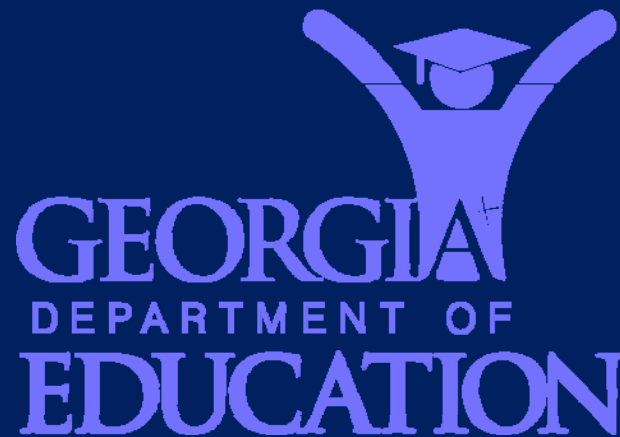


The Georgia Performance Standards for K-12 Mathematics



Kathy Cox

State Superintendent of Schools

Accelerated Mathematics I Training

May and June 2008

Overview of Day 2

- ◎ **Identifying learners who are mathematically gifted/talented**
- ◎ **Using effective teaching practices to accelerate learning in standards-based instruction**
- ◎ **Using effective instructional strategies for mathematically talented students in the standards-based mathematics classroom**



Essential Question 1

**What do mathematically
gifted/talented students
look like?**



National Association for Gifted Children (NAGC) says:

A gifted person is someone who shows, or has the potential for showing, an exceptional level of performance in one or more areas of expression.

NAGC says:

Some of these abilities are very
general...

Some are very specific talents...

And that:

The term *giftedness* provides a general reference to this spectrum of abilities without being specific or dependent on a single measure or index.

It is generally recognized that approximately five percent of the student population, or three million children, in the United States are considered gifted.

Mathematically Gifted

By Carol Bainbridge

The term *mathematically gifted* is used to refer to children who have strong math skills. The mathematically gifted kids perform better on spatial, nonverbal reasoning, speed, memory, and mechanical comprehension tests than verbally gifted children do.

What do we know about mathematically talented students?

- Boys and Girls are about evenly represented – even at the very highest group (from 2006 and 2007)
 - 38 male (4742) perfect scorers
 - 7 female (3274) perfect scorers
- In general, they do not feel very challenged by school (from 2005).
 - 5.7% say they are *never* challenged; 47.1% are *rarely* challenged; 44.9% are *sometimes* challenged

How do they study math?

(From 2005)

- ⊙ **Regular class:** 63% boys and 67% girls
- ⊙ **Small groups in regular class:** 14% boys and 13% girls
- ⊙ **Special class:** 27% boys and 25% girls
- ⊙ **Higher grade level for :
math:** 27% boys and 22% girls
- ⊙ **Individual advanced study:
with a teacher:** 8% boys and 6% girls

Susan Assouline and Ann Lupkowski-Shoplik
Belin-Blank Center

How do these
characteristics compare
with your students?

Role of the teacher:

- ❖ Teachers should provide all students with a wide variety of rich, inviting tasks that require spatial as well as analytical skills.
- ❖ Teachers should encourage students to persist in solving mathematical problems.



Role of the teacher:

- ❖ Teachers should encourage students to construct their own mathematical understanding
- ❖ Now let's take a look at these and other ideas from **Linda Jensen Sheffield**



What does a standards-based mathematics classroom look like?

- ❖ Flexible cooperative groups of children
- ❖ Hands-on learning experiences
- ❖ “Productive” noise
- ❖ Differentiation of process and products is encouraged within tasks
- ❖ Student work with teacher commentary is available for student reference
- ❖ Multiple representations of solutions are valued
- ❖ Balanced approach to concepts, skills, and problem solving



Let's take a look
at some common
gifted education myths

Morning Break



Mathematics 1

Paula's Peaches



*Quadratics
with leading
coefficient
of one.*

The Standards

What are the....

- ❖ **Key content standards**
- ❖ **Related content standards**
- ❖ **Process standards**
- ❖ **Concepts and skills to maintain**

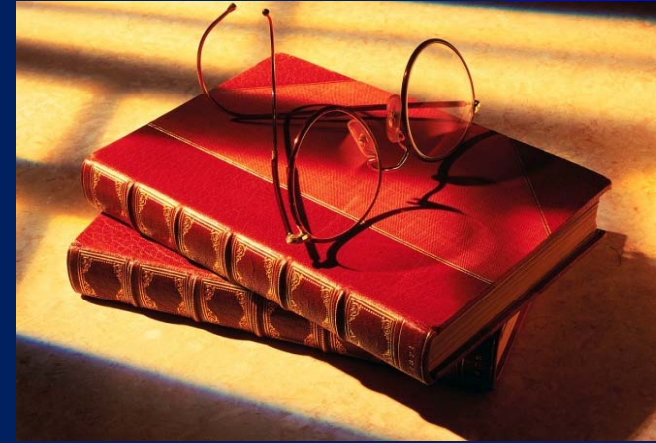


Essential Question 2

What teaching practices support standards-based instruction?



Know Your Students' Learning Styles and Preferences



- ❖ Readiness
- ❖ Learning Profile
- ❖ Personal Background and Interests

Know Your Students' Multiple Intelligences



- ❖ Verbal/Linguistic
- ❖ Logical-mathematical
- ❖ Spatial
- ❖ Bodily kinesthetic
- ❖ Musical
- ❖ Interpersonal
- ❖ Intrapersonal
- ❖ Naturalist

“Come to the edge,” he said.

“We are afraid,” they said.

“Come to the edge,” he said.

THEY DID.

And he pushed them,

And they flew.

--Apolonaire



Lunch

Four methods to address gifted/talented education

- ① **Acceleration and Enrichment**
- ② **Curriculum Compacting**
- ③ **Advanced Placement**
- ④ **Pull-Out Programs and Specialized Classes**

Mathematics II

Paula's Peaches Revisited



Quadratics

Afternoon Break



Essential Question 3

What strategies can be used to support talented students in the standards-based mathematics classroom?



Some strategies:

- ① “Provide useful concrete experiences. Even though gifted learners may be capable of abstraction and may move from concrete to abstract more rapidly, they still benefit from the use of manipulatives and "hands-on" activities.”

- ① “Use inquiry-based, discovery learning approaches that emphasize open-ended problems with multiple solutions or multiple paths to solutions. Allow students to design their own ways to find the answers to complex questions. Gifted students may discover more than you thought was possible.”

- ① “Use lots of higher-level questions in justification and discussion of problems. Ask “why” and “what if” questions.
- ① Create assessments that allow for differences in understanding, creativity, and accomplishment; give students a chance to show what they have learned. Ask students to explain their reasoning both orally and in writing.”

Teaching Practices In Action



How does Paula's Peaches revisited learning task lend itself to providing an appropriate challenge for mathematically gifted/talented students?

End of Day Two

End of Day Two

