component of simulation. Simulations are in a way a lab experiment where the students themselves are the test subjects. They experience the reality of the scenario and gather meaning from it.

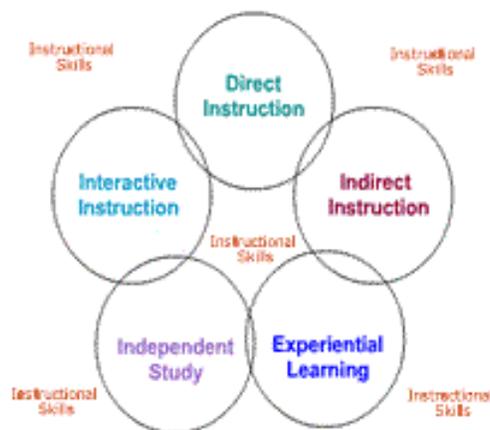
**Socratic Seminar** – A Socratic seminar allows students to reach deeper understanding of complex texts or issues through rigorously thoughtful dialogue. Unlike debate, the purpose here is not to win or lose but to arrive at understanding.

**Structured Overview** - A structured overview refers to organizing and arranging topics or concepts to make them meaningful to students.

**Surveys** - A survey is a research instrument which involves the asking of questions of a group of individuals. Creating and administering a survey, as well as analyzing the data collected, are all excellent opportunities for students to be active learners.

**Synectics** - The term Synectics from the Greek word *synectikos* which means "bringing forth together" or "bringing different things into unified connection." Since creativity involves the coordination of things into new structures, every creative thought or action draws on synectic thinking. Synectic thinking is the process of discovering the links that unite seemingly disconnected elements. It is a way of mentally taking things apart and putting them together to furnish new insight for all types of problems. It is a creative problem solving technique which uses analogies.

**Tutorial Groups** - Tutorial groups are set up to help students who need remediation or additional practice, or for students who can benefit from enrichment. Tutorial groups provide for greater attention to individual needs and allow students to participate more actively. Peer tutoring occurs when a student (the tutor) is assigned to help other students (the learners). The roles played by teacher, tutor, and learner must be explained and expectations for behavior must be outlined.



<http://olc.spsd.sk.ca/DE/PD/instr/index.html>

[http://www.saskschools.ca/curr\\_content/onlineteach/op/home/index.htm](http://www.saskschools.ca/curr_content/onlineteach/op/home/index.htm)

## Language Science Students Use

### Kindergarten

day, night, sun, moon, stars, up, down, on, above, under, color, rocks, groups, large/small, light/heavy, tall/short, rough/smooth, clay, cloth, paper, bendable, stiff, brittle, straight, zigzag, round and round, back and forth, fast, slow, fall, ground, alike, different, living, nonliving, plants, animals, movement, appearance, senses, taste, touch, smell, hearing, seeing, parent, baby, seed

### First Grade

\*Animals to use for observation: spiders, birds, insects such as ants, fish, classroom pets at school, personal pets such as dogs, cats, hamsters, at home, etc.

Common vocabulary: weather, patterns, weather instrument, thermometer, temperature, degrees, wind, wind vane, rain gauge, precipitation, rain, sleet, snow, hail, cloud, fog, sunny, cloudy, storm, thunderstorm, thunder, lightning, tornado, hurricane, seasons, summer, fall, winter, water, solid, liquid, freeze, frozen, melt, evaporate, sound, vibration, pitch, high, low, volume, loud, soft, emergency sounds, shadows, light, magnet, attract, repel, living things, plants, animals, root, stem, leaf, flower, characteristics, appearance, movement, growth, basic needs, air, light, nutrients, food, shelter

### Second Grade

Common green plants include grass, evergreen trees, deciduous trees that lose their leaves in the winter, shrubs and bushes, flowering plants, garden plants, etc.

A mushroom is an example of a fungus.

Common animals include insects, spiders, birds, fish, mammals such as dogs, hamsters and cats, reptiles such as snakes, turtles and lizards, and amphibians such as frogs/tadpoles, etc.

Common vocabulary: orbit, sun, stars, moon, moon phases, new moon, full moon, patterns, position, brightness, shadow, shadow stick, sundial, seasons, matter, states of matter, properties, solid, liquid, gas, energy, light, heat, motion, life cycle, fish, bird, amphibian, reptile, mammal, insect, chicken, frog, butterfly, egg, larva, pupa, adult, tadpole, caterpillar, chick, plant, animal, hibernate, seed, leaf, flower, stem, roots, pine needle, pine cone, fungus, fungi, mushroom

## Language Science Students Use

### Eighth Grade

#### **S8P1. Students will examine the scientific view of the nature of matter.**

Common vocabulary: nature of matter, matter, atoms, subatomic particles, proton, neutron, electron, molecule, pure substance, element, compound, mixture, dissolve, solvent, solute, solid, liquid, gas, plasma, state of matter, physical, chemical, property, density, melting point, boiling point, reaction, reactivity, reactant, combustibility, physical change, chemical change, precipitate, color, Periodic Table of Elements, Law of Conservation of Matter, mass, weight, temperature, particle, heat energy, volume, product

#### **S8P2. Students will be familiar with the forms and transformations of energy.**

Common vocabulary: energy, transform, transformation, transfer, Law of Conservation of Energy, potential energy, kinetic energy, force, gravity, machine, friction, chemical energy, heat, light, electricity, mechanical, motion, sound, molecules, conduction, radiation, current, convection

#### **S8P3. Students will investigate relationship between force, mass, and the motion of objects.**

Common vocabulary: force, mass, motion, velocity, acceleration, balanced force, unbalanced force, gravity, inertia, friction, machine, simple machine lever, inclined plane, pulley, wedge, screw, wheel and axle, complex machine, mechanical advantage, speed, distance, position, work

#### **S8P4. Students will explore the wave nature of sound and electromagnetic radiation.**

Common vocabulary: wave, sound, electromagnetic wave, mechanical wave, electromagnetic radiation, light wave, reflection, angle of reflection, refraction, diffraction, absorption, color, wavelength, spectrum, prism, visible light, medium, air, water, solid, parts of a wave, crest, trough, longitudinal, transverse, frequency, amplitude, pitch, vibration, decibel

#### **S8P5. Students will recognize characteristics of gravity, electricity, and magnetism as major kinds of forces acting in nature.**

Common vocabulary: gravity, electricity, magnet, magnetic force, magnetism, force, mass, distance, advantage, disadvantage, series circuit, parallel circuit, energy, electric current, electron, positive charge, negative charge, electromagnet, permanent magnet, poles, motor

Unit \_\_\_\_\_

Grade/Course	
Subject/Topic Areas	
Unit Title	
Unit Annotation	
Approximate Duration	
Author(s)	

**Content Standards:**

Standard and Element(s)	
Standard and Element(s)	
Standard and Element(s)	

**Characteristic of Science Standards:**

Standard and Element(s)	

**ENDURING UNDERSTANDINGS: What understandings are desired?**

Students will understand that:

<b>ESSENTIAL QUESTIONS:</b> What essential questions will be considered?

To understand, students will need to know:	To understand, students should be able to:

Science Language:				



**Balanced Assessment:** What evidence will show that students understand?

Selected Response	Constructed Response	Performance Tasks	Informal Observation	Self-Assessment

## Sequence of Activities, Tasks, and Assessments:

### WEEK ONE

Day 1:

Day 2:

Day 3:

Day 4:

Day 5:

### WEEK TWO

Day 1:

Day 2:

Day 3:

Day 4:

Day 5:

### WEEK THREE

Day 1:

Day 2:

Day 3:

Day 4:

Day 5:

### WEEK FOUR

Day 1:

Day 2:

Day 3:

Day 4:

Day 5:

