Educational Development Associates, Inc.

ACALETICS®-- Math

A Research-Based
and
Results-Based Program

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May, 2005

ABOUT THE AUTHOR

Dr. Kimberly Anderson, Ph.D. has 14 years experience in the field of education. She has worked as an elementary school teacher in monolingual English and Spanish-English bilingual programs in Los Angeles, California. She has taught English as a Second Language in Brazil. She worked as a qualitative researcher at the Charles A. Dana Center at the University of Texas at Austin, and received her **Ph.D. in Anthropology with a focus on the anthropology of education from the University of Texas at Austin** in December, 2003. Her dissertation received the 2004 "Outstanding Dissertation of the Year Award for Research Excellence in Education" from the American Anthropological Association's Council on Anthropology and Education. She served as a school consultant and teacher coach around issues of equity, building learning organizations, standards-based education, data-based decision making and professional development with schools K-12 across California and in higher education. She has worked as a program evaluation specialist with nonprofit organizations in Los Angeles, California and Miami, Florida. As of June, 2005, she is a **Senior Policy Analyst working jointly with the Georgia State Department of Education and the Southeast Regional Vision for Education (SERVE) regional education laboratory** at the University of North Carolina, Greensboro.

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PROGRAM OVERVIEW

Educational Development Associates, Inc. is a complete educational service organization that has been providing resources and support to public and private schools in Florida and across the nation for over 19 years. *Acaletics* was created with the mission of improving student performance and closing achievement gaps for all students in mathematics. *Acaletics* is the registered trademark of Educational Development Associates, Inc. ***Acaletics ("academics" + "athletics")*** makes rigorous mathematical concepts and skills meaningful to students and teaches them that the same preparation needed to be a good athlete is also necessary to be a good student: **motivation, effort and practice**. *Acaletics* makes mathematics instruction more comprehensive, efficient and effective for educators by providing a system of innovative supplementary products and services including instructional materials, assessment and monitoring tools, on-site Professional Development support from an expert consultant, technology integration, and **proven instructional best practices** to ensure that "No Child is Left Behind." **The *Acaletics Math Curriculum Accelerator Package (M-CAP)*** is aligned to state and national standards and to state administered assessments. It is customized for each school using a data-based needs assessment, and is designed to make the most of the school's current staff and curriculum to achieve results.

7 Key Components of the *Acaletics M- CAP* are:

1. **Data-driven Instructional Decision-Making Model with Ongoing Assessment and Monitoring System**
2. **Effectively Aligned with State and National Standards, State-Adopted Textbooks and State Administered Assessments**
3. **Dynamic Student Performance-Based Grouping (SPBG) to Address the Needs of All Learners Equitably**
4. **Ongoing Professional Development On-site with Value-added, Expert EDA Consultant**
5. **Strengthen School-home Connections**
6. **Principal as a Instructional Leader**
7. **Proven Instructional Model and Best Practices**

RESEARCH BASE OVERVIEW

Research on *effort, cognition and learning* supports the *Acaletics* philosophy of building academic performance through motivation, effort and practice. The *Acaletics* philosophy of effort-based intelligence says that academic achievement is not predetermined by a fixed amount of genetic aptitude. Students can build ability in mathematics as athletes build ability in sports: through motivation, effort and practice. **Nationally recognized work at the University of Pittsburgh's Institute for Learning** provides insights into effective teaching based on decades of research on cognition and learning. As opposed to the idea that ability is inherited and hence performance predetermined, Resnick and Williams Hall (2000) discuss the paradigm of "effort-based" learning: Ability is created through certain kinds of research-based, time-proven efforts on the part of learners and educators. In a nutshell, "Smart isn't something you are, it's something you get." Their Principles of Learning stress approaches that can build student performance such as the cultivation of positive attitudes toward learning, rigorous and organized curriculum, active instructional conversations, clear expectations for learning, and scaffolded, or differentiated, instruction.

The 7 Key Components of *Acaletics* integrate the "*Principles and Standards for School Mathematics*" identified by The National Council of Teachers of Mathematics (NCTM). The NCTM Principles and Standards are based on a vast body of scientific research on the theory and practice of effective mathematics teaching (NCTM 2003). The Principles and Standards address the following areas, which are integrated throughout the 7 Key Components of *Acaletics* (NCTM 2000): *Equity, Curriculum, Teaching, Learning,*

Assessment, and Technology. They will be discussed as relates to each *Key Component* in the following pages.

Each Key Component of *Acaletics* is further anchored in *research on what works* for improving student achievement, closing achievement gaps, and teaching mathematics. This is described in the following pages.

KEY COMPONENT #1:

DATA-DRIVEN INSTRUCTIONAL DECISION MAKING MODEL WITH ONGOING ASSESSMENT & MONITORING SYSTEM

DESCRIPTION

The *Acaletics* program provides a **comprehensive system of assessment and progress monitoring tools** to help schools set their goals and make decisions about how to reach them, so that *all* children achieve success. When a school decides to partner with EDA the consultant performs a **needs assessment** based on the analysis of multiple sets of data (including state administered assessment data, the state-adopted textbook, the school Improvement Plan, interviews with administration and key staff members, and an *Acaletics* diagnostic assessment). The consultant then provides a **customized** system including a Scope and Sequence analysis, a Curriculum Pacing Plan, a Student Performance-Based Grouping Plan (see Key Component #3) and levelized instructional materials that enable teachers to align their instruction and use of the textbook to address state and national standards and state administered assessments effectively and efficiently. Monthly *Acaletics* assessments are then given, the results of which are reviewed in-depth by the principal and teachers to **monitor student progress and to make appropriate decisions** about instruction, Student Performance-Based Grouping, curriculum, teacher Professional Development and parent involvement. The *Acaletics* consultant also supports teachers and administrators in monitoring classroom instruction to ensure quality implementation of the curriculum and to provide feedback to teachers. Faculty routinely come together in Instructional Exchange

Sessions (IES's, see Key Component #4) to analyze teaching and learning data, collaboratively plan and problem-solve.

RESEARCH BASE:

National Council of Teachers of Mathematics identifies *assessment and the use of data* as a key research-based principle for equitable and excellent school mathematics instruction. NCTM (2000) states that assessment should be ongoing, based upon what students should know and be able to do, and be used as data to guide instruction (22, 23).

The following studies also identified the use of a data to drive instructional decisionmaking as a key best practice in high-performing schools and districts:

- ***The Florida Best Practices Study:*** The Council for Educational Change (CEC)[, Florida Atlantic University and Barry University studied diverse schools whose students obtained at least an FCAT overall score of Level 3 (CEC 2003).
- ***The National Center for Educational Accountability(NCEA) study of high-performing urban schools and districts:*** "High-performing" was measured by standardized state tests over 3 years, testing participation rates, consistent high-ranking compared to similar schools and meeting their No Child Left behind (NCLB) Annual Yearly Progress targets; they compared these to a control group of average performing schools and districts (NCEA 2004).
- ***The Center for Performance Assessment study of "90/90/90 Schools":*** 90/90/90 means more than 90% of students eligible for free and reduced lunch, more than 90% from ethnic

minorities, and more than 90% meeting or exceeding high academic standards according to independently conducted tests of academic achievement (Reeves 2000:188).

- ***A state Department of Education sponsored study of high-performing, high-poverty schools in Kentucky:*** Sample schools were selected based on 50% or more of students on free/reduced lunch; high scores on the state accountability index for minority students and students on free/reduced lunch; progress on the state test over time; and closing achievement gaps between low and middle-income students and between white and African-American students. A range of types and locations of schools, such as urban/rural and geographic areas. Using the state standardized school audit instrument, site visits, and comparison to similar but low-performing schools, researchers identified common characteristics that seem to contribute to high student performance. (Kannapel, Patricia J. and Stephen K. Clements 2005).
- ***National, longitudinal meta-analyses of research on schools and districts that improve student achievement*** (Schmoker 1999a, 1999b)
- ***A national review of research on effective practices for English Language Learners and all learners*** (Linquanti 2005).

KEY COMPONENT #2:

EFFECTIVELY ALIGNED WITH STATE AND NATIONAL STANDARDS, STATE-ADOPTED TEXTBOOK, AND STATE ADMINISTERED ASSESSMENTS

DESCRIPTION

Acaletics instructional materials and assessments are **tightly aligned to state and national standards and to the benchmarks addressed on state administered assessments**. EDA consultants also analyze how the **school's state-adopted textbooks** address the standards, and provide schools with a **customized, synthesized curriculum Scope & Sequence plan for each grade level**. This assists teachers in addressing all of the content and skills that students need to be successful while pacing instruction efficiently. It also facilitates **the identification of coordinated, targeted enrichment and intervention** activities for teachers, tutors, parents and volunteers who work with students. An aligned **Parental Syllabus** keeps parents informed about when their children are learning which concepts and skills so that they may support this progress at home.

RESEARCH BASE:

The National Council of Teachers of Mathematics (NCTM) identifies *an aligned curriculum* as a key principle for school mathematics, based upon a vast body of rigorous research about the theory and practice of mathematics teaching. An effective curriculum must be coherent, focused on important mathematical concepts, skills and processes, and well articulated (NCTM 2003: 15).

The following studies also identified the alignment of curriculum, standards and assessments to be a key practice in high-performing schools and schools that are closing achievement gaps:

- ***The Association for Supervision and Curriculum Development 2002 national study*** of 6 high-achieving districts (according to state accountability systems) with large numbers of disadvantaged students (Cawelti 2002).
- ***A state Department of Education sponsored study of high-performing, high-poverty schools in Kentucky:*** Sample schools were selected based on 50% or more of students on free/reduced lunch; high scores on the state accountability index for minority students and students on free/reduced lunch; progress on the state test over time; and closing achievement gaps between low and middle-income students and between white and African-American students. A range of types and locations of schools, such as urban/rural and geographic areas. Using the state standardized school audit instrument, site visits, and comparison to similar but low-performing schools, researchers identified common characteristics that seem to contribute to high student performance. (Kannapel, Patricia J. and Stephen K. Clements 2005).

- ***The National Center for Educational Accountability(NCEA) study of high-performing urban schools and districts:*** "High-performing" was measured by standardized state tests over 3 years, testing participation rates, consistent high-ranking compared to their similar schools and meeting their NCLB Annual Yearly Progress targets; they compared these to a control group of average performing schools and districts (NCEA 2004).
- ***A national meta-analysis of research*** on high-performing schools (Schmoker 1999b).

KEY COMPONENT #3:

DYNAMIC STUDENT PERFORMANCE-BASED GROUPING TO ADDRESS THE NEEDS OF *ALL* LEARNERS EQUITABLY

DESCRIPTION

Acaletics utilizes the strategy of Student Performance-Based Grouping **to maximize instructional time for *all* students**. Using ***Acaletics* monthly assessment tools alongside state standards-based assessments, norm-referenced assessments and teacher judgment**, students are grouped for instruction by current performance levels. Founded on the belief that intelligence and performance can be increased through motivation, effort, practice, and on social psychological theories of learning, *Acaletics* student grouping philosophy places students in the highest level group possible to push their achievement to the next level (i.e. places them in their "zone of proximal development") (Vygotsky 1962) . **Classroom teachers collaborate** to work with groups of students at the different levels. By general rule, struggling students are placed into smaller groups to allow more direct interaction with the teacher. The EDA consultant provides guidance for the principal and teachers to build capacity in data analysis techniques, in order to ensure that the Performance-Based Grouping plan maximizes student-teacher interaction, pacing and pedagogy for students at all levels and from diverse backgrounds. Key to the *Acaletics* philosophy, however, is that these groups are not static--students are not bound to a "high," "medium," or "low" group. **The groups are fluid end flexible**, seen as dynamic instructional stepping stones for rapid improvement, as *all* students are instructed towards mastery of the state and national

standards. Students may take individualized paths towards mastery through the groups and through utilization of **tutoring, enrichment and the *Acaletics* Math Acceleration Learning Lab**, but equitable mastery is expected for *all* students. This is consistent with research around the power of **differentiated instruction** (see Key Component #7), a proactive teaching-learning approach that utilizes flexible grouping, student-centered learning experiences, and multiple instruction and assessment strategies to harness the strengths and fortify the weaknesses of all students towards mastery (Tomlinson 2001).

RESEARCH BASE:

The **National Council of Teachers of Mathematics (NCTM)** identifies *addressing the needs of all learners equitably* as a key principle for school mathematics, based upon a vast body of rigorous research about the theory and practice of mathematics teaching and learning. Instruction must be tailored to the needs of students, and supplemental programs can play important roles in this. Teaching must challenge and support all students according to the particular needs (NCTM 2003: 12, 14, 17-19).

The following studies also identified the use of data based, flexible instructional grouping and interventions to be a key practice in high-performing schools:

- ***The Association for Supervision and Curriculum Development 2002 national study*** of 6 high-achieving districts (according to state accountability systems) with large numbers of disadvantaged students (Cawelti 2002).
- ***A best-evidence synthesis of research on the effects of ability grouping on the achievement of elementary school students in reading and math*** (Slavin 1987: 328).

- ***A review of research literature on the effect of student grouping and class size on student outcomes*** (Rice 1999).
- ***A longitudinal review of research on instructional differentiation strategies*** for effective teaching of diverse student populations (Tomlinson 2001).
- ***A longitudinal review of effective teaching strategies for English Language Learners*** (Herrell and Jordan 2004).
- ***A national review of research on effective practices for English Language Learners and all learners*** (Linquanti 2005).

KEY COMPONENT #4:

ONGOING PROFESSIONAL DEVELOPMENT ON-SITE WITH VALUE-ADDED, EXPERT EDA CONSULTANT

DESCRIPTION

Professional Development is a cornerstone of the *Acaletics* program. **It creates a seamless relationship between the theory and practice of effective instruction for all students**. Supported on-site by highly trained, experienced EDA consultants, **teachers, administrators, parents and others engage in activities designed to strengthen implementation and maximize outcomes**. Professional Development activities include **data analysis and workshops** on Key Components of the program. Consultants work with teachers in the classroom, **modeling effective instructional techniques** and observing and providing collegial feedback to teachers. Consultants, administrators and teachers meet for **Instructional Exchange Sessions** (IES) to collaboratively analyze teaching and learning data, plan, share best practices, problem solve, and strengthen their understanding of the concepts and skills students need to know and be able to do. These IES's are essential to the program, as collaborative study and planning are key to increasing teacher capacity and motivation. IES's are also essential to the program given that *Acaletics* promotes a **"Standard/Flex" approach**: 60% of the program is standardized according to state and national standards, state-adopted textbooks, state administered assessments (see Key Component #2) and proven instructional best practices (see Key Component #7). 40% of the program enables teachers to use *Acaletics* content and materials creatively to fit their own

and their students' needs and interests. Additionally, EDA consultants provide Professional Development for other school community members who impact the learning of students such as **curriculum specialists, paraprofessionals, parents and volunteers** (see Strengthen Home-School Connections Component #5). There is also access to an **unlimited *800* telephone support** for prompt responses to questions about the program.

RESEARCH BASE:

The National Council of Teachers of Mathematics (NCTM) identifies *effective teaching practices built through reflective practice and continuous Professional Development around content and pedagogy* as a key principle for school mathematics, based upon a vast body of rigorous research about the theory and practice of mathematics teaching. (2000: 17-19).

The following studies also identified continuous Professional Development including educator collaboration to be a key practice in high-performing schools:

- ***The Florida Best Practices Study:*** The Council for Educational Change (CEC), Florida Atlantic University and Barry University studied diverse schools whose students obtained at least an FCAT overall score of Level 3 (CEC 2003).
- ***The Third International Mathematics and Science Study,*** an international, comparative study of best practices around the globe (Stigler and Hiebert 1999, cited in NCTM 2000: 15).
- ***The Center for Performance Assessment study of "90/90/90 Schools":*** 90/90/90 means more than 90% of students eligible for free and reduced lunch, more than 90% from ethnic

minorities, and more than 90% meeting or exceeding high academic standards according to independently conducted tests of academic achievement (Reeves 2000:188).

- ***A state Department of Education sponsored study of high-performing, high-poverty schools in Kentucky:*** Sample schools were selected based on 50% or more of students on free/reduced lunch; high scores on the state accountability index for minority students and students on free/reduced lunch; progress on the state test over time; and closing achievement gaps between low and middle-income students and between white and African-American students. A range of types and locations of schools, such as urban/rural and geographic areas. Using the state standardized school audit instrument, site visits, and comparison to similar but low-performing schools, researchers identified common characteristics that seem to contribute to high student performance. (Kannapel, Patricia J. and Stephen K. Clements 2005).
- ***A national, longitudinal meta-analyses of practices in schools and districts that improve student achievement and close achievement gaps*** (Schmoker 1999a, 1999b).
- ***A national review of research on effective practices for English Language Learners and all learners*** (Linquanti 2005).
- ***The Successful Texas Schoolwide Programs Research Study***, looking at 26 schools in Texas that had high percentages of students on free or reduced lunch, received Title 1 funds, and had at least 70% of the students passing the reading and math sections of the Texas state administered assessment. Schools represented the demographic diversity of Texas and had low rates of exemption from testing. While no particular instructional program was found in common, a common *cultural* attribute found was a passion for

learning and growing that drove continual Professional Development for teachers and others at the school (Lein, Johnson, Jr. and Ragland 1996).

KEY COMPONENT #5:

STRENGTHEN SCHOOL-HOME CONNECTIONS

DESCRIPTION

The **participation of parents, custodians or guardians, and community volunteers is embedded in the *Acaletics* approach of creating an inclusive and collaborative environment** to nurture the success of all students. **Workshops** for these stakeholders (**multilingual** where necessary) are provided to familiarize them with the program. Consultants also provide training for these stakeholders on the actual content and skills students are learning so that parents and children are learning together. This increases home-school collaboration and strengthens student accountability for learning. In settings where many find parental involvement difficult to inspire, EDA often generates 500-600 respondents to their community workshops (Moreno and Carpenter 1998: 8). Consultants also advise teachers on **how to effectively work with parents** around improving student achievement. **Supplemental materials** are provided for adults in the home to use in working with students after school and during school breaks.

RESEARCH BASE:

The National Council of Teachers of Mathematics (NCTM) identifies *connecting knowledge to existing knowledge and experience* as a key principle for school mathematics, based upon a vast body of rigorous research about the theory and practice of mathematics teaching (2000: 20-21).

The following studies also identified strong home-school communication and collaboration to be a key practice in high-performing schools:

- ***The Florida Best Practices Study:*** The Council for Educational Change (CEC), Florida Atlantic University and Barry University studied diverse schools whose students obtained at least an FCAT overall score of Level 3 (CEC 2003).
- ***The Successful Texas Schoolwide Programs Research Study*** of 26 schools in Texas that had high percentages of students on free or reduced lunch, received Title 1 funds, and had at least 70% of the students passing the reading and math sections of the Texas state administered assessment. Schools represented the demographic diversity of Texas and had low rates of exemption from testing. While no particular instructional program was found in common, a common *cultural* attribute found was the inclusion of all stakeholders in the work of educating students and a feeling of family in the school community (Lein, Johnson, Jr. and Ragland 1996).
- ***A comprehensive review of research literature on effective schools and classrooms for English Language Learners.*** Effective schools and classrooms were identified through a variety of measures, including, but not always, quantitative data (August and Hakuta 1997: 170-185).
- ***A national survey of high-performing, high-poverty schools*** identified through discussions with the state and local education officials. Schools had 75% or more of the students qualifying for free or reduced lunch. Most of the schools in the study had scores above the 60th% on national achievement tests and 11 of the 21 scored above the 80%. Public and private schools in the sample (Carter 2000).

- ***A state Department of Education sponsored study of high-performing, high-poverty schools in Kentucky:*** Sample schools were selected based on 50% or more of students on free/reduced lunch; high scores on the state accountability index for minority students and students on free/reduced lunch; progress on the state test over time; and closing achievement gaps between low and middle-income students and between white and African-American students. A range of types and locations of schools, such as urban/rural and geographic areas. Using the state standardized school audit instrument, site visits, and comparison to similar but low-performing schools, researchers identified common characteristics that seem to contribute to high student performance. (Kannapel, Patricia J. and Stephen K. Clements 2005).
- ***A national review of research on effective practices for English Language Learners and all learners*** (Linquanti 2005).

KEY COMPONENT #6:

PRINCIPAL AS INSTRUCTIONAL LEADER

DESCRIPTION

Successful schools research has shown time and time again that improving student achievement and creating dynamic school communities depends upon the leadership of the principal. **EDA consultants work closely with administrators around all of the *Acaletics* Key Components** to ensure strong leadership for the program, the effective engagement of all stakeholders and the high achievement of *all* students in mathematics.

In particular, consultants support the Professional Development of principals (connecting to Key Component #4) around data analysis, the use of data in decision-making and monitoring instruction (particularly in regards to the Student Performance-Based Grouping process, Key Component #3). This builds what EDA has found in its over 15 years of successful work with schools to be elements of ***Principal Best Practices***--being an instructional leader, providing leadership based on data, holding one-on-one meetings with teachers about progress toward goals, participating in teachers' Professional Development, talking with students about testing, identifying students and teachers who need additional support, being visible around the school, and actually teaching a few classes.

RESEARCH BASE:

Based on the vast body of research and experience showing that principal leadership is crucial to student achievement, Florida (like other states) is implementing Principal Leadership Standards in 2005. These standards include playing a leadership role in

instruction, utilizing data to make decisions and monitor learning (see Key Component #1), providing Professional Development (see Key Component #4), building community/stakeholder partnerships (see Key Component #5), and supporting high expectations for diverse student bodies (see Key Component #7).

The following studies also identified the leadership of the principal, including particular practices discussed above, to be important features of high-performing schools:

- ***The Florida Best Practices Study:*** The Council for Educational Change (CEC), Florida Atlantic University and Barry University studied diverse schools whose students obtained at least an FCAT overall score of Level 3 (CEC 2003).
- ***A meta-analysis of 81 studies and research reviews of principal effectiveness leading to high student achievement***. Included are analyses of elementary and secondary schools, teachers and students, principals and students, teachers and principals, principals only, teachers only, and various other research unit combinations including school board members. All but 7 were conducted in the United States. More than 1/2 focus on low socioeconomic status minority students (Cotton 2003).
- ***National, longitudinal meta-analyses of practices in schools and districts that improve student achievement and close achievement gaps*** (Schmoker 1999a, 1999b)
- ***A national survey of high-performing, high-poverty schools*** identified through discussions with the state and local education officials. Schools had 75% or more of the students qualifying for free or reduced lunch. Most of the schools in the study had scores above the 60th% on national achievement tests and 11 of the 21 scored above the 80%. Public and private schools in the sample (Carter 2000).

KEY COMPONENT #7:

PROVEN INSTRUCTIONAL MODEL AND BEST PRACTICES

DESCRIPTION

The *Acaletics* program provides **an Instructional Model and corresponding research-based best practices that have proven effective** in engaging students with mathematics in ways that improve their understanding and performance. The Model is implemented in accordance with the school's and grade level's customized Curriculum Scope and Sequence and is designed to **maximize instructional time**. It frames math instruction time as follows: Approximately one half of the time block is devoted to the **"Instructional Focus"**--the content and skills currently being addressed in-depth. The other half of the time block is devoted to **"Math Club"**-- a period of **integrated, multiple skills exposure** that "flashes back" to skills/content previously taught and that "previews" skills/content soon to be taught. Math Club comprises a fast-paced, interactive set of activities thought of as a "math work out," where **students build fluidity in their mathematical thinking and their academic confidence** (an emotionally safe environment of intellectual risk taking is cultivated). The effective "best practice" instructional strategies used in both blocks of the *Acaletics* Instructional Model ensure that mathematical learning is relevant, accessible, and challenging yet achievable, which keeps children motivated and on task. **EDA consultants work closely with teachers to assist them** in implementing the Instructional Model and the best practices.

FUNDAMENTAL BEST PRACTICES UTILIZED:

High Expectations: EDA is built upon a foundational philosophy identified in high-performing schools: high expectations for *all* students including previously low-performing students, English Learners, racial/ethnic minority group students, and students at low socioeconomic levels. While students may proceed through individualized paths towards mastery of mathematics, e.g. participation in different Performance-Based Instructional Groups (see Key Component #3), tutoring or enrichment activities, etc., equitable mastery of the standards and high achievement on state administered assessments is expected for *all* students.

Multiple Intelligences: *Acaletics* ("academics" + "athletics") embeds the engagement of multiple intelligences throughout the Instructional Model. Students are encouraged to be active participants in the classroom through dynamic discussions, cooperative learning, kinesthetic movement, and varied modes of processing and expression of mathematical content/skills. There is an emphasis on the cultivation of higher order thinking skills. Technology is also utilized --students are taught to use calculators as both a problem-solving and a learning tool, and EDA consultants furnish a plan for using the school's existing technology in effective and efficient ways.

Differentiated Instruction: In both whole class instruction and in the Student Performance-Based Groups (see Key Component #3), EDA consultants and classroom teachers collaborate to create lessons that utilize differentiated instructional strategies. As such students with

differing strengths, needs and prior experiences can engage with the material in rigorous, developmentally appropriate and interesting ways. Continual opportunities for structured practice build fluidity and confidence. *Acaletics* also encourages teachers to integrate alternative assessment techniques that allow students to express their understanding in varied, appropriate ways such as portfolio assessment, journals, and authentic assessments. Test taking skills are practiced so that a simple lack of test taking strategies does not impede student expression of their knowledge and understanding on state administered assessments. *Acaletics* extension activities provide further opportunities for individualized practice and intervention/enrichment based upon assessment data. Homework materials, school break study packages, tutoring and extension activities are all aligned.

Engaging Students' Prior Knowledge and Real-life Experiences: *Acaletics* teachers inquire about and integrate students' previous knowledge and home experiences into the classroom. The class also regularly engages in "Reality Checks"--discussions about the real world applications of math skills and concepts. This makes mathematical problems relevant and interesting to diverse students and enables authentic formative assessment. These practices also connect to the work done with parents and community volunteers (see Key Component #5), synthesizing the lives students lead outside of school with those inside the classroom walls, intensifying students' ability to create and retain new knowledge.

Continue ⟶

RESEARCH BASE:

The National Council of Teachers of Mathematics (NCTM) principles for school mathematics are integrated throughout these *Acaletics* best practices (particularly the *Equity, Curriculum, Teaching, and Learning principles*) (NCTM 2000)**.**

The following studies also identified these instructional best practices in high-performing schools:

- ***A large body of research on cognition, learning, diversity and intelligence is embedded in the theory of Multiple Intelligences*** (Gardner and Wake 1996).
- ***A meta-analysis of research studies on effective instructional strategies for enhancing achievement for all students in all subject areas at all grade levels*** found these strategies to be powerful: reinforcing effort and providing recognition, homework and opportunities for practice, and cooperative learning (Marzano, Pickering, and Pollock 2001).
- ***A review of national research on effective education for at-risk students*** identified common pedagogical principles of contextualizing school learning in the experiences of home and community, engaging students in dynamic instructional dialogue, and challenging students toward cognitive complexity (Leone 1999); an experimental study of the use of these principles found they had significant impact on student performance (Doherty et al. 2003).
- ***A national, longitudinal meta-analysis of research on schools and districts that improve student achievement and close achievement gaps*** found a belief that all children can learn and high expectations for all learners to be a key practice (Schmoker 1999a).

- ***A corresponding national, longitudinal meta-analysis of research*** found a focus on higher-order thinking skills and the use of cooperative learning along with direct instruction to be common practices (Schmoker 1999b)
- ***A comprehensive review of research literature on effective schools and classrooms for English Language Learners*** (effective schools and classrooms identified through a variety of measures, including, but not always, quantitative data) identified the following attributes: instruction that values the linguistic and cultural backgrounds and experiences of students, going beyond basic skills to higher order thinking, and opportunities for practice (August and Hakuta 1997)
- ***Successful Texas Schoolwide Programs Research***: A study of 26 schools in Texas that had high percentages of students on free or reduced lunch, received Title 1 funds, and had at least 70% of the students passed the reading and math sections of the Texas Assessment of Academic Skills. Schools represented the demographic diversity of Texas and had low rates of exemption from testing. While no particular program was found in common, the following common *cultural* attributes were found: a focus on the academic success of every student, high expectations and no excuses for failure, and the involvement of everyone in the school community including parents (Lein, Johnson, Jr. and Ragland 1996)
- ***A state Department of Education sponsored study of high-performing, high-poverty schools in Kentucky:*** Sample schools were selected based on 50% or more of students on free/reduced lunch; high scores on the state accountability index for minority students and students on free/reduced lunch; progress on the state test over time; and closing achievement gaps between low and middle-income students and between white and

African-American students. A range of types and locations of schools, such as urban/rural and geographic areas. Using the state standardized school audit instrument, site visits, and comparison to similar but low-performing schools, researchers identified common characteristics that seem to contribute to high student performance. (Kannapel, Patricia J. and Stephen K. Clements 2005).

- ***The Florida Best Practices Study:*** The Council for Educational Change (CEC), Florida Atlantic University and Barry University studied diverse schools whose students obtained at least an FCAT overall score of Level 3, found that high expectations for all learners was universal across the schools (CEC 2003).
- ***The National Center for Educational Accountability study of high of -performing urban schools and districts:*** "High-performing" was measured by standardized state tests over 3 years, testing participation rates, consistent high-ranking compared to their similar schools and meeting their NCLB Annual Yearly Progress targets; they compared these to a control group of average performing schools and districts. This study found that students were provided with differentiated instruction as needed--especially interventions or acceleration based on assessment data (NCEA 2004).
- ***A national review of research on effective practices for English Language Learners*** found that customizing the learning environment to meet different needs, valuing and involving home cultures in learning, balancing basic and higher-order thinking skills, and opportunities for practice ***were effective for English Learners and all learners*** (Linquanti 2005).
- ***The Center for Performance Assessment study of "90/90/90 Schools":*** 90/90/90 means more than 90% of students eligible for free and reduced lunch, more than 90% from ethnic

minorities, and more than 90% meeting or exceeding high academic standards according to independently conducted tests of academic achievement (Reeves 2000) found that students were given multiple opportunities for practice and improvement as part of the assessment cycle.

RESULTS:

EVALUATIONS & RECOGNITION

The Educational Development Associates, Inc. *Acaletics* program has been formally evaluated. These evaluations used both quantitative and qualitative research methods.

- The program was found to be effective in providing a powerful instructional model and strategies for "boosting student performance and raising mean scores" on the FCAT by Wiseman-Livingston (2001: 46).
- It was found to support the integration of theory and practice in mathematics teaching, to offer "substantial classroom innovations" and a "strong staff development and support component" by Moreno and Carpenter (1998: 15).

The *Acaletics* program has also received media recognition and practitioner acclaim for its effectiveness. Samples:

- ***The Miami Herald*** (Farrell 1998) and USA Today (Henry 1999) reported that Little Havana's Riverside Elementary in Miami, Florida achieved the goal of removing itself from the state's "critically low-performing schools list" in 1998, a feat they had previously been unable to accomplish. A major factor in improving their mathematics achievement scores was the *Acaletics* program: 70% of the fourth-graders scored above the national median in math on the SAT that year after using *Acaletics,* compared with 27% the previous year. *Said one teacher, the Acaletics consultant "makes it fun for kids and teachers. He shows you things and you go, 'Ooooh! That's a great way to teach that!'"* The article highlighted the fact that, "As school systems nationwide sign multimillion-

dollar contracts with universities and educational companies to save struggling schools, Educational Development Associates signs individual schools at a fraction of the cost and often produces immediate results [.]" (Farrell 1998: 28A).

- As reported in ***The St. Petersburg Times Online--Tampa Bay*** (no author 2004), Moton, Eastside and Pine Grove Elementary Schools in the Tampa Bay, Florida area all used *Acaletics* to improve their students' performance in math. *"It's a way to make challenging math more accessible and more fun," said one teacher. "Acaletics has just simply opened a lot of students to see success they may not have seen."*
- ***The Orlando Sentinel*** (Hinman 1997) also described how the *Acaletics* program helped Ivey Lane Elementary School and Catalina Elementary School, in Orange County, Florida, make it off of the state's "low-performing schools list" by boosting their math scores.
- ***Education Week***, in an article about schools that went "From Worst to First," reported that Fessenden Elementary School in Ocala, Florida went from an “F” in the state's accountability rating to an “A” in one year. The *Acaletics* program was credited with the great gains they made in math on the state administered assessment (Scoon Reid 2001).

RESULTS:

STUDENT ACHIEVEMENT

Over the years, Educational Development Associates, Inc. has worked with over 130 schools. Results in raising student achievement and closing achievement gaps show usually within one year.

The individual school success stories are numerous. For example,

Twin Lakes Elementary (Miami-Dade, Florida) was a success story in closing achievement gaps for minority students and students in poverty. Twin Lakes serves a student population that in 2004 was 93% Hispanic, 4% White, 2% African-American, 1% American Indian, 1% Asian, and 1% Multiracial. Seventy-eight percent (78%) of the students were on free or reduced lunch. In 1999, only 20% of the school's students were achieving at or above grade level in Math. In 2004, 89% of its students performed at or above grade level in Math on the FCAT. This included over 85% of its students with disabilities who performed at or above grade level. Additionally, Twin Lakes was ranked the #1 Florida Title 1 elementary school in Math based on a combination of the "percent of students scoring Level 3 or above (High Performance) and Percent of Students Making Annual Gains in Math." In Miami-Dade County, among 201 elementary schools (non-Title 1 and Title 1), Twin Lakes had the second best "High-Performance Math Index," second only to Frank C. Martin Elementary (a pre-International Baccalaureate Magnet Program).

District-wide success stories also abound. For example,

Marion County (Florida) showed success with a set of schools across the District: The *Acaletics* program was used in 5 low-performing schools in 1999-2000. Between 1999 and 2000, all 5 schools increased their School Letter Grade on the state's accountability system (which runs from F at the lowest to A at the highest) by at least one letter (e.g. D to C). One school went from an F to an A (1 out of only 2 schools in Florida to do so). In April, 2003 the state Department of Education announced that Mr. James Warford became the K-12 Chancellor. This was based, in part, on his success in Marion County with these schools.

**Please contact Educational Development Associates, Inc. if you would like more detailed information about the impressive results that *Acaletics* has produced for student achievement.

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