Using EXPLORE® and PLAN® Data to Evaluate GEAR UP Programs

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NATIONAL COUNCIL FOR
Community and Education Partnerships

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March 1, 2007

ACT is an independent, not-for-profit organization whose mission is helping people achieve education and workplace success. And it has been our pleasure in having had this opportunity to work with the National Council for Community and Education Partnerships (NCCEP) in its work of developing research-based college access programs and supporting the implementation of proven educational strategies. The following report is the culmination of our work.

In 2005/2006, ACT and NCCEP collaborated to collect data for evaluating student gains in academic achievement, course planning behavior, and commitment to college plans. An elemental study was created to evaluate the effectiveness of the federal GEAR UP (Gaining Early Awareness and Readiness for Undergraduate Programs) program, whose goal is to prepare students for college.

Comparisons were measured between GEAR UP and Non-GEAR UP schools at grade levels 8 and 10, using the ACT EPAS™ (Educational Planning and Assessment System). The study found that GEAR UP programs make a difference when compared to Non-GEAR UP schools regarding academic readiness and college intent. We found that GEAR UP students were more likely to be on track as college-ready, more likely to be taking the necessary core curriculum, and more likely to have plans for college by 10th grade. We also were able to make suggestions and specific recommendations to schools regarding best practices.

What we have learned with this comprehensive, longitudinal study is important to continued improvement in GEAR UP schools and how they help their students. Since many students in GEAR UP schools come with multiple challenges to their academic success, intervention programs become critical to raising the skills and expectations of these students. They previously may not have considered finishing high school, let alone further education. As we evaluate the various intervention programs of individual schools, we develop a better understanding of how best to assist students in becoming successful in their academic careers in both high school and as they continue on.

In studying this process, we have also learned how to evaluate GEAR UP programs and in what areas we need further study and follow up. And while there is continued room for improvement in helping students prepare for their future, this report signifies that we are on the right path.

I would like to thank all of those whose hard work and continuous efforts went into creating this study and report. I look forward to continued partnership between ACT, NCCEP, and GEAR UP, and to a brighter future for our country's young people.

Cynthia B. Schmeiser
President and COO, Education Division, ACT, Inc.

March 1, 2007

For the last eight years, the National Council for Community and Education Partnerships (NCCEP) has been working to increase educational expectations, preparation, and success for low-income students and their communities across the country. We do this by supporting and strengthening research-based and practice-proven educational intervention strategies, like the federal GEAR UP program, for which we serve as the national intermediary organization and technical assistance provider. We believe that GEAR UP is one of the most promising educational strategies for decreasing the academic achievement gap and increasing this country's global competitiveness.

As the GEAR UP program has grown in size and reputation, serving millions of students in its short history and producing positive data such as drastically increased high school graduation rates, NCCEP has continually worked to refine the program for maximum effectiveness. We emphasize as part of our organization's operating principles that sound research and evaluation should be at the core of both the program's growth in the policy arena as well as in impacting the program's refinement at the state and local levels.

It is for that reason that we engaged in a research collaboration with ACT to investigate some of the impact that GEAR UP was having beyond the data currently collected. In partnering with ACT, we choose an organization that is not only a leader in educational research as it relates to academic achievement and rigor but also one that understands the vital links between research, effective practice, and policy development. It is a tremendous asset to the GEAR UP and broader college access communities that ACT has joined this evaluative effort.

Our study sought to ask the broadest research question possible about GEAR UP– do students benefit by having GEAR UP in their school? The results in this report indicate that the answer is yes, and speak to the promise of GEAR UP. Despite the study limitations, the results indicate that GEAR UP is having a positive effect on students. Because of the study limitations, we have every reason to believe that the effect of GEAR UP is even greater than indicated. It is especially encouraging to see these kinds of results for GEAR UP over such a short period of time. More work needs to be done to refine GEAR UP and better understand its impact, but the results of this study, coupled with other data being collected nationally, allow us to move ahead with the knowledge that GEAR UP is working.

NCCEP views this report as another step in the still nascent research and evaluation being conducted on GEAR UP. We will continue to seek avenues to advance and accelerate efforts in this direction. I encourage others to do so as well. We look forward to nurturing our partnership with ACT so that together we can continue to advance what we know about the positive impact of GEAR UP and college access programming.

Hector Garza
President, National Council for Community and Education Partnerships (NCCEP)

Executive Summary

In this report, we compare changes in academic readiness and college intent for a sample of students from GEAR UP schools to a comparable sample from Non-GEAR UP schools. We utilize assessment data from ACT's EXPLORE® and PLAN® programs to measure students' academic readiness and college intent at grade 8 and grade 10. Therefore, we are able to measure the degree that GEAR UP affects change between these two grades. Since GEAR UP programs begin no later than grade 7 and continue on past grade 10, we are only able to measure GEAR UP's effect for a portion of the intervention period. Further, the best indicator of GEAR UP's success will be whether college enrollment and retention rates improve for students from GEAR UP schools. Still, growth between grade 8 and grade 10 is crucial for college preparedness, as many students set their future educational course during this time period.

Our analyses suggest that the students from GEAR UP schools are slightly better than their Non-GEAR UP counterparts with respect to changes in academic readiness and college intent from grade 8 to grade 10.

Highlighting the findings:

- Students from GEAR UP schools had slightly greater changes in overall academic performance from grade 8 to grade 10. Relative to the Non-GEAR UP comparison group, students in the GEAR UP group gained 0.16 more composite scale score points, on average, for one of the cohorts studied. For the other cohort, there was no significant difference in change in overall academic performance.

- Students from GEAR UP schools were slightly more likely to be on track to be college-ready in English and Reading. Relative to the Non-GEAR UP comparison group, the odds of being college-ready were 16% and 27% higher for the GEAR UP group in English and Reading, respectively, for one of the cohorts studied. For the other cohort, there was no significant difference in the odds of being college-ready in English or Reading.

- Students from GEAR UP schools were slightly more likely to take the core high school curriculum and have plans for college at grade 10. These findings applied to just one cohort studied; for the other, there was no significant difference in taking the core high school curriculum or having plans for college.

In the Discussion section of this report, we talk about future evaluation efforts to ameliorate the limitations of the current study design. Specifically, our analysis would have been more likely to detect effects of the GEAR UP program if our data set had included information on which students received which interventions, and the duration and intensity of each student's intervention. Since interventions will vary across GEAR UP schools, it stands to reason that the outcomes affected will also vary across schools. For example, some programs may be more likely to affect changes in academic performance, while others are more likely to affect changes in knowledge of the college admissions process. By combining data across GEAR UP programs, we might lose the ability to detect these program-specific effects.

As detailed in the report, we selected our comparison group of schools based on their similarity to the GEAR UP schools. But, we acknowledge that any attempt to find a comparison group for GEAR UP schools will be imperfect. Since GEAR UP schools have the highest poverty levels, any comparison of GEAR UP schools to Non-GEAR UP schools will be flawed. In our analyses, we attempted to overcome the discrepancy in school poverty level by controlling for school's poverty level through regression modeling.

This study's findings suggest that the GEAR UP program has an effect on changes between grade 8 and grade 10; the study also sheds light on how GEAR UP programs can be properly evaluated. In the Discussion section, we give specific recommendations to schools and GEAR UP evaluators. We stress the need to track student-level intervention data as well as the need to track long-term student outcomes such as college enrollment, retention, and degree completion. We also recommend longitudinal assessment systems, such as ACT's EPAS (Educational Planning and Assessment System) program for measuring student and school-level growth from the middle school years all the way through high school.

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Introduction

Background

The Gaining Early Awareness and Readiness for Undergraduate Program (GEAR UP) is designed to provide assistance to low income students. The program provides discretionary grants for the purpose of increasing the readiness of low income students to attend and succeed in postsecondary education. The grants are up to six years in length and provide services to a cohort of students who are then followed from middle school through high school.

A reasonable question to ask is how a state or partnership can show that its GEAR UP program is having the desired effect. In this report, we build upon past work by PPSS (2003) and Terenzini, et al. (2005) in an attempt to measure GEAR UP's effects. We report on analyses using EXPLORE and PLAN data for the evaluation of GEAR UP programs. EXPLORE, an assessment typically given in 8th grade, and PLAN, an assessment typically given in 10th grade, are ideally suited for measuring the level of change between 8th and 10th grade. Both tests are intended to measure skills required for postsecondary success, and both have indicators of plans for postsecondary education.

Research Questions

The National Council for Community and Education Partnerships (NCCEP) provided electronic files to ACT identifying schools that participated in the GEAR UP program for three academic years (2002–2003, 2003–2004, and 2004–2005). For each academic year, staff at ACT determined which schools participated in ACT's EXPLORE program, which schools participated in ACT's PLAN program, and which schools participated in both. We report on outcomes for two cohorts of students from GEAR-UP schools: students that took EXPLORE in grade 8 during the 2002–2003 academic year and later took PLAN in grade 10 during the 2004–2005 academic year, and a subsequent cohort of students that took EXPLORE in grade 8 during the 2003–2004 academic year and later took PLAN in grade 10 during the 2005–2006 academic year.

Using the EXPLORE and PLAN data, the GEAR UP program can be evaluated with respect to changes in academic readiness and changes in educational plans. As detailed later in this report, the GEAR UP schools can be compared to similar Non-GEAR UP schools that also participated in EXPLORE and PLAN. Since our sample data include baseline measures (EXPLORE data) and follow-up measures (PLAN data), we can address research questions related to changes in outcomes that are attributable to the GEAR UP program. The research questions we address are all concerned with college preparedness and college intent. By

utilizing EXPLORE and PLAN data, we can study the level of change that occurs for specific cohorts of students between 8th and 10th grade. The research questions we address include:

1. Is there a difference between GEAR UP and Non-GEAR UP groups in changes in overall academic achievement from 8th to 10th grade?
2. Is there a difference between GEAR UP and Non-GEAR UP groups in changes in percentage of students who are on track for being prepared for college in four subject areas (English, mathematics, reading, and science)?
3. Is there a difference between GEAR UP and Non-GEAR UP groups in changes in percentage of students who are planning to take the core high school curriculum?
4. Is there a difference between GEAR UP and Non-GEAR UP groups in changes in percentage of students planning to go to college?

Method

Selection of Matching Schools

Data were drawn from ACT's EXPLORE and PLAN history files corresponding to the academic years of interest (i.e., EXPLORE data from 2002–2003 and 2003–2004 and PLAN data from 2004–2005 and 2005–2006). For each GEAR-UP school that participated in EXPLORE and PLAN, we selected a Non-GEAR UP school that also participated in EXPLORE and PLAN to serve as a control. Each Non-GEAR UP school was matched to a particular GEAR UP school based on combinations of the following school-level characteristics:

- Mean EXPLORE Composite score
- Grade level EXPLORE was administered
- Control (public vs. private)
- Enrollment size
- Number of EXPLORE-tested students
- Metropolitan area (urban, rural, or suburban)

As an example of the matching process, for the first cohort (EXPLORE-tested students of 2002–2003), 120 GEAR UP schools participated in the EXPLORE program and 119 matched to Non-GEAR UP schools on the school characteristics listed above. Some GEAR UP schools matched with more than one Non-GEAR UP school, providing us with a pool of Non-GEAR UP schools to select from. The most similarly matching school was selected from this pool. The main criteria for matching schools was to keep the difference in mean EXPLORE Composite score within one point. Without eliminating imperfectly matching pairs of schools, we tried to

maximize the number of matching variables. Before finalizing the matching process, we attempted to match on school's poverty level and school's state, in addition to the variables listed above. However, matching on these variables resulted in too many schools for which no adequate match was found. Rather than eliminating non-matching schools, we decided to eliminate poverty level and state as matching criteria. The matching process was executed in the same fashion for both cohorts. Table 1 gives the resulting sample sizes of school pairs and students for the two cohorts (labeled as Cohorts 1 and 2).

Table 1: Sample Sizes for Cohorts Studied

Cohort Number	Year and Assessments	Number of Matching School Pairs	Number of Students	
			GEAR UP	Non-GEAR UP
1	2002/2003 EXPLORE & 2004/2005 PLAN	119	6,270	5,808
2	2003/2004 EXPLORE & 2005/2006 PLAN	136	6,707	5,791

The Appendix includes tables that compare the GEAR UP and Non-GEAR UP groups on school and student-level characteristics. Table 24 compares the GEAR UP and Non-GEAR UP schools for both cohorts. All GEAR UP and Non-GEAR UP schools were public. On average, GEAR UP and Non-GEAR UP paired schools have the same aggregate achievement in grade 8 (mean EXPLORE Composite scores). The two groups of schools are similar on the other matching characteristics (the number of students tested, enrollment size, and locale). For both cohorts, there is a discrepancy in the poverty levels of the GEAR UP and Non-GEAR UP schools. There are more GEAR UP schools at the highest level of poverty (25% or more) and more Non-GEAR UP schools at the lowest level of poverty.

Table 25 in the Appendix compares the two groups with respect to student-level characteristics. The overall student-level sample sizes are slightly higher for the GEAR UP group. Both groups include a higher concentration of female students. Relative to the Non-GEAR UP group, the GEAR UP group has a higher percentage of Hispanic students and lower percentages of White and African-American students. The percentage of students whose parents did not complete high school is greater for the GEAR UP group for both cohorts. For example, 15.3% of the mothers in the GEAR UP group did not complete high school as compared to 11.9% in the Non-GEAR group for Cohort 1. This discrepancy is similar for Cohort 2: 14.3% as compared to 11.5%.

Results of the matching process are satisfactory, though imperfect, at the school and student levels for both cohorts studied. Comparing outcomes of students in GEAR UP and Non-GEAR UP schools is now meaningful

since we have eliminated most of the differences in school environments. That is, students within the Non-GEAR UP schools can be thought of as the control group that did not experience the GEAR UP program, yet experienced similar school environments. Therefore, differences in outcomes will not be attributed to the school environment but can be attributed to the GEAR UP program.

Outcomes Studied

The investigation focused on the level of college readiness and college intent in GEAR UP schools and their matched counterparts. Baseline (EXPLORE) and follow-up (PLAN) measures were available for all students, allowing us to compare changes from grade 8 to grade 10. The outcome variables we studied include the following:

- Changes in EXPLORE and PLAN Composite scores.
- Changes in meeting EXPLORE and PLAN College Readiness Benchmarks for each subject area.
- Changes in meeting EXPLORE and PLAN College Readiness Standards for each subject area.
- Plans for taking core high school curriculum at grade 10.
- Changes in plans for college from grade 8 to grade 10.

In the following paragraphs, we describe these outcomes in greater detail.

Changes in EXPLORE and PLAN Composite scores. The EXPLORE Composite score is the mean of four multiple choice tests in English, mathematics, reading, and science. Each test, and the composite, range from 1 to 25. The tests measure students' curriculum-related knowledge and cognitive skills important for future education and careers (ACT, 2001). Similarly, the PLAN Composite score is the mean of four multiple choice tests in the same four subject areas. The PLAN Composite scores range from 1 to 32 and measures student development in the same way as the EXPLORE Composite score, with the main difference being that the two tests focus on skills attained at different times in the students' educational experience (ACT, 1999). Therefore, a student's change in composite score (from EXPLORE to PLAN) can be used as a measure of academic growth. Since GEAR UP programs typically begin in 7th grade, we hope to see greater academic growth for the GEAR UP group between 8th and 10th grade.

Changes in meeting EXPLORE and PLAN College Readiness Benchmarks. Change in composite score is a measure of overall academic growth, but does not directly address college readiness. The second research question asks: Is there a difference between GEAR UP and Non-GEAR UP groups in changes in percentage of students who are on track for being prepared for college? ACT provides two different ways of establishing college readiness for EXPLORE and PLAN test scores: the

College Readiness Benchmarks (cf., Allen and Sconing, 2005) and the College Readiness Standards™. The College Readiness Benchmarks have been established for EXPLORE, PLAN, and the ACT®. For the ACT, they measure whether a student has the knowledge required to succeed in an entry-level credit-bearing college course. For both EXPLORE and PLAN, the benchmarks measure whether a student is on track to meet the ACT benchmark. The scale score cutoffs for meeting the EXPLORE and PLAN benchmarks, respectively, in the four subject areas are: English (13, 15), Mathematics (17, 19), Reading (15, 17), and Science (20, 21). If GEAR UP programs are effective, we should see students increase their levels of readiness, as measured by the benchmarks.

Changes in meeting EXPLORE and PLAN College Readiness Standards. The College Readiness Standards are a categorization of the EXPLORE, PLAN, and ACT score ranges into discrete levels. For each level, the standards delineate what students at that level can do (for further details see www.act.org/standard/index.html). If GEAR UP programs are effective, we should see students increase their levels of readiness, as measured by their standards level.

Plans for taking the core high school curriculum at grade 10. Recent policy reports have suggested that taking rigorous courses in high school is a key to being prepared for college and work (Adelman, 1999; ACT, 2005). Taking the core high school curriculum is an indicator of a student's plans and readiness for college and the workplace. When students take the PLAN assessment in 10th grade, they are asked to provide information about the high school courses they are taking or planning to take in the future. Using this information, we can determine which students are taking (or have plans for taking) the core high school curriculum. We consider the core high school curriculum to be four years of English and three years each of mathematics, science, and social studies. If GEAR UP programs are leading students to take more courses aligned with college expectations, we should see more GEAR UP students taking the core high school curriculum by 10th grade.

Changes in plans for college from grade 8 to grade 10. When students take the EXPLORE assessment, they are asked what their future educational plans are. They can mark one of the following options: not planning to complete high school, no education or other training planned, job training offered through military service, apprenticeship or other on-the-job training, vocational or technical school, two-year community college or junior college, four-year college or university, undecided about future educational plans, or other. When students take the PLAN assessment, they are again asked what their future educational plans are. We classified students as having college plans at grade 8 and grade 10 if their response was "two-year community college or junior college" or "four-year college or university." If their response was "undecided about future educational plans" or "other," we did not classify them as having or not having college plans. By considering this outcome variable, we can measure the extent to which GEAR UP students change their college plans from 8th to 10th grade.

Statistical Analyses

For each research question, we compared the GEAR UP and Non-GEAR UP groups on the relevant outcome of interest. For each outcome, our analysis entailed two steps: 1) descriptive analysis comparing means or frequency distributions of the outcomes for the two groups, and 2) regression analysis to test the statistical significance of the group differences, while controlling for baseline measures. In order to detect possible cohort differences, these two steps are performed separately for the two cohorts.

Since the first outcome (change in Composite score from EXPLORE to PLAN) is an interval-scaled variable, a linear regression model will be used. All other outcomes can be dichotomized and logistic regression models (see Agresti, pp. 84–90) will be used. For both types of models, we will account for variation across school pairs by using hierarchical modeling (see Raudenbush & Bryk, 2002). The hierarchical linear regression models will be fit using SAS PROC MIXED software (SAS, 2004) while the hierarchical logistic regression models will be fit using the SAS GLIMMIX macro (Wolfinger & O'Connell, 1993). For each regression model, we report estimates and 95% confidence intervals for the model's parameters. For the linear regression model, the GEAR UP estimates represent the average change in the outcome attributable to the GEAR UP program. For the logistic regression models, we report the odds ratio (and 95% confidence interval) associated with the GEAR UP program. The odds ratio, calculated as $\exp(\beta)$ where β is a logistic regression coefficient, is a measure often used to describe the strength of association between a predictor and a dichotomous outcome. For example, if the odds ratio associated with the GEAR UP program is 1.20, then we estimate that the odds of "success" are 1.20 times higher for the students from GEAR UP schools relative to students from Non-GEAR UP schools. Alternatively, we could interpret the odds ratio as the percentage increase in the odds of success. For example, an odds ratio of 1.20 could be interpreted as "the odds of success are 20% higher for students from GEAR UP schools." An odds ratio of one implies that no relationship was detected between the predictor and dichotomous outcome. Therefore, if the 95% confidence interval for the odds ratio contains one, then we do not consider the odds ratio statistically significant.

From our comparison of the school-level characteristics of GEAR UP and Non-GEAR UP schools (see Table 24), we know that GEAR UP schools have higher poverty levels than their matched Non-GEAR UP counterparts. Since a school's poverty level often has a pronounced effect on students' academic achievement, comparing outcomes for the two groups without adjusting for poverty level is somewhat misleading. Therefore, we included school poverty level as a covariate in our regression models in order to control for this discrepancy. To more precisely measure poverty level, we used a continuous indicator of each school's poverty level: proportion of students eligible for free or reduced lunch. The categorical version of this variable, obtained through Market Data Retrieval (www.schooldata.com) is summarized for the two cohorts in Table 24. We obtained the continuous version of this variable from the

National Center for Education Statistics' Common Core of Data (Sable, Thomas, & Shen, 2006). Unfortunately, the continuous poverty level indicator was not available for all GEAR UP and Non-GEAR UP schools. For Cohort 1, the variable was available for 89 of the 119 school pairs; for Cohort 2, the variable was available for 100 of the 136 school pairs. Therefore, the sample of data used in the regression analyses is smaller than the overall sample.

Results

Changes in Composite Scores

The first research question asked: Is there a difference between GEAR UP and Non-GEAR UP groups in changes in overall academic achievement from 8th to 10th grade? This question entails a comparison of the two groups with respect to changes in composite scores from EXPLORE to PLAN. EXPLORE and PLAN Composite score means are given in Figure 1 for Cohort 1 and Figure 2 for Cohort 2.

Figure 1: Mean Composite Scores for Cohort 1

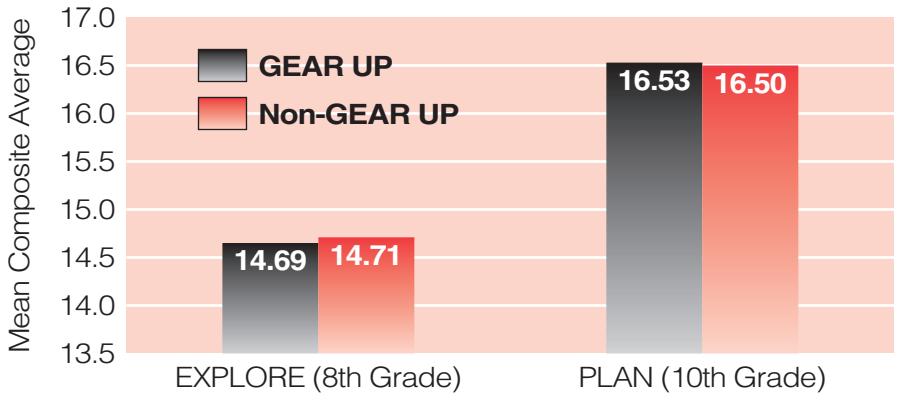
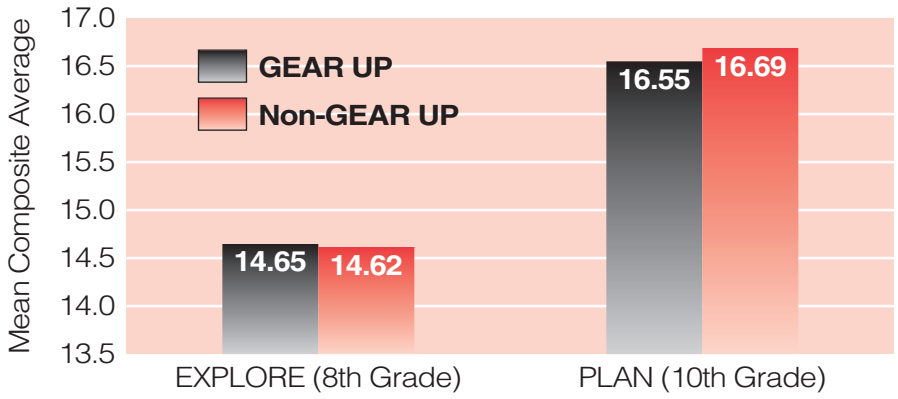


Figure 2: Mean Composite Scores for Cohort 2



Figures 1 and 2 suggest that the GEAR UP and Non-GEAR UP groups increased their composite scores at about the same level. When calculating the PLAN means, we only considered the students that had also taken EXPLORE. Therefore, the PLAN and EXPLORE means represent

identical samples of students and there is no selection bias. As a result of the matching process described earlier, EXPLORE means were about the same for the two groups. Comparing the PLAN means to the EXPLORE means, we see typical increases in composite scores of 1.84 for GEAR UP and 1.79 for Non-GEAR UP students in Cohort 1, and typical increases of 1.90 for GEAR UP and 2.07 for Non-GEAR UP schools in Cohort 2. So, from inspecting the means, it appears that the gains are very comparable for the two groups with the GEAR UP group having slightly higher gains in Cohort 1, but the Non-GEAR UP group gaining more in Cohort 2.

In addition to the simple comparison of means, we modeled the change in composite score (PLAN Composite – Explore Composite) as a function of group (GEAR UP vs. Non-GEAR UP) and school's poverty level. The results of the regression models are summarized in Table 2 for Cohort 1 and Table 3 for Cohort 2.

Table 2: Modeling Change in Composite Score–Cohort 1

Predictor	Estimate (95% C.I.)	Interpretation
GEAR UP	0.16 (0.07, 0.24)	After controlling for school's poverty level, students in the GEAR UP group gained 0.16 composite score points more than their Non-GEAR UP counterparts.
School's poverty level	–1.25 (–1.59, –0.90)	On average, students at higher poverty schools see smaller increases in their composite scores.

Table 3: Modeling Change in Composite Score–Cohort 2

Predictor	Estimate (95% C.I.)	Interpretation
GEAR UP	–0.05 (–0.14, 0.04)	After controlling for school's poverty level, students in the GEAR UP group gained slightly fewer composite score points than their Non-GEAR UP counterparts.
School's poverty level	–1.05 (–1.40, –0.69)	On average, students at higher poverty schools see smaller increases in their composite scores.

From Table 2 we see evidence that students in the GEAR UP group in Cohort 1 had greater changes in their composite scores relative to their Non-GEAR UP counterparts. After adjusting for school's poverty level, students at GEAR UP schools in Cohort 1 gained 0.16 Composite score points more than their Non-GEAR UP counterparts. We generally consider

differences that are 0.50 or more scale points (on EXPLORE, PLAN, and ACT score scales) as practically important. Since this difference is smaller, it would not be considered practically important using this criterion. However, this finding is statistically significant and points toward a small positive effect of GEAR UP on changes in academic achievement. This finding was not consistent across the two cohorts: for Cohort 2, there was no apparent effect of GEAR UP on change in composite score. The estimate of the parameter representing the GEAR UP effect was –0.05, but was not significantly different than zero since the 95% confidence interval (–0.14, 0.04) contained zero (see Table 3).

College Readiness Benchmarks

Comparing changes in composite score for GEAR UP and Non-GEAR UP schools provided a measure of GEAR UP's effect on overall academic achievement, but does not directly address GEAR UP's effect on college readiness in specific subject areas. The second research question asks: Is there a difference between GEAR UP and Non-GEAR UP groups in changes in percentage of students who are on track for being prepared for college in four subject areas (English, mathematics, reading, and science)? To help answer this question, we can compare the two groups with respect to the percentage of students meeting the College Readiness Benchmarks.

Results for meeting and not meeting the College Readiness Benchmarks for the two cohorts are given in Tables 4 and 5, respectively. For each subject area, these tables list the number of students who met the EXPLORE (grade 8) benchmark. Then, for each EXPLORE met benchmark/did not meet benchmark group, we list the number of students who met the corresponding PLAN (grade 10) benchmark. These statistics are presented separately for the GEAR UP and Non-GEAR UP schools. As an example, looking at Table 4, 2,619 GEAR UP students did not meet the EXPLORE English benchmark at grade 8. Of these students, 924 met the PLAN English benchmark at grade 10. Therefore, 35% of the GEAR UP students who were not on track to be ready for an entry-level credit-bearing English course subsequently improved to the point that they were on track to be ready in grade 10. This result can be compared with students in the Non-GEAR UP group who showed the same rate of improvement. From inspecting Tables 4 and 5, there does not appear to be any major differences in the GEAR UP and Non-GEAR UP groups with respect to meeting the PLAN benchmarks. It is apparent that students that met the benchmarks in grade 8 are much more likely to meet the benchmarks in grade 10. It is also apparent that many students are slipping in their mathematics college readiness between grade 8 and grade 10. Only about half of the students that met the mathematics benchmark in grade 8 go on to meet the benchmark in grade 10. The results appear to be quite similar for the two cohorts.

Table 4: Rates of Meeting Benchmarks from EXPLORE to PLAN–Cohort 1

Subject Area	GEAR UP			Non-GEAR UP		
	$N_{EXPLORE}$	Met PLAN Benchmark 2004–2005		$N_{EXPLORE}$	Met PLAN Benchmark 2004–2005	
		N	%		N	%
English						
Benchmark met	3,651	3,165	87	3,470	2,965	85
Benchmark not met	2,619	924	35	2,338	823	35
Mathematics						
Benchmark met	1,707	857	50	1,464	740	51
Benchmark not met	4,563	297	7	4,344	253	6
Reading						
Benchmark met	2,239	1,577	70	2,083	1,456	70
Benchmark not met	4,031	856	21	3,725	732	20
Science						
Benchmark met	473	316	67	408	280	69
Benchmark not met	5,797	587	10	5,400	591	11

Table 5: Rates of Meeting Benchmarks from EXPLORE to PLAN–Cohort 2

Subject Area	GEAR UP			Non-GEAR UP		
	$N_{EXPLORE}$	Met PLAN Benchmark 2005–2006		$N_{EXPLORE}$	Met PLAN Benchmark 2005–2006	
		N	%		N	%
English						
Benchmark met	3,824	3,255	85	3,406	2,981	88
Benchmark not met	2,883	981	34	2,385	875	37
Mathematics						
Benchmark met	1,770	951	54	1,427	803	56
Benchmark not met	4,937	298	6	4,364	309	7
Reading						
Benchmark met	2,426	1,808	75	2,042	1,585	78
Benchmark not met	4,281	983	23	3,749	920	25
Science						
Benchmark met	521	346	66	416	293	70
Benchmark not met	6,186	571	9	5,375	527	10

We fit logistic regression models for meeting PLAN benchmarks that adjust for the discrepancy in poverty level. In addition to group (GEAR UP versus Non-GEAR UP) and poverty level, we also included

whether the student met the EXPLORE benchmark as a predictor. This model was fit for each PLAN benchmark (English, mathematics, reading, and science) and for both cohorts. The results of these models are summarized in Table 6 for Cohort 1 and Table 7 for Cohort 2.

Table 6: Model for Meeting PLAN Benchmarks–Cohort 1

Subject Area	Predictor	Odds Ratio (95% C.I.)	Interpretation
English	GEAR UP	1.16 (1.04, 1.29)	After adjusting for poverty level and whether or not the EXPLORE benchmark was met, students in the GEAR UP group were more likely to meet the PLAN English benchmark.
	School's poverty level	0.53 (0.34, 0.80)	Students from schools with higher poverty levels were less likely to meet the PLAN English benchmark.
	Met EXPLORE benchmark	11.19 (10.07, 12.44)	The probability of meeting the PLAN English benchmark was much higher for students who met the EXPLORE benchmark.
Math	GEAR UP	1.11 (0.96, 1.27)	After adjusting for poverty level and whether or not the EXPLORE benchmark was met, students in the GEAR UP group were slightly more likely to meet the PLAN Math benchmark.
	School's poverty level	0.27 (0.15, 0.46)	Students from schools with higher poverty levels were less likely to meet the PLAN Math benchmark.
	Met EXPLORE benchmark	16.05 (14.00, 18.42)	The probability of meeting the PLAN Math benchmark was much higher for students who met the EXPLORE benchmark.
Reading	GEAR UP	1.27 (1.14, 1.41)	After adjusting for poverty level and whether or not the EXPLORE benchmark was met, students in the GEAR UP group were more likely to meet the PLAN Reading benchmark.
	School's poverty level	0.22 (0.15, 0.34)	Students from schools with higher poverty levels were less likely to meet the PLAN Reading benchmark.
	Met EXPLORE benchmark	9.00 (8.09, 10.00)	The probability of meeting the PLAN Reading benchmark was much higher for students who met the EXPLORE benchmark.
Science	GEAR UP	1.02 (0.88, 1.17)	After adjusting for poverty level and whether or not the EXPLORE benchmark was met, students in the GEAR UP group had about the same probability of meeting the PLAN Science benchmark.
	School's poverty level	0.20 (0.12, 0.34)	Students from schools with higher poverty levels were less likely to meet the PLAN Science benchmark.
	Met EXPLORE benchmark	18.23 (15.07, 22.05)	The probability of meeting the PLAN Science benchmark was much higher for students who met the EXPLORE benchmark.

Table 7: Model for Meeting PLAN Benchmarks–Cohort 2

Subject Area	Predictor	Odds Ratio (95% C.I.)	Interpretation
English	GEAR UP	1.02 (0.91, 1.15)	After adjusting for poverty level and whether or not the EXPLORE benchmark was met, students in the GEAR UP sample have about the same probability of meeting the PLAN English benchmark.
	School's poverty level	0.36 (0.24, 0.55)	Students from schools with higher poverty levels are less likely to meet the PLAN English benchmark.
	Met EXPLORE benchmark	10.36 (9.32, 11.52)	The probability of meeting the PLAN English benchmark is much higher for students who met the EXPLORE benchmark.
Math	GEAR UP	1.14 (0.97, 1.33)	After adjusting for poverty level and whether or not the EXPLORE benchmark was met, students in the GEAR UP group are slightly more likely to meet the PLAN Math benchmark.
	School's poverty level	0.12 (0.07, 0.22)	Students from schools with higher poverty levels are less likely to meet the PLAN Math benchmark.
	Met EXPLORE benchmark	17.67 (15.38, 20.31)	The probability of meeting the PLAN Math benchmark is much higher for students who met the EXPLORE benchmark.
Reading	GEAR UP	1.09 (0.98, 1.23)	After adjusting for poverty level and whether or not the EXPLORE benchmark was met, students in the GEAR UP sample are slightly more likely to meet the PLAN Reading benchmark.
	School's poverty level	0.25 (0.17, 0.37)	Students from schools with higher poverty levels are less likely to meet the PLAN Reading benchmark.
	Met EXPLORE benchmark	9.10 (8.17, 10.13)	The probability of meeting the PLAN Reading benchmark is much higher for students who met the EXPLORE benchmark.
Science	GEAR UP	1.19 (1.01, 1.42)	After adjusting for poverty level and whether or not the EXPLORE benchmark was met, students in the GEAR UP sample are more likely to meet the PLAN Science benchmark.
	School's poverty level	0.08 (0.04, 0.15)	Students from schools with higher poverty levels are less likely to meet the PLAN Science benchmark.
	Met EXPLORE benchmark	19.09 (15.72, 23.17)	The probability of meeting the PLAN Science benchmark is much higher for students who met the EXPLORE benchmark.

From Tables 6 and 7, we see consistent evidence that higher school poverty levels lead to lower probabilities of meeting the PLAN benchmarks. We also see that meeting the EXPLORE benchmarks greatly increases the likelihood of meeting PLAN benchmarks. We see

inconsistent evidence of GEAR UP's effect on meeting the PLAN benchmarks. For Cohort 1, students in the GEAR UP group are more likely to meet the PLAN English benchmark, once poverty level has been adjusted for. Since the odds ratio is greater than one (1.16) and the confidence interval (1.04, 1.29) does not contain one, there is evidence that the odds of meeting the PLAN English benchmark was greater for students in the GEAR UP group. For Cohort 2, the GEAR UP effect is not statistically significant since the odds ratio's confidence interval (0.91, 1.15) contains one. This suggests that students have about the same probability of meeting the PLAN benchmark, regardless of group. For the PLAN math benchmark, the positive GEAR UP effect is consistent across cohorts but again lacks statistical significance. For Cohort 1, students in the GEAR UP group have an 11% increase in the odds of meeting the PLAN math benchmark; for Cohort 2, students in the GEAR UP group have a 14% increase. For the PLAN reading benchmark, the GEAR UP effect is stronger for Cohort 1: students in the GEAR UP group have a 27% increase in the odds of meeting the PLAN reading benchmark; for Cohort 2, students in the GEAR UP group have a 9% increase. For the PLAN science benchmark, the GEAR UP effect is stronger for Cohort 2: for Cohort 1, students in the GEAR UP group have a 2% increase in the odds of meeting the PLAN science benchmark; for Cohort 2, students in the GEAR UP group have a 19% increase.

College Readiness Standards

The second research question can also be addressed by comparing the two groups with respect to improvements in level of College Readiness Standards. Tables 8 though 15 compare the groups with respect to the College Readiness Standards, with tables for each subject area and each cohort. Table 8 (Cohort 1) and Table 9 (Cohort 2) represent English, Tables 10 and 11 represent mathematics, Tables 12 and 13 represent reading, and Tables 14 and 15 represent science. These tables allow us to compare the GEAR UP group to the Non-GEAR UP group with respect to improvements in meeting the College Readiness Standards. For example, for GEAR UP students from Cohort 1, 2,619 did not meet the lowest level English standards on EXPLORE at grade 8. Of these students, 1,580 (60%) moved to the first level or higher of the English standards at grade 10 (PLAN). Note that EXPLORE and PLAN are on the same scale, so it is meaningful to compare standards at grade 8 to standards at grade 10. For the Non-GEAR UP group, 60% of the students that did not meet the EXPLORE English standards moved to the first level or higher of the standards at grade 10. So, in this case, the rates of improvement were identical for the GEAR UP and Non-GEAR UP groups. Across the different subject areas and two longitudinal cohorts, the results for the GEAR UP group are generally comparable to those for the Non-GEAR UP group.

Table 8: EXPLORE and PLAN English College Readiness Standards–Cohort 1

Score Range for Each College Readiness Standard	GEAR UP			Non-GEAR UP		
	$N_{EXPLORE}$	Improved from EXPLORE to PLAN		$N_{EXPLORE}$	Improved from EXPLORE to PLAN	
		N	%		N	%
Did not meet standards	2,619	1,580	60	2,338	1,413	60
13–15	1,574	1,004	64	1,534	923	60
16–19	1,370	530	39	1,360	478	35
20–23	660	167	25	535	116	22
24–27	47	12	26	41	16	28

Table 9: EXPLORE and PLAN English College Readiness Standards–Cohort 2

Score Range for Each College Readiness Standard	GEAR UP			Non-GEAR UP		
	$N_{EXPLORE}$	Improved from EXPLORE to PLAN		$N_{EXPLORE}$	Improved from EXPLORE to PLAN	
		N	%		N	%
Did not meet standards	2,883	1,684	58	2,385	1,430	60
13–15	1,651	1,022	62	1,487	973	65
16–19	1,424	542	38	1,316	540	41
20–23	704	216	31	564	166	29
24–27	45	15	33	39	6	15

Table 10: EXPLORE and PLAN Mathematics College Readiness Standards–Cohort 1

Score Range for Each College Readiness Standard	GEAR UP			Non-GEAR UP		
	$N_{EXPLORE}$	Improved from EXPLORE to PLAN		$N_{EXPLORE}$	Improved from EXPLORE to PLAN	
		N	%		N	%
Did not meet standards	1,536	1,095	71	1,428	1,035	72
13–15	2,279	1,240	54	2,211	1,195	54
16–19	2,170	606	28	1,938	525	27
20–23	245	105	43	203	86	42
24–27	40	21	53	28	16	57

Table 11: EXPLORE and PLAN Mathematics College Readiness Standards–Cohort 2

Score Range for Each College Readiness Standard	GEAR UP			Non-GEAR UP		
	$N_{EXPLORE}$	Improved from EXPLORE to PLAN		$N_{EXPLORE}$	Improved from EXPLORE to PLAN	
		N	%		N	%
Did not meet standards	1,681	1,235	73	1,520	1,145	75
13–15	2,506	1,272	51	2,130	1,189	56
16–19	2,182	645	30	1,909	621	33
20–23	281	108	38	191	94	49
24–27	57	24	42	41	14	34

Table 12: EXPLORE and PLAN Reading College Readiness Standards–Cohort 1

Score Range for Each College Readiness Standard	GEAR UP			Non-GEAR UP		
	$N_{EXPLORE}$	Improved from EXPLORE to PLAN		$N_{EXPLORE}$	Improved from EXPLORE to PLAN	
		N	%		N	%
Did not meet standards	2,697	1,605	60	2,413	1,464	61
13–15	1,958	1,005	51	1,842	906	49
16–19	1,158	544	47	1,147	516	45
20–23	327	86	26	317	103	32
24–27	130	24	18	89	15	17

Table 13: EXPLORE and PLAN Reading College Readiness Standards–Cohort 2

Score Range for Each College Readiness Standard	GEAR UP			Non-GEAR UP		
	$N_{EXPLORE}$	Improved from EXPLORE to PLAN		$N_{EXPLORE}$	Improved from EXPLORE to PLAN	
		N	%		N	%
Did not meet standards	2,875	1,860	65	2,491	1,699	68
13–15	2,072	1,161	56	1,803	1,050	58
16–19	1,244	536	43	1,083	461	43
20–23	411	120	29	304	85	28
24–27	105	16	15	110	15	14

Table 14: EXPLORE and PLAN Science College Readiness Standards–Cohort 1

Score Range for Each College Readiness Standard	GEAR UP			Non-GEAR UP		
	$N_{EXPLORE}$	Improved from EXPLORE to PLAN		$N_{EXPLORE}$	Improved from EXPLORE to PLAN	
		N	%		N	%
Did not meet standards	556	506	91	414	369	89
13–15	2,214	1,204	54	2,076	1,157	56
16–19	3,027	908	30	2,910	900	31
20–23	433	84	19	377	80	21
24–27	40	3	8	31	5	16

Table 15: EXPLORE and PLAN Science College Readiness Standards–Cohort 2

Score Range for Each College Readiness Standard	GEAR UP			Non-GEAR UP		
	$N_{EXPLORE}$	Improved from EXPLORE to PLAN		$N_{EXPLORE}$	Improved from EXPLORE to PLAN	
		N	%		N	%
Did not meet standards	577	552	96	510	490	96
13–15	2,428	1,444	59	2,146	1,321	62
16–19	3,181	1,014	32	2,719	960	35
20–23	468	74	16	372	59	16
24–27	53	12	23	44	3	7

We fit logistic regression models for improving level of College Readiness Standards from EXPLORE to PLAN that adjusts for the discrepancy in poverty level. We included group (GEAR UP versus Non-GEAR UP) and poverty level as predictors. This model was fit for each PLAN College Readiness Standard (English, mathematics, reading, and science) and for both cohorts. The results of these models are summarized in Table 16 for Cohort 1 and Table 17 for Cohort 2.

Table 16: Modeling Improvement in College Readiness Standards–Cohort 1

Subject Area	Predictor	Odds Ratio (95% C.I.)	Interpretation
English	GEAR UP	1.15 (1.06, 1.26)	After adjusting for poverty level, students in the GEAR UP group have a higher probability of improving their level of English College Readiness Standard.
	School's poverty level	0.81 (0.58, 1.14)	Students from schools with higher poverty levels are slightly less likely to improve their level of English College Readiness Standard.
Math	GEAR UP	1.01 (0.92, 1.10)	After adjusting for poverty level, students in the GEAR UP group have about the same probability of improving their level of Math College Readiness Standard.
	School's poverty level	0.54 (0.38, 0.77)	Students from schools with higher poverty levels are less likely to improve their level of Math College Readiness Standard.
Reading	GEAR UP	1.07 (0.98, 1.17)	After adjusting for poverty level, students in the GEAR UP group have a slightly higher probability of improving their level of Reading College Readiness Standard.
	School's poverty level	0.53 (0.38, 0.75)	Students from schools with higher poverty levels are less likely to improve their level of Reading College Readiness Standard.
Science	GEAR UP	1.04 (0.95, 1.13)	After adjusting for poverty level, students in the GEAR UP group have about the same probability of improving their level of Science College Readiness Standard.
	School's poverty level	0.65 (0.46, 0.92)	Students from schools with higher poverty levels are less likely to improve their level of Science College Readiness Standard.

Table 17: Modeling Improvement in College Readiness Standards–Cohort 2

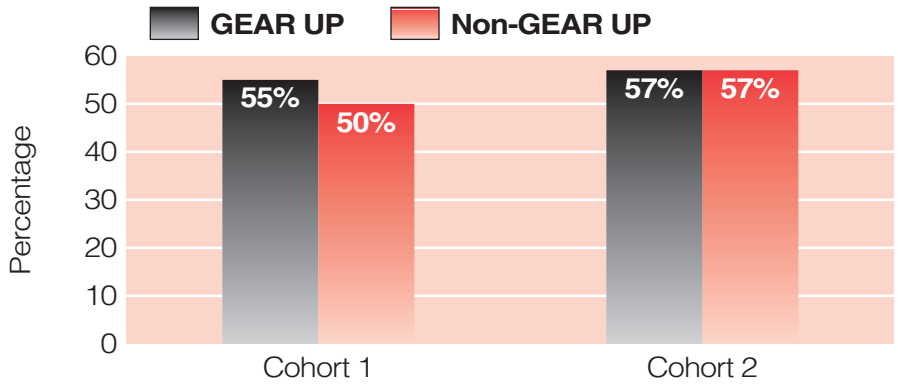
Subject Area	Predictor	Odds Ratio (95% C.I.)	Interpretation
English	GEAR UP	1.01 (0.92, 1.12)	After adjusting for poverty level, students in the GEAR UP group have about the same probability of improving their level of English College Readiness Standard.
	School's poverty level	0.61 (0.44, 0.86)	Students from schools with higher poverty levels are less likely to improve their level of English College Readiness Standard.
Math	GEAR UP	0.94 (0.85, 1.03)	After adjusting for poverty level, students in the GEAR UP group have a slightly lower probability of improving their level of Math College Readiness Standard.
	School's poverty level	0.48 (0.34, 0.68)	Students from schools with higher poverty levels are less likely to improve their level of Math College Readiness Standard.
Reading	GEAR UP	0.99 (0.90, 1.09)	After adjusting for poverty level, students in the GEAR UP group have about the same probability of improving their level of Reading College Readiness Standard.
	School's poverty level	0.72 (0.52, 1.00)	Students from schools with higher poverty levels are less likely to improve their level of Reading College Readiness Standard.
Science	GEAR UP	0.92 (0.84, 1.02)	After adjusting for poverty level, students in the GEAR UP group have slightly lower probability of improving their level of Science College Readiness Standard.
	School's poverty level	0.52 (0.37, 0.75)	Students from schools with higher poverty levels are less likely to improve their level of Science College Readiness Standard.

From Tables 16 and 17 we see that students at schools with higher poverty levels have lower probabilities of improving their level of College Readiness Standard. For example, for Cohort 1 we estimated that the odds of increasing the level of the Reading College Readiness Standard decreases by 15% ($0.85 = 0.53^{0.25}$) for each 0.25 increase in the school's proportion of students who are eligible for free or reduced lunch. We see evidence of a positive GEAR UP effect, but the findings are inconsistent across the two cohorts. For Cohort 1, the odds of increasing the level of the English College Readiness Standard are 15% higher for students in the GEAR UP group; for Cohort 2, the odds are about the same. For Cohort 1, the odds of increasing the level of the Reading College Readiness Standard are slightly higher for students in the GEAR UP group, but the effect is not statistically significant. These results suggest that the improvements for the GEAR UP group are only slightly better than the improvements for the Non-GEAR UP group.

Course Taking Patterns

Research question 3 calls for a comparison of the two groups on the percentage of students at grade 10 who plan to take the core high school curriculum. Only grade 10 was examined because high school course taking data are not collected through the EXPLORE program. Figure 3 summarizes the percentages of students planning to take the core high school curriculum. In Cohort 1, 55% of the GEAR UP students said they are presently taking or plan to take the core high school curriculum. In comparison, 5% fewer students in the Non-GEAR UP group said they are presently taking or plan to take the high school core curriculum. In Cohort 2 an equal percentage of students (57%) from the two groups said they were presently taking or planned to take the core high school curriculum.

Figure 3: Percentage of Students at Grade 10 Taking the Core High School Curriculum



For each cohort, we fit a logistic regression model for planning to take the core high school curriculum that adjusts for the discrepancy in poverty level and also adjusts for initial academic achievement level. We include group (GEAR UP versus Non-GEAR UP), school's poverty level, and EXPLORE Composite score as predictors. The results for this model are summarized in Table 18 for Cohort 1 and Table 19 for Cohort 2.

Table 18: Modeling Probability of Taking Core High School Curriculum–Cohort 1

Predictor	Odds Ratio (95% C.I.)	Interpretation
GEAR UP	1.09 (0.98, 1.21)	After adjusting for poverty level and initial academic achievement, students in the GEAR UP group are slightly more likely to take the core high school curriculum.
School's poverty level	1.49 (0.99, 2.26)	Students from schools with higher poverty levels are slightly more likely to take the core high school curriculum.
EXPLORE Composite	1.21 (1.19, 1.23)	The probability of taking the core high school curriculum increases with initial academic achievement level.

Table 19: Modeling Probability of Taking Core High School Curriculum–Cohort 2

Predictor	Odds Ratio (95% C.I.)	Interpretation
GEAR UP	1.00 (0.89, 1.13)	After adjusting for poverty level and initial academic achievement, students in the GEAR UP group have the same probability of taking the core high school curriculum.
School's poverty level	1.79 (1.10, 2.91)	Students from schools with higher poverty levels are more likely to take the core high school curriculum.
EXPLORE Composite	1.22 (1.20, 1.25)	The probability of taking the core high school curriculum increases with initial academic achievement level.

From Tables 18 and 19, we see that 8th grade academic achievement level (as measured by the EXPLORE Composite score) has a pronounced effect on taking the core high school curriculum. For Cohort 1, we'd estimate that the odds of taking the core high school curriculum increase 21% for each one point increase in EXPLORE Composite score. Interestingly, we also see evidence that students from high poverty schools are just as likely, or even more likely, to take the core high school curriculum. For Cohort 1, we see that students in the GEAR UP group were slightly more likely to take the core high school curriculum. We'd estimate that the odds of taking the core curriculum are 9% higher for the GEAR UP group. However, for Cohort 2, the odds of taking the core curriculum are the same for the two groups.

College Plans

To address the fourth research question, we compared the two groups on the percentage of students planning to go to a two- or four-year college. Table 20 summarizes how educational plans changed from grade 8 to grade 10 for Cohort 1. For example, of those in the GEAR UP group that had no postsecondary plans in grade 8, 36% changed their plans to attending a two- or four-year college and 39% changed their plans to entering a vocational school or job training. In comparison, of those in the Non-GEAR UP group that had no postsecondary plans at grade 8, 53% changed their plans to attend college and 24% decided to enter a vocational school or job training. While these differences might seem large, they are based on small sample sizes (n = 70 for GEAR UP, n = 51 for Non-GEAR UP). This is due to the fact that almost all students (89% in both groups) planned to attend a two- or four-year college at grade 8. As described in the Method section, we excluded from the analysis those students who responded "other" or "undecided" to the question about their postsecondary plans. From Table 21, we see that the results are consistent for Cohort 2.

Table 20: Changes in Educational Plans from Grade 8 to Grade 10–Cohort 1

	$N_{EXPLORE}$	Self-Reported Educational Plans 10th Grade			
		Two- or Four-year College		Vocational School or Job Training	
		N	%	N	%
Self-Reported Educational Plans in 8th Grade	**GEAR UP**				
None	70	25	36	27	39
Vocational school or job training	404	189	47	194	48
Two- or four-year college	3,805	3,527	93	245	6
Total	4,279	3,741	87	466	11
Self-Reported Educational Plans in 8th Grade	**Non-GEAR UP**				
None	51	27	53	12	24
Vocational school or job training	358	164	46	180	50
Two- or four-year college	3,399	3,117	92	256	8
Total	3,808	3,308	87	448	12

Table 21: Changes in Educational Plans from Grade 8 to Grade 10–Cohort 2

	$N_{EXPLORE}$	Self-Reported Educational Plans 10th Grade			
		Two- or Four-year College		Vocational School or Job Training	
		N	%	N	%
Self-Reported Educational Plans in 8th Grade	**GEAR UP**				
None	69	34	49	18	26
Vocational school or job training	422	208	49	188	45
Two- or four-year college	4,081	3,744	92	275	7
Total	4,572	4,016	88	481	11
Self-Reported Educational Plans in 8th Grade	**Non-GEAR UP**				
None	44	21	48	14	32
Vocational school or job training	369	181	49	177	48
Two- or four-year college	3,540	3,246	92	253	7
Total	3,953	3,448	87	444	9

For each cohort, we fit a logistic regression model for having college plans in 10th grade that adjusts for the discrepancy in poverty level and also adjusts for initial college plans (8th grade). We include group (GEAR UP versus Non-GEAR UP), school's poverty level, and 8th grade college plans (=1 if student planned on two- or four-year, =0 if student had other plans) as predictors. The results of these models are summarized in Tables 22 and 23.

Table 22: Modeling Probability of College Plans at Grade 10–Cohort 1

Predictor	Odds Ratio (95% C.I.)	Interpretation
GEAR UP	1.14 (0.96, 1.36)	After adjusting for poverty level and initial college plans, students in the GEAR UP group were slightly more likely to have plans for college at grade 10.
School's poverty level	1.18 (0.64, 2.17)	Students from schools with higher poverty levels have about the same probability of having plans for college at grade 10.
EXPLORE college plans	14.22 (11.79, 17.17)	The probability of having plans for college at grade 10 is much higher for students with plans for college at grade 8.

Table 23: Modeling Probability of College Plans at Grade 10–Cohort 2

Predictor	Odds Ratio (95% C.I.)	Interpretation
GEAR UP	1.01 (0.84, 1.22)	After adjusting for poverty level and initial college plans, students in the GEAR UP group have about the same probability of having plans for college at grade 10.
School's poverty level	1.88 (1.00, 3.56)	Students from schools with higher poverty levels have slightly higher probability of having plans for college at grade 10.
EXPLORE college plans	10.74 (8.92, 12.94)	The probability of having plans for college at grade 10 is much higher for students with plans for college at grade 8.

From Tables 22 and 23, we see that having college plans in 8th grade is the major predictor of whether a student will have college plans in 10th grade. We also see that school's poverty level does not appear to affect college plans as much as it affects academic achievement. For Cohort 2, there is some evidence that students at schools with higher poverty levels have slightly higher probability of having college plans at grade 10, after controlling for initial (8th grade) college plans. For Cohort 1, the GEAR UP group was slightly more likely to have college plans. We'd estimate that the odds of having college plans at grade 10 are 14% higher for students in the GEAR UP group. For Cohort 2, the two groups were equally likely.

Discussion

In this report, we compared changes in academic readiness and college intent for a sample of students from GEAR UP schools to a comparable sample from Non-GEAR UP schools. We utilized assessment data from ACT's EXPLORE and PLAN programs to measure students' academic readiness and college intent at grade 8 and grade 10. Using aggregated EXPLORE and PLAN data and other school-level characteristics, we selected a sample of schools and students that were comparable to the GEAR UP group. By doing so, we could attribute group differences (GEAR UP versus Non-GEAR UP) to the intervention programs rather than differences in school environment.

The outcome variables we considered include changes in overall academic achievement, meeting College Readiness Benchmarks and Standards in different subject areas, taking the core high school curriculum, and having plans for college. In general, if the GEAR UP programs had effects on these outcomes between 8th and 10th grade, our analyses should have shown the positive GEAR UP effects. Our analyses did suggest positive GEAR UP effects, though the effect sizes were generally small and the significant results were not consistent for the two cohorts studied.

Study Limitations

The relatively small, positive findings for the GEAR UP program are underestimated due to limitations with the research design. Further, the true test of GEAR UP's success will come after the students from GEAR UP schools leave high school. GEAR UP could then be evaluated with respect to college enrollment, retention, and degree completion rates.

One major limitation of this study was that we did not know which students at GEAR UP schools received which (if any) interventions, nor did we know the intensity of each student's intervention. If only a handful of students at certain schools are participating in the programs, we would be diluting the effect of the program by analyzing data for the entire school. Alternatively, if our data set included measures of intervention intensity for each student, we would have a better opportunity to observe positive GEAR UP effects.

Another limitation with our study is that we defined group membership (GEAR UP versus Non-GEAR UP) based on the school that the student attended while in 8th grade. Since students may move from school to school, there is no guarantee that they were enrolled at a GEAR UP school for an extended period of time. Also, some students will move on to high schools with very different academic environments. In our analyses, these issues will dilute any effect of the GEAR UP program.

The comparison sample of Non-GEAR UP schools was selected based on similarity to the GEAR UP schools. However, since GEAR UP schools have extremely high poverty levels, it is difficult to find a comparison sample without a discrepancy in poverty level. So, even though the Non-GEAR UP schools were similar to the GEAR UP schools, the comparison was not quite fair. To be included in our study sample, each student had to have taken EXPLORE in 8th grade and PLAN in 10th grade. The fact that the Non-GEAR UP schools participated in EXPLORE and PLAN suggests that these schools are also taking steps to improve the college readiness of their students. Therefore, we may be comparing the GEAR UP schools to a set of schools that also have special programs in place to help their students achieve college readiness. These issues will also dilute the effect of the GEAR UP program.

Recommendations

Based on our analysis and the study limitations discussed above, we have some suggestions for evaluating GEAR UP programs. Below, we list each suggestion and follow with greater discussion of each suggestion.

- Tailor the analysis to the intervention.
- Follow students across time.
- Track students' participation level in GEAR UP programs.
- Use a control group.

Tailor the analysis to the intervention. For example, if the goal of the program is to educate students about the college admissions process, then meaningful outcomes might be taking college prep courses, having college plans, and taking a standardized admissions test at the appropriate time. For programs that target specific academic skills (e.g., extra help with reading), achievement test scores may be the most appropriate outcome. Generally, the most appropriate outcomes will vary by GEAR UP program.

Follow students across time. This allows students, and groups of students, to show that they are indeed improving and allows students to serve as their own baseline. Using a longitudinal assessment system, such as EXPLORE and PLAN, is valuable for several reasons, including 1) baseline and follow-up measures are available so that changes in outcomes attributable to GEAR UP can be assessed; 2) the EXPLORE and PLAN assessments measure the same things (but at different time points), allowing for meaningful comparisons over time; 3) the EXPLORE and PLAN assessments have reliable measures of academic achievement, but also contain measures of students' educational plans; 4) the data include a wide variety of background factors, such as parents' educational level and race/ethnicity, that should be controlled for in

analyses or used for subgroup analysis; and 5) comparisons can be made at the student level or at the school level (by aggregating student-level data).

ACT's EPAS (Educational Planning and Assessment System) consists of EXPLORE, PLAN, and the ACT, which students typically take in 11th or 12th grade. In this study, we did not consider the ACT data because the cohorts have not all reached 11th or 12th grade. Cohort 1, 8th graders in 2002–2003, will likely take the ACT during the 2005–2006 and 2006–2007 academic years; Cohort 2, 8th graders in 2003–2004, will likely take the ACT during the 2006–2007 and 2007–2008 academic years. Therefore, when the ACT data are available, this study could be extended by also considering the ACT data for both cohorts. The ACT data are especially valuable components of EPAS because the data include students' college preferences, as well as final measures of academic achievement.

Track students' participation level in GEAR UP programs as well as long-term outcomes. One of the drawbacks of the current analysis is that we did not know the level of participation for each student, nor did we know the type of intervention each student received. With this data, the effects of the GEAR UP programs can be better isolated and the evaluation made more meaningful. As discussed earlier, the true test of GEAR UP's value occurs when students leave high school and have the opportunity to enroll in college. If possible, GEAR UP evaluators should track long-term outcomes, including college enrollment, retention, and degree completion, for the students that attended GEAR UP schools.

Use a control group. Comparing outcomes for students from GEAR UP schools to a control group is an attractive study design, as long as the control group is similar with respect to the other factors that affect students' college readiness. Possible control groups include:

- The school itself. By comparing outcomes for students prior to the establishment of a GEAR UP program to those who come after, the GEAR UP effects can be measured. The strength of this approach is that school-level differences are naturally eliminated, so long as the school doesn't undergo extensive changes during the study period. The drawbacks of this approach are that data must be collected for several years and that GEAR UP effects could be confounded with other changes that occur over time (i.e., other cohort effects).

- A similar school. By matching on a set of relevant variables, a similar school or schools can be selected for comparison. While this might be difficult for an individual school, ACT's EPAS program provides a rich source of data across thousands of schools. We used this approach in this study and were satisfied with the quality of the matching. The drawbacks of this approach were discussed earlier in the study limitations.

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Appendix

Table 24: School-level Characteristics for Cohorts Studied

School-level Characteristics	Cohort 1 (N = 119)		Cohort 2 (N = 136)	
	GEAR UP	Non-GEAR UP	GEAR UP	Non-GEAR UP
Public (%)	100.0	100.0	100.0	100.0
Enrollment Size (%)				
1–99	1.7	2.5	1.5	2.2
100–199	14.3	15.1	10.3	13.2
200–299	18.5	23.5	17.7	23.5
300–499	26.9	26.9	32.4	33.8
500–999	35.3	30.3	33.1	25.0
1,000–2,499	3.4	1.7	5.2	2.2
Metropolitan Area (%)				
Urban	16.0	16.0	14.7	14.7
Suburban	1.7	1.7	2.2	2.2
Rural	82.4	82.4	83.1	83.1
Poverty Level (%)				
5–11.9	9.2	21.9	7.4	20.6
12–24.9	61.3	54.6	57.4	61.8
25 or more	29.4	23.5	35.3	17.7
Mean number of EXPLORE tested students[a]	52.7 (50.3)	49.8 (46.0)	49.3 (46.4)	45.7 (39.6)
Mean EXPLORE Composite	14.5 (1.4)	14.5 (1.3)	14.3 (1.3)	14.3 (1.3)

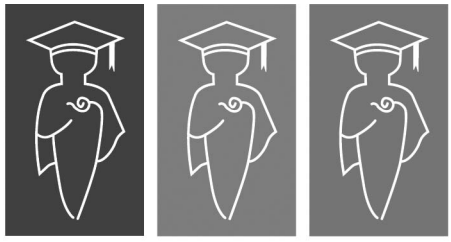
Percentages may not add to 100 due to rounding or missing responses.

[a] All EXPLORE tested students were in 8th grade. Numbers in parentheses are standard deviations.

Table 25: Student-level Characteristics for Cohorts Studied

Student-level Characteristics	Cohort 1		Cohort 2	
	GEAR UP	Non-GEAR UP	GEAR UP	Non-GEAR UP
Total number of students	6,270	5,808	6,707	5,791
Female (%)	53.5	52.7	54.4	53.2
Race/Ethnicity (%)				
White	58.1	60.7	57.6	66.5
African American	13.6	20.5	17.9	19.3
Hispanic	11.7	4.0	8.3	3.0
Mother's Educational Attainment (%)				
Did not complete high school	15.3	11.9	14.3	11.5
Have a high school diploma or equivalent	30.0	30.0	28.4	29.2
Career/technical training	3.8	3.9	3.6	3.8
Some college no degree	11.2	10.8	11.0	11.0
2-year college degree	8.3	6.9	8.4	8.1
4-year college degree	10.9	10.1	10.1	12.3
More than 4 years of college	5.1	5.4	5.5	5.2
Father's Educational Attainment (%)				
Did not complete high school	16.1	12.8	15.8	12.1
Have a high school diploma or equivalent	28.1	26.1	27.1	26.4
Career/technical training	8.6	9.4	7.6	9.3
Some college no degree	7.3	7.1	6.5	7.3
2-year college degree	3.7	3.7	4.1	4.5
4-year college degree	8.2	7.4	7.4	8.8
More than 4 years of college	4.8	4.2	4.2	4.4

Percentages may not add to 100 due to rounding or missing responses.



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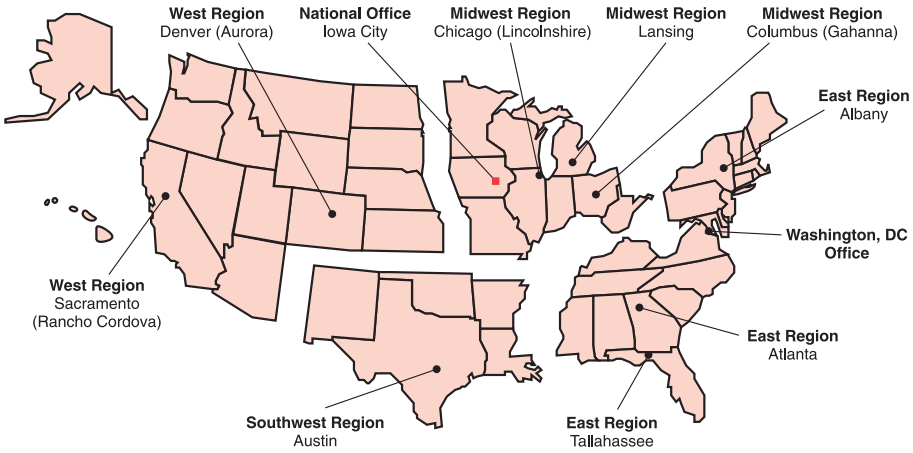

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