Austin Independent School District
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DELL MATH ACADEMY PROGRAM, 2005-2006

PROGRAM DESCRIPTION

Algebra I has long been considered as a primary gatekeeper for high school graduation and college access. The timely and successful completion of Algebra I is essential to making sure students stay on track for high school graduation. The course is a prerequisite for additional mathematics courses necessary for graduation and college admission. Student achievement in mathematics also affects student performance on state mathematics assessments and college entrance exams.

In the Austin Independent School District (AISD), many 9th graders had difficulty meeting math achievement expectations during the 2004-2005 school year. Of the 9th graders enrolled in regular Algebra I (not honors or special education), 69% passed the course in the fall semester and 67% passed the course in the spring semester. That same school year, 56% of all 9th graders passed the Texas Assessment of Knowledge and Skills (TAKS) math test (Texas Education Agency, 2004-2005). Achievement gaps were found between various 9th grade student groups who took the TAKS math test: 34% of African American students, 39% of Hispanic students, and 56% of Native American students passed, compared with 83% of White students and 86% of Asian/Pacific Islander students. Additionally, 33% of 9th grade students identified as having an economic disadvantage and 15% of 9th grade students identified as limited English proficient (LEP) passed (AISD course grade and TAKS files, 2004-2005).

During the 2005-2006 school year, the Michael and Susan Dell Foundation (MSDF) continued supporting AISD's work toward improving students' mathematics achievement and provided $688,290 to Akins, Austin, Crockett, Lanier, and Travis high schools and to Dobie Middle School for a third school year. The Dell Math Academy (DMA), formerly known as Project SMART, provided intensive academic intervention services for selected math students. Ninth grade students received these services within a second math class, in which Algebra I content was reinforced and remediation of basic skills was embedded within the Algebra I content. Students at Dobie received mathematics tutoring during their math and elective classes. The tutoring provided at the middle school focused on the skills needed to master Algebra I content.

DMA participants were selected based on their mathematics performance in the previous school year. They had failed or had been at risk of failing their previous mathematics course and/or had failed or barely passed the TAKS math test in the previous school year. During the

2005-2006 school year, 388 ninth grade and 78 seventh and eighth grade students participated in DMA. Of these students, approximately 74% were Hispanic, 13% were African American, and 13% were White. Seventy-three percent of the students were identified as having an economic disadvantage and 26% were identified as LEP.

As part of its focus on the improvement of mathematics instruction, the DMA program supported professional development opportunities for teachers. Teachers examined issues related to mathematics achievement and explored instructional strategies to improve students' mathematical proficiency. DMA teachers and staff also continued the development of their own resource manual, which contained program objectives and curriculum modules aligned with the TAKS testing format. Forms and procedures were developed to monitor student progress and communicate specific performance information to the students and their parents.

METHODOLOGY

Evaluation Objectives

This evaluation report provides program stakeholders with information about the program's implementation outcomes. This information can be used to measure progress toward the program's articulated goals and to support ongoing decision making aimed at program improvement.

Data Collection

Evaluation staff from AISD's Department of Program Evaluation collected qualitative and quantitative data pertaining to clearly defined performance measures. A description of data sources and collection follows.

- **Student Enrollment and Achievement Data**: Student attendance rates; Algebra I (regular, non-honors) enrollment and passing rates; and TAKS scores and passing rates were used to determine student needs and describe academic outcomes.
- **Program Records and Notes**: Program implementation plans and requirements, budget records, and meeting notes provided detailed information pertaining to overall program implementation.

Data Analysis

Mixed methods were used to describe program implementation processes and identify issues associated with the effective implementation of the program. Descriptive statistics summarized the students' academic achievement results. Contextual analyses examined the program implementation information provided through program records and field notes.

RESULTS AND DISCUSSION

The examination of the DMA programs revealed that campus staff experienced successes and challenges in program implementation. Student outcomes varied across campuses.

Student Attendance

Overall, DMA students had higher attendance rates than did their grade-level peers. At the high school level, DMA students had an average daily attendance rate of 91.2%, whereas the average daily attendance rate for all 9th grade students was 89.1%. At Dobie, DMA students had an average daily attendance rate of 94.8%, whereas the average daily attendance rate for all 7th and 8th grade

students was 92.5% (AISD Student Attendance, 2005-2006).

TAKS Math Test

TAKS math test results were mixed for DMA students and their grade-level peers (Table 1). The percentages of DMA 9th grade students who passed the TAKS math test in Spring 2006 were lower than the percentages of all 9th graders who did so. Moreover, a comparison of test performance across the 8th and 9th grades indicated that more DMA students passed the TAKS math test in the 9th grade at Akins, Austin, Lanier, and Travis high schools than did so in the 8th grade (Table 2). At Dobie, the percentages of all 7th and 8th grade students who passed the TAKS math test increased between Spring 2005 and Spring 2006 (Table 3). Additionally, the percentages of 7th and 8th grade DMA students who passed the TAKS math test were higher than the percentages of all students who passed in these respective grade levels.

Although TAKS passing standards were the same for the 2005 and 2006 test administrations, caution should be used when interpreting these test results. The TAKS tests contained grade-level appropriate content, and passing percentages for each year represented different groups of students with varying levels of mathematics proficiency. Passing percentages were reported for all students taking the TAKS test each spring, and individual students may or may not have been enrolled in the same school throughout the year. Thus, it was difficult to determine whether the program had a specific influence on performance. The test results shown below simply provide a description of student performance.

Table 1: Percentage of 9th Grade Students Passing the TAKS Math Test, Spring 2005 and Spring 2006

	9th Grade DMA Student Cohorts					All 9th Grade Students				
Schools	N	2005 TAKS	N	2006 TAKS	% Point Change	N	2005 TAKS	N	2006 TAKS	% Point Change
Akins HS	96	23%	64	31%	+8	587	40%	431	43%	+2
Austin HS	95	30%	53	30%	0	585	66%	243	66%	0
Crockett HS	86	24%	66	13%	-13	475	45%	327	43%	-2
Lanier HS	105	21%	143	21%	0	368	31%	392	30%	-1
Travis HS	67	18%	62	18%	0	371	34%	303	38%	+4

Source: District TAKS files prepared by the Department of Program Evaluation, Spring 2006

Table 2: Percentage of Students Passing the TAKS Math Test in the 8th Grade and 9th Grade, Spring 2005 and Spring 2006

	DMA Students				All Students			
Schools	N	8th Grade 2005 TAKS	9th Grade 2006 TAKS	% Point Change	N	8th Grade 2005 TAKS	9th Grade 2006 TAKS	% Point Change
Akins HS	64	0%	31%	+31	431	43%	43%	0
Austin HS	53	13%	30%	+17	243	61%	66%	+5
Crockett HS	66	20%	13%	-7	327	39%	43%	+4
Lanier HS	143	2%	21%	+19	392	26%	30%	+4
Travis HS	62	7%	18%	+11	303	30%	38%	+8

Source: District TAKS files prepared by the Department of Program Evaluation, Spring 2006

Table 3: Percentage of Dobie Middle School Students Passing the TAKS Math Test, Spring 2005 and Spring 2006

		N	2005 TAKS	N	2006 TAKS	% Point Change
7th Grade	DMA Cohort	30	24%	42	75%	+51
	All Students	262	45%	330	50%	+5
8th Grade	DMA Cohort	43	38%	36	56%	+18
	All Students	246	36%	273	42%	+6

Source: District TAKS files prepared by the Department of Program Evaluation, Spring 2006

Math Course Grades

During the 2005-2006 school year, course passing results were mixed for DMA students and their grade-level peers. Algebra I course passing rates declined from the previous school year for both DMA and all 9th grade students. The percentage of DMA students passing Algebra I decreased at each school. The percentage of all 9th grade students passing Algebra I also decreased at the same schools, with Lanier being an exception (Table 4).

In contrast, the course passing outcomes were primarily in a positive direction for students at Dobie Middle School. In 2005-2006, all 7th and 8th grade DMA students passed their grade-level required math course, while 79% of all 7th graders and 85% of all 8th graders did so (Table 5). The percentages of DMA 8th grade and all 8th grade students passing their grade-level required math course increased from the previous school year.

Again, the course passing results shown below provide a basic description of student performance. Caution should be used when interpreting the results. Students in the different grade levels were taking different math courses. The 7th and 8th grade middle school students were taking the standard, grade-level required math courses that were prerequisites for Algebra I. Ninth graders were taking the more rigorous Algebra I course. The course passing percentages included different groups of students enrolled in the math courses each school year. These students may have had differing levels of mathematics proficiencies. Therefore, it was difficult to determine if the program had a specific influence.

Table 4: Percentage of 9th Grade Students Passing Algebra I, Spring 2005 and Spring 2006

Schools	DMA 9th Grade Cohort Students					All 9th Grade Students				
	N	Spring 2005	N	Spring 2006	% Point Change	N	Spring 2005	N	Spring 2006	% Point Change
Akins HS	96	90%	64	79%	-11	587	76%	431	65%	-11
Austin HS	95	72%	53	47%	-25	585	63%	243	58%	-5
Crockett HS	86	95%	66	54%	-41	475	77%	327	56%	-21
Lanier HS	105	62%	143	34%	-28	368	37%	392	40%	+3
Travis HS	67	80%	62	50%	-30	371	65%	303	53%	-12

Source: District course enrollment and grade files prepared by the Department of Program Evaluation, Spring 2006

Table 5: Percentage of Dobie Middle School Students Passing Math Course, School Years 2005 and 2006

		N	2005	N	2006	% Point Change
7th Grade	DMA Cohort	30	100%	42	100%	0
	All Students	262	87%	330	79%	-8
8th Grade	DMA Cohort	43	73%	36	100%	+27
	All Students	246	66%	273	85%	+19

Source: District course enrollment and grade files prepared by the Department of Program Evaluation, Spring 2006

Program Implementation

The examination of DMA program implementation revealed factors that may have affected program quality and resulted in mixed outcomes for students. First, the student selection process differed across the schools. In one school, students were assigned to the DMA class based on their TAKS performance only. This resulted in large numbers of students enrolled in the program without consideration of the other selection factors or student consent. In other schools, the students were selected based on their performance in math classes and on the TAKS test, along with student willingness to participate.

Second, the high schools were required to schedule DMA participants into class periods during the 2005-2006 school year. Students scheduled into the DMA after the beginning of the school year were pulled from their math lab or another elective class. In some cases, the class change required a complete daily schedule change. As a result, some of the program staff reported difficulty with student recruitment.

Third, highly qualified teachers were difficult to hire and retain. In 2005-2006, 8 of 12 DMA teachers returned to the program, leaving 4 full-time teaching positions open at 3 schools. Highly skilled, experienced mathematics teachers were difficult to find because most were placed in advanced mathematics teaching assignments. Two schools used short- and long-term substitutes and part-time teachers for DMA instruction for most of the school year.

Fourth, the DMA program coordinator was not included in teacher hiring and supervision tasks. The DMA program coordinator's role was limited to

communicating information about program expectations and to providing related professional development opportunities. School principals hired or selected DMA teachers without input from the program coordinator. Principals did not include the DMA program coordinator in DMA teacher performance evaluations.

Fifth, DMA instruction was not consistent across campuses. DMA teachers used different methods of mathematics instruction in their classrooms. Some DMA teachers did not use selected portions of the DMA curriculum modules even though ongoing professional development opportunities were provided by the DMA program coordinator.

Finally, overall program implementation differences were identified at Akins and Dobie, where DMA student attendance, TAKS passing rates, and course passing outcomes were better than they were at the other schools. DMA teachers at Akins and Dobie returned to the program after participating during the previous school year. In the spring, they began targeting students for recruitment for the fall, and they engaged in planning for the upcoming school year. They established close working relationships with the mathematics course teachers so that all of the involved teachers could align and support instruction. The teachers consistently used a variety of hands-on, interactive instructional strategies with contextual connections. The teachers at Dobie used an organized pull-out/drop-in model, rather than a scheduled class model. In the pull-out/drop-in model, the DMA teachers pulled their students from elective classes at regular intervals to provide one-on-one or small groups instruction based on identified student needs. DMA students were also encouraged and scheduled to drop into the DMA classroom for individual tutoring during the school day or before and after school hours for individualized instruction.

SUMMARY

Although conclusive results describing the effects of the DMA program could not be determined, the program did focus on meeting important student and teacher needs. Ongoing academic support was provided for students who were struggling to meet grade level mathematics requirements. The DMA program also supported teacher needs by providing resource materials to guide instruction and professional development opportunities to improve instruction.

The DMA program coordinator recognized challenges in the program implementation and began addressing those challenges for the 2006-2007 school year.

- To address staffing issues, the DMA program coordinator made staffing recommendations to principals at the end of the 2005-2006 school year. The program coordinator also asked to be included in future hiring decisions and teacher evaluation processes.
- To address instructional improvement issues, the DMA program coordinator scheduled ongoing professional development opportunities. During 2006-2007, teachers will receive training focused on using newly revised instructional modules that are better aligned with the Texas Essential

Knowledge and Skills (TEKS), assessing student needs, and monitoring student progress.

- To improve coordination between the regular math class and the DMA program, DMA teachers will be encouraged to meet and plan with their students' regular math teachers. The DMA coordinator will provide guidance for joint planning that will include goal setting, aligning instruction, and student progress monitoring.
- To address individual student needs and scheduling challenges, the program coordinator encouraged all DMA schools to adopt Dobie's pull-out/drop-in program implementation model.
- To provide more guidance for teachers and standardize program implementation, the DMA coordinator will help all DMA teachers develop student intervention plans. The plans will establish a weekly rotating schedule of student contact, identify instructional resources, determine strategies to be used in the classroom, and develop individual student monitoring systems.

RECOMMENDATIONS

Although implementation challenges were identified and addressed by the program coordinator, additional considerations must be taken into account with respect to the improvement and evaluation of the program. The following recommendations are provided for district level consideration.

- *Improve teacher hiring and supervisory practices.* If the DMA program coordinator is held accountable for the success of the program, he or she should be included in teacher selection and supervision. The program coordinator should collaborate with the campus administrative staff to select highly skilled teaching staff with experience and willingness to provide students with specialized instruction. To increase teacher accountability and program implementation fidelity, the program coordinator should share teacher evaluation responsibilities with campus administrators.
- *Consider expanding the DMA program at the middle school level.* Earlier mathematics intervention may yield greater success for students. The achievement gaps between student groups could be minimized before those students reach the high school level, thereby increasing the chances that all students are able to master Algebra I content, pass TAKS, and stay on-track to graduate.
- *Enhance the program evaluation design.* Even with the most diligent efforts, student academic outcomes cannot be expected to show marked progress within a single school year, especially when the students have varying levels of mathematics proficiencies. Interim measures of change should be employed. For example, additional information could be collected as part of the program evaluation to examine student attitudes and perceptions about mathematics content and related instruction. This information could help identify ongoing student needs and effective program practices.

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