GEORGIA DEPARTMENT OF EDUCATION

Kathy Cox, State Superintendent of Schools

Training for the New Georgia Performance Standards

Day 5: Differentiation

Content Participant's Guide
Mathematics Grade 8

We will lead the nation in improving student achievement.

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Use of This Guide

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

Materials (guides, presentations, etc.) will be available electronically on http://www.georgiastandards.org under the training tab after all trainings of Day 5 have occurred. Consult the trainer for availability.

For more information on this or other GPS training, contact Peggy Pool at (404) 657-9063 or ppool@doe.k12.ga.us or Claire Pierce at (404) 657-7063 or cpierce@doe.k12.ga.us.

Specialists' Contact Information

For a list of district coordinators visit the Georgia Learning Connection:

English Language Learners
http://www.glc.k12.ga.us/contact/contact.asp?groupname=ESOL+District+Coordinators

Gifted and Talented
http://www.glc.k12.ga.us/contact/contact.asp?groupname=Gifted+Education

Special Education
http://www.gadoe.org/ci_exceptional.aspx

For specialists at the Georgia Department of Education:

English Language Learners—Andrea Mirtalebi	amirtale@doe.k12.ga.us
Gifted and Talented—Linda Andrews	lindrew@doe.k12.ga.us
Exceptional Students (Special Education)—Marlene Bryar	mbryar@doe.k12.ga.us

Agenda

Introduction to Differentiation
- Four Corners
- Calvin's Day at School
- "A Logical Exercise" Task

What is Differentiation?
- What is it?
- Standards-Based Education Model
- Self-Assessment

Why and How Do We Differentiate?
- Why do we differentiate?
- How do we differentiate?
- "Acting Out" Unit 3 Task

What Does a Differentiated Classroom Look Like?
- True/False Quiz: What Does Differentiation Look Like?
- "Healthy Heartbeats While Exercising" Unit 7 Task
- Setting Personal Goals for Differentiating

Summary and Field Assignment

Overview

Day 5

By the end of Day 5 of training, participants will be able to:

1. Define differentiation and explain the importance of differentiation in the standards-based education process.
2. Explain key elements in planning for differentiation.
3. Describe and develop procedures for differentiating instruction in a flexible classroom.
4. Describe and develop effective classroom management strategies in a differentiated classroom.
5. Describe the roles of the teacher in a differentiated classroom.
6. Set individual goals for differentiating instruction in each classroom.
7. Cultivate a strong awareness of standards-based teaching and learning.
8. Become familiar with the 8^{th} grade mathematics GPS along with the expected depth and rigor.
9. Have a deeper understanding of the content addressed within the module.

Eighth Grade Standards

Grade 8

By the end of grade eight, students will understand various numerical representations, including square roots, exponents and scientific notation; use and apply geometric properties of plane figures, including congruence and the Pythagorean theorem; use symbolic algebra to represent situations and solve problems, especially those that involve linear relationships; solve linear equations, systems of linear equations and inequalities; use equations, tables and graphs to analyze and interpret linear functions; use and understand set theory and simple counting techniques; determine the theoretical probability of simple events; and make inferences from statistical data, particularly data that can be modeled by linear functions.

Instruction and assessment should include the appropriate use of manipulatives and technology. Topics should be represented in multiple ways, such as concrete/pictorial, verbal/written, numeric/data-based, graphical, and symbolic. Concepts should be introduced and used, where appropriate, in the context of realistic phenomena.

Concepts/Skills to Maintain
Operations with rational numbers
Properties of equalities
Direct & inverse proportions
Solving multi-step equations
Properties of real numbers
Statistics

NUMBER AND OPERATIONS

Students will understand the numeric and geometric meaning of square root, apply properties of integer exponents and use scientific notation.

M8N1. Students will understand different representations of numbers including square roots, exponents, and scientific notation.

a. Find square roots of perfect squares.
b. Recognize the (positive) square root of a number as a length of a side of a square with a given area.
c. Recognize square roots as points and as lengths on a number line.
d. Understand that the square root of 0 is 0 and that every positive number has two square roots that are opposite in sign.
e. Recognize and use the radical symbol to denote the positive square root of a positive number.

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Grade 8

f. Estimate square roots of positive numbers.
g. Simplify, add, subtract, multiply, and divide expressions containing square roots.
h. Distinguish between rational and irrational numbers.
i. Simplify expressions containing integer exponents.
j. Express and use numbers in scientific notation.
k.Use appropriate technologies to solve problems involving square roots, exponents, and scientific notation.

GEOMETRY

Students will use and apply geometric properties of plane figures, including congruence and the Pythagorean Theorem.

M8G1. Students will understand and apply the properties of parallel and perpendicular lines and understand the meaning of congruence.

a. Investigate characteristics of parallel and perpendicular lines both algebraically and geometrically.
b. Apply properties of angle pairs formed by parallel lines cut by a transversal.
c. Understand the properties of the ratio of segments of parallel lines cut by one or more transversals.
d. Understand the meaning of congruence: that all corresponding angles are congruent and all corresponding sides are congruent.

M8G2. Students will understand and use the Pythagorean Theorem.

a. Apply properties of right triangles, including the Pythagorean Theorem.
b. Recognize and interpret the Pythagorean Theorem as a statement about areas of squares on the sides of a right triangle.

ALGEBRA

Students will use linear algebra to represent, analyze and solve problems. They will use equations, tables, and graphs to investigate linear relations and functions, paying particular attention to slope as a rate of change.

M8A1. Students will use algebra to represent, analyze, and solve problems.

a. Represent a given situation using algebraic expressions or equations in one variable.
b. Simplify and evaluate algebraic expressions.

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Grade 8

c. Solve algebraic equations in one variable, including equations involving absolute values.
d. Solve equations involving several variables for one variable in terms of the others.
e. Interpret solutions in problem contexts.

M8A2. Students will understand and graph inequalities in one variable.
a. Represent a given situation using an inequality in one variable.
b. Use the properties of inequality to solve inequalities.
c. Graph the solution of an inequality on a number line.
d. Interpret solutions in problem contexts.

M8A3. Students will understand relations and linear functions.
a. Recognize a relation as a correspondence between varying quantities.
b. Recognize a function as a correspondence between inputs and outputs where the output for each input must be unique.
c. Distinguish between relations that are functions and those that are not functions.
d. Recognize functions in a variety of representations and a variety of contexts.
e. Use tables to describe sequences recursively and with a formula in closed form.
f. Understand and recognize arithmetic sequences as linear functions with whole number input values.
g. Interpret the constant difference in an arithmetic sequence as the slope of the associated linear function.
h. Identify relations and functions as linear or nonlinear.
i. Translate among verbal, tabular, graphic, and algebraic representations of functions.

M8A4. Students will graph and analyze graphs of linear equations and inequalitites.
a. Interpret slope as a rate of change.
b. Determine the meaning of the slope and y-intercept in a given situation.
c. Graph equations of the form $y = mx + b$.
d. Graph equations of the form $ax + by = c$.
e. Graph the solution set of a linear inequality, identifying whether the solution set is an open or a closed half-plane.
f. Determine the equation of a line given a graph, numerical information that defines the line or a context involving a linear relationship.
g. Solve problems involving linear relationships.

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M8A5. Students will understand systems of linear equations and inequalities and use them to \ solve problems.

a. Given a problem context, write an appropriate system of linear equations or inequalities.
b. Solve systems of equations graphically and algebraically, using technology as appropriate.
c. Graph the solution set of a system of linear inequalities in two variables.
d. Interpret solutions in problem contexts.

DATA ANALYSIS AND PROBABILITY

Students will use and understand set theory and simple counting techniques; determine the theoretical probability of simple events; and make inferences from data, particularly data that can be modeled by linear functions.

M8D1. Students will apply basic concepts of set theory.

a. Demonstrate relationships among sets through use of Venn diagrams.
b. Determine subsets, complements, intersection, and union of sets.
c. Use set notation to denote elements of a set.

M8D2. Students will determine the number of outcomes related to a given event.

a. Use tree diagrams to find the number of outcomes.
b. Apply the addition and multiplication principles of counting.

M8D3. Students will use the basic laws of probability.

a. Find the probability of simple independent events.
b. Find the probability of compound independent events.

M8D4. Students will organize, interpret, and make inferences from statistical data

a. Gather data that can be modeled with a linear function.
b. Estimate and determine a line of best fit from a scatter plot.

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Terms/Symbols:
square root, radical, √, rational, irrational, exponent, additive inverse, multiplicative inverse, scientific notation, significant digits, inequality, sequence, arithmetic sequence, recursive, linear function, function, relation, rate of change, slope, intercept, linear equation, linear inequality, like terms, system of linear equations, transversal, vertical angles, complementary angles, supplementary angles, alternate interior angles, alternate exterior angles, corresponding angles, Pythagorean theorem, legs, hypotenuse, set, {}, element, ∈, subset, ⊂, complement of a set, intersection, ∩, union, ∪, Venn diagram, tree diagram, multiplication principle, addition principle, line of best fit

Process Standards

The following process standards are essential to mastering each of the mathematics content standards. They emphasize critical dimensions of the mathematical proficiency that all students need.

M8P1. Students will solve problems (using appropriate technology).
- a. Build new mathematical knowledge through problem solving.
- b. Solve problems that arise in mathematics and in other contexts.
- c. Apply and adapt a variety of appropriate strategies to solve problems.
- d. Monitor and reflect on the process of mathematical problem solving.

M8P2. Students will reason and evaluate mathematical arguments.
- a. Recognize reasoning and proof as fundamental aspects of mathematics.
- b. Make and investigate mathematical conjectures.
- c. Develop and evaluate mathematical arguments and proofs.
- d. Select and use various types of reasoning and methods of proof.

M8P3. Students will communicate mathematically.
- a. Organize and consolidate their mathematical thinking through communication.
- b. Communicate their mathematical thinking coherently and clearly to peers, teachers, and others.
- c. Analyze and evaluate the mathematical thinking and strategies of others.
- d. Use the language of mathematics to express mathematical ideas precisely.

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M8P4. Students will make connections among mathematical ideas and to other disciplines.

a. Recognize and use connections among mathematical ideas.
b. Understand how mathematical ideas interconnect and build on one another to produce a coherent whole.
c. Recognize and apply mathematics in contexts outside of mathematics.

M8P5. Students will represent mathematics in multiple ways.

a. Create and use representations to organize, record, and communicate mathematical ideas.
b. Select, apply, and translate among mathematical representations to solve problems.
c. Use representations to model and interpret physical, social, and mathematical phenomena.

Reading Standard Comment

After the elementary years, students are seriously engaged in reading for learning. This process sweeps across all disciplinary domains, extending even to the area of personal learning. Students encounter a variety of informational as well as fictional texts, and they experience text in all genres and modes of discourse. In the study of various disciplines of learning (language arts, mathematics, science, social studies), students must learn through reading the communities of discourse of each of those disciplines. Each subject has its own specific vocabulary, and for students to excel in all subjects, they must learn the specific vocabulary of those subject areas *in context.*

Beginning with the middle grades years, students begin to self-select reading materials based on personal interests established through classroom learning. Students become curious about science, mathematics, history, and literature as they form contexts for those subjects related to their personal and classroom experiences. As students explore academic areas through reading, they develop favorite subjects and become confident in their verbal discourse about those subjects.

Reading across curriculum content develops both academic and personal interests in students. As students read, they develop both content and contextual vocabulary. They also build good habits for reading, researching, and learning. The Reading Across the Curriculum standard focuses on the academic and personal skills students acquire as they read in all areas of learning.

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Grade 8

MRC. Students will enhance reading in all curriculum areas by:

a. Reading in all curriculum areas
- Read a minimum of 25 grade-level appropriate books per year from a variety of subject disciplines and participate in discussions related to curricular learning in all areas.
- Read both informational and fictional texts in a variety of genres and modes of discourse.
- Read technical texts related to various subject areas

b. Discussing books
- Discuss messages and themes from books in all subject areas.
- Respond to a variety of texts in multiple modes of discourse.
- Relate messages and themes from one subject area to messages and themes in another area.
- Evaluate the merit of texts in every subject discipline.
- Examine author's purpose in writing.
- Recognize the features of disciplinary texts.

c. Building vocabulary knowledge
- Demonstrate an understanding of contextual vocabulary in various subjects.
- Use content vocabulary in writing and speaking.
- Explore understanding of new words found in subject area texts.

d. Establishing context.
- Explore life experiences related to subject area content.
- Discuss in both writing and speaking how certain words are subject area related.
- Determine strategies for finding content and contextual meaning for unknown words.

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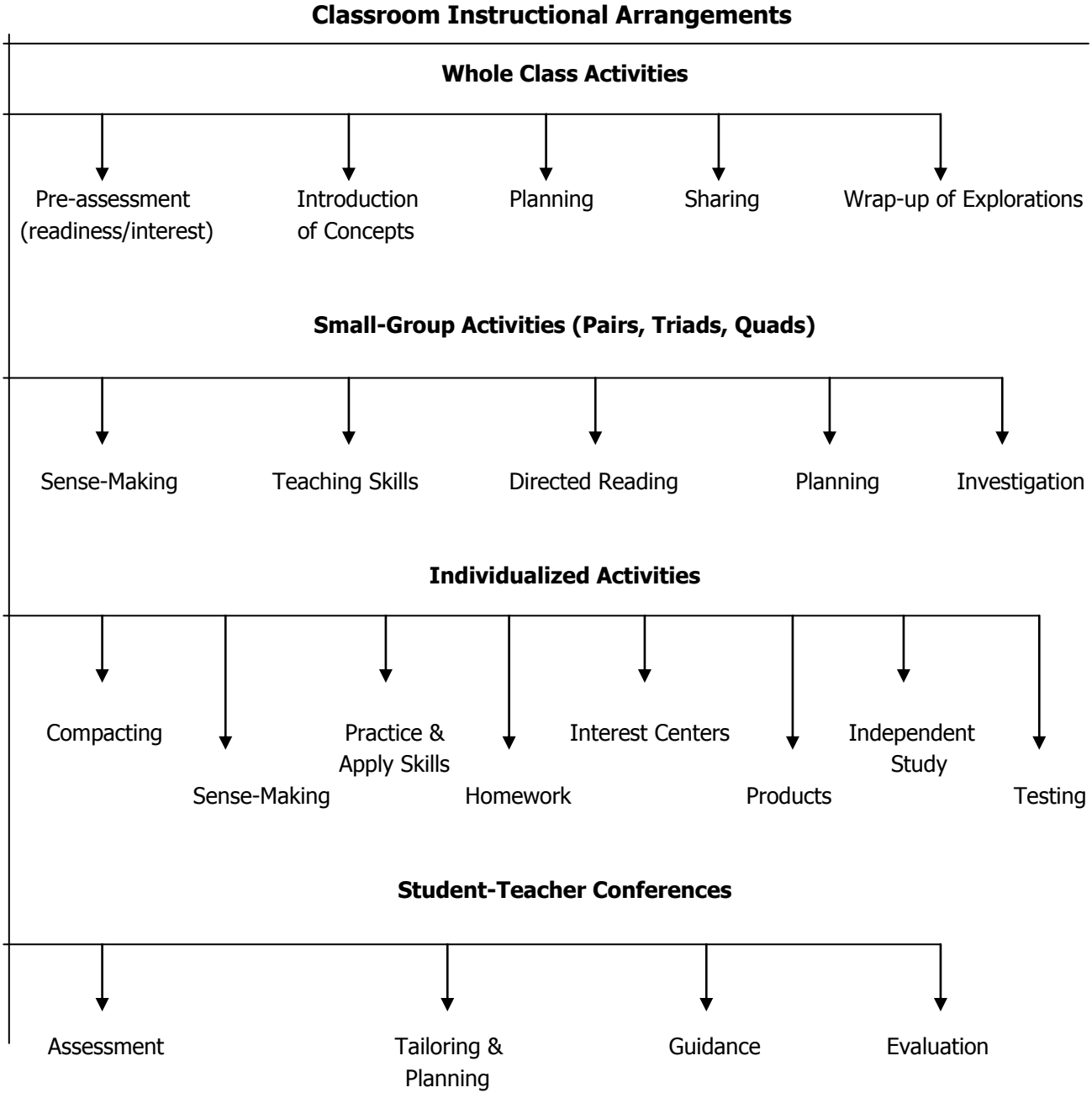
Middle School Mathematics

	6th Grade	7th Grade	8th Grade
Numbers and Operations	• Factors and multiples • Fundamental Theorem of Arithmetic • GCF and LCM • Compute with fractions and mixed numbers (unlike denominators) • Equivalent fractions, decimals, and percents	• Absolute value • Compare & order rational numbers • Compute & solve problems with positive and negative rational numbers	• Square roots of perfect squares • Rational vs Irrational numbers • Simplify expressions with integer exponents • Scientific Notation
Measurement	• Convert units using proportions • Volume of right rectangular prisms, right circular cylinders, pyramids and cones • Surface area of right rectangular prisms, right circular cylinders		
Geometry	• Line & rotational symmetry • Ratio, proportion and scale factor with similar plane figures • Scale drawings • Compare/contrast right prisms/pyramids and cylinders/cones • Views of solid figures • Nets (prisms, cylinders, pyramids, and cones)	• Basic constructions • Transformations • Properties of similarity • 3-D figures formed by translations & rotations in space • Cross sections of cones, cylinders, pyramids and prisms	• Properties of parallel and perpendicular lines • Meaning of congruence • Pythagorean Theorem
Algebra	• Ratio for quantitative relationship • Write & solve proportions • Write & solve simple one-step equations	• Algebraic expressions • Linear equations in one variable • Relationships between two variables	• Represent, analyze, and solve problems • Inequalities in one variable • Relations and Linear functions
Data Analysis and Probability	• Question, Collect Data, Make Graphs • Experimental/ Theoretical Probability • Predictions from investigations	• Question, Collect Data, Make Graphs, Interpret results	• Set theory • Tree Diagrams/ Counting Principles • Basic laws of probability • Organize, interpret, make inferences form data
Process Skills	Problem Solving, Arguments, Communicate, Connections, Multiple Representations	Problem Solving, Arguments, Communicate, Connections, Multiple Representations	Problem Solving, Arguments, Communicate, Connections, Multiple Representations

Range of Activities in a Differentiated Classroom



Carol Ann Tomlinson, *How to Differentiate in Mixed-Ability Classrooms*, 2nd ed., Alexandria: ASCD, 2001, 25.

Pre-Assessment Strategies

- ✓ **teacher prepared pretest**
- ✓ **KWL charts and other graphic organizers**
- ✓ **writing prompts/samples**
- ✓ **questioning**
- ✓ **guess box**
- ✓ **picture interpretation**
- ✓ **prediction**
- ✓ **teacher observation/checklists**
- ✓ **student demonstrations and discussions**
- ✓ **initiating activities**
- ✓ **informational surveys/questionnaires/inventories**
- ✓ **student interviews**
- ✓ **student products and work samples**
- ✓ **self-evaluations**
- ✓ **portfolio analysis**
- ✓ **game activities**
- ✓ **show of hands to determine understanding: every pupil response**
- ✓ **drawing related to topic or content**
- ✓ **standardized test information**
- ✓ **reader response survey**
- ✓ **anticipation journals**

Glossary

Ability Grouping—Grouping students according to similar readiness levels or learning profiles.

Alternate Assignment—Assignments given to particular students or groups of students in lieu of the assignment given to the other members of the class. These assignments are designed to capitalize on student readiness levels, interests, or learning profiles.

Anchor Activity—A task or activity that a student automatically moves to upon completion of other assigned work.

Cluster Grouping—Flexible grouping and regrouping of students within a classroom to accommodate different instructional needs at different times and/or for different subject or content, different readiness levels, interests, or learning profiles.

Compacting—Modifying or streamlining content, process, or product in order to eliminate repetition of previously mastered material.

Contracting—Students contract for grades and/or choose from a variety of available project/product options.

Cooperative Learning—Students work with other students in groups to achieve a specific goal or purpose. Each group member has a particular, predetermined role in helping the group reach its goal.

Exit Cards—Teacher distributes index cards to students a few minutes before the end of class. Students respond quickly to a specific prompt such as "What's the most important thing you learned today?" Exit cards provide a quick and easy method of assessing understanding.

Flexible Grouping—Purposeful reordering of students into a variety of different groups in a short amount of time in order to ensure that all students work with a number of different students on a regular basis. Criteria for grouping—readiness, interest, learning profile, activity or task, content—will vary regularly as well.

Interest Centers/Groups—Interest centers (often used with younger learners) and groups (often used with older learners) allow students choice in an area or areas of study.

Independent Study Projects—A student or small group of students pursues an area of interest related to a specific topic, curricular area, or individual area of interest.

Literature Circles—Small groups of students read and/or study different books with varying degrees of difficulty and/or focusing on a variety of topics of interest.

Product/Project Options—Students chose from a variety of options the way that they will provide evidence of learning. These options allow students to utilize their individual strengths and interests.

Pyramid Activities—Any activity that begins with students working individually, progresses through pairs, groups of four, etc., until ending with the whole-class group. A good way to review material or to practice test-taking strategies. Students may begin by individually recording what they know and then add to or change their responses as they collaborate with other students.

Questioning Strategies—Different types of questions are employed before, during, and after an activity, a lesson, or a unit of instruction to engage and challenge students to demonstrate their understanding from the knowledge level to the evaluation level. These questions allow students to clarify their thinking, increase their knowledge, and deepen their understanding.

RAFT Activities—Students select a Role, Audience, Format, and Topic for a particular task. The task vary but may include writing, oral presentations, skits, review activities, etc.

Reader's Workshop—This student-centered, instructional model for "real reading" uses authentic literature and allows students to self-select books. Students read at their own pace, reflect on what they read, and talk about their reading with others.

Reading Buddies—One name for peer reading partners, pairs of students who assist each other in reading for comprehension. They may take turns: one reading aloud and the other summarizing OR one reading aloud while the other formulates questions about that reading, etc.

Scaffolding—This refers to any support system that enables students to succeed with tasks they find genuinely challenging.

Subject/Content Acceleration—A student or group of students moves to a higher level of at an earlier time or age than the other students.

Thinking Maps—Visual representations of ideas that allow students to "unpack" their thinking and organize ideas in a visual format rather than solely in sentences or paragraphs.

Tiered Assignments—Teachers adjust the degree of difficulty for a particular assignment or task in order to meet the needs of students with varying levels of readiness, varying interests, and/or varying learner profiles.

Writer's Workshop—This student-centered, instructional model for "real writing" uses authentic assignments that allow students to participate in differentiated activities while participating in all stages of the writing process. Students spend time on self-selected writing activities.

Recommended Readings/Viewings/Websites: Differentiation

Note: A more general list of resources for the standards-based education process is contained in the materials for Day 1 of training.

At Work in the Differentiated Classroom. Alexandria, VA: ASCD, 2001.

This excellent resource includes three VHS tapes and a Facilitator's Guide. The videos provide clips of real differentiated classrooms and include commentary by Carol Ann Tomlinson. One set of these materials is being sent to each local system.

Berger, Sandra L. "Differentiating Curriculum for Gifted Students." 1991. Information Center on Disabilities and Gifted Children. Council on Exceptional Children, 1996. http://ericec.org/digests/e510.html.

Berger provides an overview of four areas of differentiation: content, process, product, and learning environment. In addition, she lists seven guiding principles for curriculum differentiation developed by the curriculum committee of the Leadership Training Institute.

Hall, Tracey, Nicole Strangman, and Anne Meyer. "Differentiated Instruction and Implications for UDL Implementation: Effective Classroom Practices Report." *Ideas that Work*. National Center on Accessing the General Curriculum. U.S. Office of Special Education Programs. CAST, Inc. 1999-2005. http://www.cast.org/publications/ncac/ncac_diffinstructudl.html.

This report examines information on the theory and research behind differentiated instruction and the intersection with Universal Design for Learning (UDL), a curriculum designed approach to increase flexibility in teaching and decrease the barriers that frequently limit student access to materials and learning in classrooms. The report includes a number of links to sites with more information about differentiated instruction.

"Interact Graphic Organizers." *Write Design Online*. zNet. http://www.writedesignonline.com/organizers/interact.html#interaction.

Using varying types/levels of graphic organizers provides one means of differentiating content or process. This website includes a number of different types of graphic organizers along with explanations and suggestions for their use. Links to other resources may also be valuable.

"The I-Search Curriculum Unit." *Literacy Matters*. Education Development Center, Inc., 2003-04. http://www.literacymatters.org/content/isearch/intro.htm.

Individual and group investigations, valuable strategies for differentiation, may be organized as I-Searches. An I-Search can actively engage students in the research process as they pursue questions of importance that they care about. This site explains one version of the I-Search process.

Laturnau, Joseph. "Standards-Based Instruction for English Language Learners." Honolulu: **Pacific Resources for Education and Learning**. http://www.prel.org/products/pc_/standards-based.htm.

This article examines the potential benefits of standards-based instruction for English Language Learners (ELLs), presents a standards-based process for designing standards-based instructional units, and reviews the design of two standards-based units for ELLs. The benefits of performance standards for ELLs are clearly represented in a chart included in the article.

Murawski, Wendy W., Dieker, Lisa A. (2004, Vol. 36, No. 5). Tips and Strategies of Co-Teaching at the Secondary Level. *Teaching Exceptional Children*, 52-58.

Teaching Styles Inventory. Texas Collaborative for Teaching Excellence. CORD, 2005. http://www.texascollaborative.org/tools/TSI.pdf.

Use this twelve item teaching style inventory to self-assess and self-score your teaching style in the areas of concept representation, learning, interaction, and cognitive processing.

Tomlinson, Carol Ann. *How to Differentiate in Mixed-Ability Classrooms*. 2nd ed. Alexandria, ASCD, 2001.

This valuable resource explains both the theory behind and the means to achieve differentiation in mixed-ability classrooms. Each school received one copy of this resource along with other materials in the fall of 2004.

-----. "Mapping a Route Toward Differentiated Instruction." *Educational Leadership* 57.1 (Sept. 1999): 12-16. http://pdonline.ascd.org/pd_online/diffinstr/el199909_tomlinson.html.

Tomlinson provides a view into three separate classrooms to illustrate what a differentiated classroom does and does not look like.

-----. *The Differentiated Classroom: Responding to the Needs of All Learners*. Alexandria, ASCD, 1999.

In this book, Tomlinson discusses the what, how, and why of differentiation, and provides examples from a number of differentiated classrooms.

Tomlinson, Carol Ann, and Caroline Cunningham Eidson. *Differentiation in Practice: A Resource Guide for Differentiating Curriculum, Grades K-5.* Alexandria, VA: ASCD, 2003.

This resource provides a brief primer on differentiation, as well as six differentiated units of instruction for grades K-5: two language arts units, two mathematics units, one science unit, and one social studies unit.

-----. *Differentiation in Practice: A Resource Guide for Differentiating Curriculum, Grades 5-9.* Alexandria, VA: ASCD, 2003.

This resource provides a brief primer on differentiation, as well as six differentiated units of instruction for grades 5-9: one language arts unit, one mathematics unit, one science unit, two social studies units, and one French unit.

-----. *Differentiation in Practice: A Resource Guide for Differentiating Curriculum, Grades 9-12.* Alexandria, VA: ASCD, 2005.

This resource is scheduled to be published in August of 2005.

Mathematics

Danielson, Charlotte. *A Collection of Performance Tasks and Rubrics: Middle School Mathematics.* Larchmont, NY: Eye on Education, 1997.

Illuminations. http:illuminations.nctm.org/index.asp

Intermath. http://www.intermath.uga.gatech.edu

National Library of Virtual Manipulatives. http://nlvm.usu.edu/en/nav/vlibrary.html

Northey, Sheryn Spencer. *Handbook on Differentiated Instruction for Middle and High Schools.* Larchmont, NY: Eye on Education, 2005.

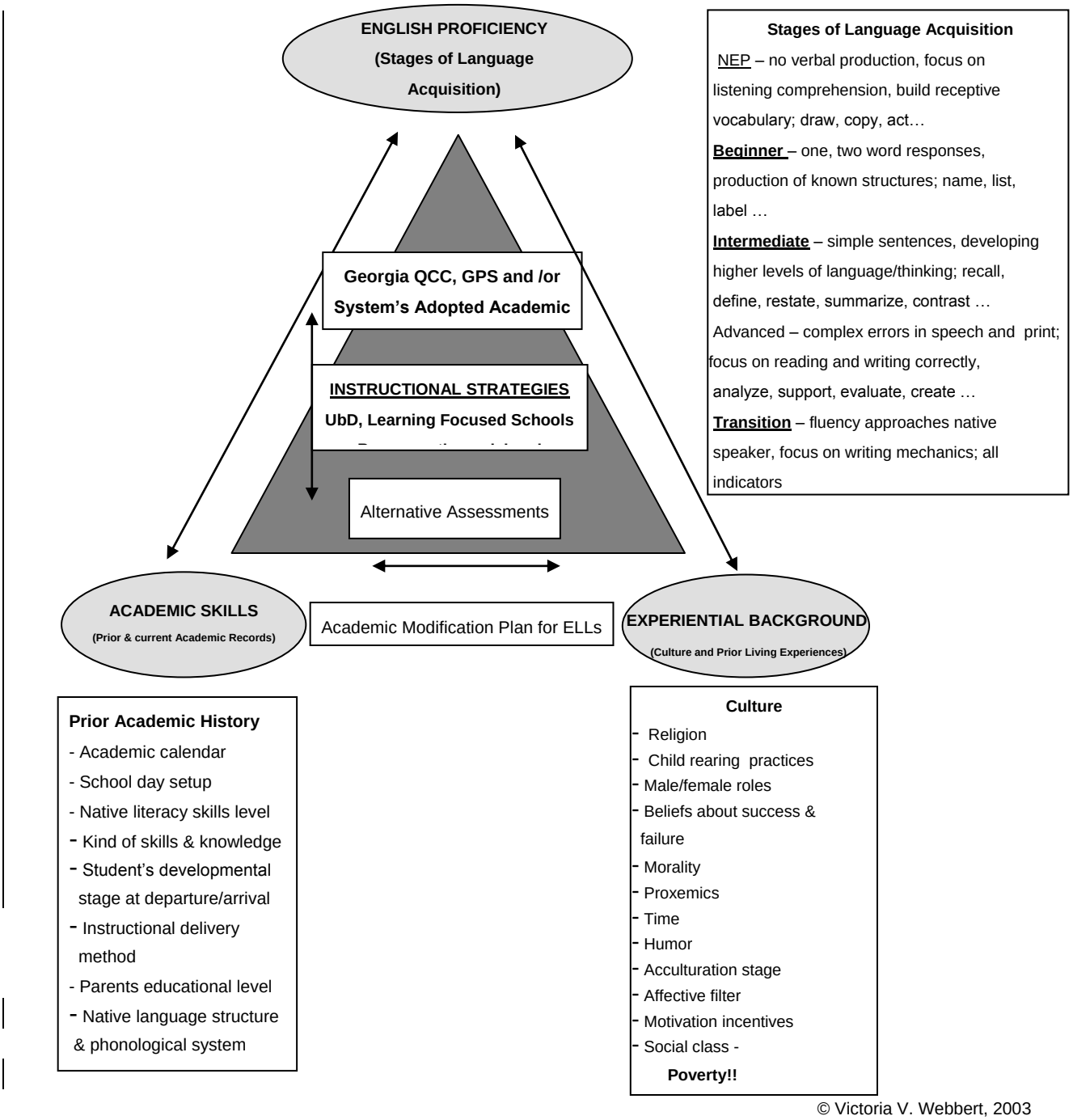
Strong, R., Thomas, E., Perini, M., & Silver, H. (2004, February). Creating a Differentiated Mathematics Classroom [Electronic version]. *Educational Leadership*, 61(5), 73-78. http://www.ascd.org/members/ed_lead/200402/strong.html.

Van de Walle, John A. *Elementary and Middle School Mathematics: Teaching Developmentally, Fifth Edition.* New York, NY: Longman Press, 2004.

Van de Walle, John A. and LouAnn Lovin. *Teaching Student-Centered Mathematics: Grades 5-8.* Boston, MA: Pearson Allyn & Bacon, 2006.

Pre-Assessing the English Language Learner

Framework for Understanding the Learning of PHLOTE & ELL Students: Who Am I Teaching?



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Instructional Accommodations for ELLs

Accommodations for ELLS are appropriate and effective only to the level that these match the English language learners proficiency in English, prior academic knowledge and cultural learning patterns.

give tests orally rather than in written form give more time to complete assignments allow same-language buddy to assist require fewer responses to demonstrate mastery permit incomplete sentences in responses permit ungrammatically correct sentences in responses provide lower level text on content material provide video on content material provide text on tape highlight key points reduce number of key points that student is responsible for knowing give advanced organizers/study guides permit open book tests use graphic organizers give written instructions as well as oral make a written record of instruction and display it on chart paper take time to develop students' prior knowledge of new topics increase % of student talk about topic (more discussions) break students into small groups for discussion plan for group work use demonstrations when possible present model of work done well at the beginning of the assignment use hands-on activities when possible give sufficient wait time after asking questions adapt homework requirements to reflect stage of language development	use performance based assessment when possible adapt project/assignment requirements so students can participate provide learning centers (language masters, books on tape, magazines for classifying and developing picture dictionaries, language based games) provide additional examples pair verbal directions with visual clues provide computer time (phonics software, *Kidspiration* graphic organizer software, internet) seat student near teacher or positive role models relate content to real life present tasks from easy to hard reduce details needed to learn main concepts use simpler vocabulary or paraphrase look at students when talking use audio-visual aids frequently provide student with outline of lesson notes use peer assisted note taking use role-playing use games provide self-checking materials use different colors for worksheets use enlarged type on worksheets reduce the length or amount of work mark only correct answers do NOT write the name of a Korean student in red...it means death give short quizzes/avoid long tests allow the use of a dictionary during tests allow student to take tests until passes/emphasize mastery

Suggested Interventions for Students That Are Impoverished

Behavior Related to Poverty	*Intervention*
Laugh when disciplined: A way to save face in matriarchal poverty.	Understand the reason for the behavior. Tell students three or four other behaviors that would be more appropriate.
Argue loudly with the teacher; Poverty is participatory, and the culture has a distrust of authority. See the system as inherently dishonest and unfair.	Don't argue with the students. Have students write the answers to questions, such as "What did you do?" "When you did that, what did you want?" "List four other things you could have done." "What will you do next time?"
Angry response: Anger is based on fear. Question what the fear is: loss of face?	Respond in the adult voice (as opposed to child or parent voice). When students cool down, discuss other responses they could have used.
Inappropriate or vulgar comments: Reliance on casual register; may not know formal register.	Have students generate (or teach other students) phrases that could be used to say the same thing.
Physically fight: Necessary to survive in poverty. Only know the language of survival. Do not have language or belief system to use conflict resolution. See themselves as less than a man or woman if they do not fight.	Stress that fighting is unacceptable in school. Examine other options that students could live with at school other than fighting. One option is not to settle the business at school, for example.
Hands always on someone else: Poverty has a heavy reliance on non-verbal data and touch.	Allow them to draw or doodle. Have them hold their hands behind their backs when in line or standing. Give them as much to do with their hands a s possible in a constructive way.
Cannot follow directions: Little procedural memory used in poverty. Sequence not used or valued.	Write steps on the board. Have them write at the top of the paper the steps need to finish the task. He them practice procedural self-talk.
Extremely disorganized: Lack of planning. Scheduling, or prioritizing skills not taught in poverty. Also probably don't have a place at home to put things so that they can be found.	Teach a simple, color-coded method of organization in the classroom. Use the five-finger method for memory at the end of the day. Have each student give a plan or organization.
Complete only part of a task: No procedural self-talk. Do not "see" the whole task.	Write on the board all the parts of the task. Require each student to check off each part when finished.
Disrespectful to teacher: Have a lack of respect for authority and the system. May not know any adults worthy of respect.	Tell the students that disrespect is not a choice. Identify for students the correct voice tone and word choices that are acceptable. This allows students to practice.
Harm other students verbally or physically: This may be a way of life. Probably a way to buy space or distance. Poverty tends to address issues in the negative.	Tell students that aggression is not a choice. Have students generate other options that are appropriate at school. Give students alternate phrases to those used.
Cheat or steal: Indicative of weak support system, weak role models and/or weak emotional resources. May indicate extreme financial need. May indicate little instruction/guidance during formative years.	Use a metaphor story to find the reason or need behind the cheating or stealing. Address the reason or need. Emphasize that the behavior is illegal and not an option at school.
Talk incessantly: Poverty is very participatory.	Have students write all questions and responses on a note card two days a week. Tell students that each gets five comments a day. Build participatory activities into the lesson.

From: Payne, Ruby K. (2001). A Framework for Understanding Poverty. Highlands, TX: aha! Process, Inc.

What Does Differentiated Instruction Look Like?

Differentiated Instruction is…	**Differentiated Instruction is NOT…**
1.Assessing students before a unit of instruction to determine what they already know	1.All students in the class completing the same work for a unit/chapter
2.Adjustment of the **core** curriculum by content (below to above grade level), process (concrete to abstract), and product (simple to complex)	2 Limiting how and what is taught by teaching to the average student
3.Providing assignments tailored for students of different levels of achievement	3. Assigning more work at the same level to high achieving students
4. Having high expectations for **ALL** students	4. Focusing on student weaknesses and ignoring student strengths
5. Educational experiences which extend, replace, or supplement standard curriculum	5. Activities that **all** students will be able to do
6. Structuring class assignments so they require high levels of critical thinking and allow for a range of responses	6. Giving the same kind of problems or questions and expecting more
7. Students participating in respectful work	7. Creating more work-extra credit, do when done
8. Students and teachers collaborating in learning	8. Using higher standards when grading
9. Putting students in situations where they don't know the answer- often	9. Providing free-time challenge activities
10. Differing the pace of instruction	10.Using capable students as tutors
11. A blend of whole class, group, and independent learning	11. Using individualized instruction

Georgia Department of Education, GPS Differentiation Menu

For students who have difficulty with ***writing/composing written material***:

- cooperative learning groups
- word processing application
- dictation to a scribe or onto a tape
- demonstrate/role play
- oral responses, presentation, and assessments
- multi-media presentation
- graphic organizer
- extended time on timed tasks
- word prediction software
- *Co-Writer, Write Out Loud, Dragon Naturally Speaking,* or other software
- voice output computer programs
- spell check/grammar check (not allowed on standardized tests)
- task item rubrics
- teacher prepared format
- bread work into manageable parts
- individual or small group test taking
- story starters
- sentence starters
- outlines
- tape recorded essays and oral presentations
- voice activated software
- portable word processor
- prewriting conference/prewriting activities
- illustrations
- K-W-L chart
- provide sample work
- debates
- proofreading checklist
- word bank/word wall
- matrix usage
- note taking assistance
- provide student with key words on essay tests
- abbreviate assignments
- adapted writing tools or other assistive technology, as appropriate

For students who have difficulty with ***reading/accessing written material***:

- cooperative learning groups/group discussion
- extended time on timed tasks
- voice output computer programs
- talking dictionaries
- break work into manageable parts/presentation of small chunks of a passage
- individual or small group test taking
- testing with reader or scanable text readers
- books on tape/listening to recording/viewing film version of story
- text read to the student by adult or peer
- reading guides (highlighted text, summaries, etc.)
- Language Master
- tracking light or other tracking device
- colored overlays
- computer generated books
- answer "yes/no" questions for comprehension checks
- choral reading
- pre-reading summary

- electronic text (text reader)
- oral (or audio) presentation to student
- teacher introduction of vocabulary words
- paired reading
- picture cues
- illustrations to show comprehension
- *CoWriter, Write Out Loud*, other software
- K-W-L chart
- previewing topics to introduce vocabulary and key concepts
- listening guide to facilitate note taking
- links to prior knowledge/personal experience
- debates
- word bank/word wall
- other assistive technology, as appropriate

For students who have difficulty ***speaking*:

- sign language interpreter/transliterator
- augmentative communication devices
- communication boards
- cooperative learning groups
- usage of other preferred means of communication
- demonstrate/play act tasks
- picture symbol program
- object symbols
- voice output computer programs
- object symbols
- voice output computer programs
- break work into manageable parts
- provide time to respond
- ask "yes/no" questions
- indicating correct answer by pointing
- assign written rather than oral reports
- avoid situations that create pressure
- other assistive technology, as appropriate

For students who have difficulty ***listening*:

- cooperative learning groups
- visual presentation using computer software, such as *PowerPoint* or *Inspiration*
- break work into manageable parts
- repeat, rephrase, simplify statements and instructions
- provide time to respond
- use of literal, concrete speech
- visual aids
- preferential seating
- note taking assistance (copy or notes/note-taking guides/note taker)
- have student repeat instructions
- reinforce oral instructions with written instructions
- assistive technology, as appropriate

For students who have difficulty with mobility:

- cooperative learning groups
- switch use
- touch screen
- modified keyboards
- extended time on timed tasks (or waive timed tasks)
- modified handwriting and/or grid paper
- weighted pencils and other motoric devices
- slant board or wedge

- magnets, tape, or other paper stabilizers
- stabilized materials
- break work into manageable parts
- individual or small group test taking
- provide time to respond
- page turner
- flexible schedule/scheduled rest breaks
- provide assistance in manipulating classroom and personal materials
- note taking assistance
- adaptive or special furniture
- dictation to a scribe or onto a tape
- other assistive technology, as appropriate

For students who have difficulty attending to *task*:

- cooperative learning groups with specific tasks assigned
- rubrics
- graphic organizers
- extended time on timed tasks
- break work into manageable parts
- individual or small group test taking
- task analysis
- task analysis graphically displayed
- proximity control
- visual, verbal, and tactile cues
- gain student's attention before delivery of information
- flexible schedule/scheduled rest breaks
- preferential seating
- note taking assistance
- provide study guides for tests
- have student repeat instructions
- regular notebook/agenda checks
- give abbreviated assignments
- set time allotments for tasks
- organizer/daily planner/homework notebook/folders
- fewer items on each page
- allow students to mark answers in workbooks and test booklets
- select optimal time of day for assessments
- provide study carrel or other quiet work space with minimal distractions
- assistive technology, as appropriate

For students who have difficulty with *organizations/study skills*:

- cooperative learning groups
- graphic organizers
- extended time on timed tasks
- break work into manageable parts
- individual or small group test taking
- task analysis
- task analysis graphically displayed
- organizer/daily planner/homework notebook/folders
- provide time to respond
- preferential seating
- provide sample work
- task item rubrics
- provide study guides for tests
- have student repeat instructions
- regular notebook/agenda checks
- set time allotments for task
- fewer items on each page
- provide study carrel or other quiet work space with minimal distractions

- provide books to remain at home
- establish and post daily routines
- allow students to mark answers in workbooks and test booklets
- assistive technology, as appropriate

For students who are *Deaf/Hard of Hearing*:

- sign language interpreter/transliterator
- amplification equipment
- sound-treated classrooms/special acoustics
- visual presentation using computer software, such as *PowerPoint* or *Inspiration*
- highlighted vocabulary
- closed captioning for viewing movies and other video presentations
- cooperative learning groups
- demonstrate/play act tasks
- voice output computer programs
- individual or small group test taking
- give short, specific verbal instructions
- story webs
- story starters
- *Write Out Loud, CoWriter,* or other software
- peer scribe
- note taking assistance
- provision of class notes with critical information, test questions, and highlighted vocabulary
- preferential seating
- refrain from speaking with back turned to students
- provide a work space with minimal noise
- other communication aids (assistive technology), as appropriate

For students who are *Visually Impaired*:

- Braille text/Braille writer
- enlarged print
- print with optical devices
- tactile symbols
- calendar system
- auditory and electronic formats
- dark or raised line paper
- cooperative learning groups
- slant board
- individual or small group test taking
- low vision devices/magnifying equipment
- screen readers/text scanners
- audiotaped directions and text (Talking Books for the Blind)
- word processing program with voice output
- electronic Braille note takers
- positioning in class away from glare
- black print handouts
- primary typewriter
- preferential seating
- usage of grid paper
- special or adapted lighting
- other alternate formats, communication aids, or assistive technology, as appropriate

Student-Created Products

Verbal	riddle	filmstrip	transparency	improvisation
anecdote	role-play	flag	travel ad	instrument
audio recording	song	flashcard	travel log	invention
ballad	speech	flip chart	tree chart	jigsaw puzzle
book report	story telling	flowchart	video tape	kite
campaign speech	survey	game	wall hanging	laboratory
characterrization		graphic	weather map	learning center
choral reading	**Visual**	greeting card	weaving	macramé
cinquain	advertisement	hieroglyphic	web	mime
comedy act	CD cover	icon	web page	mobile
comparison	anagram	id chart	window shade	model
conference	animation	illustration	word game	origami
couplet	annotated biblio.	layout	word search	parallel play
debate	area graph	map		paper mache
description	artifact collection	mask	**Kinesthetic**	play
dialog	award	mobile	apparatus	prototype
discussion	banner	mosaic	aquarium	puppet
documentary	bar graph	movie	artifacts	finger puppet
dramatization	blueprint	newscast	card game	marionette
explanation	book jacket	outline	cardboard relief	hand puppet
fairy tale/tall tale	booklet	painting	ceramics	puppet show
free verse	bookmark	pattern	charade	puzzle
interview	brochure	pennant	circuit boards	quilt
jingle	bulletin board	photo essay	clothing	relief rubbing
joke	calendar	photograph	collage	role play
lecture	cardboard relief	picture dictionary	collection	sand casting
lesson	cartoon	picture story	dance	scavenger hunt
limerick	chart	pie chart	demonstration	service
mock interview	checklist	playing card	discovery center	sewing cards
monologue	collage	print	display	shadow box
myth	collection	puzzle	dramatization	simulation
newscast	comic book	scatter graph	equipment	skit
nursery rhyme	costume	scenario	etching	soap sculpture
oral report	cross-section	scrap book	experiment	stage set
panel discussion	crossword puzzle	scroll	fair	stitchery
quatrain	design	sign	food	terrarium
radio show	diagram	silk screen	furniture	tie-dye
radio commercial	diorama	slide show	gadget	tool
rap	display	stencil	game	toy
recorded dialogue	drawing	TV commercial	hat	uniform
rhyme	film	timeline	imaginary play	vehicle
weaving	dialog	letter to editor	patent	riddle
wire sculpture	dictionary	limerick	pen pal	satire
	editorial	list	petition	science fiction

Written	essay	log	plan	scroll
advertisement	fairy tale/tall tale	lyrics	play	short story
autobiography	field manual	magazine	poem	skit
book report	free verse	magazine article	prediction	slogan
booklet	friendly letter	manual	profile	speech
brochure	glossary	metaphor	puppet show	story
business letter	guidebook	myth	questionnaire	story problems
characterization	handbook	new story ending	questions	survey
classified ad	handout	newsletter	radio script	telegram
comic book	interview script	newspaper	rating scale	TV script
comparison	job description	newspaper article	rationale	term paper
computer prog.	joke book	notes	recipe	test
couplet	jot list	novel	reference	travel log
creative writing	journal article	oath	report	vocabulary list
critique	label	outline	research paper	yearbook
database	law	pamphlet	review	
description	lesson plan	parody	rewritten ending	

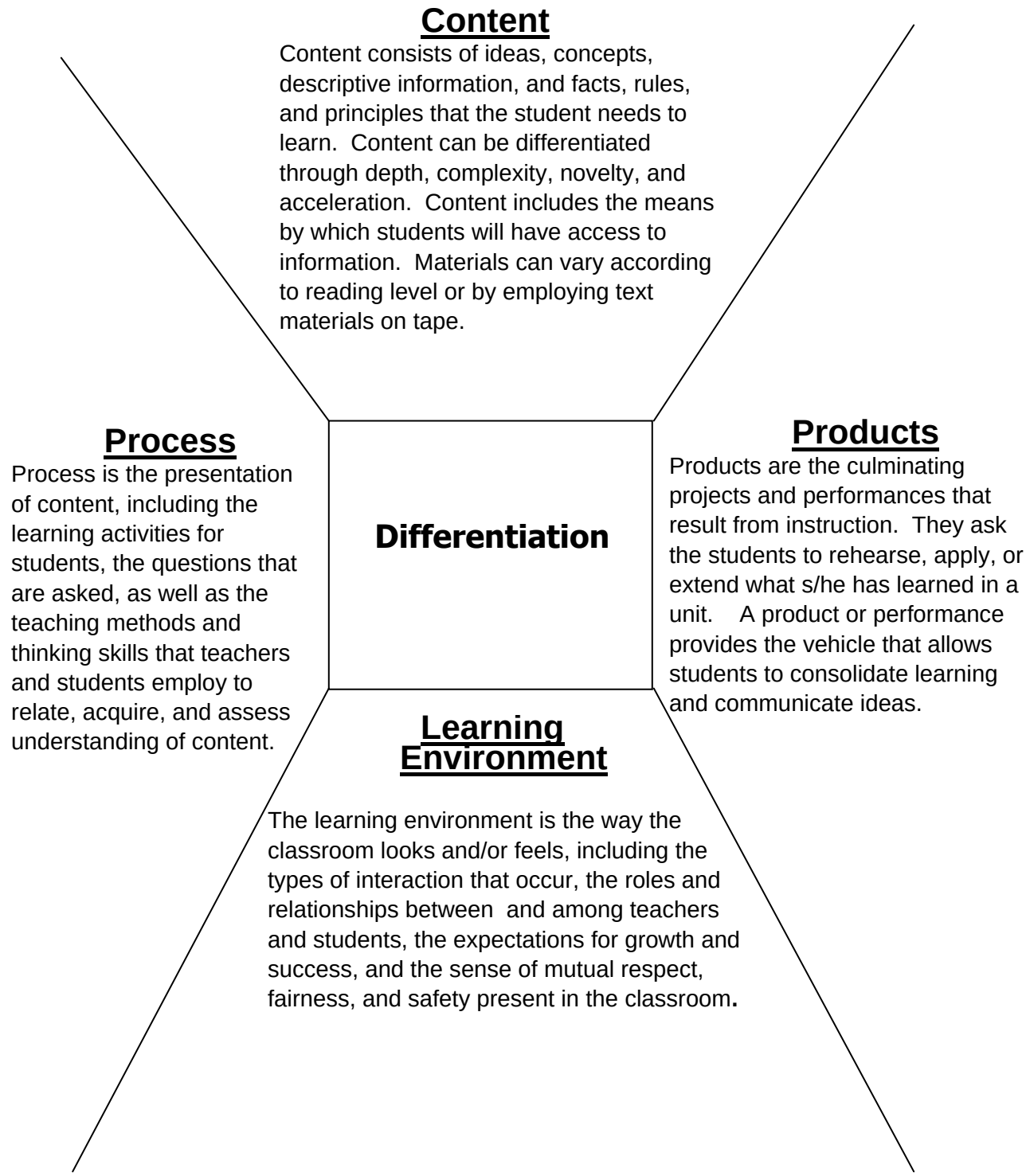
from GA Dept. of Education *Curriculum Guide for the Education of Gifted Students*, by Jim Curry and John Samara

Product Possibilities

Design a web page	Design political cartoons	Compile a newspaper
Develop a solution to a community problem	Formulate & defend a theory	Develop an exhibit
	Conduct a training session	Conduct an ethnography
Create a public service announcement	Design & teach a class	Write a biography
Write a book	Do a demonstration	Present a photo-essay
Design a game	Present a news report	Hold a press conference
Generate & circulate a petition	Write a new law & plan for its passage	Develop & use a questionnaire
Write a series of letters	Make learning centers	Conduct a debate
Present a mime	Create authentic recipes	Make a video documentary
Design & create a needlework	Choreograph dances	Create a series of illustrations
Lead a symposium	Present a mock trial	Write poems
Build a planetarium	Make a plan	Develop tools
Conduct a series of interviews	Compile & annotate a set of Internet resources	Design or create musical instruments
Develop a collection		Compile a booklet or brochure
Submit writings to a journal, magazine, or newspaper	Design a new product	Draw a set of blueprints
	Write a series of songs	Present a radio program
Interpret through multimedia	Create a subject dictionary	Do a puppet show
Design a structure	Make and carry out a plan	Create a series of wall hangings
Design & conduct an experiment	Design a simulation	Go on an archeological dig
Collect & analyze samples	Write a musical	Design & make costumes
Plan a journey or an odyssey	Develop a museum exhibit	Present an interior monologue
Make an etching or a woodcut	Be a mentor	Generate charts or diagrams to explain ideas
Writer letters to the editor	Write or produce a play	

Carol Ann Tomlinson, How to Differentiate in a Mixed-Ability Classroom, 2nd ed., Alexandria, ASCD, 2001, 89.

What to Differentiate



BLANK PAGE ON COLORED PAPER!

SCRAP WORK AND/OR NOTES:

"The Logical Exercise"

(This task is from Unit 4 of the Grade 8 Framework.)

For information concerning the Presidential Fitness Program, visit http://www.fitness.gov.

After school, the PE teachers at Venn Middle School offer a free opportunity for students to stay and work on improving their fitness skills. Three sessions are held each day and the students may attend the session(s) of their choice.

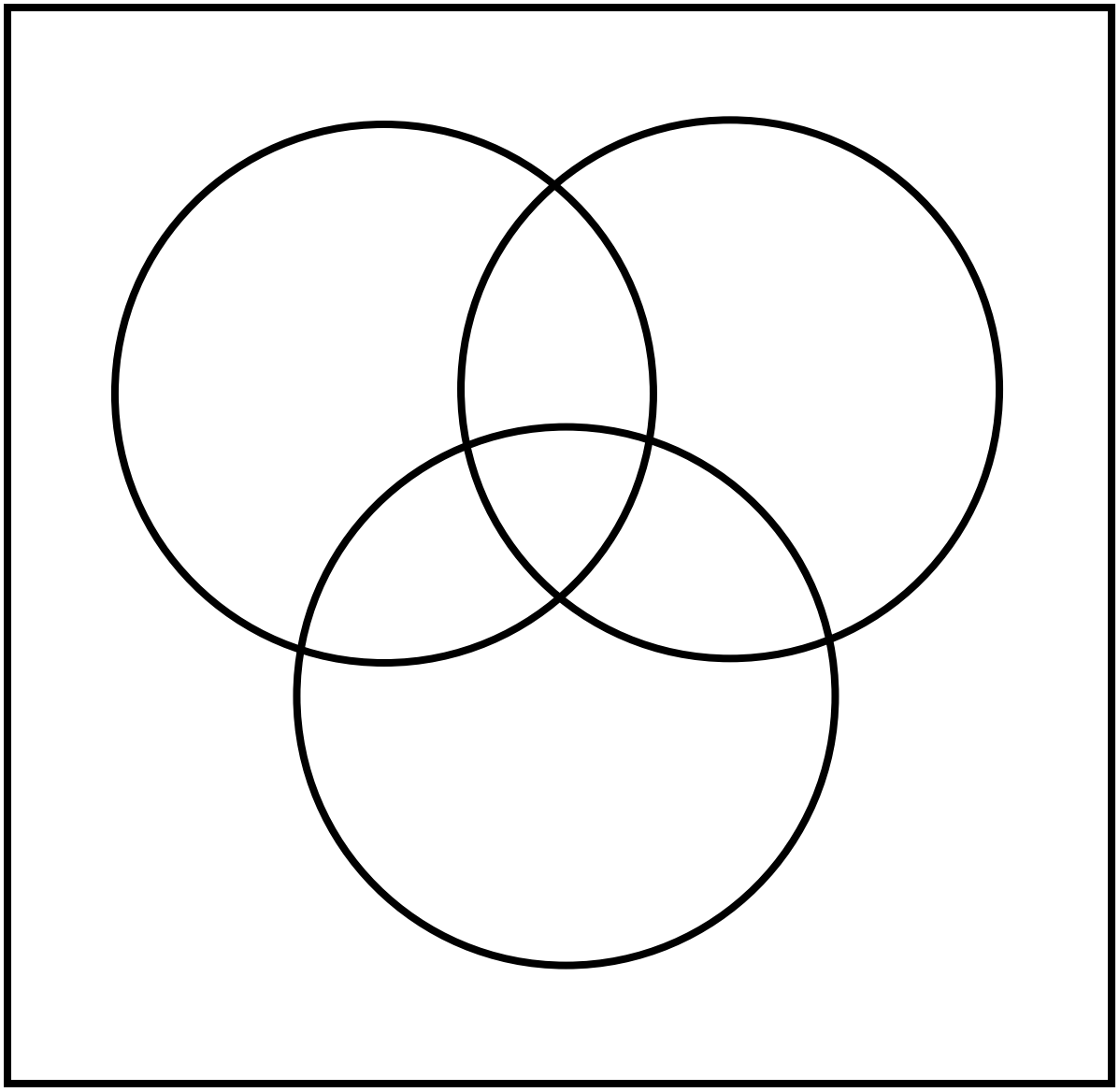
Session 1: Practice on the long jump and sit-ups.
Session 2: Jump rope and pull ups will be done.
Session 3: Running 800 meters and working on improving pull-ups.

Use the clues from yesterday's records to determine how many students stayed after school.

- Forty-one students attended Session 1.
- Fifty-one students attended Session 2.
- Forty-four students attended Session 3.
- The only student that attended all three of the sessions was congratulated by the principal during today's morning announcements.
- Seventeen students attended session 2 and session 3 but did not attend session 1.
- Twelve students attended session 1 and session 3 but did not attend session 2.
- Forty-three students participated in more than one session.
- Seven students stayed after school but did not participate in any of the PE fitness sessions.

If a name was to be drawn this morning from the list of students that attended yesterday's after school PE fitness sessions to win a new pair of running shoes; compare the probability that the winner attended sessions 1 and 2 with the probability that the winner attended exactly two sessions. Explain your thinking.

During each session, the PE teacher picked a name at random to win a school t-shirt. What is the probability that the same student won all three t-shirts? How do you know?



SCRAP WORK AND/OR NOTES:

Some Underlying Assumptions of Differentiated Instruction

Read each assumption and assess your own "way of thinking about teaching" by marking the star if this assumption is implicit when planning instruction, the smiley face if you take this assumption into consideration in some way during planning and the question mark if you need to think about your practice in terms of this assumption.

The Underlying Assumption	☆	☺	**?**
1. When planning, I accommodate multiple and varied learning needs (social as well as cognitive), rather than attempting to accommodate them after student frustration or failure.			
2. I work to create and maintain a classroom community where students feel safe and valued as they are; at the same time I support each student in order to maximize his or her potential.			
3. I interact with each student with positive regard and positive expectations.			
4. I recognize every student has both talents and areas of need, and I emphasize the student's strengths rather than accentuating labels, deficits, or differences. At the same time, I do not call attention to the differentiation, but rather I help students appreciate varied ways in which all of them can find personal success with important goals.			
5. I use multiple and alternative forms of assessment at all stages of student learning in order to uncover and address a full range of learning needs and strengths.			
6. I gather and employ knowledge and information about my students in order to identify and address their varied readiness levels, interests, and learning profiles.			
7. I find ways to provide opportunities for all students to access meaningful and powerful ideas, information, and skills rather than reducing the standards, watering down the curriculum, or assigning busy work.			
8. I use multiple methods to engage students in active learning. Although I may employ whole-class instruction, I question and encourage student discussions and explanations to enrich and remediate throughout the instruction.			
9. I work to develop classroom management skills that allow 1) multiple tasks to proceed smoothly in the classroom, 2) students to take increasing responsibility for their learning, and 3) the time to monitor student activity and coach for student growth and quality work.			

Based on the work of Stephanie Corrigan, Utah Valley State College. Adapted and modified from "The Facilitator's Guide," *At Work in the Differentiated Classroom*, Alexandria: ASCD, 2001, 57-58.

Strategies for Managing a Differentiated Classroom

Carol Ann Tomlinson

1. Have a strong rationale for differentiation instruction based on student readiness, interest, and learning profile.
2. Begin differentiating at a pace that is comfortable for you.
3. Time differentiated activities to support student success.
4. Use an "anchor activity" to free you up to focus your attention on your students.
5. Create and deliver instructions carefully
6. Assign students into groups or seating areas smoothly.
7. Have a "home base" for students.
8. Be sure students have a plan for getting help when you're busy with another student or group.
9. Minimize noise.
10. Make a plan for students to turn in work.
11. Teach students to rearrange furniture.
12. Minimize "stray movement".
13. Promote on-task behavior.
14. Have a plan for "quick finishers".
15. Make a plan for "calling a halt".
16. Give your students as much responsibility for their learning as possible.
17. Engage your students in talking about classroom procedures and group process.

The Equalizer

Concrete to → abstract
(representations, ideas, applications, materials)

Simple to → complex
(resources, research, issues, problems, skills, goals)

Basic to → transformational
(information, ideas, materials, applications)

Single facets to → multi-facts
(directions, problems, applications, solutions, approaches, disciplinary connections)

Smaller leaps to → greater leaps
(application, insight, transfer)

More structured to → more open
(solutions, decisions, approaches)

Less independence to → greater independence
(planning, designing, monitoring)

Slow to → faster
(pace of study, pace of thought)

Suggested Learning Style Inventories

Brain Scan
- Dr. Ron Rubenzer
- *Handbook on Differentiated Instruction for Middle and High Schools*, Sheryn Spencer Northey, Eye on Education, Inc. 2005, p. 8.

Four Learning Styles
- Silver, Strong, and Perini, 2000
- Creating a Differentiated Mathematics Classroom [Electronic version]. *Educational Leadership*, 61(5), 73-78. http://www.ascd.org/members/ed_lead/200402/strong.html.

4Mat System
Bernice McCarthy, 1981
- *Handbook on Differentiated Instruction for Middle and High Schools*, Sheryn Spencer Northey, Eye on Education, Inc. 2005, p. 13.

Index of Learning Styles Questionnaire
- Solomon and Felder, 1993
- http://engr.ncsu.edu/learningstyles/ilsweb.html

Kiersey Temperament Sorter II
- Kiersey, 1998
- http://www.advsorteam.com

Learning Channel Preferences
- Dr. Lynn O'Brien, 1990
- www.way2go.com

Learning Styles Inventory
- Dr. Pat Wyman
- www.howtolearn.com

Multiple Intelligences
- Harold Gardner, 1993
- *Multiple Intelligences: The Theory in Practice*. New York. Basic Books.

Multiple Intelligences Checklist
- A Personal Tour of Multiple Intelligences, 1994
- Citizens Education Center. *Teaching and Learning through the Multiple Inteligences*
- 310 First Avenue South, Suite 330, Seattle, WA 98104, ISBN: 206-624-9955

Myers-Briggs Type Indicator (MBTI)

- Myers, McCaulley, 1985
- http://www.humanmetrics.com/cgi-win/JTypes2.asp

Style Delineator

- Dr. Anthony Gregorc
- http://www.gregorc.com

The Learning Type Measure (LTM)

- http://64.226.183.123/Itm-purchase.htm (cost $8.00)

What Kind of Fruit Are You?

- Katherine Butler, 1987
- http://www.learnersdimension.com

"Acting Out"

(This task is from Unit 3 of the Grade 8 Framework.)

- Erik and Kim are actors at a theater. Erik lives 5 miles from the theater and Kim lives 3 miles from the theater. Their boss, the director, wonders how far apart the actors live.
- On grid paper, pick a point to represent the location of the theater.
- Illustrate all of the possible places that Erik could live on the grid paper.
- Using a different color, illustrate all of the possible places that Kim could live on the grid paper.
- What is the smallest distance, *d*, that could separate their homes? How did you know?
- What is the largest distance, *d*, that could separate their homes? How did you know?
- Write and graph an inequality in terms of *d* to show their boss all of the possible distances that could separate the homes of the 2 actors.
- Explain how Erik and Kim could live approximately 6 miles apart.

SCRAP WORK AND/OR NOTES:

Differentiation

	Content	Process	Product
Mastery			
Understanding			
Interpersonal			
Self-Expressive			

What Does Differentiation Look Like: A True/False Quiz

Directions: Mark the item T if it is TRUE for a differentiated classroom or F if it is FALSE for a differentiated classroom. After you have responded individually, compare your answers to the others in your table group. When you disagree, discuss your various points and attempt to reach consensus.

_____ 1. Allowing all students in the class to complete the same work for a unit/chapter.

_____ 2. Assessing students before a unit of instruction to determine what they already know.

_____ 3. Adjusting the **core** curriculum by content (below to above grade level),

_____ 4. Limiting how and what is taught by teaching to the average student.

_____ 5. Providing assignments tailored for students of different levels of achievement.

_____ 6. Having high expectations for **ALL** students.

_____ 7. Providing educational experiences which extend, replace, or supplement standard curriculum.

_____ 8. Assigning more work at the same level to high achieving students.

_____ 9. Focusing on student weaknesses and ignoring student strengths.

_____ 10. Using activities that **all** students will be able to do.

_____ 11. Structuring class assignments so they require high levels of critical thinking and allow for a range of responses.

_____ 12. Giving the same kind of problems or questions and expecting more.

_____ 13. Creating more work-extra credit, to do when done.

_____ 14. Having students participating in respectful work.

_____ 15. Putting students in situations where they don't know the answer often.

_____ 16. Ensuring that students and teachers collaborating in learning.

_____ 17. Providing free-time challenge activities.

_____ 18. Differing the pace of instruction.

_____ 19. Using capable students as tutors.

_____ 20. Using higher standards when grading.

_____ 21. Blending of whole class, group, and independent learning.

_____ 22. Using individualized instruction.

A Traditional Classroom Compared to a Differentiated One

Traditional Classroom	Differentiated Classroom
1. Student differences are masked or acted upon when problematic.	1. Student differences are studied as a basis for planning.
2. Assessment is most common at the end of learning to see "who got it."	2. Assessment is ongoing and diagnostic to understand how to make instruction more responsive to learner need.
3. A relatively narrow sense of intelligence prevails.	3. Focus on multiple forms of intelligence is evident.
4. A single definition of excellence exists.	4. Excellence is defined by individual growth from a starting point.
5. Student interest is infrequently tapped.	5. Students are frequently guided in making interest-based learning choices.
6. Relatively few learning profile options are	6. Many learning profile options are provided. taken into account.
7. Whole class instruction dominates.	7. Many instructional arrangements are used.
8. Coverage of texts and/or curriculum guides drives instruction.	8. Student readiness, interest, and learning profile shape instruction.
9. Mastery of facts and skills out-of-context focus of learning.	9. Use of essential skills to make sense of the key concepts and principles is the focus of learning.
10. Single-option assignments are the norm.	10. Multi-option assignments are frequently used.
11. Time is relatively inflexible.	11. Time is used flexibly in accordance with student need.
12. A single text prevails.	12. Multiple materials are provided.
13. Single interpretations of ideas and events	13. Multiple perspectives on ideas and events are routinely sought.
14. The teacher directs student behavior.	14. The teacher facilitates students' skills at becoming more self-reliant learners.
15. The teacher solves problems.	15. Students help one another and the teacher solve problems.
16. A single form of assessment is often used.	16. Students are assessed in multiple ways.

Carol Tomlinson

"Cholesterol – Good or Bad? – Worst Case Scenario?"

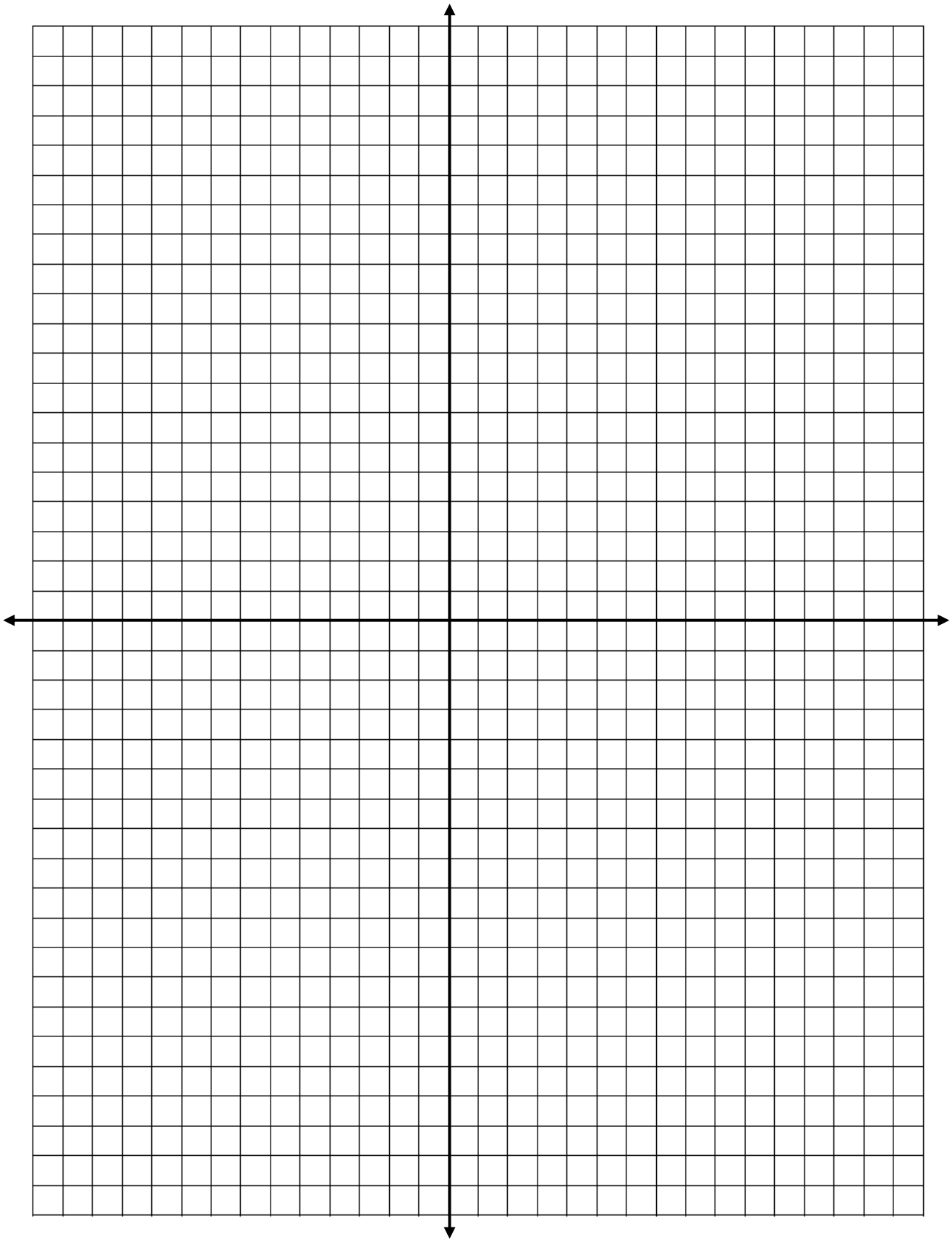
(This task is from Units 5 and 7 of the Grade 8 Framework.)

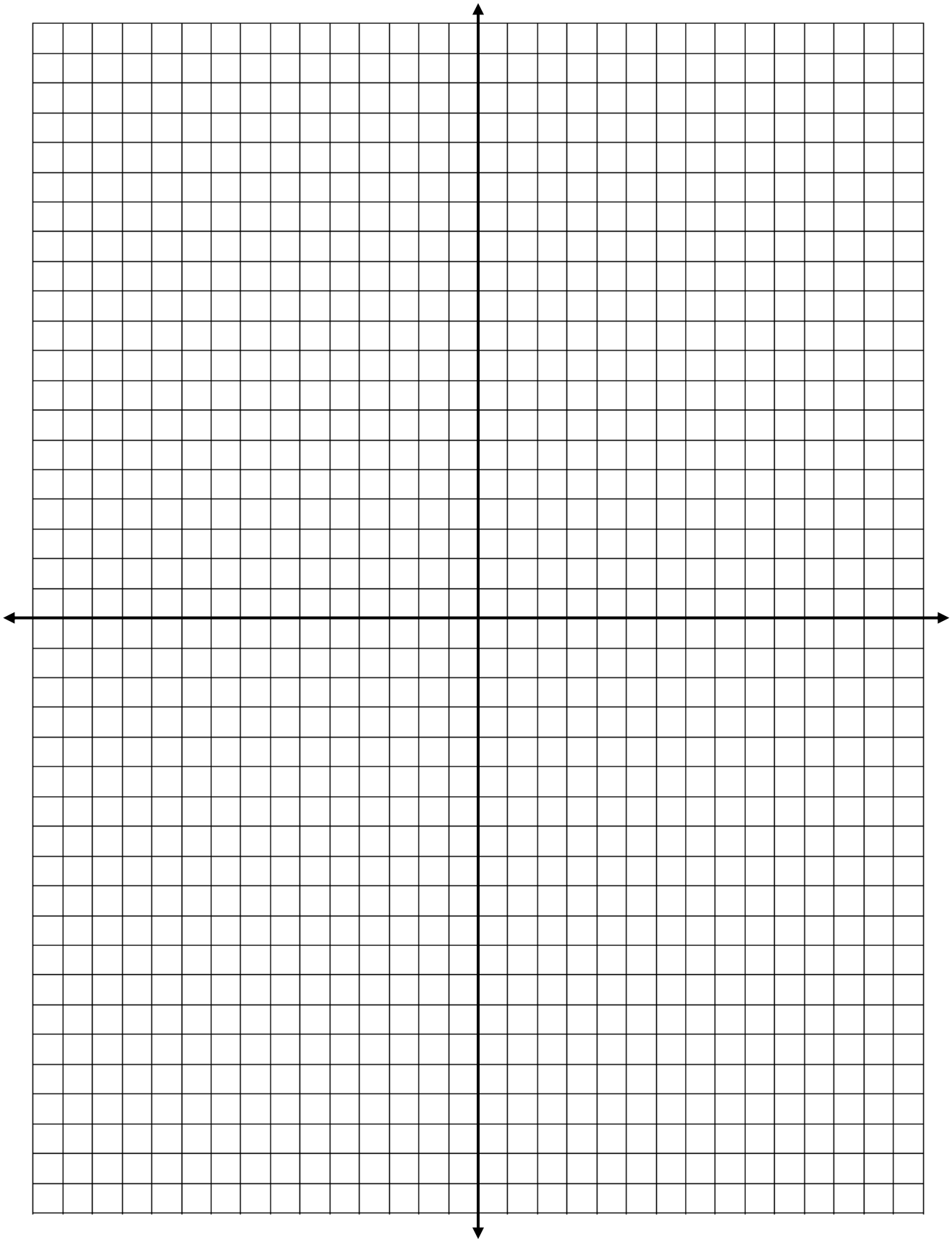
Matt's mom goes to the doctor regularly and has her cholesterol checked. The blood chemistry report shows several measurements related to cholesterol. Matt learned that there is a good kind of cholesterol (HDL) and a bad kind of cholesterol (LDL). In addition to being concerned about the total amount of cholesterol, people have to be concerned about the ratio of total cholesterol to good cholesterol. The average ratio of total to good cholesterol is 4.5 to 1. A ratio above 4.5 to 1 is an increased risk for heart disease.

Make a graph to help Matt see the combinations of total cholesterol and good cholesterol readings that would be higher-than-average risks. Let the x values represent the good cholesterol reading and the y values represent the total cholesterol readings.

Matt's mother's HDL = 35 and her total cholesterol was 200. His father had HDL = 60 and total cholesterol of 240. Help Matt to understand whether or not his parents' have combinations that are considered higher-than-average risks as far as the ratio of total to good cholesterol is concerned. Justify your answers.

Matt now wants you to add to the graph you made about cholesterol ratios. He wants a visual representation summarizing the worst-case scenario related to cholesterol. Show on your graph the region that represents increased risk for heart disease based on the ratio of total cholesterol to good cholesterol **and** increased risk because of total cholesterol ($y > 200$) **and** increased risk because of low values of good cholesterol ($x < 40$).





SCRAP WORK AND/OR NOTES:

Low-Prep and High-Prep Differentiation

Low-Prep Differentiation

- Choice of books
- Homework options
- Use of reading buddies
- Varied journal prompts
- Orbitals
- Varied pacing with anchor options
- Student-teacher goal setting
- Work alone/work together
- Whole-to-part and part to whole explanations
- Flexible seating
- Varied computer programs
- Design-A-Day
- Varied supplementary materials
- Options for varied modes of expression
- Varying scaffolding on same organizer
- Let's Make a Deal projects
- Computer mentors
- Think-Pair-Share by readiness, interest, learning profile
- Use of collaboration, independence, and cooperation
- Open-ended activities
- Miniworkshops to reteach or extend skills
- Jigsaw
- Negotiated Criteria
- Explorations by interest
- Games to practice mastery of information and skill
- Multiple levels of questions

High Prep-Differentiation

- Tiered activities and labs
- Tiered products
- Independent studies
- Multiple texts
- Alternative assessments
- Learning contracts
- 4-MAT
- Multiple intelligence options
- Compacting
- Spelling by readiness
- Entry Points
- Varying organizers
- Lectures coupled with graphic organizers
- Interest groups
- Tiered centers
- Interest centers
- Personal agendas
- Literature Circles
- Stations
- Complex instruction
- Group investigation
- Tape-recorded materials
- Teams, Games, and Tournaments
- Tic-Tac-Toe
- Simulations
- Problem-Based Learning
- Graduated rubrics
- Flexible reading formats
- Student-centered writing Formats

Tomlinson, *How to Differentiate in Mixed-Ability Classrooms*, 34.

Teacher Permission Form for Student Work

CONSENT AND ASSIGNMENT

This Consent and Assignment (the "Assignment") is effective when signed by the undersigned Georgia educator ("Educator") and is between Educator and the Georgia Department of Education (the "GDOE"). For good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties agree:

1. GDOE gratefully acknowledges the contribution Educator is hereby making to GDOE of the original work product (the "Work Product") created, developed, worked on or revised by Educator in connection with GDOE's Georgia Performance Standards Project (the "Project"). So that GDOE may fully use the Work Product in any manner it sees fit, including making copies, modifications and derivative works, Educator hereby fully and unconditionally transfers, assigns and conveys to GDOE all of Educator's copyright, ownership interests and other intellectual property rights in the Work Product (collectively, the "Intellectual Property Rights"). Educator further agrees that GDOE may publicly recognize and acknowledge Educator's contribution to, and involvement in, the Project.

2. This Assignment is governed by Georgia law, can only be amended if both parties do so in writing, is assignable solely by GDOE and supersedes any contrary oral or written agreement or understanding. Educator grants to GDOE the power and authority to execute any documentation deemed necessary by GDOE to register or protect the Work Product or Intellectual Property Rights therein or complete the full transfer of the Work Product and Intellectual Property Rights to GDOE which is the purpose of this Assignment.

"Educator"
Name:

Signature:

_____

Print:

_____

"GDOE"

Georgia Department of Education

By:

_____

Title:

_____

Date:

_____

Parent/Guardian Permission Form for Student Work

CONSENT AND ASSIGNMENT

This Consent and Assignment (the "Assignment") is effective when signed by the undersigned legal guardian ("Guardian") on behalf of the Guardian and minor Georgia student named below ("Student"), and is among Guardian, Student and the Georgia Department of Education (the "GDOE"). For good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties agree:

1. GDOE gratefully acknowledges the contribution Student and Guardian are hereby making to GDOE of the original work product (the "Work Product") created, developed, worked on or revised by Student. So that GDOE may fully use the Work Product in any manner it sees fit in connection with GDOE's Georgia Performance Standards Project (the "Project"), including making copies, modifications and derivative works, Guardian on behalf of Guardian and Student (and their heirs and successors) hereby fully and unconditionally transfer, assign and convey to GDOE all of Student's and Guardian's copyright, ownership interests and other intellectual property rights in the Work Product (collectively, the "Intellectual Property Rights"). Guardian further agrees that GDOE may publicly recognize and acknowledge Student's contribution to, and involvement in, the Project.

2. This Assignment is governed by Georgia law, can only be amended if both parties do so in writing, is assignable solely by GDOE and supersedes any contrary oral or written agreement or understanding. Student grants to GDOE the power and authority to execute any documentation deemed necessary by GDOE to register or protect the Work Product or Intellectual Property Rights therein or complete the full transfer of the Work Product and Intellectual Property Rights to GDOE which is the purpose of this Assignment.

"Guardian"

Signature:

_____

Print Name:

_____

Guardian's Relationship to Minor:

_____

Print Minor's Name:

_____

"GDOE"

Georgia Department of Education

By:

_____

Title:

_____

Date:

_____