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## **PART C: SCIENCE INSTRUCTIONAL ADAPTATIONS FOR EXCEPTIONALLY ABLE STUDENTS**

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### **INTRODUCTION**

When implementing the *Core Curriculum Content Standards*, schools must provide all students with appropriate challenges so that raised expectations do not result in lowered expectations for the exceptionally able. Gifted students remain in regular classrooms for the better part of the day and are pulled out for enrichment for a designated amount of time. As a result, teachers face the challenge of accommodating the gifted student in the regular classroom.

Gifted learners are oftentimes overlooked in classroom instruction. Consequently, some students find school boring and uninspiring due to knowing many of the concepts being introduced in the regular classroom. The exceptionally able or gifted students are those who

- demonstrate a high degree of intellectual, creative, and/or artistic ability
- possess exceptional leadership skills
- excel in specific fields
- function above grade level
- need accommodations or special instruction to achieve at levels commensurate with a challenge to his or her abilities
- have the ability to grasp concepts rapidly and/or intuitively
- have an intense curiosity about principles and how things work
- have the ability to generate theories and hypotheses and pursue methods of inquiry
- produce products that express insight, creativity and/or excellence

In the past, the term “gifted” described people with high scores on I.Q. tests. Today, new concepts connected to creative thinking models and multiple intelligences have expanded the definition of intelligence to include other dimensions. Giftedness reflects a multifaceted, multicultural, and multidimensional perspective and is defined by aptitude, traits, and behaviors rather than changeless test performance. These students are found in all cultural groups and across all economic levels. Increased understanding of culturally determined and environmentally affected behaviors will enable teachers and administrators to interpret performance indicators of creative potential.

The process of identification is ongoing because students are continuously entering and exiting school districts. Fluidity should be maintained as students’ needs change each year. Identification and placement in a gifted program should be initiated in kindergarten and reviewed annually through grade 12. Identification practices should be in place at the time of school enrollment. Selection of a pool of nominees and final selection of participants should be determined by a committee of at least three to five individuals in order to maintain a fair and democratic process.

## STRATEGIES FOR THE EXCEPTIONALLY ABLE LEARNER

“Differentiating the curriculum” refers to appropriate adjustments to content, teaching strategies, expectations of student mastery, and scope and sequence. In a differentiated classroom, students work at different paces. Gifted students are more likely to develop study and production skills, experience success and struggle, and feel challenged in a classroom setting that encourages learners to master information more quickly.

Adaptation strategies include the following:

- interdisciplinary and problem-based assignments with planned scope and sequence
- advance, accelerated, or compacted content
- abstract and advanced higher-level thinking
- allowance for individual student interests
- assignments geared to development in areas of affect, creativity, cognition, and research skills
- complex, in-depth assignments
- diverse enrichment that broadens learning
- variety in types of resources
- community involvement
- cultural diversity
- internship, mentorship, and other forms of apprenticeship

Adaptation categories include *acceleration*, *enrichment*, and *grouping*. The recommendations on the following pages identify a variety of adaptive efforts within these categories.

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### Acceleration

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**Acceleration** involves *grade skipping or changing the rate of presentation of the general curriculum to enable the students to complete the program in less time than usual. Prescribed seat-time is not necessary for achievement of the standards. Acceleration can occur in any subject area. Middle school students should be able to take high school courses; high school students should be able to take college courses with appropriate credit accrued. Some provision must be made for continued acceleration or high-level enrichment. Unless the student has a pre-identified problem, social or emotional development should not inhibit acceleration.*

Examples of accelerated types of programs are described below.

**Flexible pacing.** Assignment to classes is on the basis of ability to be challenged as well as ability to handle the work; assignment should not be age discriminatory.

**Content acceleration.** Superior performance in some areas may be addressed with placement in a higher grade level for the areas warranting it.

**Early entrance to school.** Eligibility should be evaluated in terms of (1) degree of advancement in relation to peers; (2) number of areas of advanced achievement; and (3) student's self-concept. The percentage of students attending one to three years of preschool has increased dramatically and should be considered.

**Multiage classes.** Two or more grade levels are combined in multiage classes. Students can accelerate through self-pacing.

**Compacting.** Compacting, also known as telescoping, refers to a form of acceleration in which part of the curriculum is covered in a shorter-than-usual period of time. Previously mastered content materials are determined through pre-evaluation and elimination.

**College course work.** Qualified students take college courses for college credits while completing high school requirements (concurrent enrollment). College courses may be taken in the summer.

**Early college work.** Once the standards for high school courses are met, early admission to college is an option. Students may leave high school early and enter college.

**Advanced placement.** The advanced placement program (APP), administered by the College Entrance Examination Board, enables high school students to obtain both high school and college credit for demanding course work offered as part of the school curriculum.

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## Enrichment

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**Enrichment** is another way to meet the differentiated needs of exceptionally able students. Well-articulated assignments that require cognitive processing, in-depth content, and alternate modes of communication can be effective and stimulating.

The following are some examples to consider when differentiating classroom instruction to meet the needs of academically talented students:

**Alternate learning activities/units.** Opportunities to pursue alternate activities permit students to engage in new learning and avoid the boredom of repeating instruction or unnecessary practice in skills already mastered.

**Independent study.** Students conduct planned, self-directed research projects carefully monitored by the teacher. Prerequisites include instruction in field-based and library research skills, the scientific method, and other authentic types of inquiry.

**Advanced thinking processes.** Provide assignments in all curriculum areas emphasizing higher-level thinking skills such as synthesis, analysis, and evaluation.

**Guest speakers.** Guest speakers provide information on topics beyond the teacher's expertise. University, faculty, parents, business and industry leaders, or other teachers in specific areas may be used as resources.

**Mentors/internships.** Allow students to interact with adult experts in the field of mutual interest. Mentors act as role models. Student's areas of interest, as part of career awareness, should be considered.

**Alternate resources:** Use materials from a higher grade level. Access to business, university, and community resources (such as laboratories, libraries, and computer facilities) are appropriate.

**Exchange programs.** Students attend schools in a different community or country to enrich educational experiences.

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## Grouping

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**Grouping** *students of like ability together in homogeneous arrangements such as special classes or clustering in the same classroom allows for more appropriate, rapid, and advanced instruction without isolating the exceptionally able student. Research indicates that gifted students are more likely to socialize "normally" when they are with students who share their interests and learning styles. When cooperative learning has been used in the regular classroom, gifted students sometimes become tutors for other students, and, therefore, learn less academic content. Flexible grouping is recommended in the regular classroom to give gifted students an opportunity for development of advanced skills, including skills of expression and production. Grouping flexibly allows exceptionally able students time for advanced work and a chance for independent study.*

Students may be grouped using the following scheduling arrangements or project emphases:

**Self-contained classes.** Enable exceptional students to be challenged in every area throughout the day and week, to be stimulated by their intellectual peers, and to have guidance from teachers with experience in sequential, integrated curriculum for the exceptionally able.

**Pullout programs.** Combine regular class integration and homogeneous grouping on a part-time, regular basis. Pullout programs require careful coordination and communication between the teachers of both classes.

**Cluster grouping in the regular classroom.** Cluster grouping permits homogeneous and heterogeneous grouping according to interests and achievement.

**Cluster scheduling.** Arrange schedules so that exceptionally able students can take their required core courses together to enhance rapid pacing, less drill, and greater depth and breadth.

**Honors and enrichment classes.** Provide opportunities for practicing higher-level thinking skills, creativity, and exploration of in-depth course content.

**Seminars.** Seminars are aimed at research, interdisciplinary studies, visual and performing arts, academic subjects, or other areas of interest. These seminars provide interaction with specialists who can give guidance in specific areas. Gifted specialists can be powerful resources to assist in teacher in-service programs.

**Resource centers.** Districts should establish a resource center that is available to all students. It may be a good idea to reserve designated time to utilize these facilities for exceptionally able students from a broader geographical area (e.g., interdistrict or countywide).

## REFERENCES

Association for Supervision and Curriculum Development. (1994). *Challenging the gifted in the regular classroom: Facilitator's guide*. Alexandria, VA: ASCD.

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