PROMOTING ACCESS TO THE GENERAL EDUCATION CURRICULUM: A TOOL FOR SELECTING SCIENCE CURRICULUM

INTRODUCTION

No Child Left Behind (NCLB) and IDEA are centered on the importance of all children receiving fair and equitable access to the general education curriculum. In an effort to hold educational agencies such as schools and districts accountable for students' progress, NCLB requires states and districts to report their annual yearly progress (AYP) for each subgroup of students, including students with disabilities. Schools with a subgroup of students not meeting its proficiency target are subject to serious sanctions, including closure. This heightened accountability has left many educators searching for ways to ensure that all students, including students with disabilities, meet their academic benchmarks and make progress toward 100 percent proficiency by 2014.

NCLB's accountability provisions in science require that states administer annual science assessments at least once in grades 3–5, grades 6–9, and grades 10–12, beginning in 2007–08. To meet these requirements, states and districts have used the National Science Education standards as a guide to developing their science content standards and assessments. As a result, administrators and science teachers are relying heavily on these standards and assessments to make decisions about student learning and achievement in science.

With a wide range of abilities in science classrooms, teachers often struggle to find strategies and assessments that will help all students access the science curriculum, particularly students identified for special education services. In some cases, these mainstreamed students take the same assessments, with minor modifications, as their general education counterparts. Students with more severe cognitive and physical disabilities, though, may have difficulty completing and passing general education assessments, even with these slight modifications. For example, Content Standard E for grade 5–8 in the National Science Education Standards specifies that all students should develop abilities of technological design and an understanding about science and technology. Students with certain disabilities, such as cerebral palsy, may have difficulty participating in typical technological design activities and completing related written assessments. To appropriately assess these students may require certain modifications. Moreover, since federal provisions require that *all* students be assessed in science at least once in grades 3–5, grades 6–9, and grades 10–12 beginning in 2007–2008 school year, it has become imperative for states, districts, and teachers to explore ways to more appropriately teach and assess science content knowledge and understanding. In addition to developing general science content standards and assessments, states and districts are also developing alternate content standards and assessments that align closely with the general education

standards for some students with disabilities. In response to this need, the Access Center has created a step-by-step process brief on developing alternate science content standards and aligning assessments to those standards (See *Alignment of Alternate Assessments to Science Content Standards*). With these alternate, differentiated pathways to the same content matter, all students receive an opportunity to learn rigorous science content and be tested fairly on standardized science tests, regardless of their physical or cognitive limitations.

To facilitate these pathways toward science achievement for all students, administrators and teachers must select standards-based curricula that foster differentiated instruction. The purpose of this brief is to provide a tool for educators to help them select published science curricula that offer strategies for accessing the general science education curriculum for all students, including students with disabilities. The task of selecting appropriate curricula can be daunting. Fortunately, several curriculum and instruction and science organizations, such as National Science Teachers Association, have developed resources that provide guidance on general features educators should consider (e.g., curriculum alignment to standards, evidence of effectiveness, set-up and format, professional development, cost, and services and supports). However, these resources often do not focus on the needs of students with disabilities.

SCIENCE CURRICULUM REVIEW TOOL

The Access Center has developed a tool to help curriculum selection committees choose a science curriculum that promotes access to general science education for students with disabilities. The *Science Curriculum Review Tool* helps educators examine existing curricula for research-based instructional and learning strategies that can be used with all students. The tool also helps educators determine if the curriculum is available in alternative formats to enable students that are print disabled to access the texts. The Access Center's tool can be used as a supplement to more comprehensive curriculum selection tools that are available through resources such as the National Academy Press. The tool is divided into three sections: Instructional and Learning Strategies, Technology, and Comments. The Comments section is open-ended and provides opportunities for curriculum reviewers to record additional information and to reflect on their review.

Instructional and Learning Strategies

As educators review various curricula they are asked to look for examples of specific strategies that promote access to the general education curriculum. These strategies generally fall into two different categories: instructional strategies and learning strategies. Instructional strategies are defined as methods that can be used to deliver a variety of content objectives; these strategies focus on how a course of study or curriculum can be taught. Learning strategies are techniques, principles, or rules that facilitate the acquisition, manipulation, integration, storage, and retrieval of information across situations and settings. The *Science Curriculum Review Tool* incorporates a sample of effective instructional and learning strategies; more are available on the

Access Center's *Strategies Chart*. Definitions and examples of these instructional and learning strategies can be found in Table 1 and are listed below:

- Computer Assisted Instruction (CAI)
- Adapted Books/Texts
- Learning Strategies
- Grouping Strategies
- Peer Assisted Learning Strategies
- Curriculum-Based Measurement (CBM)

A science curriculum that employs multiple strategies benefits both teachers and learners. Teachers can differentiate instruction to meet the diverse learning needs of students, and students can gain increased access to science content and concepts.

The *Science Curriculum Review Tool* provides a series of questions to consider when examining curricula for the integration of the strategies mentioned above. Administrators and educators charged with selecting a science curriculum can use the tool to document the information gathered. Questions to consider with each instructional and learning strategy may include:

- How are the strategies defined?
- How are the strategies used in each unit?
  - What are examples of how the strategies are differentiated to meet the needs of diverse learners?
- Are the strategies used consistently across grades?
- What types of professional development opportunities are provided to teachers?
- How does the curriculum address district/school goals to ensure that students with disabilities have access to the general education curriculum?

The tool enables educators to evaluate curricula by comparing findings across multiple curricula.

Access through Technology

Using technology to offer texts in a variety of formats has enabled students with disabilities to access the general education curriculum. For example, students that are print disabled can read science textbooks using refreshable Braille, screen readers, and audio files. Occupational therapists and special education teachers in schools can identify and order specialized assistive technologies like these to meet the needs of individual students.

The federal government has recognized the need for curricula to be available in various formats. The National Instructional Materials Accessibility Standard (NIMAS), a federal mandate, requires curriculum publishers to produce Braille, large-print, audio, or digital text in the form of a NIMAS file upon request for individuals with print disabilities. These files are available in a central repository stored at the National Instructional Materials Access Center (NIMAC), established by the American Printing House for the Blind (APH). The repository can be accessed at http://www.aph.org/louis/reposinf.htm or at NIMAC. NIMAS files can be requested through the repository or by providing publishers with documentation of the disability.

Science curriculum selection committees, in addition to reviewing curricula for instructional and learning strategies, may also want to consider the following technology questions as part of their review:

- Is the curriculum currently available as a NIMAS file?
- Is the curriculum available in a digital format outside of the NIMAC?

(These questions appear on the *Science Curriculum Review Tool*.)

As curriculum selection committees begin to look at the variety of published science curricula available, they need to be aware of state, district, and local school access priorities. The *Science Curriculum Review Tool* helps educators to review science curricula through the lens of accessibility for all students. Through its focus on instructional and learning strategies and technology features, the tool helps educators select a curriculum that (through a variety of instructional and learning strategies) provides opportunities for students with varying needs and backgrounds to access the general education curricula. This tool should be used in combination with the more general science curriculum review tools that are available.

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