



Question: Did mothers' completion of the ePromotora™ program influence children's prekindergarten (pre-K) academic achievement, school attendance, and personal development?

Response:

During the 2008–2009 school year, the Austin Independent School District (AISD) Office of Bilingual Education contracted with a community-based consultant to pilot the ePromotora™ program at four elementary campuses. The ePromotora™ program uses a train-the-trainers model in which Spanish-speaking mothers participate in a 6-week course about teaching early literacy skills and preparing their children for school; mothers who complete the program are then encouraged to share what they have learned with other parents in their community. The AISD ePromotora™ program has the following goals:

1. Assisting mothers with preparing their child for pre-K
2. Encouraging mothers to promote their children's academic success
3. Showing mothers how to access and use community resources (e.g., public libraries and schools)

Key Findings

- The ePromotora™ program had a 64% completion rate; of the 107 mothers who participated in the program in 2008–2009, 69 completed the program.
- The cost of the program was \$145 for each mother who completed the 6-week course.
- Of the mothers who completed the program, 26 (38%) had children who were 3-years-old in 2008–2009, and 21 (81%) of those children were enrolled in pre-K in the 2009–2010 school year.
- The students whose mothers completed the program had significantly higher first-semester grades in pre-K mathematics (math), pre-reading skills, and science/social studies than did other pre-K English language learning (ELL) students.
- Students whose mothers completed the program showed higher achievement across the first three 9-week periods in pre-K math, pre-reading skills, and science/social studies achievement than did the comparison ELL students.
- No significant differences in pre-K attendance or personal development skills were found between the students whose mothers participated in the ePromotora™ program and other ELL students.

Recommendations, Limitations, and Future Directions

- *Expand the ePromotora™ program.* Although many ELLs who enter AISD in the early grades exit bilingual education by the end of elementary school and go on to do as well as native English speakers in secondary school, about 25% of exited ELLs struggle in the later grades (Herrera & Malerba, 2009). Many ELLs are considered at educational risk

because their parents, especially those who originate from Latin America, have lower levels of education and socioeconomic status than parents born in the United States (Fortuny, Capps, Simms, & Chaudry, 2009). Programs targeting the educational attainment of low-income parents can increase parents' *and* children's education (Gennetian, Magnuson, & Morris, 2008). Although further research is needed to address the limitations outlined below, the pilot year results presented in this report are compelling and suggest that parent involvement programs, such as ePromotora™, could contribute to AISD ELLs' success in school.

- *Refine recruiting practices.* Because the ePromotora™ program is designed to promote the early literacy and numeracy skills of 3-year-olds, it is recommended that more mothers with children of this age be encouraged to participate. In the pilot year, 62% of participating mothers had children who were outside the target age range. This recruiting strategy resulted in both a limited number of children available for analysis in 2009–2010 and decreased the likelihood of immediate program impact in the families of participating mothers.
- *Conduct a cost-effectiveness analysis.* The 2008–2009 ePromotora™ program appeared to be a relatively inexpensive way of increasing academic achievement in pre-K; however, because of the small student sample size from the pilot year, a formal cost-effectiveness analysis was not conducted for this report. The number of mothers who participated during the 2009–2010 school year will provide sufficient data to estimate the cost per unit increase in student achievement among students who enroll in pre-K in Fall 2010.
- *Document intermediate and process factors.* One of the primary goals of the program was to empower low-income Spanish-speaking mothers to use community resources. Because we do not know whether or how frequently mothers used the library or other community resources, or how often they engaged in other learning activities with their children, we cannot say with certainty which program features were associated with students' school readiness and achievement. Future data collection should include measures of parent behaviors in the home and community that may be associated with positive program outcomes.
- *Incorporate an experimental design.* The findings presented in this report must be interpreted cautiously because the evaluation did not incorporate experimental design (i.e., random assignment of mothers to a treatment or control group). Although the program was associated with positive student academic outcomes, the evaluation design did not allow for the causal attribution of program participation. Also, we cannot eliminate the possibility of selection bias among participating mothers (i.e., the results could be explained by the fact that mothers who already were very effective at promoting their children's early school readiness participated in the program). The current evaluation does not permit investigation of the effect of the program on pre-K enrollment.

- *Incorporate a measure of academic growth.* Department of Program Evaluation (DPE) staff developed a proxy for growth across the school year by summing grades in each subject area across the first, second, and third reporting periods. Ideally, the association between mothers' participation in the program and student academic growth would be assessed by the same measure at three or more time points.

Rationale and Program Overview

A large body of research has documented the positive effects of maternal education on child outcomes (Attewell & Lavin, 2007; Currie & Moretti, 2003). These effects are especially powerful for low-income families (Gennetian et al., 2008). In the developing world and the United States, policy makers have begun investing in programs designed to promote low-income women's educational attainment, with the hope of breaking the intergenerational transmission of poverty and other forms of disadvantage. Because demographic inequalities build over time (Crosnoe, 2007; Pianta & Walsh, 1996), it is important that schools serving low-income and minority children start helping these children *before* they enter school. School readiness predicts later academic performance (Burger, 2010), and Mexican immigrant children tend to have lower levels of school readiness than do other children (Crosnoe, 2007; Hernandez, 2004).

The ePromotora™ program was based upon an early literacy/parent training curriculum, Promesas™, which was created by an Austin-based educational consultant, Jill Ramirez, who also lead all of the AISD ePromotora™ groups during the 2008–2009 pilot year. Although the goals of the ePromotora™ program did not include raising mothers' levels of education, the program empowered the mothers to think of themselves as their children's first teacher and to teach their children the literacy and math skills they will need to be successful in school. The program also showed mothers how to navigate the school system and access local resources (e.g., public library). This type of institutional knowledge is critical to immigrant mothers who come to the US with little schooling and who face language and cultural barriers. Mothers who completed the ePromotora™ program were given a certificate indicating they can teach early literacy and numeracy skills to young children. This certificate could potentially be used when applying for child-care employment, which could further empower mothers through the development of skills valuable in the workforce.

The ePromotora™ program was modeled after other *promotora*--the English translation of which is *advocate*--programs in which community members serve as educators, advocates, and liaisons between individuals and institutions. Promotora programs gained popularity in Latin America in the 1960s; most had the goal of raising community awareness and changing behaviors, mainly health and family-planning behaviors (Blum, 1990).

The AISD ePromotora™ program began in October 2008 and served mothers of students attending Wooldridge, Houston, Pickle, and Ridgetop Elementary Schools, each of which had high percentages of economically disadvantaged students and ELLs. The parent support

specialist at each participating school recruited mothers to participate if they met the following criteria: (a) had a child younger than 4 years of age, (b) had an older student enrolled at the school, and (c) were Spanish-speaking.

The AISD ePromotora™ program consisted of consultant-led presentations and group activities at the participating schools. Mothers met with the consultant once or twice a week for 2 hours at a time. During the training meetings, mothers learned many of the important early literacy and school readiness skills that they could teach their children (e.g., the letters of the alphabet). Mothers also had opportunities to create learning materials (e.g., books) for use at home. After 6 weeks, mothers who successfully completed the program participated in a graduation ceremony, were presented with a certificate of completion, and were certified to train other mothers in what they had learned.

Method

The purpose of this report is to examine the following research questions, which were developed in light of the goals of the ePromotora™ program.

1. Were the students of mothers who participated in ePromotora™ more likely to have been enrolled in pre-K than were students of nonparticipants?
2. Did students of mothers who participated in the ePromotora™ program have higher academic achievement (i.e., pre-K grades), fewer days absent from school, and greater personal development skills than did the students of nonparticipants?
3. Did students whose mothers participated in the ePromotora™ program have greater academic growth over the pre-K school year than did students whose mothers did not participate in the program?

Sample

During the 2008–2009 school year, 107 mothers participated in the ePromotora™ program. All of the mothers were Spanish speaking and lived in the attendance zones of the four participating elementary schools (i.e., Houston, Pickle, Ridgetop, and Wooldridge). Wooldridge had the largest group of mothers completing the program ($n = 30$); the second largest was Houston ($n = 19$); 12 mothers completed the program at Pickle, and eight at Ridgetop. Of the mothers who completed the program, 26 (38%) had children who were 3-years-old in 2008–2009, and 21 of these children enrolled in AISD pre-K in 2009–2010. The remaining 43 (62%) mothers had children who were ineligible to enroll in pre-K because they were either too young or too old. Demographic data on the mothers were not collected; however, Table 1 shows the demographic characteristics of the students who enrolled in pre-K in comparison with all other Hispanic ELL students from the 2009–2010 school year.

The students whose mothers completed the ePromotora™ program and who enrolled in AISD pre-K in 2009–2010 attended one of seven different AISD campuses: Lucy Read Pre-K Demonstration

School, and Ridgetop, Barrington, Houston, Pickle, Palm, and Kocurek Elementary Schools. The comparison sample comprised all other ELL pre-K students who attended these seven schools.

Analysis Plan

We formulated an analysis plan based on the research questions addressed in this report. Using AISD student records, we examined whether the eligible children of the mothers who completed the ePromotora™ program enrolled in pre-K during Fall 2009. To determine whether maternal program completion was associated with student academic achievement, we compared the pre-K grades of students whose mothers completed the program with grades from a sample of similar ELL students whose mothers were not in the program (Table 1). To understand whether these group differences were significant, DPE staff first computed *t*-test analyses (Gravetter & Wallnau, 1992). To investigate whether the sum of academic achievement over the first three 9-week reporting periods was statistically different for the two groups of students, DPE staff used growth curve models (SAS Institute, 2010).

The last step in our analyses involved computation of a multilevel growth curve model (SAS Institute, 2010). This statistical test allowed us to rule out the possibility that differences in the sum of academic achievement for students whose mothers completed the program and for students whose mothers were not in the program were due to school characteristics.

Table 1. Demographic Characteristics of Prekindergarten (Pre-K) Students Whose Mothers Participated in the ePromotora™ Program and Other Students From the Same Campuses

Characteristic	Students whose mothers participated in ePromotora™		All other limited English proficient (LEP) pre-K students from the same campuses	
	Number	Percentage	Number	Percentage
Gender				
Female	10	48%	1,162	47%
Male	11	52%	1,301	53%
Hispanic	21	100%	2,463	100%
Special education	0	0%	108	4%
Economically disadvantaged	21	100%	2,409	98%
LEP	21	100%	2,463	100%
Total	21	100%	2,463	100%

Source. AISD school records (ASTU, STXL, STXP, SNAPS), 2009–2010

Note. Although students in the comparison sample were slightly more likely to be in special education than were students whose mothers participated in the ePromotora™ program, the difference was not statistically significant, and therefore not used as a covariate in the group differences analyses.

Results

Enrollment in Pre-K

Although one of the primary program goals is to encourage mothers to enroll their children in pre-K, DPE staff were unable to determine if the program had the intended effect because we did not have a control sample of similar mothers with rising pre-K students who did not participate in the program. Because the study did not use a random assignment experimental design, we could not conclusively demonstrate that maternal participation in the ePromotora™ program had an impact on student pre-K enrollment.

Pre-K Grades

Throughout the 2009–2010 school year, pre-K teachers assessed students at 9-week intervals using the AISD pre-K report card rubrics. These rubrics are aligned to the state of Texas Pre-K Standards and the district’s Pre-K Instructional Planning Guides (IPGs), which highlight the student knowledge and skills that are the focus of instruction during each 9-week reporting period. AISD assesses pre-K students on the seven subject areas shown in Table 2.

Student knowledge and skills in each subject area were assessed using the following 4-point scale: (a) *needs improvement*, (b) *basic understanding*, (c) *skilled*, and (d) *advanced*. The points on this scale specify the degree to which the student understood or achieved the desired learning outcome. To determine if average pre-K grades differed between students whose mothers participated in ePromotora™ and demographically similar students whose mothers did not participate, DPE staff conducted *t*-tests (Gravetter & Wallnau, 1992).

Students’ grades from the first two reporting periods of 2009–2010 were averaged to create a composite grade for each of the seven academic subject areas and a total score across all subject areas. The *t*-tests showed that students of ePromotora™ had significantly higher average fall semester grades in each subject area and overall, compared with the students who were nonparticipants (Table 2).

Table 2. Average First Semester Grades of Prekindergarten (Pre-K) Students Whose Mothers Participated in the ePromotora™ Program and Other Students From the Same Campuses

Subject Area	Students whose mothers participated in ePromotora™		All other limited English proficient Pre-K students from the same campuses		Mean Difference
	Mean	STD	Mean	STD	
Pre-reading/concepts of print	3.33↑	0.53	2.87↓	0.72	0.47**
Oral language	3.19↑	0.46	2.83↓	0.72	0.36*
Writing	3.19↑	0.43	2.83↓	0.71	0.36*
Listening	3.05↑	0.50	2.71↓	0.69	0.34*
Mathematics	3.19↑	0.56	2.72↓	0.69	0.47**
Science/social studies	3.17↑	0.46	2.72↓	0.64	0.45**
English as a second language	2.40↑	0.53	1.99↓	0.68	0.41**
Average across subject	3.07↑	0.50	2.67↓	0.69	0.41**

Source. AISD school records (ASTU, ACLS, AMST, AGRL, AGRD), 2009–2010

Note. Asterisks indicate a statistically significant difference, * $p < .05$, ** $p < .01$, *** $p < .001$.

↑ Arrows indicate the direction of statistically significant differences.

Attendance Rates

We examined whether the number of absences accumulated during the Fall 2009 semester by the students whose mothers completed the ePromotora™ program was significantly different from that of the comparison sample. Although the comparison sample had slightly more absences than did the program sample, the difference was not statistically significant (results not shown). Follow-up analyses with a larger sample of participants may show statistically significant differences.

Personal Development

AISD pre-K teachers assess student skills that are believed to be necessary for student success in kindergarten and later grades. DPE staff averaged scores on each of the 14 personal development items to create a composite score for personal development in the first and second reporting periods in Fall 2009.

With two exceptions, *t*-tests did not indicate statistically significant differences in personal development between the students of mothers who completed the ePromotora™ and students whose mothers were not in the program. However, because so few students participated during the pilot year, DPE staff recommend examining the personal development outcomes

using the larger sample of students whose mothers participated during the 2009–2010 school year.

Table 3: Differences in Personal Development Ratings Between Prekindergarten (Pre-K) Students Whose Mothers Completed the ePromotora™ Program and Students in the Comparison Sample

Personal development	Students whose mothers participated in ePromotora™		All other limited English proficient pre-K students from the same campuses		Mean Difference
	Mean	STD	Mean	STD	
Responds to questions	3.08	0.47	2.74	0.76	0.33*
Appropriate gross motor control	3.23	0.47	3.02	0.62	0.21
Appropriate gross fine control	3.10	0.48	2.80	0.72	0.30
Adjusts to school routines	3.00	0.92	3.04	0.66	-0.04
Demonstrates healthy practices	3.15	0.61	3.04	0.67	0.11
Focuses on assigned tasks	2.95	0.60	2.87	0.72	0.39
Works productively in a large group	3.05	0.51	2.86	0.72	0.19
Works productively in a small group	3.50	0.54	2.98	0.66	0.52***
Follows directions	2.95	0.69	2.88	0.73	0.07
Demonstrates self-discipline	2.83	0.86	2.87	0.74	-0.37
Respects others	3.05	0.78	3.04	0.70	0.01
Responsible for own actions	2.88	0.94	2.94	0.74	-0.07
Works cooperatively	3.13	0.63	3.03	0.68	0.09
Solves problems	2.78	0.87	2.78	0.74	0
Average across outcomes	3.05	0.67	2.92	0.70	0.13

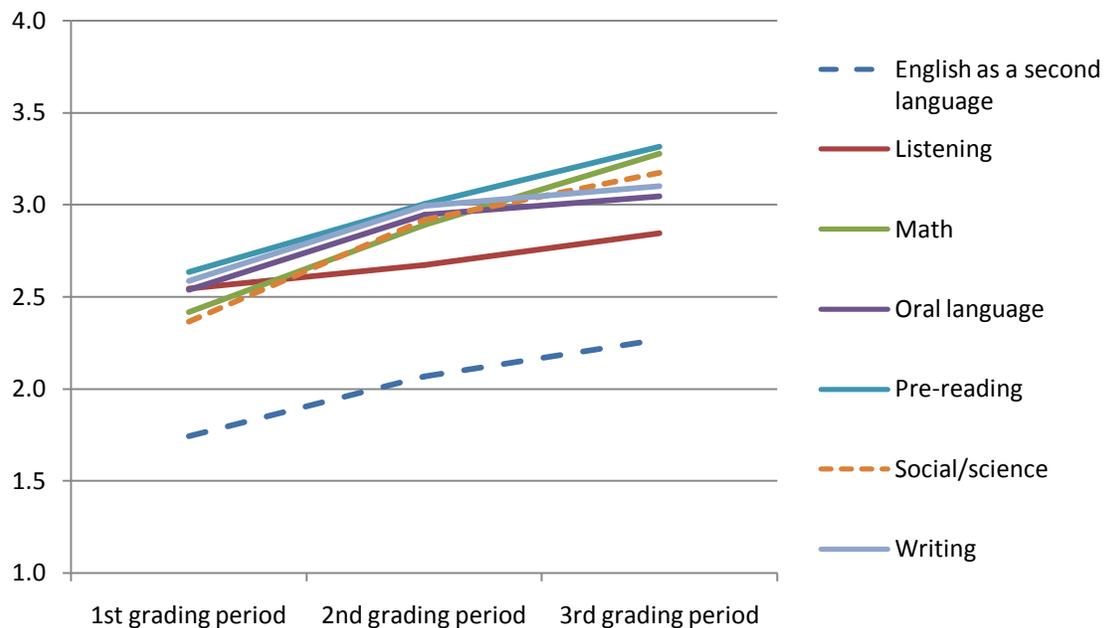
Source. AISD school records (ASTU, PKPERSONALDEV), 2009–2010

Note. Each of the personal development skills was rated on a scale from 1 (*rarely*) to 4 (*consistently*) at each 9-week grading period. Asterisks indicate a statistically significant difference between groups. * $p < .05$, ** $p < .01$, *** $p < .001$

Academic Growth

Because significant average differences were found for first semester grades between the students of mothers who participated in of ePromotora™ and the students of nonparticipating mothers, DPE staff examined the possibility that program participation also might be associated with student achievement over time. Figure 1 shows average student grades in each subject area for each of the first three reporting periods. Students' grades in English as a second language (ESL) were notably lower than those for the other subjects, which is not surprising given that the entire sample comprised ELLs; as in the other subject areas, students' ESL achievement did increase at each time point.

Figure 1. Average Prekindergarten (Pre-K) Grades in the First, Second, and Third Grading Periods, 2009–2010



Source. AISD pre-K records

Note. The figure summarizes the average grades in each subject for the entire sample, regardless of mothers' ePromotora™ program participation status.

Although Figure 1 indicates that, on average, students had increases in their grades over the course of the year, these scores did not equate to student growth because of the way student achievement was measured and recorded. During the 2009–2010 school year, the pre-K report card assessed different skills and abilities at each of the four 9-week grading periods. Therefore, DPE staff developed a proxy for student growth by creating a data set with students' grades for the first reporting period, the sum of the first and second reporting periods, and the sum of the first, second, and third reporting periods. These resulting scores represent the accumulation of

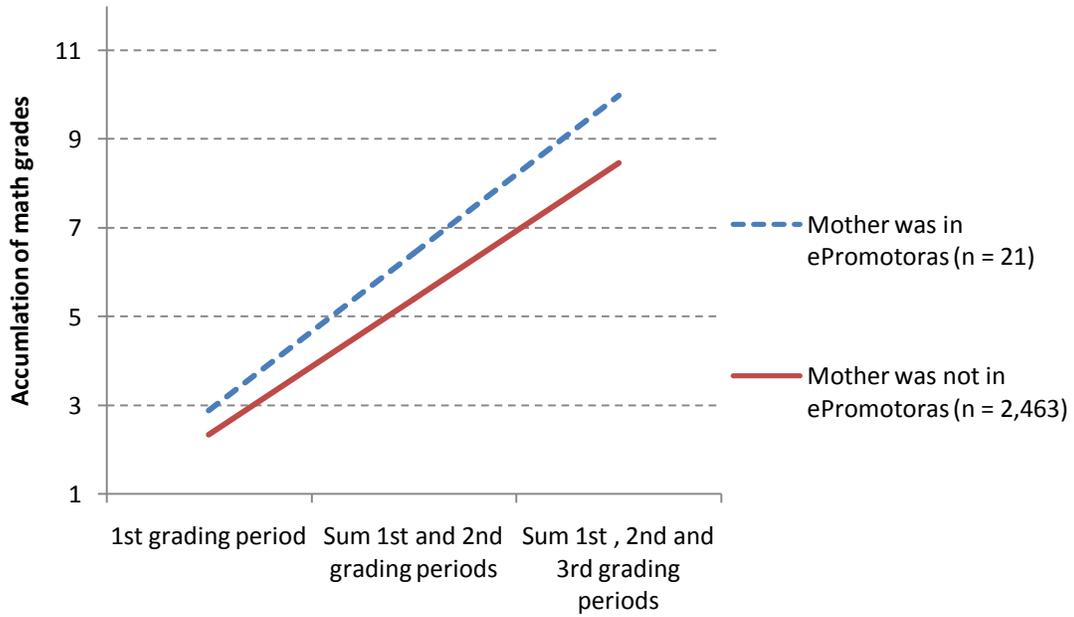
skills and abilities across the year; these scores were examined via a growth curve model (SAS Institute, 2010). This model permitted a statistical test of the differences in the students' initial skill level (i.e., intercept) and their accumulation of skills over time. To ensure school characteristics were not the determining factor in explaining students' achievement differences (i.e., to control for the non-independent nature of the data), a multilevel growth curve model was computed in which a school identification number was included as a school-level factor. We found the school-level factor was not significant and did not change the results presented in Figures 2 through 3.¹

Results indicated that students whose mothers had participated in the ePromotora™ program had higher grades in math (Figure 2), pre-reading (Figure 3), and science/social studies (Figure 4) in all three grading periods than did the students in the comparison sample. The initial (i.e., intercept) math, pre-reading, and science/social studies grades for the program sample also were higher than were those for the comparison students. Mothers' program participation was not significantly associated with initial performance or skill accumulation in the other pre-K subject areas (i.e., ESL, listening, oral language, and writing).

The results suggest mothers' participation in the ePromotora™ program may have made a positive contribution to students' initial math, pre-reading, and science/social studies performance and to their further accumulation of skills during pre-K. Even given the small size of the program participation sample, these pilot year results indicate that the ePromotora™ program should be continued, and these analyses replicated, to confirm what appears to be a promising method for engaging Spanish-speaking mothers in preparing their young children for school.

¹ The results from the unconditional multilevel models showed that the intra-class correlation (i.e., the ratio of between-school and within-school variance) was 0.27. This means most (73%) of the variation in student academic achievement was at the student level rather than at the school level.

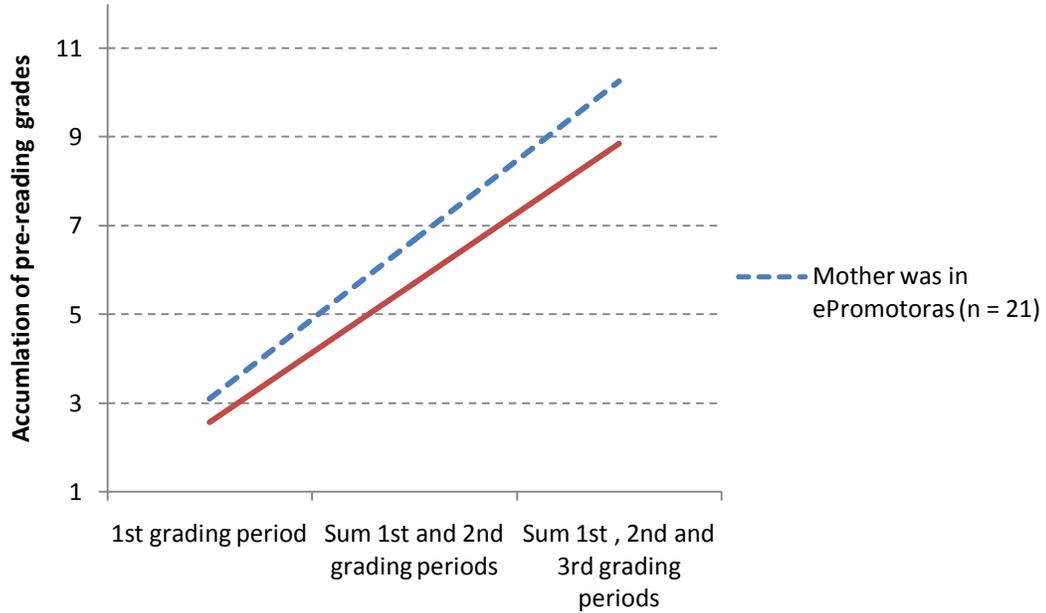
Figure 2. Skill Accumulation in Prekindergarten (Pre-K) Math Across the First, Second, and Third Grading Periods, 2009–2010



Source. AISD Pre-K records

Note. This figure represents students' skill accumulation in pre-K math across the first three grading periods. Grades at each time point were assigned on a scale of 1 to 4, such that the minimum score at the first grading period was 1 and the maximum sum of the first, second, and third reporting periods was 12.

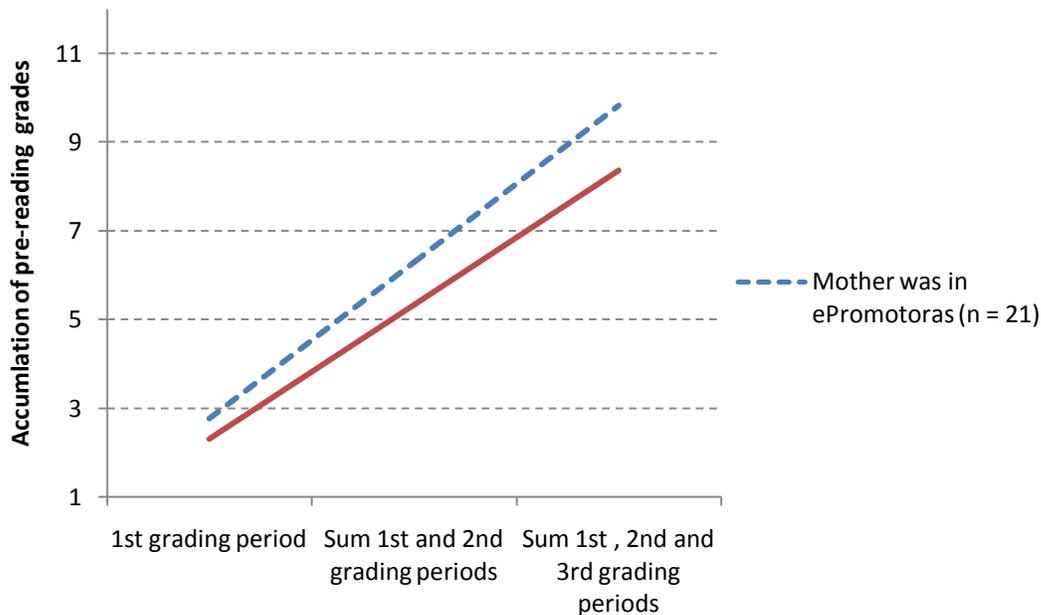
Figure 3. Skill Accumulation in Prekindergarten (Pre-K) Pre-reading Across the First, Second, and Third Grading Periods, 2009–2010



Source. AISD Pre-K records

Note. This figure represents students’ skill accumulation in pre-K math across the first three grading periods. Grades at each time point were assigned on a scale of 1 to 4, such that the minimum score at the first grading period was 1 and the maximum sum of the first, second, and third reporting periods was 12.

Figure 4. Skill Accumulation in Prekindergarten (Pre-K) Science/Social Studies Across the First, Second, and Third Grading Periods, 2009–2010



Source. AISD Pre-K records

Note. This figure represents students’ skill accumulation in pre-K math across the first three grading periods. Grades at each time point were assigned on a scale of 1 to 4, such that the minimum score at the first grading period was 1 and the maximum sum of the first, second, and third reporting periods was 12.

Fiscal Considerations

The AISD Office of Bilingual Education spent \$9,978 to serve 107 mothers in the ePromotora™ program during the 2008–2009 school year, resulting in an overall cost of \$93.25 per participant. However, to complete the program, mothers had to attend all sessions during the 6-week course period and complete certain tasks (e.g., obtaining a library card, creating a book for their child), resulting in an adjusted cost of \$145 per mother who completed the program. Table 4 shows the distribution of program expenditures.

Table 4. Expenditures for the ePromotora™ Program, 2008–2009

	Dollar amount	Percentage of total funds
Contracted consultant	\$9,900	99%
Materials	\$78	1%
Total	\$9,978	100%

Note. All amounts are rounded to the nearest dollar.

Due to time constraints, we could not conduct a cost-effectiveness study of the 2008–2009 program. A review of the literature on the effects of pre-K, however, shows attending pre-K lowers the risk of grade retention and dropout (Barnett, 2004). A recent study found dropouts will cost the state of Texas \$6 billion to \$10.7 billion over the course of the dropouts' lifetimes (Alexander, 2009). The low cost of the ePromotora™ program, coupled with the potentially positive results related to student academic achievement and the prospective savings from dropout prevention, makes a compelling case to expand the program to serve more mothers.

Conclusions, Recommendations, Limitations, and Future Directions

Findings suggest students whose mothers completed the ePromotora™ program began pre-K with more math, pre-reading, and science/social studies knowledge and skills than did the comparison sample of students whose mothers did not participate in the program. The findings also suggest that the students whose mothers completed the ePromotora™ program were more successful in pre-K than were the comparison students because the students of participating mothers also accumulated more skills in math, pre-reading, and science/social studies during pre-K than did students of nonparticipants.

These preliminary results from the pilot year suggest that the ePromotora™ program met its goals of (a) assisting mothers with preparing their child for pre-K; (b) encouraging mothers to promote their children's academic success; and (c) showing mothers how to access and use community resources (e.g., public libraries and schools). However, in addition to the very small sample of students available for analysis, the study had several important limitations. These limitations and DPE staff recommendations are outlined as follows:

- *Refine recruiting practices.* Because the ePromotora™ program is designed to promote the early literacy and numeracy skills of 3-year-olds, it is recommended that more mothers with children of this age are encouraged to participate. In the pilot year, 62% of participating mothers had children who were outside the target age range. This recruiting strategy resulted in both a limited number of children available for analysis in 2009–2010 and the likelihood of limited immediate program impact in the families of participating mothers.
- *Conduct a cost-effectiveness analysis.* The 2008–2009 ePromotora™ program appeared to be a relatively inexpensive way of increasing academic achievement in pre-K; however, because of the small student sample size from the pilot year, a formal cost-effectiveness analysis was not conducted for this report. The number of mothers who participated during the 2009–2010 school year will provide sufficient data to estimate the cost per unit increase in student achievement among students who enrolled in pre-K in Fall 2010.
- *Document intermediate and process factors.* One of the primary goals of the program was to empower low-income Spanish-speaking mothers to use community resources. Because we do not know whether or how frequently mothers used the library or other

community resources or how often they engaged in other learning activities with their children, we cannot say with certainty which program features were associated with students' school readiness and achievement. Future data collection should include measures of parent behaviors in the home and community that may be associated with positive program outcomes.

- *Incorporate an experimental design.* The findings presented in this report must be interpreted cautiously because the evaluation did not incorporate an experimental design (i.e., random assignment of mothers to a treatment or control group). Although the program was associated with positive student academic outcomes, the evaluation design did not allow for the causal attribution of program participation. Also, we cannot eliminate the possibility of selection bias among participating mothers (i.e., that the results could be explained by the fact that mothers who already were very effective at promoting their child's early school readiness participated in the program). The current evaluation did not permit investigation of the effect of the program on pre-K enrollment.
- *Incorporate a measure of academic growth.* DPE staff developed a proxy for growth across the school year by summing grades in each subject area across the first, second, and third reporting periods. Ideally, program impact on student academic growth would be assessed by the same measure at three or more time points.

In addition to conducting an experiment to investigate the effects of the ePromotora™ program, cost-effectiveness studies should be conducted. In 2009–2010, the ePromotora™ program was funded by Title IIIA and American Recovery and Reinvestment Act of 2009 (ARRA) funds. The 2009–2010 program spent substantially more money per mother participant than what was spent per mother in the 2008–2009 program. To determine whether the benefits (i.e., student enrollment in AISD pre-K and student academic achievement) outweigh the costs, a full cost-effectiveness analysis should be conducted.

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