MEMORANDUM November 15, 2013

TO: Board Members

FROM: Terry B. Grier, Ed.D.
Superintendent of Schools

SUBJECT: **USING PREDICTIVE ANALYTICS TO IDENTIFY ACADEMIC PERFORMANCE AMONG MAGNET SECONDARY STUDENTS PROGRAM EVALUATION, 2012–2013**

CONTACT: Carla Stevens, (713) 556-6700

This study examined the effect of participation in science, technology, engineering, and math (STEM) programs compared to non-STEM programs on graduation, academic achievement, and four-year college participation in two cohorts of students who enrolled in the programs in ninth grade, remained in the program for four consecutive years until graduation (persistent STEM), and immediately enrolled in college following graduation (seamless college enrollment). The two cohorts were established based on enrollment as first-time 9th graders in 2007–2008 (Class of 2011) and in 2008–2009 (Class of 2012). In addition, the study examined four-year college enrollment of students who enrolled in Magnet programs at ninth grade. The Magnet Department identified 39 Magnet programs with clearly-defined STEM themes. Twenty secondary level schools were designated as STEM Magnet schools and 28 were designated as non-STEM comparison schools.

Among the most notable findings was students in STEM Magnet programs in both cohorts had higher graduation rates and outperformed the non-STEM Magnet student sample in math and science relative to course grades and attaining Texas Assessment of Knowledge and Skills (TAKS) math and science “commended” status. “Commended” was considered a college success indicator in this study. Moreover, the most important predictors of seamless college enrollment and attaining “commended” status on the TAKS math test were Stanford 10 performance at eighth grade in reading, math, and science.

Administrative Response: The HISD Magnet Department will strengthen middle schools in STEM disciplines through unique and innovative programs that have direct ties to industries that are unique to Houston. This approach will heighten students’ awareness of STEM career fields and Magnet opportunities that exist at the high-school level to prepare them for those fields. In addition, the Magnet Department will explore avenues to effectively message STEM Magnet programs with the goal of reducing underrepresentation of females and minorities in STEM-career fields.

Should you have any questions or require any further information, please contact me or Carla Stevens in the Department of Research and Accountability, at 713-556-6700.

Terry B. Grier
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TBG/CS:vh

cc: Superintendent’s Direct Reports
Chief School Officers
School Support Officers
David Wheat
Lupita Hinojosa
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RESEARCH

Educational Program Report

USING PREDICTIVE ANALYTICS TO IDENTIFY ACADEMIC PERFORMANCE AMONG MAGNET SECONDARY STUDENTS 2012-2013

DEPARTMENT OF RESEARCH AND ACCOUNTABILITY
HOUSTON INDEPENDENT SCHOOL DISTRICT

2013 Board of Education

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USING PREDICTIVE ANALYTICS TO IDENTIFY ACADEMIC PERFORMANCE AMONG MAGNET SECONDARY STUDENTS 2012–2013

Executive Summary

Magnet schools are distinctive, theme-based educational programs designed to capture students' interests, talents, and needs. Magnet programs in the Houston Independent School (HISD) are structured around five essential elements or "pillars" for an effective Magnet school system: (1) diversity, (2) distinctive curriculum, (3) improved student achievement, (4) specialized teachers, and (5) unique community partnerships. The Magnet Schools of America benchmarks Magnet schools against these five pillars (Magnet Schools of America, 2013).

HISD has long purposed quality Magnet programs that engage students in the learning process in order to promote higher academic achievement (U. S. Department of Education, 2004). Magnet schools with STEM themes offer an attractive option to shape students' "intellectual development, opportunities for future study and work, and choices of career" (National Research Council, 2011, p. 1).

This study examined the effect of STEM and non-STEM program participation on graduation, academic achievement, and four-year college participation in two cohorts of students who enrolled in programs in ninth grade, remained in the program for four consecutive years until graduation (persistent STEM), and immediately enrolled in college following graduation (seamless college enrollment). The two cohorts were established based on enrollment as first-time 9th graders in 2007–2008 (Class of 2011) and in 2008–2009 (Class of 2012). In addition, the study examined four-year college enrollment of students enrolled in Magnet programs at ninth grade. The Magnet Department identified 39 Magnet programs with clearly-defined STEM themes. Twenty secondary level schools were designated as STEM Magnet schools and 28 were designated as non-STEM comparison schools. The evaluation focused on the following:

- High-school graduation rates,
- Math and science performance,
- College success indicator, and
- Seamless college enrollment.

Highlights

- The graduation rates of Magnet students who persisted in STEM schools from ninth grade until graduation (4 years later) in the Class of 2011 and the Class of 2012 exceeded the graduation rate of Magnet students in non-STEM schools by 2.1 and 4.5 percentage points, respectively.

- Math and science achievement showed persistent Magnet STEM students in the Class of 2011 and the Class of 2012 outperformed their non-STEM counterparts on the eleventh grade TAKS science and math tests.

- The percentage of persistent Magnet STEM students in the Class of 2011 who scored "commended" on TAKS (college success indicator) was 22 percentage points higher in math and 16 percentage points higher in science than the persistent non-STEM comparison group.

- Persistent STEM students in the Class of 2011 were more likely to seamlessly enroll in a 4-year college following graduation than persistent non-STEM students included in the study.

- Logistic regression modeling based on students in the Class of 2011 found that Stanford 10 percentile ranks at eighth grade in math, reading, and science, followed by Magnet status at ninth grade were among the most important predictors of 4-year college enrollment.

- Logistic regression modeling found that enrollment in a Magnet school at ninth grade for the Class of 2011 made a statistically significant contribution toward students achieving at the "commended" level on the TAKS mathematics test. Other variables that made large contributions to students scoring "commended" were students' at risk and gifted/talented status, and 8th-grade mathematics course grade. Being Asian and African American, respectively, compared to other ethnicities was revealed to be the most important predictor of students achieving at the "commended" level on TAKS math test.

Recommendations

1. The HISD Magnet Department should continue to promote student participation in Magnet schools, particularly with a STEM focus, in order to enhance math and science achievement and seamless college enrollment of students in 4-year colleges. There was evidence in this study that STEM students outperformed students in other types of Magnet programs in these areas.

Administrative Response

The HISD Magnet Department will strengthen middle schools in STEM disciplines through unique and innovative programs that have direct ties to industries that are unique to Houston. This approach will heighten students' awareness of STEM career fields and Magnet opportunities that exist at the high-school level to prepare them for those fields. In addition, the Magnet Department will explore avenues to effectively message STEM Magnet programs with the goal of reducing underrepresentation of females and minorities in STEM-career fields.

Introduction

For more than a decade, urban educational policy and research has been driven by continuous efforts to comprehend achievement gaps that exist among student groups. Efforts to understand trends have triggered education reform models, such as the effective schools movement, school restructuring, school choice, and privatization plans (Balfanz, 2000; Beckar & Luthar, 2002). Magnet programs are among the varied educational school choice options offered to K-12 students in the Houston Independent School District (HISD). Magnet programs are designed around specialized themes to stimulate students' interests, talents, and needs relevant in today's society (HISD, Magnet Department, 2013). Teachers receive specialized training in the field of study based on program themes. An ethnically-diverse student body is sought to enhance the education of every student. Strong collaborations are built with community and business establishments to provide real-world perspectives.

HISD supports three Magnet program models. *Schoolwide Programs (SWP)* are specialized programs that are added on to the school's regular curriculum. Every student in these schools receives instruction in the specialty area taught by teachers qualified in that area. *Separate and Unique School (SUS)* offer a unique curriculum and single educational focus for all students attending these schools. Every student in a *SUS* is a transfer student since this type of school has no attendance zone. *School-Within-A-School Magnet*s *(SWAS)* provide instruction in a specialized area to a specific group of students in an existing school. Although these students meet separately for the specialty classes, they may join the rest of the student body for studies not related to the area of specialization (HISD, Magnet Department, 2013).

Literature Review

Magnet schools originated in the 1960's as a strategy for school desegregation, racial diversity, parental choice, socioeconomic diversity (Frankenberg & Siegel-Hawley, 2011), and educational inequity (Betts el al., 2006; Bifulco, Cobb & Bell, 2008; Gamoran, 1996). School desegregation, mandated by the Supreme Court decision on Brown v. Board of Education, was pivotal in the creation of magnet programs as school districts retained white students to improve racial balance (Metz, 2003). While Magnet schools initially focused on reducing racial isolation, school districts have also found the need to accommodate the advancement of all students by offering "superior" public sector educational options, even in schools of primarily one race (Waldrip, 2013, p. 1).

Coleman (1990) argues that schools with specially-focused missions are needed to help overcome family and community breakdowns often found in inner-city, urban communities. As students engage in a common mission, they may form strong social ties. Magnet schools can serve as a focal point to build communities, teachers, and students, while reinvesting in social capital.

Diverse schools are believed to affect personal academic levels and the distribution of academic achievement within school settings (Clotfelter, 2002). Gamoran's (1996) compared student achievement in 48 magnet schools to achievement in comprehensive public schools, Catholic schools, and secular schools using National Educational Longitudinal Study (NELS) data. The researcher noted that "public magnet schools' achievement was higher than that in public comprehensive schools" in math, science, reading, and social studies" (p. 45). Moreover, effective Magnet programs must be equipped to prepare teachers and school leaders through specialized professional development experiences that not only address their own academic needs, but socio-emotional and developmental issues that students encounter as they strive to function in more academically-challenging school settings (Carnegie Council on Adolescent Development, 1995; Cowen et al., 1996).

The evolution of STEM schools in the United States was influenced by the desire to stay ahead of global competitors (Mean, Confrey, House, Bhanot, 2008) while providing a “pipeline” for “science elites”. STEM schools “do not have to be highly selective in terms of prior achievement or aptitude as measured by an entrance examination. Rather, strong teaching and student effort can prepare students from diverse backgrounds for STEM majors in college” (Confrey, and House, & Bhanot, 2008, p.9).

With support from the National Science Foundation, the Committee on Highly Successful Schools or Programs for K-12 STEM Education was developed to explore what makes STEM education work and effective. The National Research Council’s Committee (2011) reported that to support effective K-12 STEM education, “districts should devote adequate instructional time and resources to science in grades k-5”, which is an “important foundation that can stimulate students’ interest in taking more science courses in middle school and high school, and possibly in pursuing STEM disciplines and careers.” (p. 27). As a follow-up, the Council identified goals for monitoring progress toward successful K-12 STEM education, including increase science literacy for all students. This could be accomplished by examining the number of courses students take in math and science during high school, and determining whether these courses reflect a coherent sequence in math and science. The College Board considers math performance as a college success indicator (College Board, 2007). Thus, more directed focus on math may be of particular benefit to student as they progress through secondary school and to college.

Methods

Data Collection and Analysis

Sample

- STEM and non-STEM cohort assignment was based on lists from the HISD Magnet Department. The study sample consisted of students in 20 STEM and 28 non-STEM secondary level schools. (See **Appendix A** for lists of STEM and non-STEM schools.)
- Students identified as the Class of 2011 were first-time HISD ninth graders in 2007–2008 and students identified as the Class of 2012 were first-time HISD ninth graders in 2008–2009. For the Class of 2011, 747 students were included in the persistent STEM Magnet cohort and 1018 students were identified in the non-STEM Magnet cohort. The Class of 2012 consisted of 853 STEM Magnet students and 892 non-STEM Magnet students.
- Magnet designation was confirmed each year, beginning the year students entered ninth grade throughout their stay in high-school for four consecutive years.
- The first-time ninth-grade status was retrieved from HISD’s Chancery data system.
- Graduates were defined as students who graduated within four years of entering ninth grade in HISD. Non-graduates were students who did not achieve graduation status within four consecutive years in HISD.
- The study sample designated as persistent STEM Magnet students were enrolled in a STEM Magnet school throughout their stay in high school. Students in the persistent non-STEM comparison group were enrolled in a non-STEM Magnet school throughout their stay in HISD. Students did not have to remain at the same campus, but did have to attend a campus that was designated as STEM or non-STEM comparison to be considered as persistent in the respective program.

Variables of Interest

- Student demographic characteristics of ethnicity, free and/or reduced lunch status, gender, limited English proficient (LEP), and gifted/talented (G/T) program participation were extracted from the Public Enrollment Information Management System (PEIMS) at ninth grade.

- Mean science and math grades were calculated using grades students earned in math and science courses from ninth grade until graduation.
- College enrollment for all students in the Class of 2011, extracted from the National Student Clearinghouse (NSC) database, identified seamless enrollment in a 4-year college. The database was submitted to HISD by NSC in spring 2012. College enrollment data for the Class of 2012 were not available at the time of this study.
- Stanford 10 percentile ranks measured students' science, reading and math performance at eighth grade as an academic predictor variable for 4-year college enrollment and "commended" status on TAKS.

Predictive Modeling

- Logistic regression was conducted using IBM SPSS Modeler to determine the impact of a set of predictor variables on (1) 4-year college enrollment after graduation and (2) TAKS math "commended" performance in eleventh grade, considering Magnet school enrollment. The fixed demographic predictor variables were ethnicity, gender, ninth grade at-risk status, and ninth grade free and/or reduced lunch status. Academic predictor variables were selected based on the premise that these variables were good indicators of student performance prior to entering ninth grade. They were eighth grade math course grades, eighth grade science course grades along with Stanford 10 eighth grade reading, math, and science percentile ranks.
- The model predicting 4-year college enrollment after graduation was developed using split half reliability measure on the Class of 2011 data. The model was tested on the full Class of 2011. The model could not be tested on the Class of 2012 because NSC data were not available at the time of this report.
- The model predicting math "commended" performance was developed using the Class of 2011 data.

Data Limitations

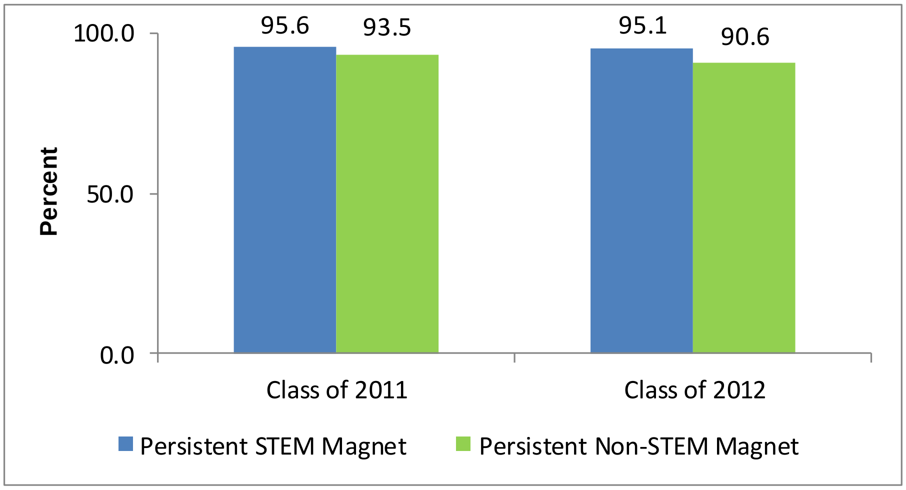
- Graduation status of the study participants was limited to HISD records. It was unknown whether students whose data were not available four years after ninth-grade enrollment left the district or dropped out of school.
- Linkage to four-year college enrollment is limited to the colleges that are included in the NSC database.
- The model included only academic performance variables considered important contributors to four-year college enrollment and available at the time of model building.

Results

How did graduation rates of persistent STEM Magnet students compare to those of persistent non-STEM Magnet students in the Class of 2011 and 2012?

- **Figure 1** depicts the graduation rates of students in the Class of 2011 and the Class of 2012 who remained in STEM and Non-STEM Magnet programs from ninth-grade to graduation (persistent STEM and non-STEM Magnet students).
- The 4-year graduation rate for persistent STEM students exceeded the graduation rate of persistent non-STEM students by 2.1 percentage points for the Class of 2011 and 4.5 percentage points for the Class of 2012.

Figure 1. Graduation Rates of Persistent STEM and Non-STEM Students in the Class of 2011 and 2012

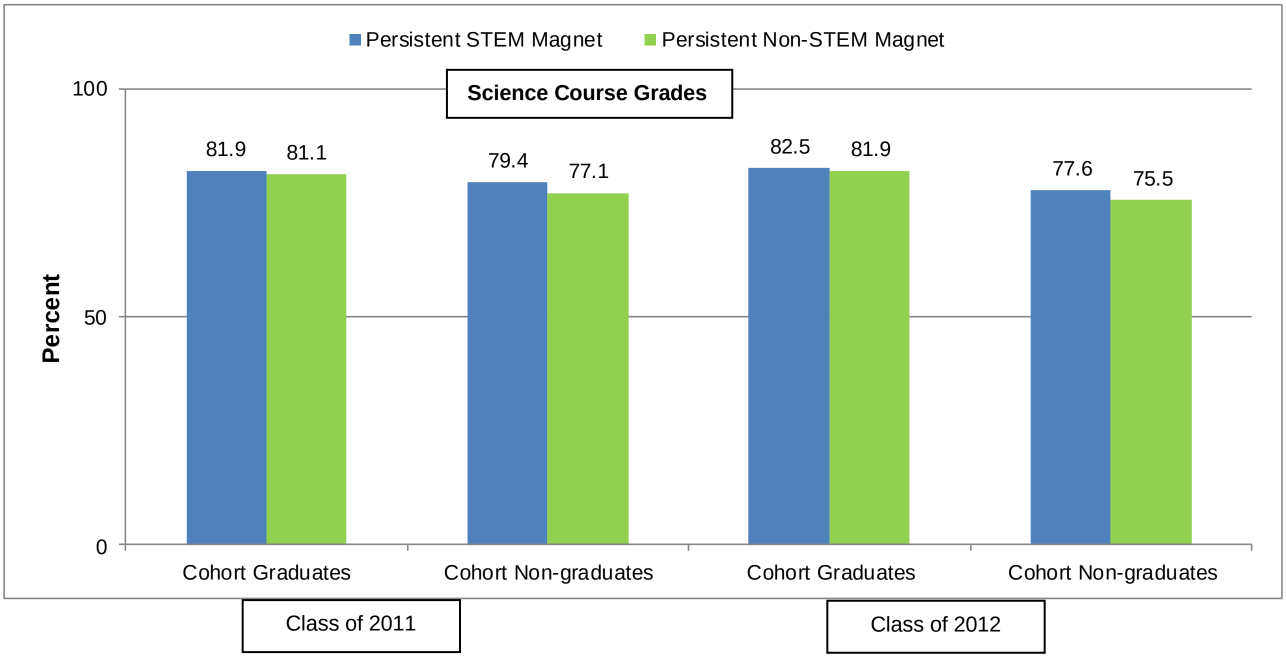


How did persistent STEM and non-STEM Magnet students in the Class of 2011 and 2012 compare relative to performance in science courses, considering graduation status?

- **Figure 2** shows the mean science course grades for the persistent STEM and non-STEM Magnet cohort classes of 2011 and 2012 who did and did not achieve graduation status in HISD after four consecutive years.

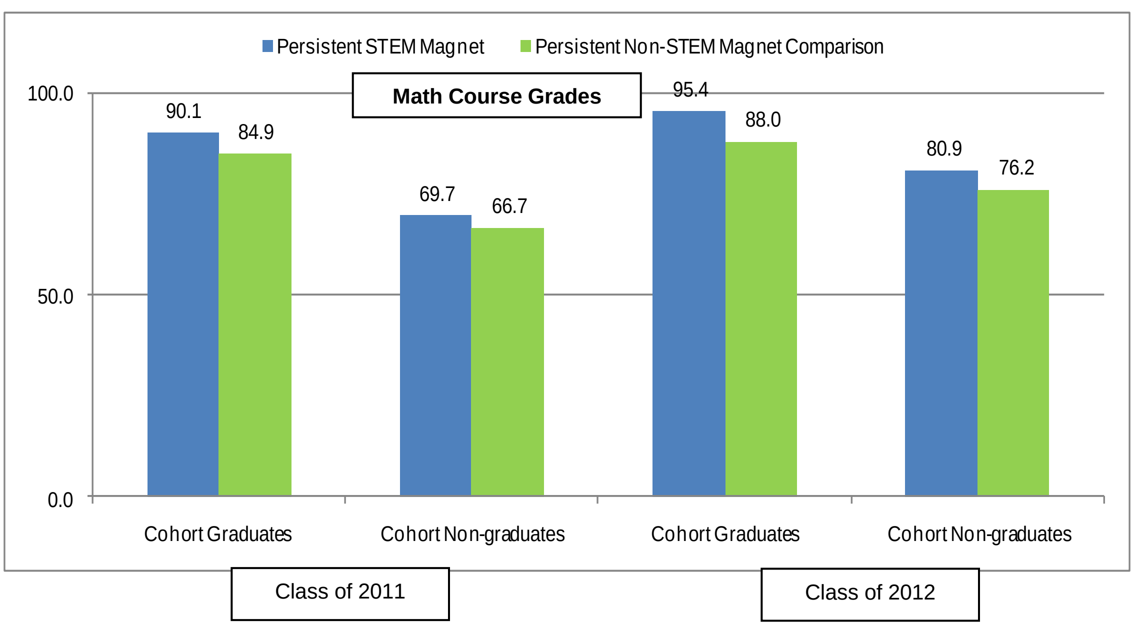
- Persistent STEM graduates in the Class of 2011 and the Class of 2012 outperformed persistent non-STEM graduates relative to mean science course grades by .8 and .6 points, respectively. Larger differentials were noted among the Class of 2011 and the Class of 2012 non-graduates than graduates, with mean science grades differing by 2.3 and 2.1 percentage points in the respective years.

Figure 2. Mean Science Course Grades of Persistent STEM and Non-STEM Students in the Class of 2011 and 2012 by Graduation Status



How did persistent STEM and non-STEM Magnet students in the Class of 2011 and 2012 compare relative to performance in math courses considering graduation status?

Figure 3. Mean Math Course Grades of Persistent STEM and non-STEM Students in the Class of 2011 and 2012 by Graduation Status

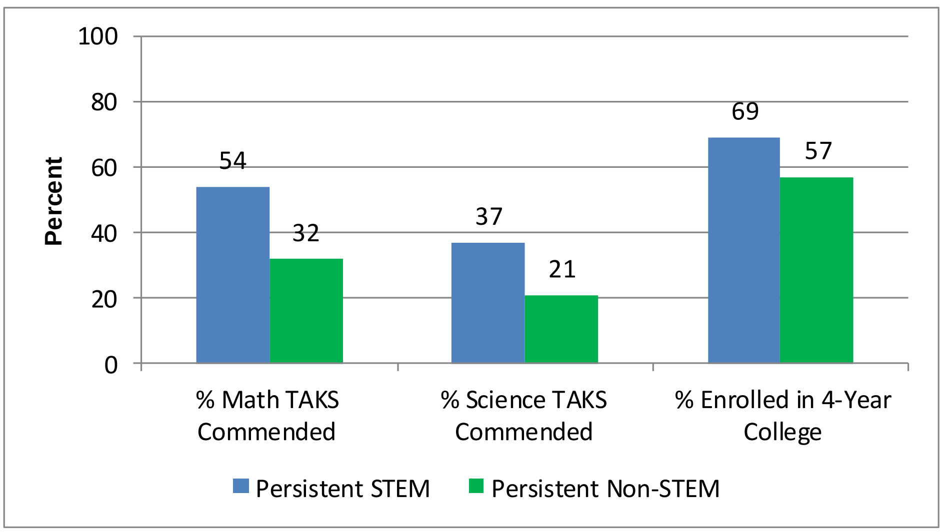


- **Figure 3** shows the mean math course grades for the persistent STEM and non-STEM Magnet cohort classes of 2011 and 2012 who did and did not achieve graduation status in HISD after four consecutive years.

- Among cohort graduates, persistent STEM students in the Class of 2011 scored 5.2 points higher their non-STEM counterparts in math. Figure 3 also shows that persistent STEM students in the Class of 2012 scored 7.4 points higher than their non-STEM counterparts in math. While the persistent STEM non-graduates outperformed non-STEM students, the differential in math performance of the Class of 2011 non-graduates was less than the class of 2012 (3.0 vs. 4.7 points).

How did persistent STEM and non-STEM Magnet cohorts compare relative to performance on TAKS math and science tests relative to "commended" status as a predictor of 4-year college enrollment?

Figure 4. Predictive Model Outcomes for Persistent STEM and Non-STEM Class of 2011 Students Relative to TAKS "Commended" Status and 4-Year College Enrollment



- **Figure 4** reveals that a higher percentage of persistent STEM than non-STEM Magnet students in the Class of 2011 achieved "commended" status on the TAKS math and science tests. The difference in performance was 22 percentage points in math and 16 percentage points in science.

- Relative to 4-year college enrollment, 69% of persistent STEM Magnet students enrolled in 4-year colleges the year after graduation compared to 57% of persistent non-STEM students. (Four-year college enrollment data from NSC for the Class of 2012 students was not available at the time of this report.)

What factors predicted likelihood of 4-year college enrollment for a cohort of students in the Class of 2011 considering ninth-grade Magnet enrollment?

- Logistic regression was performed to determine factors that predicted the likelihood of 4-year college enrollment for a cohort of students in the Class of 2011. A total of 5,429 students who entered the ninth grade in 2007–2008 were used to create the model. The variables used in the model were based on student information at the time the student entered the ninth grade.
- **Table 1** (**Appendix B**, p. 14) shows that a slight majority of students in the cohort were female (50.5%) and 81.3% enrolled in Magnet programs in ninth grade. In addition, 23.1% of the students included in the model enrolled in a four-year college the semester following graduation.
- The data were randomly split in half. One half of the data was used to build the model (training dataset) and the other half of the data was used to test the reliability of the model (test dataset). Performance of the model on the test dataset demonstrates the reliability of the model. The model performed with 83% accuracy on both the training dataset and the independent test dataset.
- Stepwise Method was applied to enter the variables in the model. Among the independent variables entered in the model, IBM Modeler identified 13 variables as important predictors of four-year college enrollment. The variables by order of importance are shown in **Table 2** (Appendix B, p. 14).
- The model was statistically significant, χ^2 (13, N = 4535) = 1877, p<.001, indicating that the model was able to distinguish between students who did or did not enroll in a four-year college. The model as a whole explained between 29.2% (Cox and Snell R square) and 44.2% (Nagelkerke R squared) of the variance in four-year college enrollment.
- **Table 2** shows that Stanford 10 percentile ranks at eighth grade in math, reading, and science, followed by Magnet status at ninth grade were among the most important predictors of 4-year college enrollment in the student cohort.
- Other important predictors were gifted/talented status and whether students were identified as at risk in ninth grade and as Asian or African Americans.

What factors predicted likelihood of "commended" status on the TAKS math test (college success indicator) for a cohort of students in the Class of 2011, considering ninth-grade Magnet enrollment?

- Logistic regression was performed to predict factors that influenced "commended" status for a cohort of students in the Class of 2011. A total of 5,435 students who entered the ninth grade in 2007–2008 were used to create the model. The variables used in the model were based on student information at the time the student entered the ninth grade.
- **Table 3** (**Appendix C**, p. 15) shows that a slight majority of the student cohort were male (50.9%) and 80.5% enrolled in a Magnet program in 9^{th} grade. In addition, 14.9% of the students included in the model attained "commended" on the TAKS math test in eleventh grade.
- The model performed with 88% accuracy on both the training dataset and the independent test dataset.
- Stepwise Method was applied to enter the variables in the model. Among the independent variables entered in the model, IBM Modeler identified eight variables as important predictors of "commended" status at eleventh grade. The variables by order of importance are shown in **Table**

4 (Appendix C).

- The model was statistically significant, χ^2 (8, N = 5482) = 1735.77, p<.001, indicating that it was able to distinguish between students who attained "commended" status on TAKS math test in the 11th grade compared to students who did not. The model as a whole explained between 27.1% (Cox and Snell R square) and 47.6% (Nagelkerke R squared) of the variance in 11th grade TAKS math "commended" status correctly.
- Table 4 (p. 15) shows that Stanford 10 percentile rank in math at eighth grade, gifted/talented status at ninth grade made the most significant contribution to the model predicting performance at the "commended" level on the TAKS math test for the Class of 2011 (Appendix C).
- Other important predictors were whether students were Asian, at-risk status in ninth grade, math course grade at eighth grade and Magnet status at ninth 11thgrade.

Discussion

The purpose of this evaluation was to compare the performance of students enrolled in STEM Magnet programs with non-STEM Magnet program students relative to high school graduation rates, math and science achievement, and seamless college enrollment. The study used two cohorts of students in the Class of 2011 and the Class of 2012 to conduct the analysis. Among the most notable findings was students in STEM Magnet programs in both cohorts had higher graduation rates and outperformed the non-STEM Magnet student sample in math and science relative to course grades and attaining TAKS math and science "commended" status. "Commended" was considered a college success indicator in this study. Moreover, the most important predictors of seamless college enrollment and attaining "commended" status on the TAKS math test were Stanford 10 performance at eighth grade in reading, math, and science.

There were several limitations to the study. Graduation status of the study sample was limited to data extracted from available HISD records. Linkage to seamless four-year college enrollment was limited to colleges included in the NSC database. The only variables included in the model were those considered to be important in predicting four-year college enrollment and college success.

An implication of the study is that HISD should continue to support Magnet programs whose mission is to devote adequate instructional time and resources to students in STEM programs. STEM courses provide an important foundation that can stimulate students' interest in taking more science and math courses in middle school and high school, and possibly in pursuing STEM disciplines and careers. There was some evidence that strong teacher and student effort, as evidenced by "commended" performance on TAKS, could prepare students from diverse backgrounds for college.

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APPENDIX A

STEM MIDDLE AND HIGH SCHOOLS

Attucks Middle School	Science, Technology, Engineering, Math- STEM (SWAS)
Clifton Middle School	Science, Technology, Engineering, Math- STEM (SWAS)
Hartman Middle School	Medical and Health Science (SWAS)
Hogg Middle School	Science, Technology, Engineering, Math- STEM (SWAS)
Revere Middle School	Science, Technology, Engineering, Math- STEM (SWAS)
Stevenson Middle School	Science, Technology, Engineering, Math- STEM (SWAS)
Williams Middle School	Science, Technology, Engineering, Math- STEM (SWAS)
Chavez High School	Environmental Science (SWAS)
DeBakey HSHP	Health Professions (SUS)
Jones High School	Science, Technology, Engineering, Math- STEM (SWP)
Milby High School	Science Institute (SWAS)
Reagan High School	Computer Technology (SWAS)
Sterling High School	Aviation Sciences (SWAS)
Waltrip High School	Research & Technology (SWAS)
Washington High School	Engineering Professions(SWAS)
Westside High School	Integrated Technology (SWAS)
Wheatley High School	Technology Careers (SWAS)
Worthing High School	Math, Science & Technology (SWAS)
Rice School K-8	Technology & Spanish (SUS)
Rusk School K-8	Science, Technology, Engineering, Math- STEM (SWP)

SWP (Schoolwide Program)
SUS (Separate and Unique School) – "Dedicated Magnet"
SWAS (School-within-a School)

NON-STEM MIDDLE AND HIGH COMPARISON SCHOOLS

Deady Middle School	Communication Arts (SWAS)
Dowling Middle School	Fine Arts (SWAS)
Fleming Middle School	Fine Arts (SWAS)
Fondren Middle School	International Baccalaurete Candidate (SWP)
Henry Middle School	Fine Arts (SWAS)
Johnston Middle School	Performing Arts (SWAS)
Marshall Middle School	Fine Arts (SWAS)
Pershing Middle School	Fine Arts (SWAS)
Pin Oak Middle School	Languages (SWAS)
Welch Middle School	Physical Development (SWAS)
Austin High School	Teaching Professions (SWAS)
Bellaire High School	World Languages (SWAS)
Davis High School	Media for Culinary Arts & Hotel & Restaurant. Management (SWAS)
Furr High School	Technology & Fine Arts (SWAS)
High School for Law Enforcement and Criminal Justice	Law Enforcement & Criminal Justice (SUS)
High School for the Performing and Visual Arts	Performing and Visual Arts (SUS)
Jordan High School for Careers	Careers (SUS)
Kashmere High School	Music & Fine Arts (SWAS)
Lamar High School	Business Administration (SWAS)
Lee High School	Modern Humanities (SWAS)
Scarborough High School	Landscaping & Architectural Design (SWAS)
Sharpstown High School	Leadership (SWAS)
Westbury High School	Fine Arts (SWAS)
Yates High School	Communications (SWAS)
Gregory-Lincoln Education Center (K-8)	Fine Arts (SWAS)
Sharpstown International School (6-12)	International Studies (SUS)
Wharton Dual Language Academy (K-8)	Dual Language (SWP)
Wilson Montessori School (K-8)	Montessori (SWP)

SWP (Schoolwide Program)
SUS (Separate and Unique School) – “Dedicated Magnet”
SWAS (School-within-a School)

APPENDIX B

Table 1: Four Year College Enrollment for a Cohort of Students in the Class of 2011	n	%
Gender		
Female	2744	50.5
Male	2685	49.5
Ninth Grade Magnet Enrollment		
Yes	4415	81.3
No	1014	18.7
Four-Year College Enrollment		
Yes	1253	23.1
No	4176	76.9

Table 2: Logistic regression model predicting 4-year college enrollment for a cohort of students in the Class of 2011	B	Sig.
Stanford PR Math- 8th grade	.022	.000
Stanford PR Reading- 8th grade	.016	.000
Stanford PR Science- 8th grade	.009	.000
Magnet – 9th grade (Magnet = 1, Not Magnet = 0)	-.716	.000
At risk- 9th grade (At risk = 1, Not at risk = 0)	-.441	.000
Gifted/Talented - 9th grade (G/T = 1, Not G/T = 0)	.609	.000
Hispanic vs. Other Ethnicity	-.385	.007
Asian vs. Other Ethnicity	.809	.001
Economically disadvantaged -9th grade (Yes = 1, No = 0)	-.248	.008
Course grade Math – 8th grade	.410	.012
African American vs. Other Ethnicity	.786	.000
Female (0) /Male (1)	.386	.000
Course grade Science – 8th grade	.410	.012

Note: Variables listed by order of importance. All variables listed were statistically significant at $p < .05$.

APPENDIX C

Table 3: TAKS Magnet Commended Status for a Cohort of Students in the Class of 2011	n	%
Gender		
Female	2692	49.1
Male	2790	50.9
Ninth Grade Magnet Enrollment		
Yes	1070	80.5
No	4412	19.5
Commended		
Yes	819	14.9
No	4663	85.1

Table 4: Logistic regression model predicting likelihood of attaining "commended" status on TAKS mathematics test at 11th grade for a cohort of students in the Class of 2011

	B	Sig.
Stanford PR Math- 8th grade	.058	.000
Gifted/Talented - 9th grade (G/T = 1, Not G/T = 0)	.689	.000
Stanford PR Reading- 8th grade	.007	.034
Stanford PR Science- 8th grade	.008	.013
At risk- 9th grade (At risk = 1, Not at risk = 0)	-.415	.001
Magnet – 9th grade (Magnet = 1, Not Magnet = 0)	-.294	.004
Asian vs. Other Ethnicity	.766	.000
Course grade Math – 8th grade	.433	.015

Note: Variables listed by order of importance. All variables listed were statistically significant at $p < .05$.