Project Athena:

A Pathway to Advanced Literacy Development for Children of Poverty

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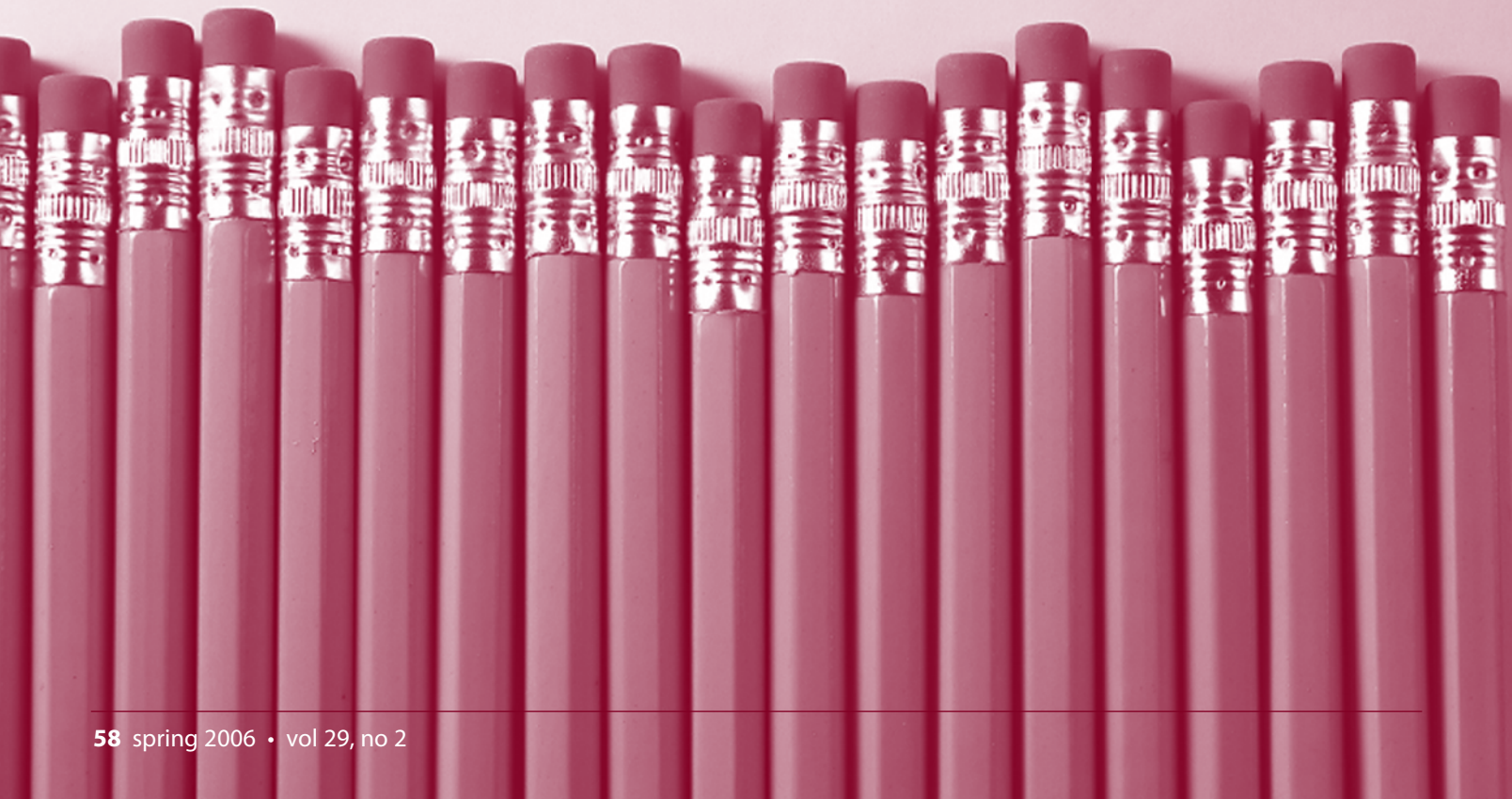

Finding concrete ways to help children of poverty develop advanced skills in the critical areas of reading comprehension and literary analysis, as well as persuasive writing, is the worthy goal tackled by Project Athena, a Javits program funded by the United States Department of Education and developed through the Center for Gifted Education at the College of William and Mary. Now in its fourth year of operation, the project has 2 years of data suggesting that the emphases of the curricula are beneficial to students from Title I schools in three states that have been identified as gifted, those identified as promising due to strong reading ability, more typical learners, and some special education students.

The program employs the use of the William and Mary language arts units at grades 3–5 and supplements them with a new set of materials called *Jacob's Ladder*, a reading comprehension program intended to move students from lower order to higher order thinking skills in the language arts (VanTassel-Baska, Stambaugh, & French, 2004). Supporting the implementation of the program is a series of workshops provided to project teachers over the course of 4 days a year, 3 in the summer, and 1 at the end of the implementation period midyear. These workshops feature the use of models designed to scaffold instruction in critical ways through the use of concept maps, questions, and core activities that engage learners in thinking about what they are reading and writing.

Goals of the Project and Rationale

The goals of Project Athena are four-fold:

1. To implement, refine, and extend research-based language arts curricular units of study in grades 3–5. Language arts units have been previously tested and found to be effective with high-ability learners (Feng, VanTassel-Baska, Quek, Bai, & O'Neill, 2004; VanTassel-Baska, Johnson, Hughes, & Boyce, 1996; VanTassel-Baska, Zuo, Avery, & Little, 2002), but at that time work had not been done to expand the use of the existing curriculum with economically disadvantaged and nongifted populations of students. The special needs of economically disadvantaged and nongifted students, in particular, have already led to the creation of a supplementary curriculum, *Jacob's Ladder*, to build thinking skills.
2. To develop and implement professional training models for teachers, administrators, and broader school communities. Professional development training models are essential to the proper implementation of the curriculum and treatment fidelity. A positive correlate exists between teachers' use of higher level thinking skills and higher student achievement scores (Sanders & Horn, 1998; Weglinsky, 2002). Therefore, professional development modules are essential to the implementation of curriculum that emphasizes and assesses higher level thinking skills.
3. To develop and implement instrumentation sensitive to low-socioeconomic learners for the purpose of identification and assessment of learning.
4. To conduct research on short-term and longitudinal student learning gains, as well as the mechanisms that promote the institutionalization of innovation through scaling up.

The goals of Project Athena were initiated based on prior curriculum development research initiated at the College of William and Mary, Center for Gifted Education. The third goal, to develop instrumentation sensitive to disadvantaged students, is most critical. Students of disadvantaged means tend to lack the environmental exposure to advanced vocabulary, books, and the modeling of verbal skills needed for literacy and test-taking (Barone, 2002; Duke, 2000; Grigg, Daane, Jin, & Campbell, 2003). Likewise, students of poverty also score well below the national average on typical, standardized achievement tests (Grigg et al.). Alternative assessments are needed to measure the full potential of these students and to determine what needs to be done to bring them to proficient levels of reading. Project Athena has employed multiple and varied assessment tools to establish baseline data on each student and also to demonstrate that different tests identify different students as gifted.

Finally, snapshot research agendas are not as effective in measuring the long-term achievement gains or nuances of curriculum for high-ability students (Arnold & Subotnik, 1993). Longitudinal research gains over time are essential to assess the long-term effects and implications of curriculum on student achievement. Project Athena has collected both longitudinal and cross-sectional data to document learning effects and plans to conduct case study research on the most and least effective schools.

Participants

Participants included a random sample of 2,113 students across 3 years and 39 experimental and 38

control teachers. Approximately 43% of the population is White, 27.5% African American, 18% Hispanic, 3.4% Asian American, and the approximately 8% additional are of Pacific Islander, American Indian, or other ethic origin. Gender distribution includes 48% male, 50% female, and 2% not reported.

Curriculum Intervention

The project employs award-winning curriculum found effective with gifted learners in earlier studies to test whether students who are not gifted can benefit from its use and whether teachers not endorsed or certified in gifted education can implement it successfully.

The intervention consists of a minimum of 24 lessons implemented over a 3-month period at grades 3, 4, and 5. These lessons focus in an integrated way on the following curriculum goals:

- develop literary analysis and interpretation skills,
- develop persuasive writing skills,
- develop linguistic competency,
- develop listening and oral communication skills,
- develop reasoning skills, and
- develop a conceptual understanding (i.e., concept of change).

For example, each lesson to promote literary interpretation would include the following components: (a) a multicultural literary selection, usually a poem or short story; (b) a literature web that asks students to identify key words, feelings, ideas, images, and the structure of the literary piece read; (c) a set of questions to probe student understanding of the literature at a deeper level; and (d) a related writing assignment to encourage metacognitive reflection on the reading. A sample lesson is presented in Figure 1.

Teacher Training Model

The model employed to train teachers builds on the curriculum itself by providing teachers the models for teaching the unit and then providing them the material to employ in the process. Each workshop segment is organized according to the structure of (a) introducing the model for teaching, (b) providing practice using the model, and (c) debriefing the model with the teachers. Collaborative learning is stressed as teachers work in small groups to learn the models. For example, in order to use a literature web with students, teachers would read a poem, complete a web individually, then discuss it with their group, and finally the workshop facilitator would conduct a whole group discussion of the poem. Based on this process, teachers would then reflect on what they had done, analyze the processes employed in the lesson, and raise questions and concerns about implementing the strategy with their learners. For many training sessions this format would be augmented by a videotape, showing how the web is used in a comparable classroom setting with comparable learners.

The multiday workshops each feature instruction in at least two such models each day, providing both the structure and practice for teaching. A sample workshop day schedule that featured the literature web would include:

1. introduction of the literature web and its components (30 minutes);
2. whole group researcher-modeled lesson using a poem or short story from one the units (45 minutes);
3. debriefing of the lesson, modeled with discussion of the observed teacher stance, research on teacher stance, and a discussion of implementation strategies—including a question-and-answer period (45 minutes); and
4. reading of a longer passage and small group practice in grade levels using the literature web, with researcher feedback (60 minutes).

All of the models used in the workshop are mutually reinforcing, as well, in the learning process. The reading model and the writing model work together to integrate the two sets of skills through the use of writing prompts that require students to think about the literature they are reading and decide if it should be required for students their age. Teachers are led through a power writing exercise that gives them 10 minutes to respond to the prompt, using a persuasive writing model that requires claim, supporting data, and a warrant. They then read their selections and assess whether the structure has been followed, using a carefully designed rubric. Such an exercise would be encouraged for use with students to give them practice with writing to a prompt in order to build fluency of response.

Results from data collected on the implementation of the curricula in Athena classrooms suggests that teachers show a distinct and both statistically significant and educationally important growth pattern in the use of the differentiation skills of critical thinking, creative thinking, and accommodation to individual differences after 2 years of such train-

Lesson 12: *The Secret Garden* by Frances Burnett
(Checkpoint on Reading Assignment)
Literary Reflections Unit (Grade Four)

Objectives:
1. To develop reasoning and interpretive skills in literature through discussion of *The Secret Garden*
2. To develop persuasive writing skills

Materials: *The Secret Garden*, Completed Literature Webs (from the day before), Student Response Journals, Poem: "I never saw a moor" by Emily Dickinson, Student Writing Assignment (Handout 12A)

Activities:
1. Students work in pairs to discuss their literature webs. Groups share ideas with the class.
2. In small groups, students share questions they wrote about the novel, *The Secret Garden*. They discuss each question and potential answers with the group.
3. Teacher-led discussion about *The Secret Garden* highlighting the following sample questions:
   a. Literary Response and Interpretation
      i. Why was the robin important? What did it symbolize or stand for in the story?
      ii. On page 49, Mary realized that she felt sorry for someone else. Was this an important understanding for Mary to have? Why or why not?
      iii. Why was Mary nervous about telling Dickon about the garden?
   b. Reasoning
      i. From Mary's conversation with her uncle, what inferences can you make about him and his feelings?
      ii. What would be the consequences for Mary and for the garden if Colin insisted on having the garden reopened?
   c. Change
      i. On page 94 Mary was thinking that now "the world seemed to be changing and getting nicer." In what ways is Mary's world changing? In what ways is her perception on the way she sees the world changing?
4. The teacher reads the poem by Emily Dickinson "I never saw a moor. . . ." Students compare and contrast the images from their reading of *The Secret Garden* with the poem.
5. Students reflect on their discussions of *The Secret Garden* (in their response journals) by either defending or opposing **one** of the following statements, using the Hamburger Model for Persuasive Writing and specific examples from the novel to support their ideas:
   a. The garden is a symbol for Mary and for Colin.
   b. Mary's discussions with Martha show evidence of how she is changing.
   c. Dickon and the robin are symbols of friendship and of spring.
   d. When people think of others and stop feeling sorry for themselves, it helps them to grow.

Figure 1. Sample lesson

Note. Adapted from *Literary Reflections*, by Center for Gifted Education, 1998, Dubuque, IA: Kendall Hunt.

ing coupled with the use of the curricula that is already differentiated in design.

Moreover, teachers appear to enjoy the nature of the training experience and believe that it benefits students to a great extent. Feedback from the training sessions have included comments such as:

- "I very much enjoy the hands-on activities that had us actually using the materials and working together through common problems that we had."
- "I'm so excited to get started . . . the workshop made me analyze my teaching. I am more aware of what I've done and where I am going."

Assessment of Students

Project Athena students are assessed on a pre-post design that tests the extent of growth gains in the dimensions of critical thinking, general reading comprehension, specific curriculum-based proficiency in literary analysis and persuasive writing, and state proficiency in language arts. These assessments are done through the use of specific instruments either designed for the project or incorporated into it in order to provide data on student learning that is credible. A brief description of each assessment tool follows.

- *Test of Critical Thinking (TCT).* The TCT was designed by the Center for Gifted Education for Project Athena (Bracken et al., 2003). The test uses Paul's Reasoning Model (1992) as a conceptual framework for the assessment. There are 10 scenarios and 45 questions based on those scenarios. Internal consistency coefficients are high: grade 3 is .85, grade 4 is .83, and grade 5 is .87. The total sample is .89. Content validity was also assessed by experts knowledgeable about Paul's Reasoning Model and critical thinking elements. Construct validity is yet to be determined. Based on the pilot data and data from Project Athena, the test has a strong floor and ceiling (-2 standard deviations to +2 standard deviations), therefore exhibiting sufficient stretch for the exceptional students assessed with this measure.
- *Iowa Test of Basic Skills (ITBS).* The ITBS is a long-standing standardized assessment that has been in existence since 1935 and has regular renorming procedures. The reading comprehension section of this assessment was used to determine the pre-post comprehension levels of students. Reliability coefficients are higher for the subtest of reading comprehension at each grade level. Grade 3 reading ranged from .88 to .89, grade 4 from .87 to .88, and grade 5 ranged from .86 to .87. Standard error of measurement was between 2.1 and 2.5.
- *Performance-Based Assessments.* Pre and post performance-based reading and writing assessments were also administered to the experimental group only. Modeling after the National Assessment of Educational Progress (NAEP) in reading, content validity and reliability of both measures has been assessed and found to be appropriate. The literary analysis assessment consists of four questions about a particular reading. Questions require inference, interpretation, and conceptual thinking. Similarly, the persuasive writing assessment provides a prompt that students must respond to based on a particular reading (e.g., Should this story be required reading for your grade level?) Rubrics have been designed to measure the appropriateness of responses for each assessment. Interreliability among teacher ratings has been assessed and found to be acceptable.

Assessment of Teachers

Just as students are assessed in the project for indicators of learning, so too are their teachers. The teachers are observed twice each year during the implementation period to ensure fidelity of implementation of the curriculum and also to assess the degree of effectiveness in using differentiation strategies that promote higher level thinking and problem solving. The instrument employed to conduct these assessments is the Classroom Observation Scale—Revised (COS-R; VanTassel-Baska, Avery, et al., 2004). The form measures differences in instructional behavior and includes six subscales: curriculum planning and delivery, accommodations for individual differences, problem solving, critical thinking, creative thinking, and research.

The overall interrater reliability of the COS-R is very high at .91 and .93, based on two separate observations. Subscale data were also collated ranging from .67 to .94. Content validity of .98 was determined by expert review of the form prior to Project Athena implementation.

Findings

Two-year findings on both student learning and teacher learning are promising and may be summarized in the following way:

- Experimental students did significantly better than control students in both critical thinking and comprehension,
- gender effects were minimal,
- all ability groups and ethnic groups registered significant growth gains from using the curriculum,
- experimental teachers scored significantly higher on both the frequency of use and effective use of differentiated strategies across both years, and
- experimental teachers who had used the curriculum for 2 years and received commensurate training demonstrated significantly enhanced use of differentiated strategies over first-year experimental teachers.

Conclusion

Developing the literacy of children from poverty backgrounds can be done through a systematic approach that involves high-powered curriculum wedded to the use of powerful teaching and learning models linked to multiple modes of student assessment in order to gauge the level and extent of learning accrued. This approach can only be successful, however, if it is also integrated with a concomitant model for teacher training that stresses the importance of faithful implementation of units of study. Together, such components can spell the difference between high levels of student challenge and excitement in learning versus disengaged apathetic learners subjected to low-level skill sheets. We must do more to ensure that all of our gifted and potentially gifted students are having the opportunity to learn at high levels and to benefit from the work of gifted education over the past 30 years. Only then can we say that we have tried innovative approaches that work and found them to be successful and worthy of replication over the years. GCT

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