

Aspire to Achieve: A Student-Led, Service-Learning Approach for SAT Equity

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Abstract

On average, low-income students score significantly lower on the SAT than their wealthier peers, causing a cascade of disadvantages that decrease opportunities for college admission and receiving financial aid. To address this disparity, undergraduates at the University of Houston created Aspire, a service-learning project that provides SAT tutoring and postsecondary preparation to students at a predominantly Hispanic, low-income urban high school. From 2019 to 2023, 125 students participated in Aspire, attending five to 11 weekly sessions per semester for up to 22 hours of SAT and postsecondary prep mentorship. Of these students, 53 met inclusion criteria for analysis, with results showing that students in the Aspire program exhibit statistically significant SAT score improvements, with a mean increase of 54 points on a 1,600-point scale. This study demonstrates that undergraduate-led service-learning programs can improve outcomes for underserved students at a relatively low cost, offering a model for replication by other universities.

Keywords: SAT, socioeconomic disparities, underserved students, volunteer tutoring, service-learning



Standardized test scores play an integral role in the college admissions process. Scores on exams such as the SAT are one of the most significant determinants of college admissions and scholarship awards for high school students (Montgomery & Lilly, 2012). However, high school students from low socioeconomic status (SES) backgrounds consistently perform worse on the SAT than peers with higher SES—a trend that perpetuates, and sometimes exacerbates, income-based disparities in higher education and achievement (Alvero et al., 2021; Bastedo et al., 2025; Belasco et al., 2018; Corin et al., 2020; Garg et al., 2023; Huang, 2024; Lutz et al., 2018; Othman, 2025; J. Smith et al., 2022; Yun et al., 2024; Zheng & Yu, 2024).

A major contributor to this disparity is unequal access to SAT preparation resources. Students from higher SES families are more likely to have access to and utilize SAT preparation tools such as private tutors

and commercial test preparation courses, which can cost hundreds to thousands of dollars and are therefore inaccessible to many low-SES students (Zheng & Yu, 2024). As a result, lower SES students frequently receive less intensive and/or less sophisticated preparation for this high-stakes exam. Illustratively, a 2023 study identified that children from the wealthiest 1% of U.S. households were 13 times more likely than children from low-income families to score at least a 1,500 on the SAT (Chetty et al., 2023). Although commercial coaching can yield modest score gains—approximately 10 to 20 points per section—these gains disproportionately benefit higher income students due to greater access to paid tutoring, repeated test-taking opportunities, and sustained preparation (Goodman et al., 2020). Together, these findings underscore a central challenge in the test-preparation landscape: Although coaching can improve SAT performance, its benefits are unevenly distributed and may reinforce existing socioeconomic inequalities.

SAT score gaps have meaningful downstream consequences, as even relatively small differences in performance can shape students' postsecondary trajectories. SAT scores influence college admissions, scholarship eligibility, degree completion, and professional success (Reeves & Halikias, 2017; Shaw, 2025). Using a regression discontinuity design, one study demonstrated that minimum SAT score thresholds for admission to public universities in Georgia significantly affected college enrollment and bachelor's degree attainment, particularly among lower scoring, lower income students. These findings highlighted that SAT performance differences of 30 to 40 points could have substantial long-term impacts on educational and economic outcomes (Goodman et al., 2017). How SAT scores are interpreted also matters: When admissions officers are given contextual information about applicants' high schools or neighborhoods, they are more likely to recommend admission for high-achieving students from low-SES backgrounds (Bastedo et al., 2025). Collectively, this literature emphasizes the high stakes of SAT performance for low-SES students and the importance of interventions that address inequities in both preparation and evaluation.

Expanding access to SAT preparation presents a promising opportunity to mitigate barriers to higher education and achievement. Prior research demonstrates that preparation programs can substantially improve students' performance on the paper SAT (Montgomery & Lilly, 2012; Weatherholtz et al., 2020; What Works Clearinghouse, 2016). One study of over 545,000 students found that practicing for 6 or more hours with Official SAT Practice on Khan Academy was associated with an average 21-point increase on the SAT. This score increase nearly doubled to 39 points for students who supplemented practice time with "best practice behaviors," such as reaching higher difficulty levels in skills or completing full-length practice exams (Weatherholtz et al., 2020). Although a 21- to 39-point score increase is lower than the gains often advertised by commercial coaching companies, differences of this magnitude can be decisive in college and scholarship application processes (Appelrouth et al., 2017; Briggs, 2009; Westrick et al., 2020).

Importantly, emerging evidence further suggests that low-cost, community-based

interventions can help narrow SES-based gaps in SAT performance. One randomized controlled trial found that free, volunteer-based SAT tutoring enhanced with automated feedback led to increased student engagement and performance (Yun et al., 2024). Beyond score gains, engagement in SAT prep and other college application activities has been shown to foster a broader culture of college attendance among students from low-SES backgrounds (Grodsky & Riegle-Crumb, 2010; Hurwitz et al., 2017; Schneider et al., 2014). Thus, expanding access to effective SAT prep programs can improve test scores for low-SES students while also equipping them with the tools and confidence to pursue higher education, ultimately reducing systemic disparities in academic achievement and opportunity.

Taken together, the literature suggests that targeted and accessible preparation interventions have the potential to mitigate disparities in SAT performance and larger socioeconomic inequalities (Buchmann et al., 2010; Summers et al., 2015; Yun et al., 2024). However, relatively few recent studies have examined grassroots, low-cost interventions designed specifically to support underserved students. In particular, there is limited empirical evidence on service-learning models that integrate SAT coaching with mentorship and social support, and how such approaches influence not only test performance but also students' academic confidence, engagement, and long-term college readiness. This study addresses this gap by examining Aspire, a service-learning project created by undergraduate students at the University of Houston (UH), a large, urban university in the Southwest. Service-learning is a teaching method integrating classroom instruction with structured service to the surrounding community (Kiely, 2005; B. H. Smith et al., 2011). Aspire was developed in a UH course called Introduction to Civic Engagement, a class that promotes service-learning and the study of community issues, civic participation, and sustainable service. Students in this course created Aspire to address educational inequality by providing no-cost, high-quality SAT preparation for low-income high school students.

Aspire is currently staffed and implemented by UH undergraduates with oversight from university faculty and administrators at the partner school, a large urban high school located in a high-poverty Houston neighborhood. At this school, roughly 96% of stu-

dents qualify for free or reduced lunch, and most students are minorities, with 92.3% of students identifying as Hispanic or Latino (Texas Education Agency, 2024a). By evaluating Aspire students' SAT outcomes alongside their reported experiences with the program, this study seeks to assess whether a small-scale, student-led, low-cost intervention can produce meaningful SAT performance gains while fostering confidence and engagement among students from underserved communities. Additionally, this article will explore strategies to enhance the efficacy of similar programs, informed by an analysis of Aspire's performance in previous semesters.

Methods

Intervention

Program Structure

From 2019 to 2023, the "Aspire" intervention was conducted weekly after school at the partner high school, spanning 6 to 11 consecutive weeks during both the fall and spring semesters of each academic year. This methodology constituted five to 10 program sessions per semester. Figure 1 highlights changes in program length, session duration, session content, and other calendar variations from 2019 to 2023. Details regarding Aspire's organizational structure and cost of implementation are provided in Appendix A and Appendix B, respectively.

Despite considerable variation in program structure across semesters, each semester's program began with a survey documenting students' past SAT/PSAT scores, which were self-reported by students and subsequently verified through official score reports provided by the community partner. In the Fall 2021, Spring 2022, Fall 2022, and Fall 2023 semesters, a full-length diagnostic SAT exam was conducted one week prior to the first program session. This diagnostic test was an official College Board SAT Practice Exam administered by Aspire executives under realistic testing conditions, and students' scores served as their preintervention scores if they had no past score data available. However, data was preferably drawn from mentees' most recently taken official or practice SAT or PSAT exams. For the Fall 2019 and Spring 2023 semesters, a diagnostic test was not conducted, and students' most recent PSAT or SAT score reports were used instead as the baseline score for mentees (Figure 1).

After initial data collection, subsequent SAT prep sessions followed a curriculum designed by the Aspire executive board, with the semester calendar strategically arranged around students' in-school SAT exam dates. Students were encouraged throughout the program to take the in-school test, mainly to mitigate financial barriers to SAT registration. These exams, which typically occurred in November or December for fall semester cohorts and in March or April

Figure 1. Aspire Program Structure per Semester

	Incentive?	Diagnostic?	Session 1	Session 2	Session 3	Session 4	Session 5	Session 6	Session 7	Session 8	Session 9	Session 10	Session 11
Fall 2019 (2 hours)	No	No	SAT	SAT	No session (Open House)	SAT	SAT	SAT	SAT	SAT	College	Campus visit	College, Celebration
Spring 2020 (2 hours)	No	Diagnostic exam	SAT	SAT	SAT	SAT	Cancelled (COVID)	Cancelled (COVID)	Cancelled (COVID)	Cancelled (COVID)	Cancelled (COVID)	-	-
Fall 2020 (2 hours; Virtual)	No	No	SAT	No session (Holiday)	SAT	SAT	SAT	SAT	SAT	College	College, Celebration	-	-
Fall 2021 (2 hours)	College basket	Diagnostic exam	SAT, College	College	SAT	SAT	SAT	SAT	SAT	SAT	SAT	College	College, Celebration
Spring 2022 (2 hours)	College basket	Diagnostic exam	SAT	SAT	SAT	No session (In-School SAT)	SAT	No session (Holiday)	SAT	College	Life skills	Celebration	-
Fall 2022 (2 hours)	2 VISA gift cards (\$50 each)	Diagnostic exam	SAT	SAT, College	SAT, College	SAT, College	No session (Holiday)	SAT, College	SAT	SAT	SAT	College, Celebration	-
Spring 2023 (1h15m)	2 VISA gift cards (\$50 each)	No	SAT	SAT	SAT	SAT	No session (Holiday)	College, Celebration	-	-	-	-	-
Fall 2023 (1h15m)	1 VISA gift card (\$100)	Diagnostic exam	SAT	SAT	SAT	SAT	SAT	College, Life skills	Celebration	-	-	-	-

Note. Various facets of Aspire's structure changed across semesters, such as the program length, session duration, and session content (e.g., SAT preparation, college preparation, life skills). In general, the program intervention was conducted over 6 to 11 weeks, with each session lasting from 1.5 to 2 hours.

for spring cohorts, guided the curriculum schedule to optimize student preparation. Each semester's curriculum was designed using various SAT resources, such as the College Board website and official practice SAT exams. Curriculum materials consisted of Google Slides presentations, in-session worksheets (ISWs), and out-of-session worksheets (OSWs), each covering specific SAT topics. Other topics, such as life skills and college applications, were also covered in the Aspire curriculum via similar formats; a detailed breakdown of these subjects and the specific SAT topics taught by mentors is provided in Appendix C.

All curriculum materials were made available on the Aspire program website, alongside answer keys for students to check their work. Google Slides presentations provided overviews of SAT sections and the types of questions asked in each section (e.g., Problem-Solving and Data Analysis questions within the Math section of the exam). Both ISWs and OSWs were composed of past questions from official College Board exams and were presented to students in either physical or digital formats, depending on the semester. OSWs were used to monitor improvement between individual sessions and to emphasize consistent practice outside sessions. To incentivize active, sustained participation in the program, session engagement and completion of OSWs comprised a portion of the assessment determining which mentee(s) received an award during the program's final celebration. Further information on these awards and their distribution is provided in Appendix D.

Mentor Recruitment, Training, and Demographics

At the beginning of each academic year, Aspire recruited UH undergraduate students, from freshman to senior standing, to serve as volunteer mentors. There were neither upper nor lower boundaries on the number of mentors recruited. However, many after-school education programs and near-peer mentoring programs have observed that a "two-way" mentor-mentee relationship—where the relationship is built on open communication, trust, and mutual respect—can empower students in psychosocial and academic domains alike. This dynamic is best supported by a lower mentee-to-mentor ratio, which allows mentors to more closely monitor mentee progress and provide frequent, tailored, and adaptive guidance, resulting in higher quality mentee instruction

and stronger perceived support (Akinla et al., 2018; Hudson, 2016; White et al., 2023). Thus, Aspire executives strove to recruit a sufficient number of mentors such that each high school student who registered to participate in the program was matched with at least one dedicated mentor.

After committing to volunteer with Aspire, mentors underwent comprehensive training that familiarized them with SAT content, emotional and cultural competency, and the core elements of the Aspire curriculum. Once sessions began, all high school mentees were assigned to Aspire mentors in a 1:1 or 1:2 mentor-to-mentee ratio. These assignments were determined through a matching system, where the circumstances and interests of a mentee were paired with an appropriately knowledgeable and skilled mentor. Mentors and mentees were encouraged to form relationships with one another in order to build trust, improve the learning environment, and boost student morale.

The undergraduate students who served as mentors in Aspire came from diverse backgrounds and areas of study. For the Fall 2019, Fall 2021, Spring 2022, Fall 2022, Spring 2023, and Fall 2023 cohorts, 48.8% of mentors identified as Asian/Pacific Islander, 22% of mentors identified as White/Caucasian, 14.6% of mentors identified as Hispanic/Latino, 12.2% of mentors identified as Black/African American, and 2.4% of mentors identified as both African American and Hispanic/Latino (see Appendix E1). Additionally, 31.7% of mentors were students in the College of Liberal Arts and Social Sciences, 29.3% of mentors were students in the College of Natural Sciences and Mathematics, 26.8% of mentors were students in the College of Business, 4.9% of mentors were students in the College of Engineering, 2.4% of mentors were students in the College of Education, 2.4% of mentors were students in the College of Technology, and 2.4% of mentors were students in the College of Architecture and Design (see Appendix E2).

Mentee Recruitment

Aspire utilized multiple approaches in recruiting mentees. Typically, interest forms and flyers were distributed to students at the participating high school via Aspire's community partner, who also advertised the program by word of mouth. Specific students were also occasionally referred to the program by instructors at the high school.

However, starting in Spring 2023, Aspire began to utilize in-person advertisement to increase mentee enrollment: Before the start of the program, Aspire mentors and executives traveled to the partner high school campus and shared in-class presentations on Aspire to junior and senior students. Presentations were followed by the distribution of promotional flyers, which contained QR codes linked to a Google Form that students used to register for the program. When comparing the average student participation in 2023 (Spring 2023, Fall 2023) to that observed in 2022 (Spring 2022, Fall 2022), adopting this in-person advertisement strategy led to a 170% increase in mentee enrollment.

Study Participants

The participants in this study were juniors and seniors who attended the participating institution: a large, urban, public secondary school in Houston. Much of the student population at the partner school are minorities: as of 2024, 92.3% of students are Hispanic and 5.9% of students are African American, with the remaining 1.8% of students distributed across various ethnic backgrounds. Furthermore, 95.9% of students are considered economically disadvantaged (i.e., qualifying for free or reduced-price lunch or other public assistance), compared to 79.6% of students in the larger school district (Texas Education Agency, 2024a, 2024b). Aspire students were roughly representative of their school's overall student body: Of the 48 students with ethnicity data available, 77.1% identified as Hispanic or Latino, and 16.7% identified as Black or African-American. Similarly, of the 47 students with the corresponding data available, 97.9% were considered economically disadvantaged, and 66% identified as first-generation students (i.e., students whose parents did not complete a baccalaureate degree; Council for Opportunity in Education, 2024).

Participation in Aspire was voluntary—students joined the program through self-selection and were admitted regardless of their prior test scores. There were a total of nine cohorts ($N = 125$) from Fall 2019 to Fall 2023, with five fall cohorts and four spring cohorts. Cohort size ranged from 5 students to 32 students per semester. For analysis in this study, students were filtered through various inclusion criteria designed to ensure consistent exposure to Aspire's SAT prep curriculum prior to their outcome

exam, comparable baseline measures, and the ability to calculate a valid pre- versus postprogram score change.

First, students needed to attend at least one SAT-prep session prior to the SAT administration used as their “postprogram” exam date. Because the focus and number of Aspire sessions varied by semester, and some students took their official SAT exam before the program concluded, only the number of SAT-relevant sessions a student attended *prior* to their “postprogram” test date was considered. This approach allowed for a more robust estimate of each student's exposure to Aspire's SAT preparation content before their exam and the potential effect of that exposure on any score changes.

The second inclusion criterion was that students' preprogram scores needed to come from an official SAT administration (i.e., students who used a PSAT score or an Aspire-administered diagnostic SAT exam score as their preprogram score were excluded). This requirement ensured comparability of baseline scores across students, as the PSAT uses a different scoring scale than the SAT, and even high-quality diagnostic exams can differ meaningfully from official testing conditions. For example, Aspire's diagnostic exams were typically administered after school in the evening, outside the standard morning testing hours; this and other environmental differences may have influenced test performance in ways unrelated to students' academic ability. Analysis was therefore limited to official SAT scores to minimize measurement variability and to strengthen inferences about score change attributable to students' participation in Aspire, rather than those attributable to differences in test format or scaling.

Finally, students for whom a pre- versus postprogram score change could not be computed were automatically excluded. Students with no available preprogram scores (i.e., students who had never taken the SAT prior to Aspire participation and who also did not take the PSAT or Aspire diagnostic) and students with no available postprogram scores (i.e., students who did not take an official SAT exam after participating in Aspire) were therefore automatically excluded.

As a result, the intervention group consisted of 53 students, distributed across six cohorts: Fall 2019, Fall 2021, Spring 2022,

Fall 2022, Spring 2023, Fall 2023. No demographic data was collected for any of the Fall 2019 students. However, of the intervention group students from whom demographic data was collected, 33 reported their sex, 29 reported their ethnicity, 30 provided information on whether they qualified for free/reduced lunch or other public assistance, and 29 reported the highest education level attained by their parents (see Appendix F). Based on this information, approximately 72.7% of students were female, roughly 82.8% of students identified as Hispanic or Latino, and 13.8% of students identified as Black or African American. Of the intervention group students with the available corresponding data, 96.7% were considered economically disadvantaged, and 76.7% identified as first-generation students.

Data Analysis

This study was retrospective and used a mixed-methods design, incorporating both quantitative and qualitative analyses to evaluate the impact of Aspire on participants' SAT performance and perceptions of readiness for postsecondary pathways. Data collection was performed by various Aspire executives over the course of 2019–2023, and included students' ethnicities, details on their socioeconomic background (e.g., whether students qualified for free/reduced lunch, the highest education level achieved in their household, whether they qualified as a first-generation student), students' composite SAT score prior to joining the program, students' composite SAT score after participating in the program, and students' feelings of readiness for college/postsecondary pathways before and after Aspire participation. Student demographic data (i.e., sex, ethnicity, and socioeconomic background) was not collected during Fall 2019; however, in subsequent semesters, demographics were self-reported by students using a Google Form, where students also provided their preprogram SAT scores. These self-reported preintervention scores were then verified through official College Board score reports provided by the community partner. Similarly, after the program's conclusion each semester, students' postprogram SAT scores were collected from faculty at the partner school, who obtained student scores through the official College Board reporting system.

Quantitative analysis of data involved the use of paired *t*-tests to compare composite

SAT scores before and after participation in Aspire. Individual students' score changes were calculated both in terms of points and as a percentage of students' initial SAT scores, as seen in Equations (1) and (2). Overall cohort performance on the SAT before and after Aspire participation was also compared across cohorts using analysis of variance (ANOVA). Subjects were excluded from the study if they had not taken the PSAT, SAT, or any similar diagnostic exam prior to starting the program; if they did not take the SAT after completing our program; and/or if they attended fewer than two SAT-prep sessions prior to their second exam date.

Score change (points) = Postprogram score - Preprogram score (1)

$$\text{Score change (\%)} = \frac{\text{Postprogram score} - \text{Preprogram score}}{\text{Preprogram score}} \times 100\% \quad (2)$$

The qualitative component of this study explored Aspire's impact on students' academic confidence and perceived preparedness for standardized testing, as well as students' perceptions of their overall program experience. Student readiness prior to and following program participation, learning priorities, and gains across readiness domains were analyzed using data collected from beginning-of-program (BOP) and end-of-program (EOP) surveys administered between Fall 2019 and Spring 2023. However, survey administration and design were inconsistent across semesters, and postprogram survey responses were available for only a subset of cohorts, limiting the availability of matched pre- versus post-program data. Both BOP and EOP surveys included Likert scale items and open-ended questions assessing confidence in standardized test-taking and program experience. Surveys also included items related to other domains like college preparation and financial literacy, which were retained in the analysis to provide contextual insight into students' broader academic planning but were not treated as primary outcomes (see Appendix G). Because survey design varied across semesters—including differences in question wording, response scale ranges (e.g., 1–5 vs. 1–10), and item inclusion—it was not possible to track identical constructs (e.g., test preparedness) consistently across cohorts or even within some cohorts over time. As a result, Likert scale responses were summarized descriptively, with mean scores standardized as a percentage of the maximum.

Table 1. Student Statistics by Cohort

Cohort	<i>n</i>	Average score change (points)	Average score change (%)	Average number of sessions attended
Fall 2019	20	60.5	7.56	4.10
Fall 2021	9	73.3	7.78	2.89
Spring 2022	1	20.0	2.74	3.00
Fall 2022	3	83.3	8.88	5.76
Spring 2023	6	46.7	4.95	1.83
Fall 2023	14	32.9	4.08	2.25

Note. Columns represent the cohort size, average score change (relative to preprogram score) in points, average percent score change, and average number of sessions attended.

Open-ended survey responses were reviewed and coded into recurring topical categories aligned with Aspire’s program objectives, such as scholarship and financial aid, PSAT/SAT test improvement, college admission processes, and testing strategies. The frequency of responses within each category was tabulated to describe student-reported needs and experiences across cohorts.

The Institutional Review Boards of the University of Houston approved this study, and informed consent was obtained from all participants.

Results

Initially, data from nine cohorts were collected (*N* = 125). However, 72 students did not meet inclusion criteria; therefore, final data analysis was performed on only 53 students. Table 1 displays statistics for these students by cohort, defined as semester and year of program participation (see Appendix H for individual student statistics). The mean preprogram composite SAT score was 934 ± 139. The number of sessions attended did not differ significantly across cohorts when examined using a one-way analysis of variance test, *F*(5, 47) = 2.601, *p* = .0371. Nevertheless, the large standard deviation observed in preprogram scores indicates wide variation in initial ability for our students.

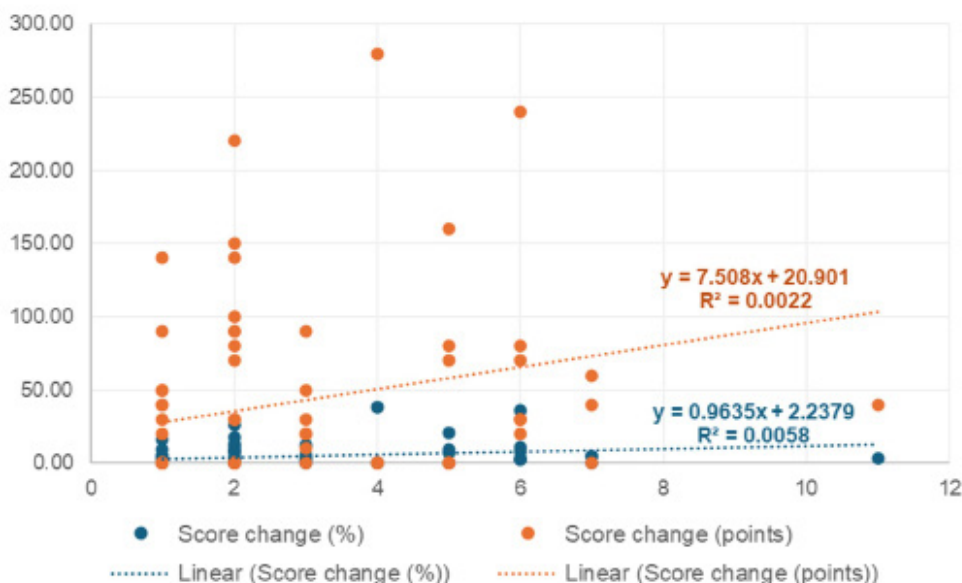
Pre- Versus Postintervention SAT Performance

There was a significant difference between composite SAT scores prior to program participation versus after, with scores increasing by an average of 54 points, *t*(52)

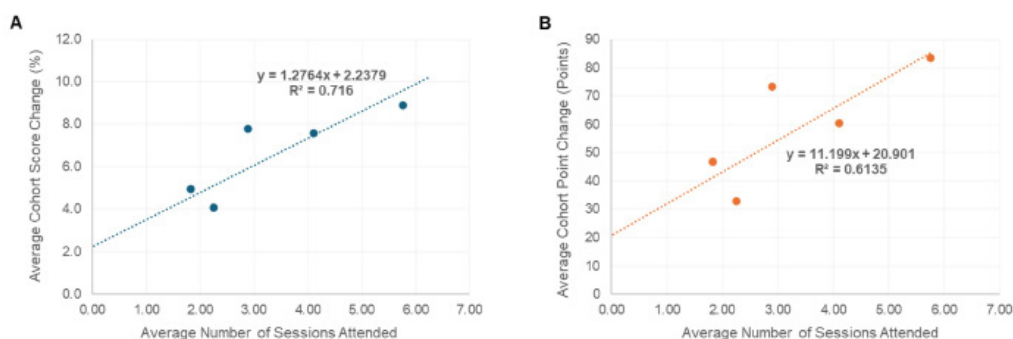
= 6.1366, *p* < .001. Neither score change in points [*F*(5, 47) = 0.677, *p* = .643] nor percentage score change [*F*(5, 47) = 0.432, *p* = .824] were significantly different across cohorts when examined using one-way analysis of variance tests. See Appendix I for a comparison of participants’ average SAT scores before and after the program, broken down by cohort, as well as the average districtwide and schoolwide SAT scores for their graduating class.

Of the 53 students assessed, 69.8% showed improvement in composite scores after attending at least one intervention session: 41.5% of all students demonstrated score increases of 50 points or greater, while 15.1% of students improved their scores by at least 100 points. The average postprogram composite score of this sample of students was 988 ± 134, representing a score increase of 0.39 standard deviations. Notably, this score improvement was significantly greater than the boost expected from simply retaking the SAT: A 2020 study assessing over 11 million SAT-takers from the high school classes of 2006–2014 found that, on average, retaking the SAT produces scores 0.15 standard deviations higher than first-take scores (Goodman et al., 2020). For our sample of students, this difference would have equated to a 20.9-point increase on a 1,600-point scale, or a 2.24% score increase. Analysis of student data via paired *t*-test provided strong evidence that the average SAT score increase expected from Aspire participation is significantly greater than 20.9 points, *t*(52) = 3.7762, *p* < .001.

A scatterplot of all data points used to generate Table 1 was used to create Figure 2, which compared individual students’ score

Figure 2. Linear Correlation Between Individual Attendance and Score Change

Note. The number of Aspire sessions an individual student attended is plotted against their percent score change (blue) and against their score change in points (orange).

Figure 3. Linear Correlation Between Cohort Attendance and Score Change

Note. Spring 2022 cohort excluded. Figure 3A (left) graphs the average number of Aspire sessions attended by all students in a cohort versus the cohort's average percent score change. Figure 3B (right) graphs the average number of Aspire sessions attended by all students in a cohort versus the cohort's average score change in points.

improvement based on the number of Aspire SAT prep sessions they attended prior to their exams. On average, Aspire students attended 3.31 sessions before their postintervention exam attempt, equating to 6.1 hours of SAT instruction. Interestingly, however, the number of sessions students attended prior to this SAT exam did not exhibit a strong relationship with score improvement. With the y -intercept set at 2.24 to account for the score increase expected to result from

retaking the SAT, plotting percent score change against number of sessions attended produced a linear regression equation of $y = 0.9635x + 2.2379$, $R^2 = .0058$. Plotting score change in points against number of sessions attended, with the y -intercept set at 20.9 to account for retake effects, produced a linear regression equation of $y = 7.508x + 20.901$, $R^2 = .0022$.

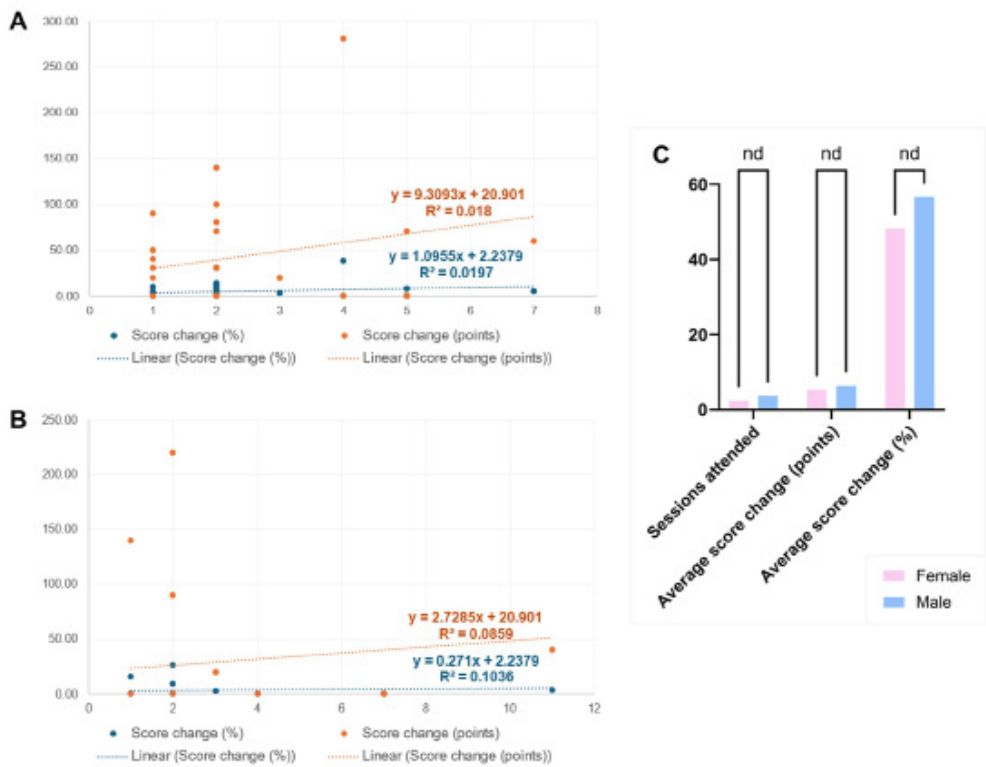
To mitigate the wide variation between individual students, Figure 3 was created

to compare each cohort’s average number of sessions attended to the cohort’s average score improvement. The Spring 2022 cohort was not included in these analyses due to having only one student who fit all inclusion criteria. With the y-intercept set at 2.24 to account for retake effects, plotting each cohort’s average percent score change against the average number of sessions attended produced a linear regression equation of $y = 1.2764x + 2.2379$, $R^2 = .716$. Plotting each cohort’s average score change in points against the average number of sessions attended, with the y-intercept set at 20.9 to account for retake effects, produced a linear regression equation of $y = 11.199x + 20.901$, $R^2 = .6135$.

No demographic data was collected for the Fall 2019 cohort, and only some students in the Fall 2021 through Fall 2023 cohorts provided demographic data. However, based

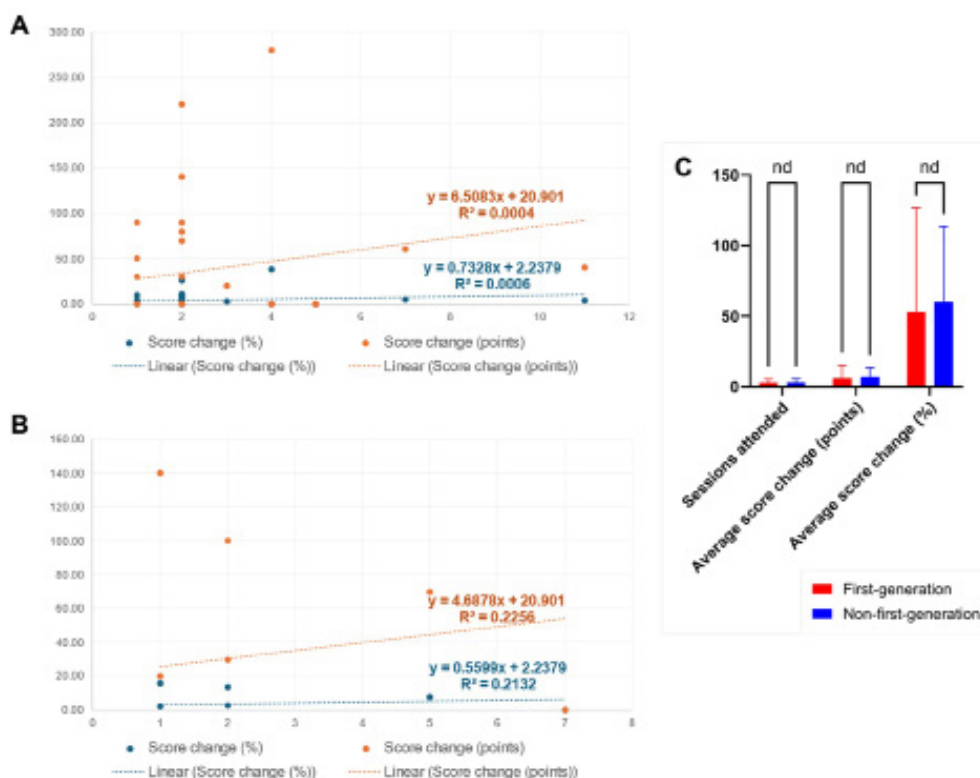
on all students who did have available demographic data, no significant differences in the number of sessions attended, the score change in points, or the percent score change were observed between male versus female students and between first-generation versus non-first-generation students. Preprogram scores also did not significantly differ between male students (980 ± 136) versus female students (961 ± 146), nor did they differ significantly between first-generation (952 ± 146) versus non-first-generation (987 ± 164) students. In the same vein, postprogram scores did not differ significantly between male students ($1,037 \pm 123$) versus female students ($1,010 \pm 149$) nor between first-generation ($1,005 \pm 156$) versus non-first-generation students ($1,047 \pm 130$). Interestingly, the linear correlation between sessions attended and score change (both in terms of points and percent change) was stronger

Figure 4. Attendance and Score Change Comparison Between Male Versus Female Students



Note. Figure 4A (top left) graphs the number of sessions attended versus the score change for female students. Figure 4B (bottom left) graphs the number of sessions attended versus the score change for male students. Figure 4C (right) compares the average number of sessions attended, the average score change in points, and the average percent score change for male versus female students. No significant differences in any of these three variables were observed between sexes.

Figure 5. Attendance and Score Change Comparison Between First-Generation Versus Non-First-Generation Students



Note. Figure 5A (top left) graphs the number of sessions attended versus the score change for first-generation students. Figure 4B (bottom left) graphs the number of sessions attended versus the score change for non-first-generation students. Figure 4C (right) compares the average number of sessions attended, the average score change in points, and the average percent score change for first-generation versus non-first-generation students. No significant differences in any of these three variables were observed.

for male students than for female students, though the linear regression equations for female students had greater slopes (Figure 4). Similarly, the linear correlation between sessions attended and score change was stronger for non-first-generation students than for first-generation students, although the linear regression equations for first-generation students had greater slopes (Figure 5).

Student Perspectives on Readiness, Mentorship, and Program Value

Descriptive analysis of qualitative data was performed to contextualize SAT score outcomes by examining students' self-reported needs at program entry and their postprogram experiences following their participation. While standardized test scores captured changes in academic performance, survey responses provided insight and may explain the informational and experiential

mechanisms through which Aspire's service-learning and mentorship model may support standardized test preparation and confidence. Because survey instruments varied across semesters and cohort sizes, these findings are presented descriptively to highlight key take-home messages about student experiences rather than to support inferential or comparative claims. Supplementary figures summarizing these patterns are provided in Appendix G.

Across cohorts with available preprogram SAT-relevant data (Fall 2021), students most frequently reported needs related to standardized test improvement ($n = 5$). Beginning-of-program responses observed from Spring 2022 ($n = 1$) and Spring 2023 ($n = 2$) semesters indicated uneven baseline readiness, with comparatively lower confidence in domains directly tied to SAT performance; students reported PSAT/SAT

improvement and testing skills and strategies as priority learning topics. Postprogram responses observed from the Fall 2019 and Spring 2022 semesters reflected higher perceived confidence and preparedness in domains aligned with Aspire's SAT readiness objectives, such as test preparedness and test-taking confidence. Open-ended responses further emphasized students' appreciation for Aspire's structure, particularly the personalized guidance they were able to receive from mentors to address their unique needs. Students emphasized the value of having dedicated time to ask questions and revisit challenging topics with mentors, as mentors were not only patient and encouraging but also readily available to review difficult material as many times as needed. When asked what they perceived to be the most beneficial aspect of Aspire, the majority of students highlighted the mentor-mentee relationship, stating, "The personal connection between mentors and students [creates] a comfortable environment where students can be vulnerable and feel that the listener can relate to them." Several students also reported forming stronger bonds with their peers over the course of the program, and when asked in an anonymous online survey whether they would recommend Aspire to future students, 100% of students said yes. These observations align with broader research on tutoring and supplemental instruction, which finds that programs are most meaningful when tutors foster positive relationships that allow instruction to be tailored to students' strengths and needs, suggesting mentor-mentee relationships as a potential mechanism for improved academic engagement and achievement (White et al., 2023).

Collectively, these student-reported perspectives suggest that Aspire's service-learning and mentorship model may support SAT score improvement through targeted, iterative test-focused instruction. These adaptive changes may function to increase student confidence, financial and postsecondary guidance, and perceived readiness to engage with postsecondary pathways.

Discussion

This study provides preliminary evidence for the feasibility and efficacy of service-learning projects, like Aspire, to narrow the achievement gap for underserved students. When comparing students' performance on their preprogram exam to their SAT attempt

after participating in Aspire, students demonstrated an average score improvement of 54 points on a 1,600-point scale. Our results may also be interpreted to show a dosage effect of Aspire sessions: Based on the linear regression model created with individual students' data, student scores increased by an average of 7.5 points for each additional session attended. When referencing the linear regression model created using cohort averages, student scores can be estimated to increase by 11.2 points per additional session attended. These observations are supported by findings that increased contact in SAT preparation classes leads to higher score increases (Montgomery & Lilly, 2012). Additionally, based on the R^2 values generated for average cohort statistics, 71.6% of the variance in percent score improvements and 61.4% of the variance in point score change can be attributed to participation in Aspire. Considering the many factors that can impact SAT performance, this is a robust amount of variance attributable to our intervention.

Our findings also demonstrate that Aspire's model of free, small-group instruction utilizing volunteer undergraduate mentors may be equally or more effective than costly, private, one-on-one tutoring and commercial test prep programs, which are considered the gold standard of SAT coaching. Whereas one 2010 study showed that commercial SAT prep courses and private tutoring increase scores by about 30 points and 37 points, respectively, our results demonstrate an average 54-point increase in student scores (Buchmann et al., 2010). This finding is particularly significant given the results of a 2009 survey of college admissions counselors, which indicated that a 20-point increase in the Math section or a 10-point increase in the Reading section was enough to significantly improve a student's chances of gaining admission into their institutions (Goodman et al., 2017). Therefore, it is likely that the score improvement seen by Aspire students is enough to improve chances of college admissions, positively influence the choice of schools, and lead to higher rates or amounts of scholarships and financial aid awards disbursed.

Limitations and Future Directions

This research should be regarded as a pilot study, and the results should be interpreted in light of various limitations. For instance, the number of Aspire sessions students

attended was not strongly correlated with score improvement: In the Fall 2021 cohort, Student 62 did not demonstrate any changes in score despite attending seven sessions, whereas Student 64 exhibited tremendous improvement despite attending only two sessions. However, success on the SAT can be influenced by a wide range of factors, both internal and external. Test-day issues such as sleep deprivation, calculator issues, and environmental distractions can significantly affect performance. Furthermore, given the demographics of the participating high school and therefore of Aspire attendees, students may face challenges shaped by socioeconomic factors, such as access to stable internet for online resources, having a quiet place to study, working a part-time job, having parents who are knowledgeable about standardized exams and the college admissions process, and so on. All these obstacles and more can limit students' ability to study and/or their availability to attend prep sessions, regardless of internal motivation; consequently, a student can underperform for a variety of reasons that are not tracked in this study.

This study is also subject to several limitations regarding the nature of Aspire participation and the inclusion criteria used for analysis. Because students self-selected into Aspire—and because inclusion in the study sample required taking an official SAT exam both before and after participating in the program—our sample may overrepresent students who were already more academically engaged or driven to improve their SAT scores. These factors limit the generalizability of our findings and make it challenging to fully isolate the effects of Aspire participation from any preexisting student characteristics. Additionally, although it was necessary for analytic rigor, restricting the study sample to students with official baseline SAT scores substantially reduced our sample size and may have excluded students who benefited from Aspire but lacked complete testing records. Given these constraints, our observed score changes should be interpreted cautiously and viewed as preliminary evidence rather than definitive measurements of Aspire's impact.

Another limitation is the issue of mentee attrition, which also affected our sample size and has been a significant issue for Aspire almost every year. Several factors likely contribute to attrition, such as competing academic or personal commitments, lack of

motivation, and/or insufficient support from home. To address these factors, future iterations of our program should consider strategies to improve student retention, including increasing parent involvement. For example, requiring a parent's signature on a registration form for Aspire could increase accountability by ensuring students have another person encouraging them to stay committed to attending sessions. Increased teacher involvement could also be beneficial—school faculty may be able to help advertise the program, encourage participation, remind students of sessions, or even offer extra credit for attending sessions as motivation for students to stay engaged. Providing snacks during every session and rewarding mentees for consistent attendance has also proven effective in recent cohorts. Future iterations of our model should thus pursue a multipronged approach, implementing various additional strategies to reduce attrition among students. Mentee attendance aside, future programs may also benefit from exploring the minimum score increase needed on the revised SAT to incur benefits in the college admission process. This outcome could be accomplished with a larger sample that is also followed longitudinally for acceptance into and graduation from an institution of higher education.

Another factor to consider is the impact of cohort differences, particularly the shift in college admissions policies following the COVID-19 pandemic. The test-optional movement, which gained momentum as colleges began to suspend SAT/ACT requirements in Spring 2020, has altered the motivation and mindset of many students. According to recent data, the number of schools adopting test-optional or test-blind admissions policies has nearly doubled since 2020. For the 2025–26 application cycle, 85.4% of the 2,247 colleges in the FairTest database were test-optional and 3.3% were test-free; these numbers have increased to 86.4% and 3.6% respectively for the 2026–27 cycle (FairTest, 2026). This shift may have altered student attitudes toward the SAT: Some students may feel less pressure to prioritize test prep if they believe their scores are no longer critical for college admissions, which could impact their engagement in programs like Aspire, as well as their willingness to take full advantage of the resources Aspire offers. Understanding these cohort differences is essential when assessing differences in attendance and score improvement between

cohorts, and for adapting the program to meet students' evolving needs and motivations.

Finally, variation in program structure and curriculum across semesters may have influenced Aspire's efficacy. Changes in session content, session duration, teaching methods, and the number of available mentors can all affect how well students absorb the material. For instance, certain semesters may have placed greater emphasis on personalized mentoring, and others may have focused more on test-taking strategies or group instruction. These shifts can create inconsistencies in the overall effectiveness of the program from one cohort to the next, and it may be necessary to evaluate which approaches yield the best outcomes to refine the curriculum going forward.

Study Implications

Socioeconomic status affects achievement throughout the educational continuum, from influencing elementary school test scores to determining the resources available at home, the quality of students' learning environments, and the social capital that can be used to improve students' academic experience (Black et al., 2016; Dahlke et al., 2023; Lin et al., 2020; Shekhar et al., 2024; Sirin, 2005; Stitzel & Raje, 2022; Zwick, 2004). Thus, the inequalities that manifest in poorer performance on the SAT may begin before a student has even set foot in the classroom. Although Aspire does not address the earlier causes of educational disparities, it may provide a model for a late-stage, service-learning intervention to lessen the far-reaching effects of socioeconomic inequality. Considering the score gains of our specific student population, our model may have the potential to diminish the income achievement gap for low-income students who identify with traditionally underserved demographics. Furthermore, Aspire students receive not only individualized mentorship, but also the opportunity to build strong peer-to-peer connections in a supportive environment. This dynamic provides social support that may act as a protective factor in mitigating the impact of SES on academic performance (Cygrymus & Lent, 2023; Malecki & Demaray, 2006; Schneider et al., 2014; Strang, 2015).

It is also important to note that our model provides an SAT preparation service at no cost to students. The Princeton Review,

which is a leading commercial test preparation provider, charges \$949–\$2,349 per student for an SAT preparation class and \$1,750–\$6,650 for up to 18 hours of private SAT tutoring, according to 2024 prices (Princeton Review, n.d.). Conversely, Aspire's primary costs, which mainly entail printing worksheets and providing snacks for each session, amount to less than \$1,000 per year. To illustrate, costs for the Fall 2023 semester were approximately \$450, equating to an average of \$26.31 per student. The cost per student is likely even lower, considering that Aspire's snack purchases also feed mentors. Thus, for less than the cost of a single large-classroom subscription to a commercial program, our model has been able to serve anywhere from five to 32 students per semester, addressing not only disparities in SAT prep access but also knowledge gaps related to post-secondary preparation: In addition to SAT tutoring, Aspire provides extensive support for students throughout the college application process and mentorship on various life skills, from financial literacy to job interviews. This comprehensive approach has encouraged students to pursue opportunities they might have otherwise hesitated to explore, helping them secure scholarships, gain admission to various colleges, and feel more confident about transitioning to the next phase of their academic and professional careers.

Additionally, based on years of mentor testimony, the undergraduate students who volunteer as Aspire mentors gain valuable skills from their participation, including leadership, cultural sensitivity, professional communication, teaching skills, creative problem-solving, goal-setting, and strategic planning, all while learning about educational inequality and the diffuse effects of poverty. Mentors' ages, academic pathways, and high school SAT scores have varied widely, and some Aspire mentors never took the SAT, much less participated in SAT prep programs themselves. However, these diverse backgrounds and experiences, along with the variety of majors represented by Aspire mentor cohorts, suggest that just about any college student who is willing to make the commitment is capable of being an effective mentor. Although not objectively measured, our program has also influenced the career trajectories and interests of the undergraduate students involved, inspiring careers in fields from social work to academia.

Whereas our program focuses on serving low-income and minority students in an urban setting, a previous study has demonstrated that students in rural areas face similar disparities in SAT performance (Herman et al., 2013; Schneider et al., 2014). Given the success seen in urban settings, expanding our low-cost SAT mentorship model to benefit students in rural areas could help level the playing field, highlighting the potential of service-learning initiatives to address educational inequities across diverse contexts. Ultimately, the Aspire model offers civic-minded universities—whether urban or rural—an opportunity to bridge the gap in access to SAT preparation for low-income students, thereby reducing systemic disparities in academic achievement and opportunity. By providing meaningful development opportunities for both students and mentors, service-learning programs like Aspire foster a collaborative environment that empowers all participants to uplift their communities, combat the effects of socioeconomic inequality, and reach their full potential.



Author Note

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Appendix A. Program Structure and Key Stakeholders

Aspire is a collaborative initiative involving several groups: the Aspire executive board, program directors, community partners, mentors from the University of Houston, and mentees from the partner school. The Aspire executive board is comprised of a group of highly dedicated college students who exhibit commitment and passion for the project's mission. These executives are selected for their positions after an interview process with program directors, who are UH faculty that agree to serve and guide the direction, communications, and cohesiveness of the program. Similarly, Aspire's community partner is a designated teacher at the partner school who agrees to serve as a program supervisor, advocate, and liaison to the partner school's students, faculty, and administrative staff, and as a key benefactor in ensuring the success of the program.

Appendix B. Program Costs

Both mentors and mentees are responsible for the cost of transportation to and from after-school sessions. Mentors are able to carpool with other Aspire mentors or arrange alternative transport, but they may need to pay for gas, the cost of which may be reimbursed by the University of Houston. Beginning with the Fall 2022 semester, Aspire began awarding scholarships (distributed as Visa gift cards) to the one to two students with the highest attendance and engagement throughout the program. In Fall 2022 and Spring 2023, two \$50 Visa gift cards were awarded; in Fall 2023, one \$100 gift card was awarded. These scholarships, each of which costs approximately \$102 in total, are distributed during the celebration hosted during the final program session. Other program expenses include snacks for each session, printing costs for in-session worksheets and out-of-session worksheets, and teaching supplies, such as whiteboards, markers, folders, and erasers. Overall, Aspire's primary costs—which mainly encompass snacks, printing, and supplies—amount to less than \$1,000 per year.

Appendix C. Curriculum Topics

The Aspire curriculum covers a wide range of topics related to SAT preparation, college readiness, and life skills. Resources and curricula are available for all topics; however, not every topic is covered each semester. Non-SAT topics like college applications and post-secondary preparation are interspersed in small volumes throughout each session and/or taught based on individual mentee interests. Although these topics are important for closing the knowledge gap for students at underresourced high schools, Aspire's primary focus is improving students' performance on the SAT. These subjects thus constitute a small portion of the curriculum, and the special topics covered vary each semester based on each cohort's interests. Similarly, Aspire's program calendars, which outline one to three specific topics per session, vary by semester and merely serve as a suggested framework for mentors and mentees. Each mentor-mentee pairing is encouraged to customize their calendars to address the mentee's unique needs and interests, and the vast majority of mentor-mentee pairs elect to do so. Below is an overview of topics covered in Aspire's curriculum.

- **SAT Math**
 - *Algebra*: Powers and roots; factoring; expressions; solving equations; systems of equations; linear functions, equations, and inequalities; and interpreting linear models
 - *Geometry and trigonometry*: Area and volume; lines, angles, and triangles; right triangles and trigonometry; circles; and degrees and radians
 - *Problem-solving and data analysis*: Averages, statistics, and probability; percents, proportions, ratios, and rates; and word problems and reading data
 - *Advanced math*: Exponents and radicals, exponential versus linear growth, non-linear functions, synthetic division, complex numbers, and absolute value
- **SAT Reading and Writing**
 - *Reading*: Process of elimination, strategies for approaching different passages
 - *Writing*: Literary devices; standard English conventions; sentence structure; subject-verb agreement; parallelism; comparisons; pronoun errors; pronouns, person, and number; dangling modifiers; verb tense; irregular verbs; adjectives versus adverbs; mood, voice, style, and diction; concision, cohesion, and organization; and idioms
- **College**
 - *College applications*: College application deadlines; safety, match, and reach schools; choosing a school; ApplyTexas and CommonApp; college essays; college interviews; and FAFSA, loans, and scholarships
 - *Alternative pathways*: Trade schools, community college
 - *College life*: Choosing a major, extracurriculars, common college misconceptions, housing, study abroad, work-life balance, campus jobs, and work-study programs
- **Life skills**
 - *Professional communication*: Using LinkedIn, sending professional emails
 - *Job interviews*: Common questions and how to answer, interview practice, and interview etiquette
 - *Resumes and cover letters*: Sections and formatting, how to describe experiences more effectively, example resumes, and resume review
 - *Financial literacy*: Budgeting and making financial decisions, how taxes work, managing credit and debit, choosing a credit card, opening a bank account (checking and savings), and living on your own (paying for housing, bills, insurance, car payments, etc.)

Appendix D. Final Celebration and Mentee Awards

The final session of each semester's program is a celebration of student efforts. Food and drink is provided, and a mentor panel is hosted, allowing mentees to ask mentors questions about various program topics, such as how mentors navigate college responsibilities. Additionally, beginning in Fall 2022, Visa gift cards are awarded during the celebration to the mentees who have shown the greatest engagement in the program. This achievement is measured via a point system, where points are awarded based on mentee attendance and the number of out-of-session worksheets (OSWs) completed. One point is awarded per session attended and per OSW completed, with OSW completion verified and recorded by mentees' respective mentor(s). Linking the Visa gift cards to this point system is designed not only to incentivize consistent participation in the program, but also to recognize the students who have devoted significant effort to their improvement, encouraging them to maintain their commitment to their future success. This being said, final celebrations ultimately provide mentors an opportunity to celebrate mentees' progress, disburse mentee awards, and foster a supportive and welcoming environment for all parties.

Appendix E. Mentor Characteristics

Table E1. Mentor Demographics

Mentor race	<i>n</i>	Percent of total (%)
Asian/Pacific Islander	20	48.8
White/Caucasian	9	22.0
Hispanic/Latino	6	14.6
Black/African American	5	12.2
Hispanic/Latino and Black/African American	1	2.4

Note. Demographic data for all Aspire mentors in the Fall 2019, Fall 2021, Spring 2022, Fall 2022, Spring 2023, and Fall 2023 cohorts (*n* = 41).

Table E2. Mentor Areas of Study

Mentor degree program	<i>n</i>	Percent of total (%)
College of Natural Sciences & Mathematics	12	29.3
College of Liberal Arts & Social Sciences	13	31.7
C.T. Bauer College of Business	11	26.8
Cullen College of Engineering	2	4.9
College of Education	1	2.4
College of Technology	1	2.4
Gerald D. Hines College of Architecture & Design	1	2.4

Note. Undergraduate college of all Aspire mentors in the Fall 2019, Fall 2021, Spring 2022, Fall 2022, Spring 2023, and Fall 2023 cohorts (*n* = 41).

Appendix F. Characteristics of Study Participants With Available Demographic Data

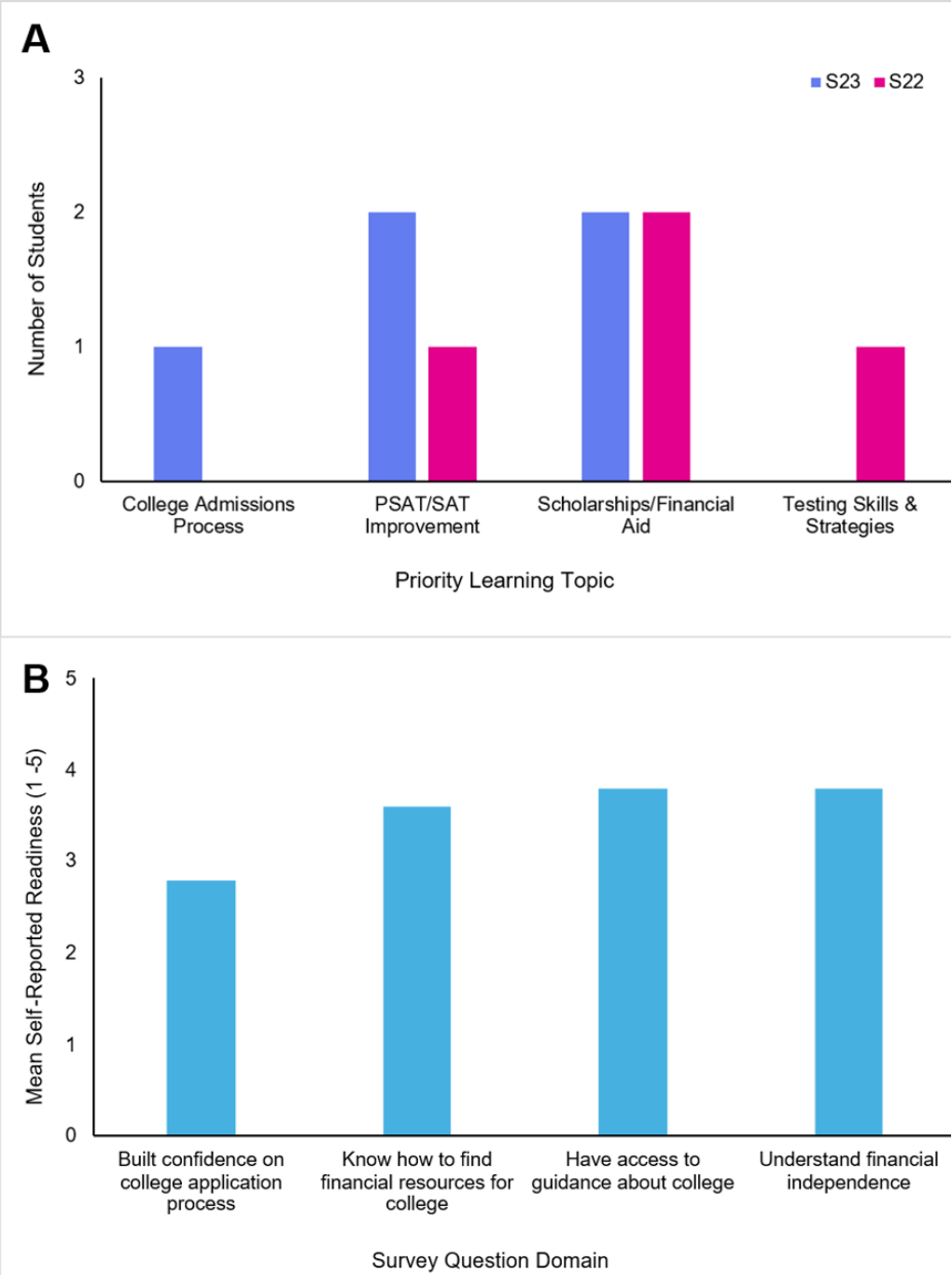
Table F1. Participants' Sex, Income Status, First-Generation Status, and Ethnicity

Student	Cohort	Sex	LI	FG	Ethnicity
Student 46	F21	Female	Yes	Yes	Hispanic or Latino
Student 50	F21	Male	Yes	Yes	Hispanic or Latino
Student 52	F21	Female	No	No	Black or African American
Student 56	F21	Female	Yes	No	Hispanic or Latino
Student 57	F21	Female	Yes	Yes	Hispanic or Latino
Student 60	F21	Female	Yes	No	Other/Prefer not to answer
Student 61	F21	Female	Yes	Yes	Black or African American
Student 62	F21	Male	Yes	No	Hispanic or Latino
Student 64	F21	Male	Yes	Yes	Hispanic or Latino
Student 65	S22	Female	Yes	Yes	Black or African American
Student 66	F22	Male	Yes	Yes	Hispanic or Latino
Student 70	F22	Male	Yes	No	White
Student 71	F22	Female	Yes	No	Black or African American
Student 75	S23	Female	Yes	Yes	Hispanic or Latino
Student 76	S23	Female	Yes	Yes	Hispanic or Latino
Student 77	S23	Female	Yes	Yes	Hispanic or Latino
Student 82	S23	Female	Yes	Yes	Hispanic or Latino
Student 83	S23	Female	Yes	Yes	Hispanic or Latino
Student 84	S23	Female	Yes	Yes	Hispanic or Latino
Student 86	F23	Female	Yes	Yes	Hispanic or Latino
Student 87	F23	Male	Yes	Yes	Hispanic or Latino
Student 88	F23	Male	Yes	Yes	Hispanic or Latino
Student 89	F23	Female	Yes	Yes	Hispanic or Latino
Student 90	F23	Female	Yes	Yes	Hispanic or Latino
Student 91	F23	Female	N/A	N/A	N/A
Student 92	F23	Female	N/A	N/A	N/A
Student 93	F23	Female	Yes	Yes	Hispanic or Latino
Student 94	F23	Female	Yes	Unsure	Hispanic or Latino
Student 95	F23	Male	Yes	Yes	Hispanic or Latino
Student 96	F23	Male	Yes	Yes	Hispanic or Latino
Student 97	F23	Female	Yes	Yes	Hispanic or Latino
Student 98	F23	Female	N/A	N/A	N/A
Student 101	F23	Female	Yes	Yes	Hispanic or Latino

Note. LI = low-income, FG = first-generation. For all study participants who reported their sex ($n = 33$), the majority of students were female (72.7%, $n = 24$) versus male (27.3%, $n = 9$). For students who provided information on whether they qualified for free/reduced lunch or other public assistance ($n = 30$), the vast majority were defined as low-income (96.7%, $n = 29$) versus not low-income (3.3%, $n = 1$). For students who reported the highest education level attained by their parents ($n = 29$), most students identified as first-generation (76.7%, $n = 23$) versus non-first-generation (20.7%, $n = 6$). For students who provided ethnicity data ($n = 29$), most identified as Hispanic or Latino (82.8%, $n = 24$), followed by students who identified as Black or African American (13.8%, $n = 4$), equating to a 96.6% proportion of Aspire students who identified as underrepresented minorities.

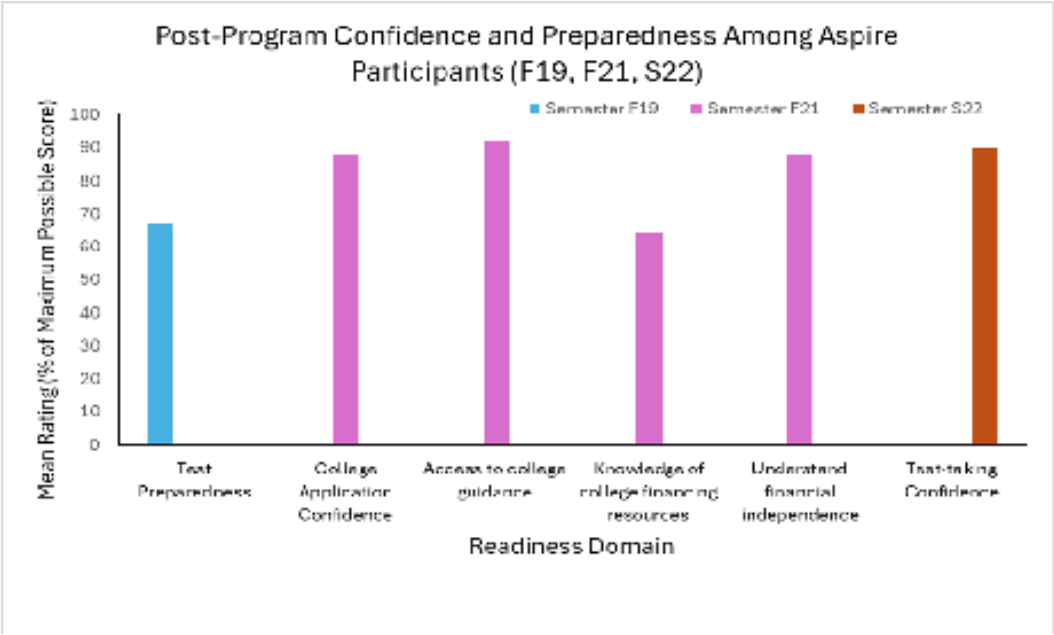
Appendix G. Student Readiness and Program Experiences Based on Survey Responses

Figure G1. Preprogram Readiness and Learning Priorities Among Aspire Participants



Note. Figure G1A (top) graphs preprogram college and financial readiness among Fall 2021 Aspire participants ($n = 5$). Mean self-reported readiness ratings (1–5 on Likert scale) are shown for domains related to college application confidence, knowledge of college financing resources, access to college guidance, and understanding of financial independence. Figure G1B (bottom) graphs preprogram learning goals reported by Aspire participants in Spring 2022 ($n = 4$) and Fall 2023 ($n = 6$). Bars represent the number of students identifying a given topic as a primary learning goal upon program entry, based on mentee registration forms or beginning-of-program surveys. Priority topics reflect descriptive categorization of open-ended responses and illustrate areas of greatest perceived need prior to Aspire participation. Collectively, Figure G1 indicates that students entered Aspire with uneven baseline readiness and clear informational needs—particularly related to college financing, standardized test performance, and navigating the college admissions process.

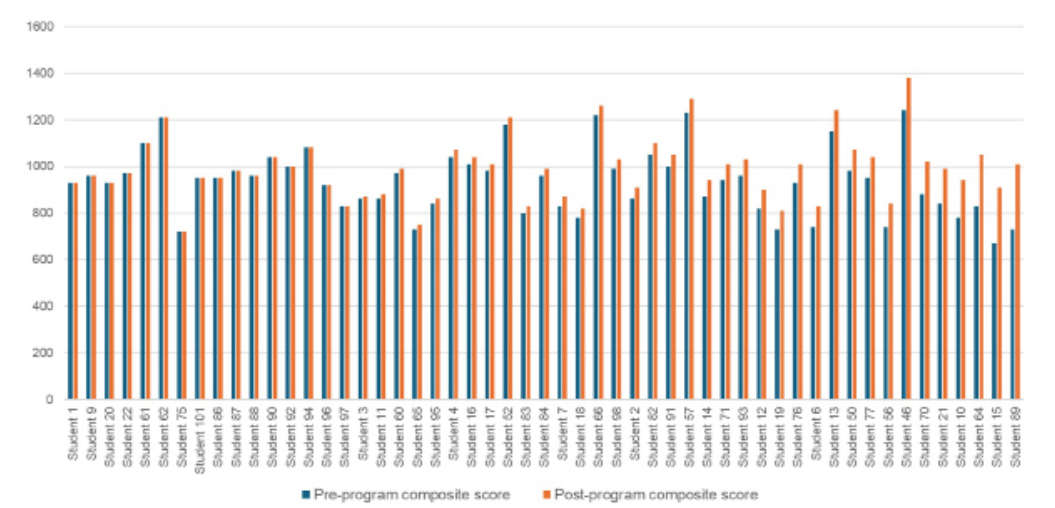
Figure G2. Postprogram Confidence and Preparedness Among Aspire Participants in Fall 2019, Fall 2021, and Spring 2022 Cohorts



Note. Mean postprogram ratings are shown for readiness domains measured in end-of-program surveys, including test preparedness or test-taking confidence, college application confidence, knowledge of college financing resources, and understanding financial independence. To facilitate comparison across the Fall 2019 ($n = 7$), Fall 2021 ($n = 5$), and Spring 2022 ($n = 4$) cohorts using different Likert-scale ranges, mean values are expressed as a percentage of the maximum possible score for each item. Readiness domains vary by cohort based on survey instruments administered. Across the cohorts, students reported high postprogram confidence and preparedness in domains aligned with Aspire’s standardized testing and college-readiness objectives.

Appendix H. Individual Student Statistics

Figure H1. Individual Composite Score Change



Note. Side-by-side comparison of all study participants' composite scores for preintervention SAT exam and their postintervention SAT, listed by least to greatest score change from left to right ($n = 53$).

Table H1. Individual SAT Score and Attendance Data

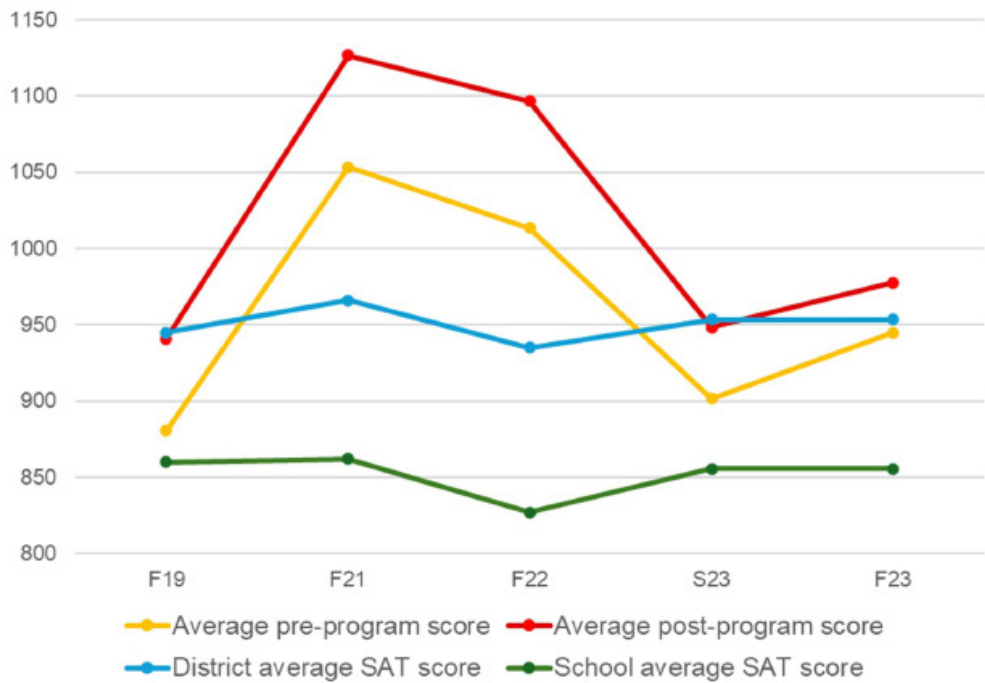
Student	Cohort	Pre-PS	Post-PS	Score change (Pts)	Score change (%)	Sessions attended
Student 1	F19	930	930	0	0.00	3
Student 2	F19	860	910	50	5.81	3
Student 3	F19	860	870	10	1.16	3
Student 4	F19	1,040	1,070	30	2.88	6
Student 6	F19	740	830	90	12.16	3
Student 7	F19	830	870	40	4.82	1
Student 9	F19	960	960	0	0.00	2
Student 10	F19	780	940	160	20.51	5
Student 11	F19	860	880	20	2.33	6
Student 12	F19	820	900	80	9.76	5
Student 13	F19	1,150	1,240	90	7.83	2
Student 14	F19	870	940	70	8.05	6
Student 15	F19	670	910	240	35.82	6
Student 16	F19	1,010	1,040	30	2.97	3
Student 17	F19	980	1,010	30	3.06	6
Student 18	F19	780	820	40	5.13	7
Student 19	F19	730	810	80	10.96	6
Student 20	F19	930	930	0	0.00	2
Student 21	F19	840	990	150	17.86	2
Student 22	F19	970	970	0	0.00	5

Student	Cohort	Pre-PS	Post-PS	Score change (Pts)	Score change (%)	Sessions attended
Student 46	F21	1,240	1,380	140	11.29	2
Student 50	F21	980	1070	90	9.18	2
Student 52	F21	1,180	1,210	30	2.54	2
Student 56	F21	740	840	100	13.51	2
Student 57	F21	1230	1290	60	4.88	7
Student 60	F21	970	990	20	2.06	1
Student 61	F21	1,100	1,100	0	0.00	1
Student 62	F21	1,210	1,210	0	0.00	7
Student 64	F21	830	1,050	220	26.51	2
Student 65	S22	730	750	20	2.74	3
Student 66	F22	1,220	1,260	40	3.28	11
Student 70	F22	880	1,020	140	15.91	1
Student 71	F22	940	1,010	70	7.45	5
Student 75	S23	720	720	0	0.00	4
Student 76	S23	930	1,010	80	8.60	2
Student 77	S23	950	1,040	90	9.47	1
Student 82	S23	1,050	1,100	50	4.76	1
Student 83	S23	800	830	30	3.75	2
Student 84	S23	960	990	30	3.13	1
Student 86	F23	950	950	0	0.00	2
Student 87	F23	980	980	0	0.00	4
Student 88	F23	960	960	0	0.00	2
Student 89	F23	730	1,010	280	38.36	4
Student 90	F23	1,040	1,040	0	0.00	1
Student 91	F23	1,000	1,050	50	5.00	1
Student 92	F23	1,000	1,000	0	0.00	1
Student 93	F23	960	1,030	70	7.29	2
Student 94	F23	1,080	1,080	0	0.00	2
Student 95	F23	840	860	20	2.38	3
Student 96	F23	920	920	0	0.00	1
Student 97	F23	830	830	0	0.00	5
Student 98	F23	990	1,030	40	4.04	1
Student 101	F23	950	950	0	0.00	5

Note. Columns represent study participants' composite scores for their preintervention SAT exam and their postintervention exam, the cohort they participated in, their score change in points, their percent score change, and the number of SAT-relevant Aspire sessions they attended prior to their postintervention exam date ($n = 53$). Pre-PS = preprogram score, Post-PS = postprogram score, Pts = points.

Appendix I. SAT Scores by Cohort and School/District Averages

Figure I1. Line Graph of Average Pre- and Postprogram SAT Scores by Cohort and Comparison With School and District Averages



Note. Line graph comparing study participants’ average SAT scores pre- and postprogram (by cohort), the average districtwide SAT score for their graduating class, and the average schoolwide SAT score for their graduating class. The Spring 2022 cohort was excluded due to having only one student who fit all inclusion criteria. F19 = Fall 2019, F21 = Fall 2021, F22 = Fall 2022, S23 = Spring 2023, F23 = Fall 2023.

Table I1. Average Pre- and Postprogram SAT Scores by Cohort and Comparison With School and District Averages

Cohort	Average pre-PS	Average post-PS	District average SAT score	School average SAT score
Fall 2019	881	941	945	860
Fall 2021	1,053	1,127	966	862
Fall 2022	1,013	1,097	935	827
Spring 2023	902	948	953.5 ^a	855.67 ^a
Fall 2023	945	978	953.5 ^a	855.67 ^a

Note. Table comparing study participants’ average SAT scores pre- and postprogram (by cohort), the average districtwide SAT score for their graduating class, and the average schoolwide SAT score for their graduating class. The Spring 2022 cohort was excluded due to having only one student who fit all inclusion criteria. Pre-PS = preprogram score, Post-PS = postprogram score.

^aThe average school and district composite SAT scores for the class of 2024 (Spring 2023 and Fall 2023 students) were calculated by averaging the school and district mean SAT scores for prior graduating classes (classes of 2018–2023). Official score reports for the class of 2024 have yet to be released.

Table I2. District and Campus Average SAT Scores by Graduating Class

Graduating class	District average SAT score	School average SAT score
Class of 2018	961	876
Class of 2019	954	860
Class of 2020	945	860
Class of 2021	960	849
Class of 2022	966	862
Class of 2023	935	827

Note. Data pulled from official educational program reports (Houston Independent School District, 2018, 2019, 2020, 2022, 2023; Hui et al., 2024).