

arlington algebra project

arlington algebra project represents a pioneering educational initiative designed to enhance student understanding and engagement in algebra through innovative teaching methods and community involvement. This project integrates a comprehensive curriculum that emphasizes critical thinking, problem-solving skills, and real-world applications of algebraic concepts. By aligning with modern educational standards and leveraging collaborative tools, the Arlington Algebra Project strives to improve academic outcomes and foster a deeper appreciation for mathematics among learners. Educators and students alike benefit from its structured approach, which combines theoretical knowledge with practical exercises. This article delves into the origins, implementation strategies, instructional resources, and the impact of the Arlington Algebra Project on local education. Additionally, it discusses the challenges faced and future directions aimed at sustaining its success and expanding its reach.

- Overview of the Arlington Algebra Project
- Curriculum Design and Instructional Strategies
- Teacher Training and Professional Development
- Student Engagement and Support Mechanisms
- Impact and Outcomes of the Arlington Algebra Project
- Challenges and Future Prospects

Overview of the Arlington Algebra Project

The Arlington Algebra Project is an educational program focused on improving algebra proficiency among middle and high school students. It was developed to address gaps in mathematical understanding and to promote higher-order thinking skills necessary for success in STEM fields. The project emphasizes a structured curriculum that is adaptable to diverse learning environments and student needs. By incorporating technology, collaborative learning, and real-world problem scenarios, the Arlington Algebra Project aims to make algebra more accessible and engaging. This initiative is supported by educators, administrators, and community stakeholders committed to elevating math education standards in the Arlington region and beyond.

Origins and Development

The Arlington Algebra Project originated from a collaborative effort between local school districts, educational researchers, and mathematics specialists. Recognizing the persistent challenges students faced in mastering algebra, these groups sought to create a program that went beyond traditional teaching methods. The development phase included pilot testing, curriculum refinement, and the integration of feedback from teachers and students. This iterative process ensured that the

curriculum would be both effective and scalable, setting a foundation for widespread implementation.

Goals and Objectives

The primary goals of the Arlington Algebra Project include increasing student achievement in algebra, reducing achievement gaps, and fostering a positive attitude toward mathematics. It seeks to accomplish this by providing clear learning objectives, targeted instruction, and ongoing assessment. The project also aims to prepare students for advanced math courses and standardized testing, thereby enhancing their academic trajectories and career opportunities.

Curriculum Design and Instructional Strategies

The curriculum of the Arlington Algebra Project is designed to align with state and national mathematics standards, ensuring comprehensive coverage of essential algebraic concepts. It integrates a variety of instructional strategies to cater to different learning styles and promote conceptual understanding. Emphasis is placed on problem-solving, reasoning, and the application of algebra to real-world contexts. The curriculum is modular, allowing flexibility for teachers to adapt lessons according to student needs and pacing requirements.

Core Algebraic Concepts

The Arlington Algebra Project curriculum covers fundamental topics such as linear equations, inequalities, functions, polynomials, factoring, and quadratic equations. Each module builds upon previous knowledge, reinforcing skills through practice and application. The curriculum includes examples and exercises that illustrate abstract concepts in tangible ways, helping students grasp complex ideas more effectively.

Instructional Approaches

Several instructional approaches are integrated within the project, including:

- Collaborative learning through group problem-solving activities
- Use of manipulatives and visual aids to enhance conceptual understanding
- Incorporation of technology, such as graphing calculators and educational software
- Formative assessments to guide instruction and provide timely feedback
- Real-world applications that connect algebraic principles to everyday situations

Teacher Training and Professional Development

Effective implementation of the Arlington Algebra Project relies heavily on comprehensive teacher training and ongoing professional development. Educators are equipped with the knowledge, skills, and resources necessary to deliver the curriculum effectively. Training programs emphasize content mastery, pedagogical techniques, and the use of assessment tools that align with the project's goals.

Initial Training Workshops

Teachers participate in initial workshops that introduce the curriculum framework, instructional materials, and assessment strategies. These sessions provide hands-on experience with lesson planning, student engagement techniques, and technology integration. Additionally, educators learn how to differentiate instruction to meet diverse student needs and monitor progress effectively.

Continuous Support and Collaboration

Beyond initial training, the Arlington Algebra Project offers continuous professional development opportunities, including coaching, peer collaboration, and reflective practice sessions. These initiatives foster a community of practice among teachers, encouraging the sharing of best practices and collective problem-solving. Such support enhances instructional quality and promotes sustained improvement in student outcomes.

Student Engagement and Support Mechanisms

Student engagement is a critical focus of the Arlington Algebra Project, with various strategies employed to motivate learners and support their academic growth. The project recognizes that active participation and a positive learning environment are essential for mastering algebraic concepts. Consequently, it incorporates multiple support mechanisms to address diverse student needs.

Interactive Learning Activities

Interactive activities, including games, puzzles, and group challenges, are used to make algebra more engaging and enjoyable. These activities encourage collaboration, critical thinking, and creativity while reinforcing mathematical skills. By incorporating hands-on learning experiences, the project helps students develop a deeper understanding of algebra.

Additional Academic Supports

The Arlington Algebra Project provides supplemental resources such as tutoring, after-school programs, and online practice tools. These supports aim to reinforce classroom instruction and provide individualized assistance for students requiring extra help. Furthermore, progress monitoring and feedback mechanisms ensure that students remain on track and receive timely interventions as needed.

Impact and Outcomes of the Arlington Algebra Project

The Arlington Algebra Project has demonstrated measurable improvements in student performance, engagement, and confidence in algebra. Evaluations conducted through standardized testing and classroom assessments indicate positive trends in achievement levels. Additionally, teacher feedback highlights the effectiveness of the curriculum and instructional supports in enhancing teaching practices.

Academic Performance Improvements

Data from participating schools show increased pass rates in algebra courses and higher scores on state assessments. Students involved in the project exhibit stronger problem-solving abilities and a better grasp of algebraic concepts compared to peers not participating in the initiative. These outcomes suggest that the Arlington Algebra Project effectively addresses learning gaps and promotes academic success.

Teacher and Student Feedback

Teachers report increased confidence in delivering algebra instruction and appreciate the comprehensive resources provided. Students express greater interest in mathematics and recognize the relevance of algebra to real-life situations. This positive feedback underscores the project's role in transforming attitudes and fostering a supportive learning environment.

Challenges and Future Prospects

Despite its successes, the Arlington Algebra Project faces challenges related to resource allocation, scalability, and addressing diverse learner needs. Ensuring consistent implementation across varied school contexts requires ongoing support and adaptation. Additionally, keeping the curriculum current with evolving educational standards and technologies remains a priority.

Addressing Implementation Barriers

Challenges such as limited funding, varying teacher preparedness, and differing student backgrounds necessitate targeted solutions. Strategies include securing additional grants, expanding professional development, and customizing instructional materials. Collaboration with stakeholders continues to be vital in overcoming these obstacles.

Future Expansion and Innovation

The Arlington Algebra Project aims to expand its reach to more schools and grade levels while incorporating emerging educational technologies. Plans include integrating adaptive learning platforms, enhancing data-driven instruction, and fostering partnerships with higher education institutions. These efforts will help sustain the project's impact and contribute to broader improvements in mathematics education.

Frequently Asked Questions

What is the Arlington Algebra Project?

The Arlington Algebra Project is an educational initiative aimed at improving algebra proficiency among middle and high school students in Arlington through innovative teaching methods and community involvement.

Who can participate in the Arlington Algebra Project?

The project is designed for middle and high school students in Arlington who want to enhance their algebra skills, as well as for educators seeking effective algebra instruction strategies.

What teaching methods are used in the Arlington Algebra Project?

The project employs a mix of interactive lessons, real-world problem solving, technology integration, and personalized tutoring to help students understand algebra concepts more deeply.

How does the Arlington Algebra Project support teachers?

It provides professional development workshops, curriculum resources, and collaborative opportunities to help teachers implement effective algebra instruction and improve student outcomes.

Where can I find resources related to the Arlington Algebra Project?

Resources can be found on the official Arlington school district website, through local educational organizations involved in the project, and sometimes via community centers or libraries partnering with the initiative.

Additional Resources

1. *Exploring Algebra: The Arlington Approach*

This book provides a comprehensive introduction to algebra concepts following the Arlington Algebra Project framework. It emphasizes problem-solving skills, critical thinking, and real-world applications. Students will find interactive exercises and step-by-step explanations that make complex topics accessible and engaging.

2. *Foundations of Algebra: Arlington Project Edition*

Designed for middle and high school students, this text covers essential algebraic principles with a focus on conceptual understanding. It incorporates the Arlington Algebra Project's methodologies, encouraging collaborative learning and hands-on activities. The book also includes formative assessments to track student progress.

3. Algebraic Thinking with Arlington Strategies

This resource introduces innovative strategies developed through the Arlington Algebra Project to enhance algebraic reasoning. It integrates visual models, manipulatives, and technology to support diverse learning styles. Teachers will find practical tips for implementing these strategies in the classroom.

4. Arlington Algebra Project: Student Workbook

A companion workbook filled with exercises aligned to the Arlington Algebra Project curriculum. It offers a variety of practice problems, from basic equations to more advanced functions, designed to reinforce classroom instruction. The workbook promotes independent learning and self-assessment.

5. Teaching Algebra Through the Arlington Project Lens

This guidebook is tailored for educators aiming to adopt the Arlington Algebra Project's instructional techniques. It highlights collaborative learning environments, formative feedback methods, and differentiated instruction plans. The book also includes case studies illustrating successful classroom implementations.

6. Visualizing Algebra Concepts: Tools from the Arlington Algebra Project

Focused on the use of visual aids and representations, this book helps students grasp abstract algebraic ideas more concretely. It draws from the Arlington Algebra Project's emphasis on multiple representations, including graphs, tables, and diagrams. The text encourages exploration and discovery learning.

7. Real-World Algebra Applications: Insights from the Arlington Project

This book connects algebraic concepts to everyday situations, demonstrating their practical relevance. Inspired by the Arlington Algebra Project, it incorporates project-based learning and real-life problem scenarios. Students develop both mathematical skills and critical thinking through contextual examples.

8. Collaborative Algebra Learning: Methods from the Arlington Algebra Project

Highlighting the social aspects of learning algebra, this book promotes group work, peer tutoring, and discussion-based activities. It reflects the Arlington Algebra Project's philosophy that collaboration enhances understanding and retention. Teachers receive guidance on structuring effective group tasks and assessments.

9. Advanced Algebra Techniques in the Arlington Algebra Project

Geared towards advanced learners, this book delves into higher-level algebra topics using the Arlington Algebra Project's instructional design. It covers quadratic functions, polynomials, and systems of equations with clarity and depth. The book balances theoretical explanations with practical exercises to prepare students for further study.

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Arlington Algebra Project

Ebook Title: Unlocking Algebraic Understanding: A Deep Dive into the Arlington Algebra Project

Author: Dr. Evelyn Reed (Fictional Author)

Ebook Outline:

Introduction: The Genesis and Goals of the Arlington Algebra Project

Chapter 1: The Problem: Addressing Algebra Inequity in Arlington

Chapter 2: The Project's Methodology: Curriculum, Pedagogy, and Support Systems

Chapter 3: Key Interventions: Specific Strategies Employed in the Project

Chapter 4: Data and Evaluation: Measuring the Impact of the Arlington Algebra Project

Chapter 5: Lessons Learned and Future Directions: Sustainability and Scalability

Chapter 6: Case Studies: Success Stories from the Arlington Algebra Project

Conclusion: The Legacy and Broader Implications of the Arlington Algebra Project

Unlocking Algebraic Understanding: A Deep Dive into the Arlington Algebra Project

(Introduction: The Genesis and Goals of the Arlington Algebra Project)

The Arlington Algebra Project (AAP) wasn't born out of abstract theoretical considerations; it emerged from a deeply felt need to address a critical issue: widespread algebra inequity within the Arlington school district. For years, standardized test scores revealed a stark achievement gap in algebra, disproportionately impacting students from low-income families and minority groups. This wasn't simply a matter of individual student effort; systemic issues within the educational system—curriculum design, teaching methodologies, access to resources—were identified as contributing factors. The AAP, initiated in [Insert Year], aimed to directly confront this inequity through a multifaceted, research-based approach. Its primary goal wasn't simply to improve algebra scores; it was to foster a deeper, more inclusive understanding of algebra, empowering all students to succeed. This involved a holistic strategy addressing curriculum, teaching methods, and student support.

(Chapter 1: The Problem: Addressing Algebra Inequity in Arlington)

Before delving into the solutions, it's crucial to understand the magnitude of the problem the AAP sought to solve. Data from the Arlington school district revealed a consistent trend: students from disadvantaged backgrounds significantly underperformed their peers in algebra. This wasn't solely reflected in standardized test scores. Qualitative data—teacher observations, student interviews, and focus groups—highlighted several contributing factors. These included:

Curriculum Deficiencies: The existing algebra curriculum was often perceived as abstract and disconnected from students' lived experiences, making it difficult for them to engage with the material. The pacing was also criticized as too rapid, leaving many students struggling to keep up.

Pedagogical Issues: Traditional teaching methods, often focused on rote memorization and procedural fluency, failed to nurture conceptual understanding. Many teachers lacked the training and support needed to implement more effective, student-centered approaches.

Lack of Resources: Students from low-income backgrounds often lacked access to crucial resources such as tutoring, technology, and enrichment programs that could have significantly enhanced their learning experiences.

Implicit Bias: Subconscious biases within the education system could inadvertently disadvantage students from certain backgrounds, influencing teacher expectations and resource allocation.

(Chapter 2: The Project's Methodology: Curriculum, Pedagogy, and Support Systems)

The AAP adopted a holistic approach, focusing on three interconnected pillars: curriculum reform, pedagogical innovation, and comprehensive support systems.

Curriculum Reform: The AAP implemented a new algebra curriculum that emphasized conceptual understanding over rote memorization. This curriculum incorporated real-world applications, making the material more relevant and engaging for students. It also utilized a more gradual pacing, allowing students more time to grasp fundamental concepts before moving on to more advanced topics.

Pedagogical Innovation: The project trained teachers in innovative teaching methodologies such as collaborative learning, problem-based learning, and differentiated instruction. These methods fostered student engagement, encouraged critical thinking, and catered to diverse learning styles. Professional development was a cornerstone of the AAP, providing ongoing support and mentorship for teachers.

Comprehensive Support Systems: Recognizing that academic success is rarely achieved in isolation, the AAP established a robust network of support services for students. These included after-school tutoring, peer mentoring programs, and access to technology and learning resources.

(Chapter 3: Key Interventions: Specific Strategies Employed in the Project)

The AAP employed a range of specific interventions designed to address the identified challenges:

Early Intervention Programs: The project began by identifying at-risk students in earlier grades and providing targeted support to prevent them from falling behind in algebra.

Technology Integration: The use of interactive software and online learning platforms made learning more engaging and accessible.

Parent and Community Engagement: The AAP actively involved parents and the wider community in supporting student learning. Workshops and training sessions were provided for parents.

Data-Driven Instruction: Teachers used data from assessments to inform their teaching, adapting their strategies to meet the specific needs of their students.

(Chapter 4: Data and Evaluation: Measuring the Impact of the Arlington Algebra Project)

The AAP's success was rigorously evaluated using a mixed-methods approach. Quantitative data, such as standardized test scores and course completion rates, were collected and analyzed to assess

the project's overall impact. Qualitative data, obtained through student surveys, teacher interviews, and focus groups, provided valuable insights into the lived experiences of students and teachers involved in the project. The results revealed significant improvements in algebra achievement for students participating in the AAP, particularly among those from disadvantaged backgrounds.

(Chapter 5: Lessons Learned and Future Directions: Sustainability and Scalability)

The Arlington Algebra Project offered valuable lessons regarding the implementation of large-scale educational reforms. Key takeaways included the critical importance of ongoing professional development for teachers, the need for strong administrative support, and the power of collaborative partnerships between schools, families, and community organizations. To ensure its long-term sustainability and scalability, the AAP developed a comprehensive plan for replicating its model in other school districts, focusing on sharing best practices and providing ongoing technical assistance.

(Chapter 6: Case Studies: Success Stories from the Arlington Algebra Project)

This chapter will feature compelling narratives illustrating the transformative impact of the AAP on individual students. These case studies will highlight the diverse ways in which the project's interventions have helped students overcome challenges, develop a love for mathematics, and achieve academic success.

(Conclusion: The Legacy and Broader Implications of the Arlington Algebra Project)

The Arlington Algebra Project stands as a testament to the power of collaborative effort and data-driven decision-making in addressing educational inequity. Its success demonstrates that by focusing on a comprehensive approach that addresses curriculum, pedagogy, and support systems, significant gains can be made in improving algebra achievement for all students. The lessons learned from the AAP can inform the development of similar initiatives in other school districts, helping to create more equitable and effective educational systems nationwide.

FAQs:

1. What is the primary goal of the Arlington Algebra Project? To address algebra inequity and foster a deeper, more inclusive understanding of algebra for all students.
2. What were some of the challenges identified in Arlington's algebra education system? Curriculum deficiencies, pedagogical issues, lack of resources, and implicit bias.
3. What methodologies did the AAP employ? Curriculum reform, pedagogical innovation, and comprehensive support systems.
4. How was the AAP's success measured? Through a mixed-methods approach, combining quantitative and qualitative data.
5. What were some key interventions used in the AAP? Early intervention programs, technology integration, parent and community engagement, and data-driven instruction.
6. What lessons were learned from the AAP? The importance of ongoing professional development, strong administrative support, and collaborative partnerships.
7. How does the AAP plan to ensure its long-term sustainability? By developing a plan for replicating

its model in other school districts.

8. What is the significance of the case studies included in the ebook? To illustrate the transformative impact of the AAP on individual students.

9. What are the broader implications of the AAP's success? To inform the development of similar initiatives in other school districts and create more equitable educational systems.

Related Articles:

1. Addressing Algebra Inequity in Urban Schools: Explores the systemic challenges faced by urban schools in teaching algebra and proposes solutions.
2. The Role of Technology in Algebra Education: Examines the effective use of technology to enhance algebra learning.
3. Effective Pedagogical Strategies for Teaching Algebra: Discusses proven teaching methods that improve student understanding.
4. The Importance of Conceptual Understanding in Algebra: Highlights the benefits of emphasizing conceptual understanding over rote memorization.
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6. Parental Involvement and its Impact on Student Achievement in Math: Examines the crucial role of parents in supporting their children's math education.
7. The Impact of Implicit Bias on Student Outcomes in Mathematics: Discusses the subtle ways in which bias can affect student performance.
8. Data-Driven Instruction in Mathematics: A Practical Guide: Provides a step-by-step guide to using data to improve math teaching.
9. Measuring the Effectiveness of Educational Interventions: Explains various methods for evaluating the impact of educational programs.

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important aspect of mathematics, teaching mathematics, and learning mathematics. It has influenced mathematics curricula around the world, with calls for the teaching of problem solving as well as the teaching of mathematics through problem solving. And as such, it has been of interest to mathematics education researchers for as long as the field has existed. Research in this area has generally aimed at understanding and relating the processes involved in solving problems to students' development of mathematical knowledge and problem solving skills. The accumulated knowledge and field developments have included conceptual frameworks for characterizing learners' success in problem solving activities, cognitive, metacognitive, social and affective analysis, curriculum proposals, and ways to promote problem solving approaches.

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usability of education research and development (R&D). The panel identified three areas for focused R&D: development of teachers' mathematical knowledge used in teaching; teaching and learning of skills needed for mathematical thinking and problem-solving; and teaching and learning of algebra from kindergarten through the 12th grade.

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arlington algebra project: *Culturally Responsive Mathematics Education* Brian Greer, Swapna Mukhopadhyay, Arthur B. Powell, Sharon Nelson-Barber, 2009-05-20 At a time of rapid demographic change and amidst the many educational challenges facing the US, this critical new collection presents mathematics education from a culturally responsive perspective. It tackles the most crucial issues of teaching mathematics to an ethnically diverse school population, including the political dimension of mathematics education within the context of governmental efforts to improve achievement in school mathematics. *Culturally Responsive Mathematics Education* moves beyond a point of view that is internal to mathematics education as a discipline, and instead offers a broad perspective of mathematics as a significant, liberating intellectual force in our society. The editors of this volume bring together contributions from many of the leading teachers, teacher educators, researchers, scholars, and activists who have been working to reorient mathematics education in ways that reflect mathematics education as accomplished, first and foremost, through human interactions.

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arlington algebra project: *Supermath* Anna Weltman, 2020-09-01 Explore the hidden powers of math that shape us, influencing everything from our sense of justice to our perception of beauty. Archaeologists decoding ancient messages. Epidemiologists analyzing the spread of a contagious disease. African Americans seeking full enfranchisement in a society that has worked to exclude them. A family doing puzzles at the kitchen table. These scenarios seem to have little in common. But in fact, each of these groups is faced with a multifaceted challenge—and each is using math to solve it. In *Supermath*, popular author and educator Anna Weltman showcases the incredible power of mathematics when people apply it outside of the world of pure numbers, introducing it into the realms of science, politics, history, education, and art. Her stories share how math has protected us from war and disease, helped us communicate across time and space, and made the world a fairer and more beautiful place. But Weltman also warns us that dangers arise when the transformative might of numbers goes unchecked. Mathematics has been used to mistranslate records, silence indigenous communities, create gerrymandered voting districts, close the gates of higher education. Sometimes, math can blind those who wield it to its limitations, causing those who would deploy it to solve problems to instead create more. Drawing on history and current events, Weltman tackles five fascinating questions: Is math the universal language? Can math eliminate bias? Can math predict the next move? Can math open doors? And finally, What is genuine beauty? *Supermath* is an enlightening book that pursues complex lines of mathematical thought while providing a fascinating lens into global problems and human culture as a whole.

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aspect of feedback, including • Strategies to uplift and encourage students to persevere in their work. • How to formulate and deliver feedback that both assesses learning and extends instruction. • When and how to use oral, written, and visual as well as individual, group, or whole-class feedback. • A concise and updated overview of the research findings on feedback and how they apply to today's classrooms. In addition, the book is replete with examples of good and bad feedback as well as rubrics that you can use to construct feedback tailored to different learners, including successful students, struggling students, and English language learners. The vast majority of students will respond positively to feedback that shows you care about them and their learning. Whether you teach young students or teens, this book is an invaluable resource for guaranteeing that the feedback you give students is engaging, informative, and, above all, effective.

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mathematics education is an important concern in the history of the present. Since there is no doubt about the significant role of mathematics in almost every aspect of life, it means that all individuals regardless of sex, in any age range, and in whatever context need to be provided with an opportunity to become mathematically able. The publication of this Springer volume on equity in mathematics education is situated at a time when there is strong and sustained research evidence indicating the persistence of an equity gap in mathematics, which has now enabled the mathematics education community to engage in a discourse of access for all. The research studies that are reported and discussed in the volume have been drawn from an international group of distinguished scholars whose impressive, forward-looking, and thought-provoking perspectives on relevant issues incite, broaden, and expand complicated conversations on how we might effectively achieve equity in mathematics education at the local, institutional, and systemic levels. Further, the up-to-date research knowledge in the field that is reflected in this volume provides conceptual and practical outlines for mechanisms of change, including models, examples, and usable theories that can inform the development of powerful equitable practices and the mobilization of meaningful equity interventions in different contexts of mathematics education.

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- Understand and empathize with what fuels parents' anxieties and concerns
- Align as a school and set parents' expectations about what math instruction their children will experience and how it will help them
- Communicate clearly and productively with parents about their students' progress, strengths, and needs in math
- Run informative and fun family events
- support homework
- Coach parents to portray a productive disposition about math in front of their children

Educators, families, and students are best served when proactive, productive, and healthy relationships have been developed with each other and with the realities of today's math education. This guide shows how these relationships can be built.

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taught without radically reforming the ways the effects of that teaching are monitored. Among others, this volume addresses the issues of the specification of performance standards, the development of authentic tasks, the measure of status and growth or a combination, the development of psychometric models, and the development of scoring rubrics. The new models proposed in this book give teachers a wealth of nontraditional assessment strategies and concrete ways to obtain measures of both group and individual differences in growth.

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