



*Training for the New Georgia Performance Standards  
Day 1: Standards-Based Education and the New GPS*

# ***Content Facilitator's Guide Science***

## *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. The following people contributed to its development.

Carolyn Baldree	William Cranshaw	Alicia McCartney	Kay Seabolt
Eloise Barron	Robin Gower	Sallie Mills	Cynde Snider
Gerald Boyd	Sally Krisel	John O'Connor	Charrita Danley
Kathleen Boyle	Marty Lawrence	Stephen Pruitt	Marlee Tierce
Lisa Copeland	Phyllis Martin	Sherry Reynolds	

For more information on this or other GPS training, contact Robin Gower at (404) 463-1933 or [rogower@doe.k12.ga.us](mailto:rogower@doe.k12.ga.us).

## *Use of This Guide*

The module materials, including a Content Facilitator's Guide, Participant'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.

## *Table of Contents*

<b>Acknowledgements</b> .....	<b>2</b>
<b>Use of This Guide</b> .....	<b>2</b>
<b>Table of Contents</b> .....	<b>3</b>
<b>Overview</b> .....	<b>5</b>
Module Rationale .....	5
Module Description .....	6
Module Goal .....	6
Module One Objectives.....	7
Module Sequence.....	7
Leader Roles and Responsibilities.....	8
Target Population .....	8
Module Preparation.....	8
Recommended Training Setup .....	12
Module Materials for Day One of Training.....	13
Provided Texts.....	14
<b>Recommended Readings</b> .....	<b>16</b>
<b>Agenda</b> .....	<b>22</b>
<b>Introduction</b> .....	<b>23</b>
Hook: Large Group Activity (15 minutes).....	24
Overview of the Module: Presentation (5 minutes).....	25
What Do We Know and What Do You Want to Know: Small Group Activity (10 minutes).....	29
<b>Overview of Standards</b> .....	<b>30</b>
Introduction (10 minutes) .....	31
What are the new standards? (60 minutes) .....	34
What makes the standards different? (20 minutes) .....	44
Sample Unit (60 minutes).....	52
Summary: Large Group Activity (10 minutes) .....	52
<b>Standards Based Teaching and Learning</b> .....	<b>54</b>
Standards Based Education (SBE): Small Group Activity (15 minutes) .....	55
Benefits of Standards-Based Education: Small Group Activity (30 minutes).....	56
SBE and GPS: Presentation and Walkthrough (1 hour) .....	
Summary: Large Group Activity (5 minutes) .....	61
<b>Putting It All Together</b> .....	<b>62</b>
Putting It All Together: Triad Activity (1 hour, 40 minutes).....	63

<b>Summary and Follow Up Assignments</b> .....	<b>65</b>
Follow Up Assignment (5 minutes) .....	66
Action Planning (15 minutes) .....	67
Summary (10 minutes) .....	67
<b>Day One Preparation</b> .....	<b>68</b>
<b>Reflections on the Day</b> .....	<b>69</b>
<b>Glossary</b> .....	<b>70</b>

## *Overview*

**Module Rationale** “Georgia will lead the nation in improving student achievement.” This is the goal, and promise, behind the new Georgia Performance Standards (GPS). The purpose of this training is two-fold.

The first purpose is to introduce participants to the applicable standards. For 2004-2005, these include:

1. K-3 ELA
2. 4-8 ELA
3. 9-12 ELA
4. 6 Mathematics
5. 6-7 Science
6. 9-12 Life Science
7. 9-12 Physical Science

Teachers are excited and a little nervous about the content of the new curriculum (GPS), the structure of the standards, and how they relate to the previous (QCC) curriculum. Everyone is eager to find out what content has been added, dropped, and/or moved, whether performance demands have been changed, and how the new curriculum relates to state-wide testing. These concerns and questions are addressed in this training. After day one, participants should have a good general idea of the standards; the standards will be explored in more depth in subsequent training days.

The second purpose is to introduce the standards-based education approach and to assist teachers in using this “backward design” approach to develop assessments and instruction in support of the new curriculum standards. During day one of the training, the emphasis is on the model itself—what it is, why it is important, and how it can be used so that the new GPS have a profound impact at the classroom level. Subsequent days of the training will address elements of the backward design model (curriculum mapping, assessment, and instruction).

Although there is not enough time in one day of training to address either of these two purposes in great depth, participants will get a chance to “dig into” the standards, so that they can begin to see how the big ideas apply to specific parts of the GPS.

**Module Description**

This module includes preparation (an assignment for participants to complete before training), an instructor-led one-day session, and follow up. The prior preparation helps participants to jump into meaningful discussions quickly, and the follow up serves as a bridge to day two of training. Class presentations, discussions, and activities contain both general principles and specific applications. “General principles” refers to concepts that extend across the curriculum; “specific applications” refers to the standards that are the focus of the module. For this reason, there are seven variations on the module, corresponding to the seven subject areas/grade levels listed on the previous page. The training is structured so that the general principles are the same throughout the modules, with “drop in” examples specific to the subject and grade levels.

**Module Goal**

Demonstrate a deep understanding of the new Georgia Performance Standards and the standards-based education approach, through thoughtful curriculum planning, development of formative and summative assessments, and the design of instruction matched to the standards and research-based best practices. This shall be measured by student performance on progress monitoring and standardized criterion-referenced tests.

Key words from the goal:

- Deep understanding
- Georgia Performance Standards (GPS)
- Standards-based education
- Research-based best practices

Note that the goal will not be reached by day one of training alone. It will take preparation, eight days of classroom instruction, and follow up to master this goal. Various days of training will deal with different components of the goal, such as curriculum planning, assessment, and instruction.

**Module One Objectives**

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

1. Describe the benefits of the GPS.
2. Describe the various phases of the GPS rollout plan.
3. Define terms related to the GPS.
4. Identify four parts of each standard.
5. Describe the backward design process used in standards-based teaching and learning.
6. Identify key components of the applicable standards (for example, 9<sup>th</sup> grade science).

**Module Sequence**

Prior Preparation—Participants (3 hours)

- Understanding backward design
- Review of information from [www.georgiastandards.org](http://www.georgiastandards.org).

Introduction (30 minutes)

- Hook
- Overview of the Module
- What We Know/What We Want to Know

Overview of the Standards (2½ hours)

- Benefits of GPS and GPS Implementation
- Content-Specific Information

Standards-Based Teaching and Learning (1 hour, 50 minutes)

- Standards Based Education (SBE)
- Benefits of backward design
- SBE and GPS
- Walk Through of (Backward Design) Process

Putting It All Together (1 hour, 40 minutes)

- Planning to use GPS, using Unit design templates

Summary and Follow Up Work (30 minutes)

- Action Planning
- Follow-up Assignment
- Summary

**Leader Roles and Responsibilities** This workshop will require of you a different set of skills than most other instructor-led training programs. There is less presentation and lecture; instead, you will have to use demonstration, questioning, and facilitation skills. This guide includes the basic questions you should ask the participants, but throughout the workshop, you will have to add additional probing questions to get the participants to question their assumptions and continue to refine their understanding of what standards-based teaching is and how it can make a difference.

**Target Population** The target populations for this training are teachers of English Language Arts at all grade levels; teachers of 5<sup>th</sup> and 6<sup>th</sup> grade mathematics; and teachers of 6<sup>th</sup> grade, 7<sup>th</sup> grade, and high school science. This includes teachers of this content in special education, gifted, and supplemental/alternative positions who need to be knowledgeable of the general curriculum in order to provide accommodations, modifications, and/or support so that students with special needs have access to, and progress in, that curriculum. Also included in the target population are others in leadership positions for these portions of the curriculum (e.g., literacy coaches, curriculum specialists).

Teachers will be trained locally, in groups corresponding to the following modules:

1. K-3 ELA\*
2. 4-8 ELA\*
3. 9-12 ELA\*
4. 6 Mathematics\*
5. 6-7 Science\*
6. 9-12 Life Science\*
7. 9-12 Physical Science\*

\* This includes regular education, special education, gifted education, and supplemental/alternative teachers.

**Module Preparation** Preparation is critical to a successful training session. Listed below are some tips that will help you prepare for your session.

1. Participate in a Train-the-Trainer session.

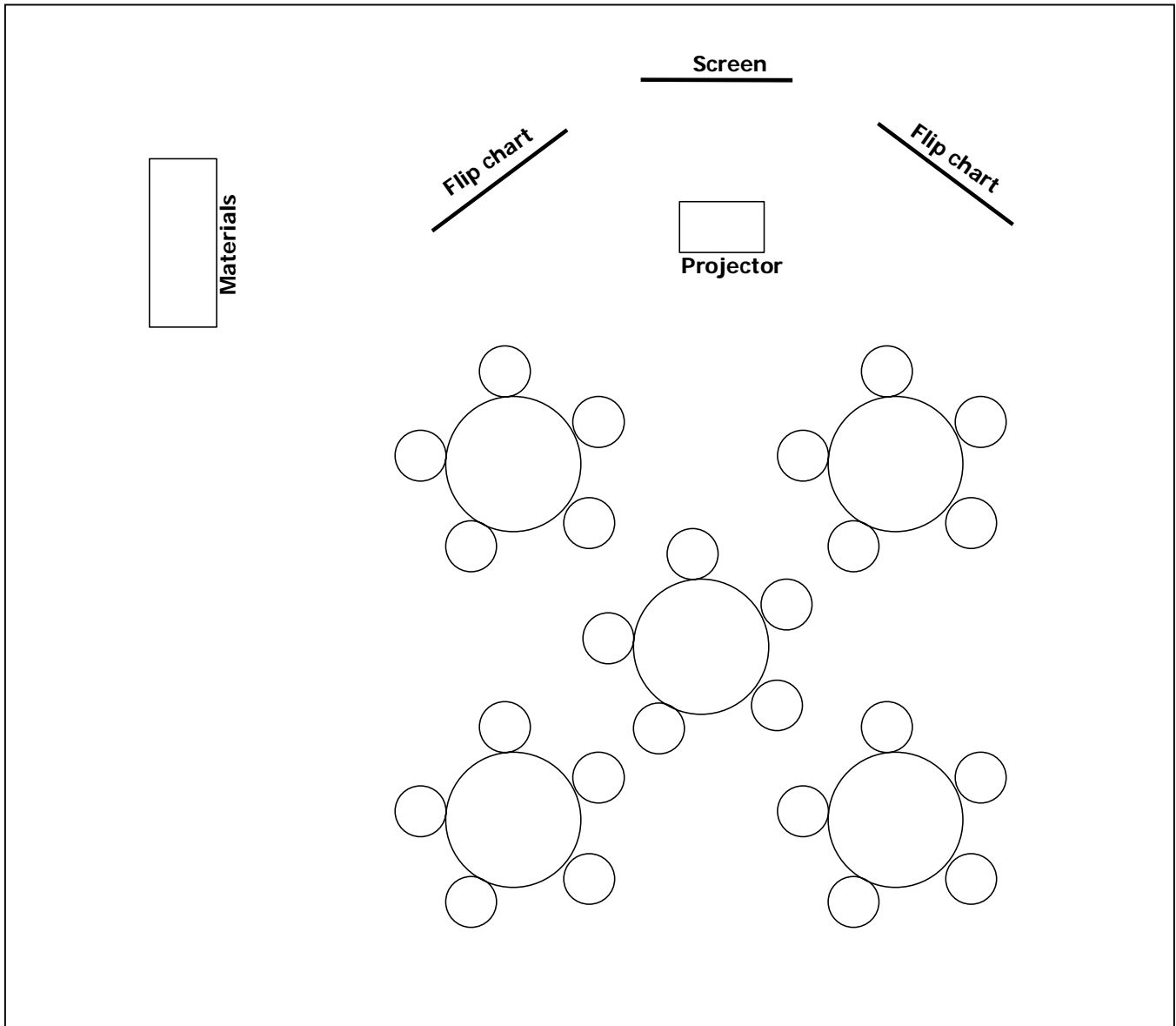


2. Gather all the required articles, texts, and other materials listed in the "Module Materials" list on page 13. A set of books is provided to each school, as listed on page 14. Become very familiar with these materials and the materials in the *Recommended Readings* list.
3. Ensure that school administrators understand the preparation and follow up requirements of the course and that the GPS curriculum changes have evolved from a very open public process that included public input from responses sought by the DOE. Current GPS were developed taking into consideration all input from all respondents.
4. Ensure the participants who are enrolled in your training sessions have the preparation materials and realize it is an absolute requisite to attending the training. The best way to ensure compliance is to have multiple contacts with the participants and their administrators. During these contacts, whether by mail, phone, or e-mail (preferably a combination), ensure that participants have the prework materials, understand the assignment, and are committed to arriving prepared. Anything you can do to establish a relationship with participants will help reduce stress and ensure a meaningful and successful training experience. If the participants start the training unprepared, they may never catch up.
5. Identify a date, times, and location for this training. This may vary from one setting to the next, as you work with local schools and districts to arrange a customized delivery schedule. Prepare a handout with this information and photocopy it for the participants. You can use the agenda on page 22 to guide you.

6. Determine how course follow-up will be handled. It is very important that professional development be an on-going, job-embedded process, with the training sessions being part of a cohesive plan to help teachers increase skills and knowledge. Here are some questions you must answer before conducting the workshop:
  - Will there be any follow-up conference calls or a list serve to discuss progress and provide an information-sharing and networking forum? If so, who will lead them? When? How?
  - How will we ensure that participants complete the follow-up assignments? Who will follow up with reminders? How will we make sure this effort is supported locally?
  - Will there be grade level meetings? Department meetings?
  
7. Ensure that you have all materials.
  
8. Gather information about your training site:
  - Mailing address, contact person with phone number (Participant materials need to be shipped to a specific location and someone needs to receive the materials.)
  - Size of room and space to work in small groups
  - Audio visual equipment
    - Projection system
    - Two flipcharts with pads
  - Table and chairs: One table for leader (in front), one for materials, enough tables for the number of participants to sit in groups of about four
  - Wall space for your posters and flipcharts
  - Determine plans and payment for refreshments as desired/needed.
  - Review the graphic of the ideal site setup on the following page.
  - Set up your training room the night before the training. If you have never seen the room, this is especially important.
  - Test all equipment and make sure you have all of your materials organized for efficient distribution.

9. Go through the entire Content Facilitator's Guide.
  - Prepare an agenda. (You may also want to mark key times with Post-Its put in your guide.)
  - Use margins to note key points you plan to emphasize.
  - Walk through all activities.
  - Prepare any flipcharts.
  - Make sure your materials are organized according to when you will need them.
  - Make any adjustments that are needed to the activities, room layout, audio-visuials, etc., based on the number of participants.

**Recommended Training Setup**



**Module Materials  
for Day One of  
Training****Content Facilitator's Kit contents:**

- Content Facilitator's Guide (one for each leader)
- Complete set of slide transparencies
- Participant's Guide (one per participant and one per leader)
- Preparation Assignment (one per participant, to be sent out two weeks prior to class)

Make the appropriate number of copies of each of the following handouts. It is a good idea to have one labeled file folder for each set of handouts, so they are available when you need them.

- A. Contact Information handout
- B. Sample unit/lesson
- C. Handout, *Tools and Templates for Backward Design*  
(This handout should include the following pages from the *Understanding by Design Professional Development Workbook*: 62, 69, 91, 106, 108-110, 115, 122-125, 127-128, 133.)
- D. Handout: *Mapping the Big Picture*, pages 49-63

Other materials needed:

- Name tags
- A variety of colored markers appropriate for flipcharts
- Highlighter markers
- Flipchart paper and stand
- Masking tape to post flipcharts
- Optional: Red and green cards, one of each color per participant (an easy way to create these is to take colored copy paper or construction paper and cut it into four quadrants)

Equipment:

- Projection system for slides
- Computer

**Provided Texts**

Each school will received one copy of each book listed below, and ten copies of the *Understanding by Design* book.

Hayes Jacobs, Heidi. *Mapping the Big Pictures: Integrating Curriculum and Assessment K-12*. Alexandria, VA: Association for Supervision and Curriculum Development. 1997.

Marzano, Robert J. *What Works in Schools: Translating Research into Action*. Alexandria, VA: Association for Supervision and Curriculum Development. 2003.

Robert J. Marzano, Debra Pickering, and Jay McTighe. *Assessing Student Outcomes: Performance Assessment Using the Dimensions of Learning Model*. Alexandria, VA: Association for Supervision and Curriculum Development. 1993.

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

Marzano, Robert J, Jana Marzano, & Debra Pickering. *Classroom Management That Works: Research-Based Strategies for Every Teacher*. Alexandria, VA: Association for Supervision and Curriculum Development. 2003.

Strong, Richard W., Harvey F. Silver, and Matthew J. Perini. *Teaching What Matters Most: Standards and Strategies for Raising Student Achievement*. Alexandria, VA: Association for Supervision and Curriculum Development. 2001.

Tomlinson, Carol Ann. *How to Differentiate Instruction in Mixed-Ability Classrooms, 2<sup>nd</sup> edition*. Alexandria, VA: Association for Supervision and Curriculum Development. 2001.

Wiggins, Grant and Jay McTighe. *Understanding by Design*. Alexandria, VA: Association for Supervision and Curriculum Development. 1998. \*

Wiggins, Grant and Jay McTighe. *Understanding by Design Study Guide*. Alexandria, VA: Association for Supervision and Curriculum Development. 2000.

\* Note: Ten copies of this book were purchased for each school.

**Day One  
Preparation**

Send participants the Day One Preparation assignment and instruct them to complete the assignments prior to attending class.

## *Recommended Readings*

### **Books**

Dufour, R., & Eaker, R. *Professional Learning Communities at Work*. Bloomington, IN: National Educational Service. 1998.

The authors use Adlai Stevenson High School as the case study of how principals can create learning communities where student learning and achievement are center stage. The book lays out the school improvement process. No failing schools would exist if every school became a learning community modeled after DuFour's school. The book contains an extensive bibliography.

Hayes Jacobs, Heidi. *Mapping the Big Pictures: Integrating Curriculum and Assessment K-12*. Alexandria, VA: Association for Supervision and Curriculum Development. 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 12*. Southern Regional Education Board, 2004. Publication Orders Department, 592 10th St. N.W., Atlanta, GA 30318-5790, Fax: (404) 872-1477 (03V63, \$10 each/\$6.50 each for 10 or more.) <http://www.sreb.org/main/Publications/catalog/howtoorder.asp>.

This volume is essential for state, district, and school leaders who plan to implement schoolwide 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: Association for Supervision and Curriculum Development. 2001.

Using a meta-analysis of thousands of research studies, Marzano clearly answer 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., Norford, J., Paynter, D., Pickering, D., & Gaddy, B. (2001). *A Handbook for Classroom Instruction That Works*. Alexandria, VA: Association for Supervision and Curriculum Development.

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 strategy with students.

Marzano, Robert J. *Classroom Management That Works: Research-Based Strategies for Every Teacher*. Alexandria, VA: Association for Supervision and Curriculum Development. 2003.

The authors analyze 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 authors provide action steps, along with real stories of teachers and students, to guide teachers in implementing the research findings.

Marzano, Robert J. *Transforming Classroom Grading*. Alexandria, VA: Association for Supervision and Curriculum Development. 2000.

Grading has the *potential* for being a valuable learning tool that helps both students and teachers clearly see how they can improve; however, this potential is seldom realized. In this book, Marzano presents viable alternatives to traditional assessment that are grounded in research and practical at the same time.

Strong, R., Silver, H., & Perini, M. *Teaching What Matters Most: Standards and Strategies for Raising Student Achievement*. Alexandria, VA: Association for Supervision and Curriculum Development. 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.

Tomlinson, C. *The Differentiated Classroom: Responding to the Needs of All Learners*. Alexandria, VA: Association for Supervision and Curriculum Development. 1999.

Tomlinson explains the elements of differentiated instruction and the importance of differentiated instruction within the classroom. The book also serves as an instructional guide for educational leaders and instructors as differentiated strategies are implemented.

Tomlinson, C. *How to Differentiate Instruction in Mixed-Ability Classrooms*. Alexandria, VA: Association for Supervision and Curriculum Development. 2001.

This excellent resource includes concrete examples of instructional strategies matched to the readiness, interests, and talents of all students. Strategies include learning-centered, hands-on activities; contracts; and investigative projects. The author also offers lesson-planning strategies to provide scaffolding of the content, procedures used in learning, and products of learning.

Wiggins, Grant and Jay McTighe. *Understanding by Design*. Alexandria, VA: Association for Supervision and Curriculum Development. 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: Association for Supervision and Curriculum Development. 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: Association for Supervision and Curriculum Development. 2004.

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

## Professional Organizations

NCTE - <http://www.ncte.org/>

GCTE - <http://www.gcte.org/>

IRA - <http://www.reading.org/>

GRA - <http://www.georgiareading.org/>

NSTA—<http://www.nsta.org>

GSTA—<http://www.georgiascienceteacher.org>

ENC—<http://www.enc.org>

## Web Sites

Read-Write-Think. NCTE/IRA. <http://www.readwritethink.org/>.

This site contains lessons, web resources, standards, and student materials. It provides quality practices and resources in reading and language arts instruction.

Illinois School Improvement Division. [http://206.166.105.86/knowledge/standards\\_resources.asp](http://206.166.105.86/knowledge/standards_resources.asp).

This site provides Illinois Learning Standards Resources, including benchmark indicators, sample learning activities, and sample student work.

Units (incorporating Learning Focused components). Connected Learning. <http://www.title3.org/>.

BOCES is a cooperative service organization that helps school districts save money by pooling resources and sharing costs.

## Special Education Resources

*Access, Participation, & Progress in the General K-12 Curriculum*. National Center on Accessing the General Curriculum (ncaog.org).

Approximately 70 general and special educators and parents attended the National Capacity Building Institute on Access, Participation, and Progress in the General Curriculum, held on July 10, in Arlington, VA. The article includes the proceedings from the Institute.

*Aligning Special Education with NCLB.* www.ldonline.org.

The No Child Left Behind Act (NCLB) is a standards-based reform movement. This movement emphasizes standards and the alignment of curriculum and assessment to those standards. States established what is to be taught. The goal of standards is to increase academic achievement levels. A related goal is to close the achievement gap for students who have traditionally been at-risk for academic failure or lack of success. This group includes students with disabilities.

Thompson, S., Thurlow, M., Quenemoen, R.F., & Esler, A. (2001). *Addressing Standards and Assessments on State IEP Forms*, National Center on Educational Outcomes (NCEO Synthesis Report 38)

This article summarizes data on each State's use of standards in developing Individualized Education Programs (IEP) for students with disabilities. All fifty states were asked to send their IEP forms and to indicate whether the forms were required, recommended, or simply sample forms. Out of the 41 states with IEP forms, only 5 states specifically addressed the general curriculum on their forms. Recommendations for IEP forms that provide decision-making guidance involving access to the general curriculum are summarized.

*Writing Standards-based IEPs.* Colorado Department of Education. www.cde.org.

The Colorado Department of Education provides information for teachers on developing standards-driven IEPs. The summary includes a definition of standards-driven IEPs, characteristics of standards-driven IEPs, and a rationale for standards-driven IEPs.

## **Resources for Differentiation**

Association for Supervision and Curriculum Development. *At Work in the Differentiated Classroom.* Alexandria, VA. Author. (video staff development set). 2001.

Chapman C. & Gregory, G. *Differentiated Instruction Strategies for Writing in the Content Areas.* Thousand Oaks, CA: Corwin Press. 2003.

Coil, C. *Standards-Based Activities and Assessments for the Differentiated Classroom.* Marion, IL: Pieces of Learning. 2004.

Tomlinson, C. *Fulfilling the Promise of the Differentiated Classroom: Strategies and Tools for Responsive Teaching.* Alexandria, VA: Association for Supervision and Curriculum Development. 2003.

Winebrenner, S. *Teaching Gifted Kids in the Regular Classroom*. Minneapolis, MN: Free Spirit. 1992.

## *Agenda*

This is a one-day course, with approximately seven hours of instructional time.

Introduction .....	30 minutes
Overview of Standards .....	2 hours, 30 minutes
Standards Based Teaching and Learning .....	1 hour, 50 minutes
Putting It All Together .....	1 hour, 40 minutes
Summary and Follow Up Assignments.....	30 minutes

## Introduction

**Time** 30 minutes

**Overview** In the overview, the participants complete a brief discovery activity to learn the rationale for backward design; i.e., that beginning with the GPS as desired outcomes and then designing instruction and assessment leads to in-depth understanding and mastery of the standards. This activity leads directly into a discussion of the goals of the training. Finally, participants share “what they know” and “what they want to know” about Georgia Performance Standards and their implementation.

**Objectives** ➤ N/A

**Activities**

- Hook: Large Group Activity (15 minutes)
- Overview of the Module: Presentation (5 minutes)
- What Do You Know and What Do You Want to Know: Small Group Activity (10 minutes)

**Materials**

- Summary of Backward Design handout
- Take the quotation “Georgia will lead the nation in improving student achievement.” Print each word on a different color paper (or with different colored text). Cut all the letters and punctuation (period), so that each letter is on a different sheet of paper. The end result should be 54 pieces of paper, each containing one letter or punctuation mark, with letters from any given word in the same color.
- Flipchart paper
- Markers
- Scratch paper

**Hook: Large Group Activity (15 minutes)**

1. Distribute one letter or punctuation mark to each participant as she/he enters the room. Do not provide any directions.

***Trainer's Note:** There are 54 pieces in all, so complete a rough calculation of how many pieces each participant should receive based on the anticipated number of participants. It is OK to have more participants than pieces, or participants with more than one piece.*

2. When all participants have arrived, say:

**I think we're all here, so I'd like for you to proceed with the introductory activity.**

3. Pause to give the participants time to express bewilderment, either verbally or via body language or both, and then ask: **Are there any questions?**
4. Expect participants to ask what you want them to do. Say: **Each of you has a different letter or punctuation mark. Individually they lack coherence, but if you put them together correctly, you'll discover that they make a meaningful quotation. Take the next couple of minutes and work together to make meaning out of the pieces you've been given. Lay the letters out on the floor or a table as you figure out the quotation.**

***Trainer's Note:** Manage the time of this activity, if necessary, by asking questions to speed up the process, such as, "Are the colors important?" or "This training is for the whole state of Georgia. Could that be important?"*



5. After the quotation is complete, say: **You've got it!**
6. Explain:
  - **As you can see from this activity, it's difficult to achieve a desired outcome if we don't know what the expectations are.**
  - **The Georgia Performance Standards have been developed by teaching professionals from all over Georgia and the nation. They provide the expectations. Implementing the GPS is now our task.**

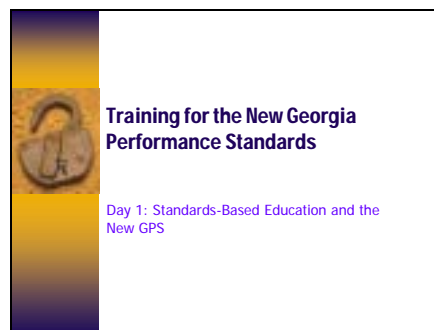
*Trainer's Note: This is the time for inclusions—words or gestures should be employed to indicate very clearly that "our" means all of us in the training room.*

- **Just as you were able to make sense of the individual letters once you knew what you needed to do, we all need to know what our roles are in terms of implementing the new standards.**

### Overview of the Module: Presentation (5 minutes)

Slide 1

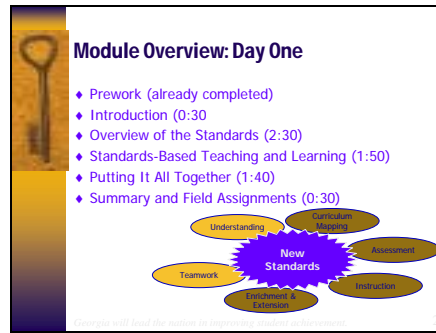
1. Show slide 1 (the title slide). Introduce yourself and briefly describe your background.



2. Ask participants to *briefly* introduce themselves, with just name and position.

Slide 2

3. Show slide 2, which contains the course overview information.



4. Present:

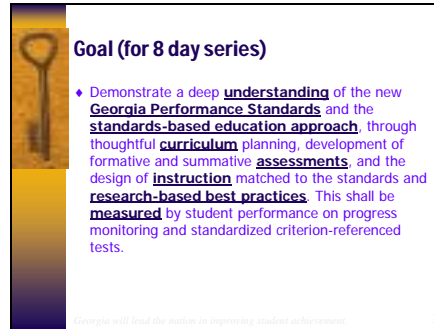
- **As the graphic shows, successful implementation of the new standards requires work in assessment, instruction, etc.**
- **Today, we'll be laying the foundation for all these other activities as we focus on building a team understanding of the standards and standards-based education—a process for using the standards to increase student achievement.**
- **As you can see from the topics, the preparation you did before class ties into "Overview of the Standards" and "Standards-Based Teaching and Learning."**

PG-5

5. Present: **The goal and today's objectives are listed on page 5 of your Participant's Guide.**

Slide 3

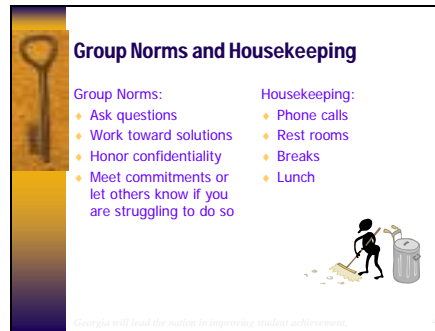
6. Show slide 3, Goal (*for 8 day series*). Explain:



- **This is our goal for the training. Key words are highlighted. As you see, many of these words are the same ones that were in the previous slide.**
  - **This goal cannot be mastered in one day. It requires on-going, job-embedded professional development. It will take all of us working together to fully implement the GPS and reach this goal. We'll be working toward this goal over eight days of training.**
  - **We must practice, reflect, collaborate, and receive feedback as we learn. Therefore, there will be follow-up assignments after each day of training. These are suggested activities that will help you work independently and with others in your school and district to apply what you've learned.**
7. Present: **Because we have only one day together at this time, it might be helpful to talk about some ways that we can all work together.**

Slide 4

8. Show slide 4, *Group Norms and Housekeeping*. Ask participants if they would like to add to or change the group norms. Record any needed changes on a flipchart. Then, ask participants to agree to these norms.

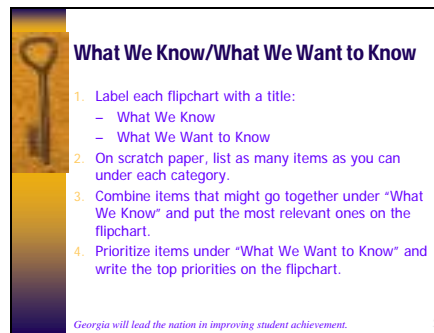


9. Go over housekeeping rules (phone, breaks, etc.) as appropriate to your schedule and location.
10. Transition: **Our goal today and in the remaining training sessions is to work through a step-by-step process we can use both to make sense out of the GPS and to use these standards to plan curriculum units, strategies, and lessons that facilitate student improvement. To do this I need to get a sense of what you know and what you want to know.**

### What Do We Know and What Do You Want to Know: Small Group Activity (10 minutes)

- Flipcharts, markers
11. Ask participants to work in small groups of three to four people. Distribute markers and at least two sheets of flipchart paper to each group.
- Slide 5
12. Show slide 5, *What We Know/What We Want to Know*. Reveal the instructions one at a time, allowing time for participants to complete each step before revealing the next one.

**Trainer's Note:** *The slide is set up to reveal the instructions one at a time.*



13. Designate a "What We Know" side of the room and a "What We Want to Know" side and ask groups to post their lists.
14. Briefly note any patterns that you see and/or any items that may be listed on both sides of the room, then tell participants that we will get back to these lists throughout the day.
15. Transition: **Let's move to the next section of training, *Overview of Standards*, and make sure that we all have a shared understanding of the GPS standards.**

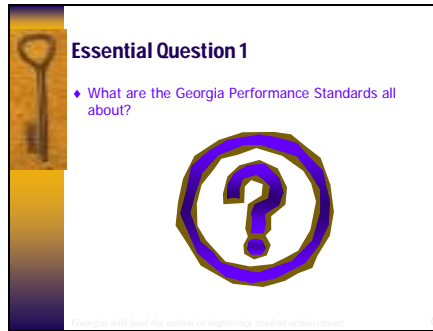
## *Overview of Standards*

<b>Time</b>	2 hours, 30 minutes
<b>Overview</b>	In this section, the trainer leads participants through an in-depth examination of the individual science standards. The participants are first introduced to the implementation plan for the GPS as well as the benefits of the new standards. Specific myths, or misconceptions, regarding the science standards will be addressed throughout this section of the training. Participants are then introduced to the parts of a performance standard and the essential changes and key features of the strands and standards. Finally, participants are provided a model showing how a particular unit/lesson may address multiple standards from multiple strands.
<b>Objectives</b>	<ul style="list-style-type: none"><li>➤ Describe the benefits of the GPS.</li><li>➤ Describe the various phases of the GPS rollout plan.</li><li>➤ Define terms related to the GPS.</li><li>➤ Identify four parts of each standard.</li></ul>
<b>Activities</b>	<ul style="list-style-type: none"><li>➤ Introduction (10 minutes)</li><li>➤ What Are the New Standards (60 minutes)</li><li>➤ What Makes the Standards Different (20 minutes)</li><li>➤ Sample Unit (60 minutes)</li><li>➤ Summary (10 minutes)</li></ul>
<b>Materials</b>	<ul style="list-style-type: none"><li>➤ Copy of standards</li><li>➤ Chart paper</li><li>➤ Markers</li><li>➤ Sample unit</li><li>➤ Participant's Guide</li><li>➤ Overhead projector or computer and LCD projector</li><li>➤ Transparencies or PowerPoint presentation</li><li>➤ Sample unit/lesson</li></ul>

**Introduction (10 minutes)**

Slide 6

1. Show slide 6, *Essential Question 1*. Present: **We are going to be exploring this question first.**




Slide 7

2. Show slide 7, *Phase-In Plan*. Present key points:
  - This is a 2-year phase-in plan
  - The 1<sup>st</sup> year includes content-specific training, professional learning, familiarity with the standards and standards-based education
  - During the 2<sup>nd</sup> year we begin to teach with the GPS; students are assessed on GPS (CRCT).

Grade	Year I ELA	Year II ELA	Year I Math	Year II Math	Year I Science	Year II Science	Year I Social Studies	Year II Social Studies
K	04-05	05-06	05-06	06-07	06-07	07-08	07-08	08-09
1	04-05	05-06	05-06	06-07	06-07	07-08	07-08	08-09
2	04-05	05-06	05-06	06-07	06-07	07-08	07-08	08-09
3	04-05	05-06	06-07	07-08	04-06	06-07	07-08	08-09
4	04-05	05-06	06-07	07-08	05-06	06-07	07-08	08-09
5	04-05	05-06	06-07	07-08	05-06	06-07	07-08	08-09
6	04-05	05-06	04-05	05-06	04-05	05-06	06-07	07-08
7	04-05	05-06	05-06	06-07	04-05	05-06	07-08	08-09
8	04-05	05-06	06-07	07-08	06-07	07-08	06-07	07-08
9	04-05	05-06	07-08	08-09	04-05	05-06	06-07	07-08
10	04-05	05-06	07-08	08-09	04-05	05-06	06-07	07-08
11	04-05	05-06	07-08	08-09	04-05	05-06	06-07	07-08
12	04-05	05-06	07-08	08-09	04-05	05-06	06-07	07-08


Slides 8 - 11

3. Show slides 8 – 11, which explain how the testing components are being phased in.




### Test Alignment

- ◆ Criterion-Referenced Competency Tests (CRCT) and End of Course Test (EOCT)
  - Test alignment is completed during Year II implementation for each content area and grade level.
- ◆ High School Graduation Test (GHSGT and GHSGT Enhanced)
  - Test alignment is completed during the third year following Year II implementation for each content area and grade level.




### Middle School Assessment Timeline

- ◆ 2004-2005 School year: All middle school science CRCT will assess the QCC.
- ◆ 2005-2006 School year: All middle school science CRCT will assess the GPS.



### CRCT Assessment

- ◆ Content switch from the QCC to the GPS will happen in Year II implementation schedule.
  - Eighth and Sixth grades will be tested over GPS Earth Science content 2005-2006.
  - Seventh grade will be tested over GPS Life Science content 2005-2006.



### High School Assessment Timeline

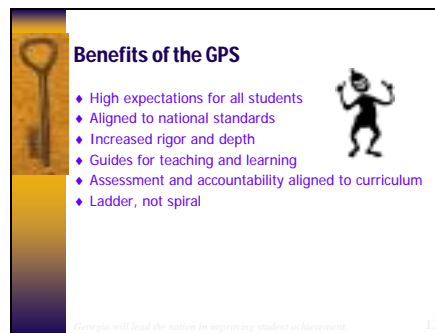
- ◆ 2004-2005 School year: All high school science tests will assess the QCC.
- ◆ 2005-2006 School year: All science EOCT will assess the GPS.



Slide 12

4. Show slide 12, *Benefits of the GPS*. Present key points:

- **With the Georgia Performance Standards, we are creating a ladder style curriculum that expects mastery of topics - as opposed to our current spiral curriculum, which contains constant review. The QCC had many topics at each grade; each topic is addressed in less depth. The GPS has fewer topics, allowing each topic to be explored in greater depth.**
- **Consistency within and across grade levels.**
- **Assessment (CRCT) will be aligned with the curriculum (GPS and EOCT).**



Slide 13

5. Show slide 13, *Alignment to National Standards*. Present key points:

- **This was a particularly big issue with both curriculum writers and the general public.**
- **Georgia needed to show we follow the national standards and did not write them in a vacuum.**
- **Alignment will be posted on the web in a separate document linked to the standards.**



## What are the new standards? (60 minutes)

Slide 14

1. Show slide 14, *Performance Standards Are...* Present key points:

- **Standards apply to every student. GPS is curriculum for ALL students.**
- **It is NOT:**
  - **An instructional handbook**
  - **Being restrictive**
  - **Being prescriptive**
  - **Telling how to teach, what methods, what strategies**
- **It IS telling teachers what students should know and be able to do.**



**Performance Standards...**

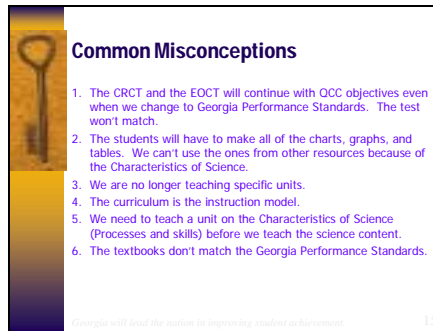
<u>Are:</u>	<u>Are Not:</u>
<ul style="list-style-type: none"><li>◆ Georgia Performance Standards (GPS)</li><li>◆ What students are to learn, know, and understand</li><li>◆ Clear expectations of performance</li><li>◆ Curriculum document</li><li>◆ Few in number</li><li>◆ Application of content</li></ul>	<ul style="list-style-type: none"><li>◆ New Quality Core Curriculum (QCC)</li><li>◆ How teachers are to teach</li><li>◆ Comprehensive school reform</li><li>◆ Instructional handbook</li><li>◆ Checklist of objectives</li><li>◆ Coverage of content</li></ul>

14

Slides 15 and 16  
PG-6

2. Show slides 15 and 16, *Common Misconceptions*. Refer participants to the same information on page 6 in their Participant's Guide.


*Trainer's Note: The two slides titled Common Misconceptions are myths that can get in the way of both your presentation and the understanding of the new curriculum. They are false assumptions. The myths are not ranked in any particular. They are given numbers for identification purposes only. These two slides are a suggested list, but not inclusive. You can use these or have participants brainstorm their own list. **Correct statements that refute these misconceptions are contained on the next page.***



**Common Misconceptions**

1. The CRCT and the EOCT will continue with OCC objectives even when we change to Georgia Performance Standards. The test won't match.
2. The students will have to make all of the charts, graphs, and tables. We can't use the ones from other resources because of the Characteristics of Science.
3. We are no longer teaching specific units.
4. The curriculum is the instruction model.
5. We need to teach a unit on the Characteristics of Science (Processes and skills) before we teach the science content.
6. The textbooks don't match the Georgia Performance Standards.

Georgia will lead the nation in improving student achievement.



**Common Misconceptions (cont.)**

7. The Georgia Performance Standards are the same as the OCC just repackaged.
8. We left out the good stuff/ my favorite unit.
9. The Georgia Performance Standards are not as specific. (For example classification; mirrors)
10. We cannot teach the human body in Biology...ever.
11. We have to prioritize/interpret the Georgia Performance Standards.
12. We teach only the standards and elements, not what we used to teach.
13. It is prescriptive and restrictive.
14. Everyone must teach the same tasks and they will be tested.
15. We need a state pacing guide.

Georgia will lead the nation in improving student achievement.

### **The Truth Behind Common Misconceptions**

- 1) The tests will be written to the GPS at the element level.
- 2) The goal is to have students understand the application and interpretation of charts, graphs, and tables. The more they are involved in the process of collecting, organizing, and analyzing data, the better they will understand how and why graphical representations are used.
- 3) Unit design will change. The units will focus on themes or big ideas instead of activities and worksheets.
- 4) The curriculum does not tell the teacher how to instruct. It tells the teacher what every student should know and be able to do.
- 5) You can't teach one without the other. The Characteristics of Science should be the process and rationale used to teach the content. Characteristics of Science will be assessed through content.
- 6) The science hasn't changed. The method of instruction has improved. Textbooks are only one resource.
- 7) The perspective of how to instruct has changed. The science has not changed.
- 8) Unit design may change, but labs/activities that students can use to connect content to understanding are still important.
- 9) The GPS do not limit instruction. They explain what every student should know and be able to do. How the teacher develops that springboard to understanding for the student is different. The process of using tools in science is emphasized not the tools themselves.
- 10) Comparative biology focuses on comparing all organisms, not just the human body in isolation.
- 11) The GPS are essential for all students. There will be differentiation guides in science for instructing different levels.

### The Truth Behind Common Misconceptions, continued

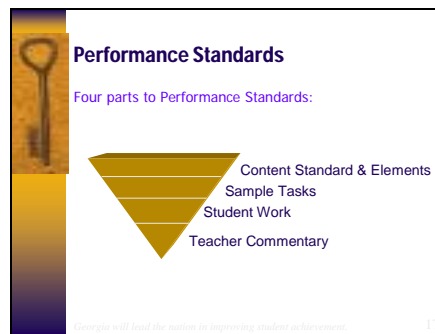
12) The GPS does not limit the instruction, it details what every student should know and be able to do. The journey to that understanding is developed by the instruction.

13) The tasks are suggestive and not inclusive. The tests will be written at the element level.

14) Because of the logistics of sharing equipment and labs, the GPS will not guide teachers on when to teach science standards. That will be left up to the individual.

Slide 17

3. Show slide 17, *Performance Standards*. Present key points:

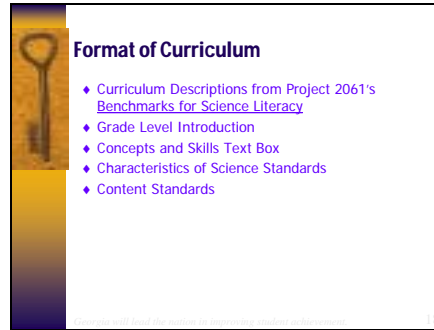


- **Performance Standards:** Performance standards define specific expectations of what students should know and be able to do and how well students must perform to achieve or exceed the standard. Georgia's performance standards are composed of four components: content standards, tasks, student work, and teacher commentary.
- **Content/Characteristics of Science standards:** Standards state the purpose and direction the content is to take, and are followed by elements. Standards define what students are expected to know, understand, and be able to do.
- **Elements:** identify specific learning goals in conjunction with the standard; establish the level of rigor at each grade level as well as the scope of work grade by grade in the context of the standard.

- *Note: The following components require Georgia teacher input. Collection of these will be ongoing process. Your help is needed.*
- **Tasks:** keyed to relevant standards; provide a sample performance that demonstrates what students should know and be able to do during or by the end of the school year; can serve as activities that will help students achieve the learning goals of the standard or can be used to assess student learning (many serve both purposes). NOTE: Although the GPS will include tasks, teachers may develop their own tasks. These are sample tasks; will show the rigor of an assignment that a teacher should be giving in order to assess student's achievement of the standard. Published tasks are not required –they are illustrative.
- **Student Work:** specify what it takes to meet the standard and to enable both teachers and students to see what meeting the standard “looks like.” NOTE: Samples of student work show how the student has met the standard. They are not perfect. Some pieces may not meet all of the elements of the standard, but it will meet the requirements for the part/s (elements) that you (the teacher) have been teaching.
- **Teacher Commentary:** opens communication between students and the classroom teacher as well as within a faculty in order to ensure consistency within assessment and expectations; shows students why they did or did not meet a standard and enables them to take ownership of their own learning. For example, it might say, “This piece of work meets the standard . . .” and explain specifically how it meets (or does not meet) it.

Slide 18

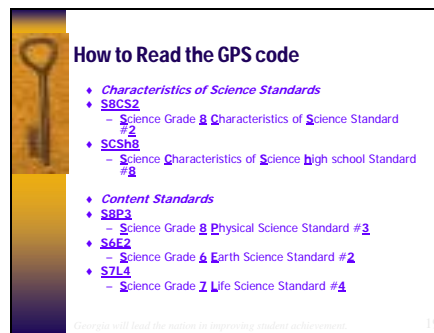
4. Show slide 18, *Format of Curriculum*. Refer participants to the GPS that they brought with them and ask them to locate each part labeled on the slide.



Slide 19

5. Show slide 19, *How to Read the GPS Code*. Explain the coding and ask participants to interpret several examples.

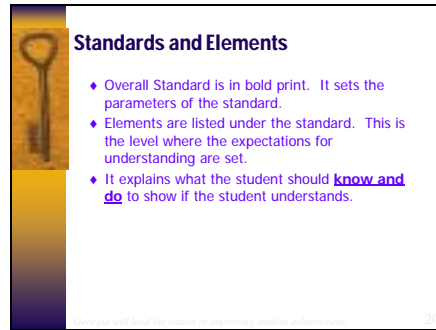
**Trainer's Note:** *This has been a source of confusion. Make sure participants are comfortable with the code.*



Slide 20

6. Show slide 20, *Standards and Elements*. Emphasize:

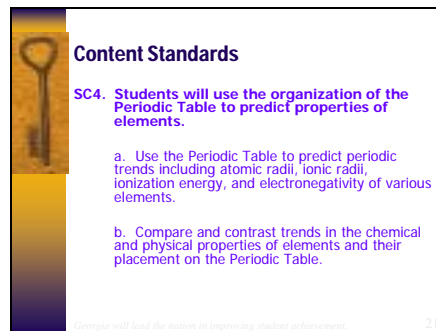
- **Standards are assessed at the element level.**
- **Since elements define standards, they are not stand alones.**
- **Elements are not discreet skills to be learned.**



**Standards and Elements**

- ◆ Overall Standard is in bold print. It sets the parameters of the standard.
- ◆ Elements are listed under the standard. This is the level where the expectations for understanding are set.
- ◆ It explains what the student should **know and do** to show if the student understands.

Slide 21

7. Show slide 21, *Content Standards*. Ask participants to identify standard and element, and to describe the differences between them.

**Content Standards**

**SC4. Students will use the organization of the Periodic Table to predict properties of elements.**

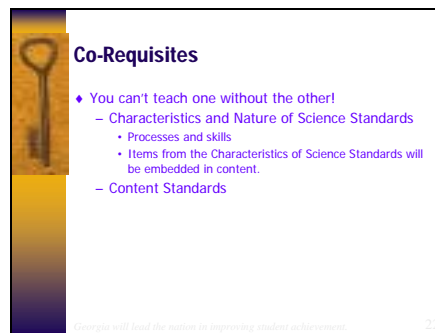
- a. Use the Periodic Table to predict periodic trends including atomic radii, ionic radii, ionization energy, and electronegativity of various elements.
- b. Compare and contrast trends in the chemical and physical properties of elements and their placement on the Periodic Table.



Slide 22

8. Show slide 22, *Co-Requisites*. Present key points:

- **The QCC had four process skill objectives. They were listed at the beginning of each grade level/course. Teachers misunderstood the purpose of these and sometimes taught them as discreet skills independent of content.**
- **Benchmarks for Scientific Literacy and the National Science Education Standards placed great emphasis on how science should be taught and learned.**
- **The Co-Requisites emphasize teaching content through using an inquiry approach based on Habits of Mind (processes) and Nature of Science.**
- **The Co-Requisites shall be integrated and will be assessed in the same manner.**
- **Since Characteristics of Science and Science Content are taught together, the following portion of the Lesson Planner is an example (on next slide).**
- **Allow time for discussing the role of the Characteristics of Science to discover how they explain what science is and ways to do science.**



Slide 23

9. Show slide 23, *Lesson Planner*. Present key points:

- **The Lesson Planner will be available and can be adapted to suit the needs of individual classroom teachers. *This is only a portion of a lesson planner matrix.***
- **The goal is to allow teachers a year long graphic organizer to plan the integration of the Co-Requisites.**
- **One standard does not equal one unit.**
- **The standards and elements can be used and revisited throughout the year to make for more enduring understandings.**
- **Teachers may arrange standards in different combinations to design meaningful units to meet the needs of their students.**
- **Standards are not sequential, nor are they ranked. Standards are not created equally. In other words, they are not six week units.**

	Unit #	SCSB1 a Curiosity, Inquiry, Openness, Replication	SCSB1 b Different explanations	SCSB1 c Design and execution of new experiments	SCSB2 a Use of scientific apparatus	SCSB2 b Appropriate techniques in all laboratory situations	SCSB2 c Safety problems and violations
SB1a Cell organelles							
SB1b Enzymes							
SB1c major macromolecules							
SB2a DNA & RNA							
SB2b DNA cloning info							
SB2c Reproductive variability							
SB3 New units							
SB2c Serial vs. parallel							
SB2f DNA technology							

Slide 24

10. Show slide 24, *Middle School Characteristics of Science Example*. Point out how the Characteristics of Science standard cannot be understood without the context of the science content.

**Middle School Characteristics of Science Example**

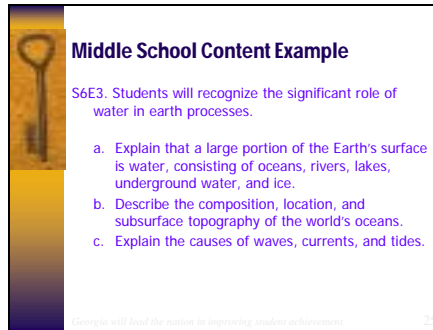
- ◆ S6CS5. Students will use the ideas of system, model, change, and scale in exploring scientific and technological matters.
  - a. Observe and explain how parts are related to other parts in systems such as weather systems, solar systems, and ocean systems including how the output from one part of a system (in the form of material, energy, or information) can become the input to other parts. (For example: El Nino's effect on weather)
  - b. Identify several different models (such as physical replicas, pictures, and analogies) that could be used to represent the same thing, and evaluate their usefulness, taking into account such things as the model's purpose and complexity.

Example will lead the nation in improving student achievement.

Slide 25

11. Show slide 25, *Middle School Content Example*. Emphasize:

- **Content provides context for Characteristics; Characteristics provide the vehicle for understanding Content.**



**Middle School Content Example**

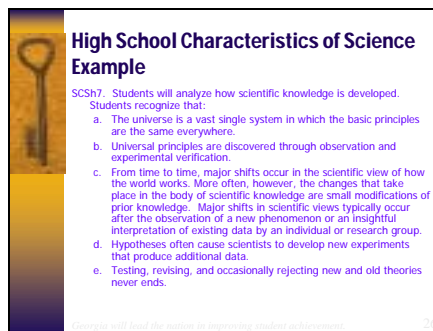
S6E3. Students will recognize the significant role of water in earth processes.

- a. Explain that a large portion of the Earth's surface is water, consisting of oceans, rivers, lakes, underground water, and ice.
- b. Describe the composition, location, and subsurface topography of the world's oceans.
- c. Explain the causes of waves, currents, and tides.

Florida will lead the nation in increasing student achievement.

Slide 26

12. Show slide 26, *High School Characteristics of Science Example*. Point out how the Characteristics of Science standard cannot be understood without the context of the science content.



**High School Characteristics of Science Example**

SCSH7. Students will analyze how scientific knowledge is developed. Students recognize that:

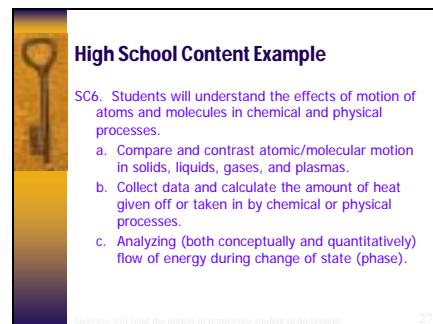
- a. The universe is a vast single system in which the basic principles are the same everywhere.
- b. Universal principles are discovered through observation and experimental verification.
- c. From time to time, major shifts occur in the scientific view of how the world works. More often, however, the changes that take place in the body of scientific knowledge are small modifications of prior knowledge. Major shifts in scientific views typically occur after the observation of a new phenomenon or an insightful interpretation of existing data by an individual or research group.
- d. Hypotheses often cause scientists to develop new experiments that produce additional data.
- e. Testing, revising, and occasionally rejecting new and old theories never ends.

Florida will lead the nation in increasing student achievement.

Slide 27

13. Show slide 27, *High School Content Example*. Emphasize:

- **While Content provides context for Characteristics, Characteristics provide the vehicle for understanding Content.**



**High School Content Example**

SC6. Students will understand the effects of motion of atoms and molecules in chemical and physical processes.

- a. Compare and contrast atomic/molecular motion in solids, liquids, gases, and plasmas.
- b. Collect data and calculate the amount of heat given off or taken in by chemical or physical processes.
- c. Analyzing (both conceptually and quantitatively) flow of energy during change of state (phase).

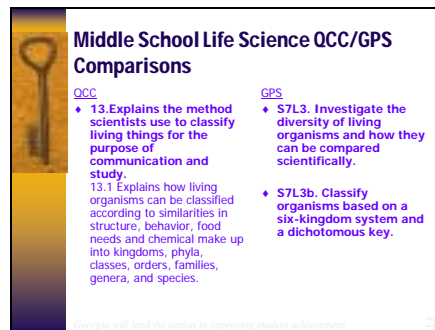
Florida will lead the nation in increasing student achievement.

**What makes the standards different? (20 minutes)**

Slide 28

14. Show slide 28, *Middle School Life Science QCC/GPS Comparisons*. Present key points:

- **The QCC emphasizes the memorization of each level of classification, whereas the GPS emphasizes the use of classification to understand organisms. Instruction is not limited to teaching only kingdoms; true understanding of diversity requires teaching all levels of classification. However, students will be assessed on understanding the process of classification, not the trivia of classification.**
- **The QCC was based on the five-kingdom system. Due to a greater understanding of organisms, the writing teams chose the current six-kingdom system.**
- **Classification is a tool for understanding organisms. The GPS emphasize classification as a tool or process, not an end product.**



**Middle School Life Science QCC/GPS Comparisons**

**QCC**

- ♦ 13. Explains the method scientists use to classify living things for the purpose of communication and study.

13.1 Explains how living organisms can be classified according to similarities in structure, behavior, food needs and chemical make up into kingdoms, phyla, classes, orders, families, genera, and species.

**GPS**

- ♦ 57L3. Investigate the diversity of living organisms and how they can be compared scientifically.
- ♦ 57L3b. Classify organisms based on a six-kingdom system and a dichotomous key.

Georgia will lead the nation in improving student achievement.

21

Slide 29

15. Show slide 29, *Biology QCC/GPS Comparisons*. Ask: What differences do you see between the two?

- **In the QCC, the student “identifies” whereas the GPS ask the student to “explain the role of.”**
- **Addition of “prokaryotic and eukaryotic cells” brings the GPS standard to a more current level of understanding.**

**Biology QCC/GPS Comparisons**

<p><b>QCC</b></p> <p><b>4. Explains the cellular basis of life.</b></p> <p>4.1 Distinguishes between living and nonliving things (e.g., characteristics of living things).</p> <p>4.2 States the cell theory.</p> <p>4.3 Differentiates between prokaryotes and eukaryotes.</p> <p>4.4 Identifies common cell organelles and describe the function of each (e.g., diagrams and microscopic examinations).</p> <p>4.5 Distinguishes between unicellular and multicellular organisms.</p>	<p><b>GPS</b></p> <p><b>SB4. Students will analyze the nature of the relationships between structures and functions in living cells.</b></p> <p>a. Explain the role of cell organelles for both prokaryotic and eukaryotic cells, including the cell membrane, in maintaining homeostasis and cell reproduction.</p> <p>b. Explain how enzymes function as catalysts.</p> <p>c. Identify the function of the four major macromolecules (i.e., carbohydrates, proteins, lipids, nucleic acids).</p>
---	--

Georgia will lead the nation in improving student achievement.

Slide 30

16. Show slide 30, *Physical Science QCC/GPS Comparisons*. Ask: What differences do you see between the two?

- **For example, 9.2 and 9.3 are low level.**

**Physical Science QCC/GPS Comparisons**

<p><b>QCC</b></p> <p><b>9. Applies the law of definite proportions to predict mole quantities of chemicals that combine.</b></p> <p>9.1 Predicts whether two elements will chemically combine based on their position in the periodic chart.</p> <p>9.2 Applies rules for writing formulas of simple chemical compounds.</p> <p>9.3 Applies rules for naming simple chemical compounds.</p> <p>9.4 Classifies compounds as ionic or covalent.</p>	<p><b>GPS</b></p> <p><b>SPS2. Students will explore the nature of matter, its classifications, and its system for naming types of matter.</b></p> <p>a. Predict formulas for stable binary ionic compounds based on balance of charges.</p> <p>b. Use IUPAC nomenclature for transition between chemical names and chemical formulas of</p> <ul style="list-style-type: none"> <li>- binary ionic compounds (containing representative elements).</li> <li>- binary covalent compounds (i.e. carbon dioxide, carbon tetrachloride).</li> </ul>
---	--

Georgia will lead the nation in improving student achievement.

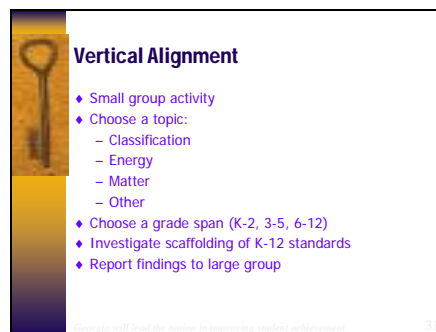
17. Transition: **We have been talking about the basic structure of the GPS and how they are an improvement from the QCC. Let's now turn to the sequence of the GPS curriculum standards.**

Slide 31  
PG-7

18. Show slide 31, *Vertical Alignment*. Ask participants to work in small groups and complete the instructions on the slide, using page 7 in the Participant's Guide as a worksheet.

- **The topics are suggested, but a small group can choose their own topic if needed.**
- **Within the small group, have them pair to search the K-2, 3-5, or 6-12 grade spans. You may wish to break 6-12 into 6-8 and 9-12 if they choose a life or physical science topic. Earth science is limited to 6-8 at this time.**
- **Have participants report to their small groups about levels of understanding in selected grade spans. Then have the small groups choose a reporter to share with the large group.**

***Trainer's Note:** This exercise allows participants to search for evidence of topic scaffolding to understand the vertical alignment of the science Georgia Performance Standards. The QCC repeated topics, sometimes verbatim. The GPS does not repeat topics, since students at different cognitive levels will learn concepts at different cognitive levels. The key is understanding at each level to provide a firm scaffold for the next level and not building too high too quickly—knowing when to stop.*

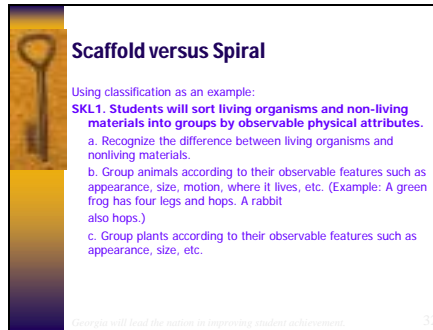


19. Allow about ten minutes for small group work and then ask them to report out.

- Participants should see for themselves that the content builds on itself (ladder or scaffold) rather than revisits each topic (spiral).

Slides 32-25

20. Show slides 32-35 to illustrate the scaffolding nature of the curriculum.

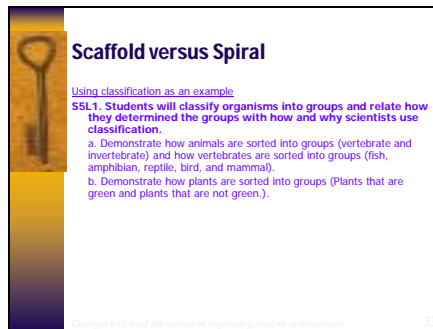


**Scaffold versus Spiral**

Using classification as an example:  
**SKL1. Students will sort living organisms and non-living materials into groups by observable physical attributes.**

- Recognize the difference between living organisms and nonliving materials.
- Group animals according to their observable features such as appearance, size, motion, where it lives, etc. (Example: A green frog has four legs and hops. A rabbit also hops.)
- Group plants according to their observable features such as appearance, size, etc.

- **In kindergarten students begin understanding how to group objects. They work with concrete characteristics such as living/nonliving and plant/animal. Basic understandings rely on generalities that are observed—movement, growth, eating, etc.**

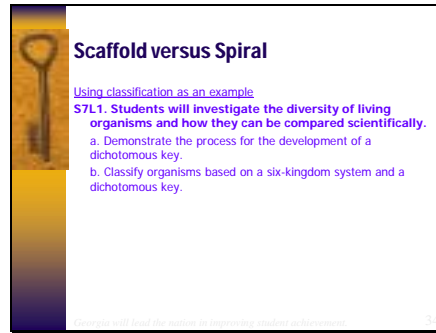


**Scaffold versus Spiral**

Using classification as an example:  
**SSL1. Students will classify organisms into groups and relate how they determined the groups with how and why scientists use classification.**

- Demonstrate how animals are sorted into groups (vertebrate and invertebrate) and how vertebrates are sorted into groups (fish, amphibian, reptile, bird, and mammal).
- Demonstrate how plants are sorted into groups (Plants that are green and plants that are not green).

- **By fifth grade students can use characteristics to group, and they can consistently generate rules and explanations for grouping. Categorizing organisms into groups according to observations and common features lays the groundwork for understanding dichotomous keys and diversity.**



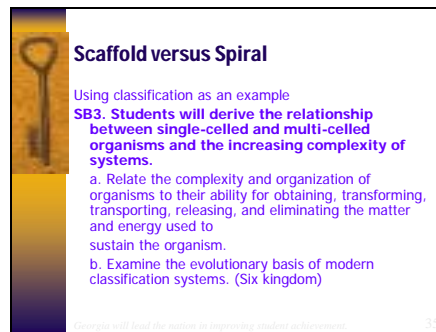
**Scaffold versus Spiral**

Using classification as an example

**S7L1. Students will investigate the diversity of living organisms and how they can be compared scientifically.**

- Demonstrate the process for the development of a dichotomous key.
- Classify organisms based on a six-kingdom system and a dichotomous key.

- **Seventh graders begin working on scientific classification using dichotomous keys. By putting order to the grouping rules, the seventh grader can better understand how a scientist organizes thinking. The six kingdoms suggested are archaebacteria, eubacteria, protists, fungi, plants, and animals.**



**Scaffold versus Spiral**

Using classification as an example

**SB3. Students will derive the relationship between single-celled and multi-celled organisms and the increasing complexity of systems.**

- Relate the complexity and organization of organisms to their ability for obtaining, transforming, transporting, releasing, and eliminating the matter and energy used to sustain the organism.
- Examine the evolutionary basis of modern classification systems. (Six kingdom)

- **The foundation is built for students to then examine, not only the grouping of organisms, but also how that grouping has evolved as scientists learn more about organisms and refine classification to the cellular level.**



Slide 36

21. Show slide 36, *Middle School Plan*. Explain how Physical Science is being moved to the eighth grade and how the students will be phased in.

	2004-05	2005-06	2006-07	2007-08
6 <sup>th</sup> Grade	Physical Science (OCC)	Earth Science (GPS)	Earth Science (GPS)	Earth Science (GPS)
7 <sup>th</sup> Grade	Life Science (OCC)	Life Science (GPS)	Life Science (GPS)	Life Science (GPS)
8 <sup>th</sup> Grade	Earth Science (OCC)	Earth Science (GPS)	Earth Science (GPS)	Physical Science (GPS)

- **This can get pretty confusing. You read the chart diagonally to follow a student's path through middle school.**
- **If "Sally" is a sixth grader in 2004, she will take Physical Science (taught and assessed on OCC guidelines). In 2005 as a seventh grader, Sally will take Life Science (taught and assessed on GPS guidelines). She will take Earth Science in 2006 as an eighth grader (taught and assessed on GPS guidelines).**
- **To ensure that all middle school students take physical, life, and earth science, GPS will be the curriculum for both sixth and eighth grades 2005-2007.**
- **The CRCT in sixth and eighth grade will be based on the GPS beginning in 2005-2006 school year. School systems will determine how to distribute their resources for these two years.**

Slide 37

22. Show slide 37, *Implementation of Georgia Performance Standards –Year II*. Explain how Physical Science is being moved to the eighth grade and how the students will be phased in.



**Implementation of Georgia Performance Standards –Year II**

- ◆ Sixth Grade– GPS Earth Science (2005-2006)
- ◆ Seventh Grade– GPS Life Science (2005-2006)
- ◆ Eighth Grade– GPS Earth Science (2005-2007), then GPS Physical Science (2007-2008)

Slide 38

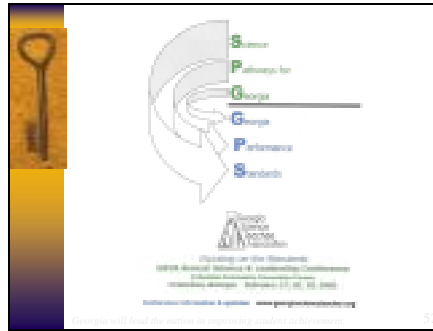
23. Show slide 38, *High School Courses*. Explain the plan for the development of standards.



**High School Courses**

- ◆ Four High School Courses developed to date
  - Biology
  - Physical Science
  - Chemistry
  - Physics
- ◆ Three more high school courses to be developed
  - Earth Systems
  - Environmental Science
  - Human Anatomy and Physiology

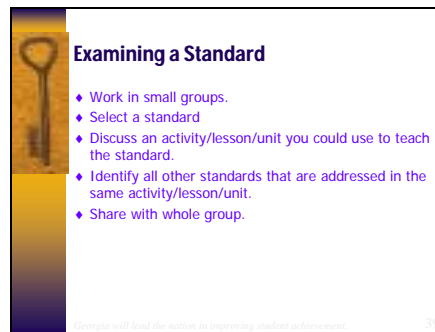
Slide 39

24. Show slide 39, *GSTA Conference Graphic*. Present:

- **The GSTA conference will focus on the implementation of the Georgia Science Performance Standards. Several strands are planned to help teachers make the transition.**
- **The conference is in Columbus, Georgia, February 17-19, 2004.**
- **Information for this conference is available on the GSTA website:**  
<http://www.georgiascienceteacher.org>.

### Sample Unit (60 minutes)

1. Transition: Let's look at how the use of these standards might shape instruction.
- Sample unit/lesson
2. Share sample unit/lesson written for a specific standard. Note additional standards addressed in the unit/lesson.
- Slide 40
3. Show slide 40, *Examining a Standard*. Ask participants to work in small groups (2-4 people/group).
    - **Select a standard.**
    - **Discuss an activity/lesson/unit they could use to teach the standard.**
    - **Identify all other standards that are addressed in the same activity/lesson/unit.**
    - **Share with whole group.**

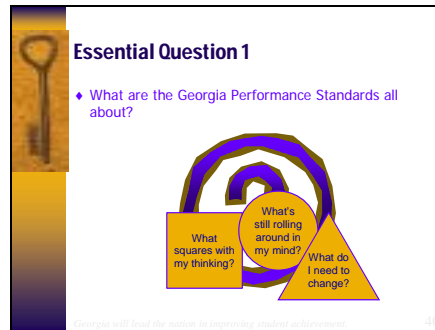


### Summary: Large Group Activity (10 minutes)

- Flipcharts on walls
1. Refer participants to “What We Know” and “What We Want to Know” flipcharts on the walls.
  2. Ask participants to revise the charts as needed, based on the discussions and activities so far.

Slide 41  
PG-Learning Journal

3. Show slide 41, *Essential Question 1*. Ask participants to consider this question and make notes in the Learning Journal at the back of their Participant's Guides.



4. Transition: **In the next section of the training, we are going to focus on a process—and a way of thinking—that will help us use these standards to make a difference in our teaching practice.**

## ***Standards Based Teaching and Learning***

**Time** 1 hour, 50 minutes

**Overview** In this section, participants will learn about standards based teaching and learning. They start by organizing the relationship among standards, resources, assessment, instructional strategies, and revision. Next, participants walk through an example of the process in action. The summary again refers to the What We Know/What We Want to Know flipcharts.

**Objectives** ➤ Describe standards based teaching and learning.

**Activities**

- Standards Based Education (SBE): Small Group Activity (15 minutes)
- Benefits of SBE: Small Group Activity (30 minutes)
- SBE and GPS: Presentation and Walkthrough (1 hour)
- Summary: Large Group Activity (5 minutes)

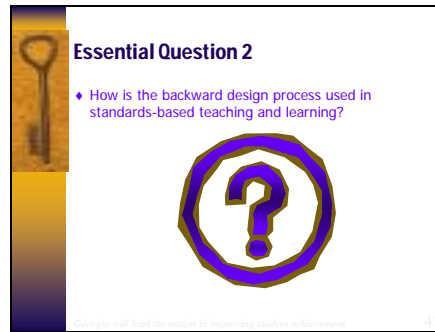
**Materials**

- Handout 2: SBE Model; Handouts 3 & 4: pages 69 & 91 from Wiggins and McTighe's *Professional Development Workbook*; Handout 5: pages 65-66 from Jacobs's *Mapping the Big Picture*; Handout 6: page 13 from Thompson, Thomason, and Thompson's *Catching Kids Up*; page 18 from Tomlinson's *How to Differentiate Instruction in Mixed Ability Classrooms*

## Standards Based Education (SBE): Small Group Activity (15 minutes)

Slide 42

1. Show slide 42, *Essential Question 2*. Present: We are going to be exploring this question next.



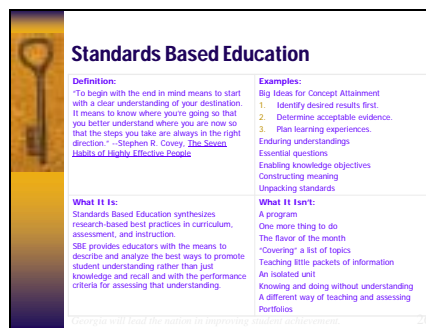
2. Ask: What is the basic idea behind standards-based education?
  - **The standards are the starting point. The standards state what the student should be able to do/understand, so the whole focus is on student learning.**

PG-8

3. Refer participants to the graphic organizer *Standards Based Education* on page 8 in their Participant's Guide.
4. Ask participants to work in small groups to complete this chart.
5. Allow ten minutes.

Slide 43

6. Show slide 43, *Standards Based Education*. Present: This is one example of the graphic organizer.



7. Ask: **Do you have additional points to add to this slide?**

Slides 44 and 45

8. Show slides 44 and 45, *Standards Based Education (SBE)*. Go over the key points on these slides.



### Benefits of SBE: Small Group Activity (30 minutes)

PG-9

9. Refer participants to *Benefits of Standards Based Education* on page 9 in the Participant's Guide. Read the instructions.

### Benefits of Standards-Based Education: Small Group Activity (30 minutes)

PG-9

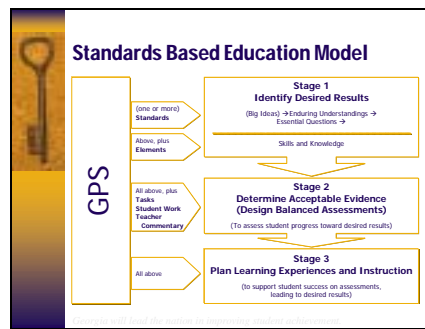
1. Refer participants to *Benefits of Standards-Based Education Design* on page 9 in the Participant's Guide. Read the instructions.
2. Ask participants to work in triads, with one person serving as the resister, one as the proponent of Standards Based Education (SBE), and the third as an observer/note taker. They should spend just a few minutes on each round, and then they should rotate until everyone gets a chance in each role.
3. Ask participants to take ten minutes for planning and ten minutes for their three rounds.



4. Ask volunteers to report their key learning points.
5. Transition: **We've talked about GPS and we've talked about SBE. Next, let's talk about how to use them together.**

Slide 46

6. Show slide 46, *Standards Based Education Model*. Refer participants to this same information on handout. Present:
  - **This graphic provides a model of Standards Based Education.**
  - **We are going to take one standard and walk through the process of SBE, then I am going to give you time to work in groups to complete the same process.**
  - **In addition to providing you with a model, I am also going to provide you with some tips and tools that will help you through the process.**



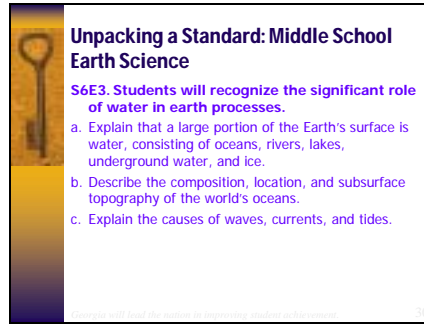
Handout 2:  
*Standards Based Education Model*

7. Distribute Handout 2, *Standards Based Education Model*
8. Transition: **In the next section, you are going to get a chance to work more with these concepts and tools, as you work in small groups to apply them to a select standard. But before we do that, let's go back to our flipcharts.**

Slide 47

9. Show slide 47, Unpacking a Standard—Middle School Earth Science. Present: **This is the standard that we will be “unpacking” using the SBE process.**

*Trainer's Note: Allow a moment for participants to locate this standard in their set of standards.*



**Unpacking a Standard: Middle School Earth Science**

**S6E3. Students will recognize the significant role of water in earth processes.**

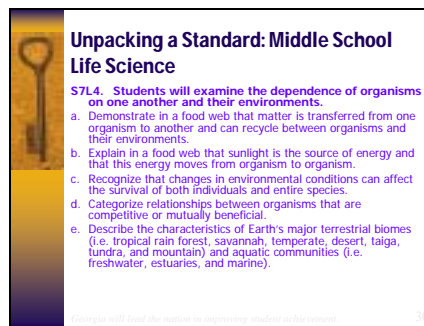
- Explain that a large portion of the Earth's surface is water, consisting of oceans, rivers, lakes, underground water, and ice.
- Describe the composition, location, and subsurface topography of the world's oceans.
- Explain the causes of waves, currents, and tides.

**NOTE:** There are four slides: slide number 47-- Middle School Earth, slide number 48--Middle School Life, slide number 49--High School Life, or slide number 50--High School Physical Science about Unpacking a Standard. You can choose the one that is specific to the science content for your redelivery or practice on more than one.

Slide 48

10. Show slide 48, Unpacking a Standard—Middle School Life Science. Present: **This is the standard that we will be “unpacking” using the SBE process.**

*Trainer's Note: Allow a moment for participants to locate this standard in their set of standards.*



**Unpacking a Standard: Middle School Life Science**

**S7L4. Students will examine the dependence of organisms on one another and their environments.**

- Demonstrate in a food web that matter is transferred from one organism to another and can recycle between organisms and their environments.
- Explain in a food web that sunlight is the source of energy and that this energy moves from organism to organism.
- Recognize that changes in environmental conditions can affect the survival of both individuals and entire species.
- Categorize relationships between organisms that are competitive or mutually beneficial.
- Describe the characteristics of Earth's major terrestrial biomes (i.e. tropical rain forest, savannah, temperate, desert, taiga, tundra, and mountain) and aquatic communities (i.e. freshwater, estuaries, and marine).

Slide 49

11. Show slide 49, Unpacking a Standard—High School Life Science. Present: **This is the standard that we will be “unpacking” using the SBE process.**

*Trainer's Note: Allow a moment for participants to locate this standard in their set of standards.*

**Unpacking a Standard: High School Life Science (Biology)**

**SB2. Students will analyze how biological traits are passed on to successive generations.**

b. Explain the role of DNA in storing and transmitting cellular information.

Slide 50

12. Show slide 50, Unpacking a Standard—High School Physical Science. Present: **This is the standard that we will be “unpacking” using the SBE process.**

*Trainer's Note: Allow a moment for participants to locate this standard in their set of standards.*

**Unpacking a Standard: High School Physical Science**

**SPS9. Students will investigate the properties of waves.**

a. Recognize that all waves transfer energy.

b. Relate frequency and wavelength to the energy of different types of electromagnetic waves and mechanical waves.

c. Compare and contrast the characteristics of electromagnetic and mechanical (sound) waves.

d. Investigate the phenomena of reflection, refraction, interference, and diffraction.

e. Relate the speed of sound to different mediums.

f. Explain the Doppler Effect in terms of everyday interactions.

Handout 3:  
*A Big Idea*

13. Refer participants Handout 3, *A Big Idea*. Present: **This page describes what we mean by a “big idea.”** (Ask participants to take a moment to skim the content of the page.)
  - **Big ideas are embedded in the standards and they address the standard, but they transcend any single standard.**
  - **Big ideas lead to enduring understandings, declarations of what we want students to understand as a result of participating in this unit written as “Students will understand that \_\_\_\_\_.”**
  - **When you complete the unpacking activity in the next section, you may find it helpful to use the organizer on page 13 of your Participant's Guide, or a similar one that you create.**
14. Refer participants again to page 13 in the Participant's Guide. Present: **Once you have the big ideas and enduring understandings identified, you can reframe them as essential questions. This page shows an organizer you can use to do this work, but it is really a process of thinking through, “How can I translate these big ideas and enduring understandings into thought-provoking engaging questions for the students?”**

Handouts 4, 5, & 6:  
*Essential Questions;*  
*Sample Essential*  
*Questions;* and *Unit*  
*Essential Questions*

15. Refer participants to Handouts 4, 5, & 6 *Essential Questions, Sample Essential Questions, and Unit Essential Questions*. Present:
  - **Of course, there can be great, meaningful essential questions as well as ones that are shallow or too narrow.**
  - **These pages provide some tips and some ideas to help you figure out how to craft your essential questions.**
  - **Ask participants to take a moment to skim the content of the pages.**
16. Ask (referring to slide 47, 48, 49, or 50): **What might be some essential questions related to this standard and these big ideas and enduring understandings?**

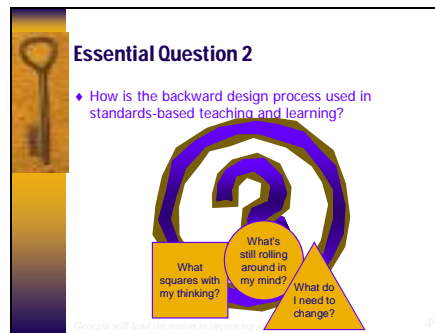
17. **The standards—not the textbook—drive the curriculum. Standards and elements come first, then the resources.**
18. **Connecting the resources to the standards helps determine the requisite knowledge and skills to mesh the resources and materials with the standards.**
19. **Identify the elements of the standard that will provide the measurable performance criteria for the critical component of the standard.**

**Summary: Large Group Activity (5 minutes)**

20. Refer participants to “What We Know” and “What We Want to Know” flipcharts on the walls.
21. Ask participants to revise the charts as needed, based on the discussions and activities so far.

Slide 51  
PG-Learning Journal

22. Show slide 51, *Essential Question 2*. Ask participants to consider this question and make notes in the Learning Journal at the back of their Participant's Guides.



## *Putting It All Together*

<b>Time</b>	1 hour, 40 minutes
<b>Overview</b>	This section contains only one activity, but it is an extensive one. Participants, working in small groups, will take one standard and analyze it using the templates and tools they were introduced to in the previous section. They will identify big ideas→understandings →essential questions→skills and knowledge→ evidence. Then, they will present their work to other groups.
<b>Objectives</b>	<ul style="list-style-type: none"><li>➤ Describe the benefits of the GPS.</li><li>➤ Describe the various phases of the GPS rollout plan.</li><li>➤ Define terms related to the GPS.</li><li>➤ Identify four parts of each standard.</li><li>➤ Describe the backward design process used in standards-based teaching and learning.</li><li>➤ Identify key components of the applicable standards (e.g., 9<sup>th</sup> grade science).</li></ul>
<b>Activities</b>	<ul style="list-style-type: none"><li>➤ Putting It All Together: Triad Activity (1 hour, 40 minutes)</li></ul>
<b>Materials</b>	<ul style="list-style-type: none"><li>➤ Handouts</li></ul>

### Putting It All Together: Triad Activity (1 hour, 40 minutes)

1. Ask participants to work in triads (preferably with others who are teaching the same subject/grade level as they are).

**Trainer's Note:** If necessary, participants may work in pairs or groups of four; try to make sure that everyone has a suitable peer group (one in which they would be interested in looking at the same standards).

2. Present: **Standards and elements should not be taught in isolation. For demonstration purposes, we may be using one or two standards at a time, but they should not be taught in such isolation in classrooms.**
3. Ask each group to select one standard or set of related standards to analyze.

Slide 52

4. Show slide 52, *Unit Design*. Explain the activity directions.



5. Refer participants to previous handouts. Present: **This is a template that you can use to complete this activity. If you prefer, you can use a different format, but it should have all the same components.**
6. Present: **You are going to have approximately an hour and 20 minutes to complete this activity, but we are going to take two or three pauses in the middle to share our thinking.**
7. Ask groups to begin working.
8. At a suitable time (about 15 or 20 minutes into the activity), ask participants to pause in their work.

9. Ask each group what work they've accomplished, what insights they've had, and what they're struggling with. Ask other groups to provide constructive feedback.
10. Repeat this time out process once or twice more, as the groups seem to need it.
11. At the end of 1 hour and 20 minutes, ask each group to work on summarizing their work into a template (either from the tools they were provided in the handouts or in one of their own choosing). Allow ten minutes.
12. Ask each group to present their summary. Encourage their efforts.
13. Transition: **We're nearing the end of the day. Let's move to the summary and follow-up assignments.**



## *Summary and Follow Up Assignments*

**Time** 30 minutes

**Overview** Participants are given a follow up assignment to analyze several standards. They begin to develop an action plan. At a minimum, they should determine the time and place of the first meeting and how to work together to complete the assignment. Then, the trainer tells them about the rest of the 8-day sequence. Finally, they refer once more to their flipcharts from the introduction.

**Objectives**

- Demonstrate how to lead the Professional Development process in a school.

**Activities**

- Follow-up Assignment (5 minutes)
- Action Planning (15 minutes)
- Summary (10 minutes)

**Follow Up Assignment (5 minutes)**

1. Present: **As I said earlier, it *does* take some work to adopt a new set of standards. It is much more than just trying to find the right standards to “attach” to lesson plans that you already have. If it were, there wouldn’t be much point, would there?**
2. Present: **The reason that this course is divided into eight days of training over two years is to give you a chance to apply what you’ve learned as you go, so that you are truly ready to complete a meaningful implementation of the standards—one that will boost student achievement. It’s been done in other states and other countries, and we will do it even better here.**

PG-11

3. Refer participants to the follow-up assignment on page 11 in the Participant's Guides.
4. Explain:
  - **This follow-up assignment asks you to unpack another standard, as we did in the previous activity.**
  - **Eventually, you will have to unpack all the standards in order to teach them, but only one is *required* for day two of training.**
  - **During day two of training, we will use the standard that you unpack to begin to build a unit of study. Therefore, it is very important that each of us comes prepared for day two.**
5. Ask one or two participants to state their understanding of the follow-up assignments.

### Action Planning (15 minutes)

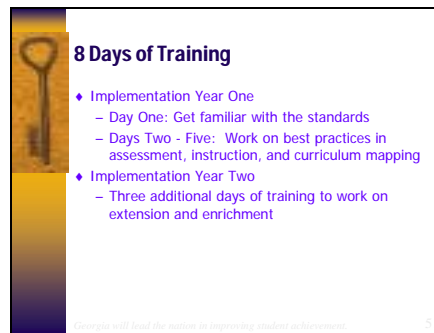
PG-12

1. Present: **On page 12 of your Participant's Guide, you'll find an Action Plan template. This is for you to plan out your group work for both follow-up assignments. I'm going to allow you about 10 minutes to work on your plan now. Minimally, you should determine when and where you'll meet next and what you hope to accomplish in that first meeting.**
2. Allow ten minutes.
3. Ask groups to present their plans.

### Summary (10 minutes)

Slide 53

1. Show slide 53, *8 Days of Training*. Provide overview of the 8-day sequence, explaining how the process will develop over time and how follow-up assignments fit in. If known, provide participants with the date, time, and location for day two of training.



2. Refer participants to “What We Know” and “What We Want to Know” flipcharts on the walls.
3. Ask participants to revise the charts as needed, based on the discussions and activities so far.
4. Thank participants for their time and efforts and encourage them to make the most of the new GPS.

## **Day One Preparation**

**Directions:** Please complete both steps below and bring all your products to class; your fellow participants are counting on you, and we want everyone to get the most they can from the session.

**Step 1:** Read the attached summary of standards-based education, then use the prompts below to summarize your thoughts.

- The key things I learned were...
  
- What puzzles me is...

**Step 2:** Go to the web site [www.georgiastandards.org](http://www.georgiastandards.org). Please print out, read, and bring to class:

- Executive Summary for applicable content area
- Frequently Asked Questions (FAQs)
- List of standards for applicable content area and grade level

The image shows a screenshot of the Georgia Performance Standards website in a Microsoft Internet Explorer browser window. The browser's address bar shows the URL <http://www.georgiastandards.org>. The website header includes the Georgia Department of Education logo and navigation links for Home, Introduction, Training, and Comments (ELA K-3). The main content area is titled 'Draft Georgia Performance Standards (GPS) by Subject' and is organized into a grid. On the left side, there is a section for 'Introduction to GPS' with links for 'GPS Introductory Video', 'What is a performance standard?', 'Why the revision?', and 'Who came up with the new standards?', along with a 'View all FAQs' link. Below this is a 'News & Announcements' section with links for 'Audit Goes High Marks To GPS', 'May 13-14 State Board Meeting', and 'Statement of Expectations for the new Georgia Curriculum (K-1206-14)'. The main grid contains four subject categories: English Language Arts (ELA), Mathematics, Social Studies, and Science. Each category lists 'Standards', 'Executive Summary', and 'Introductory Video'. Three callout boxes with arrows point to specific elements: one labeled 'FAQs' points to the 'View all FAQs' link; one labeled 'Standards' points to the 'Standards' link under the ELA category; and one labeled 'Executive Summaries' points to the 'Executive Summary' link under the Mathematics category.

## **Reflections on the Day**

Please take a few minutes and share your thoughts on the following four areas.

Important things I've learned or had reaffirmed. . .

Today's experiences have left me feeling. . .

Questions I want answered now. . .

What I will do when I return to my workplace. . .

## *Glossary*

CONTENT STANDARDS:	Content standards state the purpose and direction the content is to take, and are generally followed by elements. Content standards define what students are expected to know, understand, and be able to do.
CURRICULUM DOCUMENT:	The Georgia Performance Standards document is the curriculum document that contains all standards that should be learned by all students.
ELEMENTS:	Elements are part of the content standards that identify specific learning goals associated with the standard.
PERFORMANCE STANDARDS:	Performance standards define specific expectations of what students should know and be able to do and how well students must perform to achieve or exceed the standard. Georgia's performance standards are composed of four components: content standards, tasks, student work, and teacher commentary.
PROCESS STANDARDS:	Process standards define the means used to develop patterns of thought and behavior that lead to conceptual understanding.
STANDARD:	Something set up and established by authority as a rule for the measure of quantity, weight, extent, value, or quality.
STANDARDS-BASED EDUCATION:	In standards-based classrooms, standards are the starting point for classroom instruction that ensures high expectations for all students.
STRAND:	A strand is an organizing tool used to group standards by content. For example, the English language arts curriculum contains strands of reading, writing, listening, speaking, and viewing. K-5 science curriculum contains a life science strand, physical science strand, and an earth science strand.
STUDENT WORK:	Examples of successful student work are included to specify what it takes to meet the standard and to enable both teachers and students to see what meeting the standard "looks like."

**TASKS:**

Keyed to the relevant standards, tasks provide a sample performance that demonstrates to teachers what students should know and be able to do during or by the end of the course. Some tasks can serve as activities that will help students achieve the learning goals of the standard, while others can be used to assess student learning; many serve both purposes. Although the Georgia Performance Standards include tasks, teachers may develop their own tasks.

**TEACHER COMMENTARY:**

Teacher commentary is meant to open the pathways of communication between students and the classroom teacher as well as within faculty in order to ensure consistency within assessment and expectations. Commentary shows students why they did or did not meet a standard and enables them to take ownership of their own learning.