2016 YouScience Pilot Program, Evaluation Report

Final report

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Executive Summary

Overview

YouScience is an online career and personal planning discovery tool that enables teens and adults to identify their potential aptitudes and careers. To create a personalized YouScience profile, the tool engages students in a series of online exercises to help them identify their natural abilities, refine their specific areas of interest, and explore career opportunities that are aligned with their interests and aptitudes. In an effort led by Senator Lindsey Tippins, state funds were appropriated for a pilot initiative to identify an online profile that would help Georgia high school students discover their aptitudes and apply those strengths to find direction for their pathway, college, and career choices. After a committee explored various options, the Technical College System of Georgia (TCSG) partnered with YouScience to provide 20,000 licenses to Georgia 10th graders in a representative sample of high schools around the state for the 2015-2016 school year. TCSG partnered with the Governor's Office of Student Achievement (GOSA) to administer and evaluate this pilot program.

Fifty-one high schools (approximately one-tenth of all high schools in Georgia) participated in the pilot study, and school-level "ambassadors" were selected to work with the YouScience staff and GOSA to ensure successful implementation of the pilot. To assess the impact of YouScience on students, GOSA contracted with an external evaluation firm, SageFox Consulting Group, in December 2015 to conduct the evaluation. This report is intended to be a summative analysis of the efficacy of YouScience on students' attitudinal outcomes. The results of the report serve to inform whether and how YouScience should be implemented in the future across Georgia schools.

SageFox Consulting Group, in collaboration with GOSA, worked extensively to identify the programmatic areas of importance, design a theoretical model to guide the evaluation plan, and analyze and report on the data. The evaluation report includes:

- A full demographic profile of students and schools in the pilot study
- A description of the design and development of the evaluation surveys
- A presentation of the survey results
- A discussion of students' results within the context of implementation

The 2016 YouScience Evaluation Report is divided into three main sections. The first section is an overview of the pilot program. This section provides a description of the pilot implementation planning and administration process as well as a summary of the evaluation questions and theoretical model. The second section of the report includes a statistical analysis of the surveys—Ambassador and Student Surveys— deployed to participants. During the Spring 2016 semester, (March – May 2016), 35 schools from the pilot study were asked to deploy a student survey to 10th grade students who took the YouScience profile. Overall, more than 3,000 10th grade students completed the survey.[1] Additionally, to add contextual information to students' outcomes, a survey was administered to each school ambassador towards the end of the semester (April – May 2016). This survey was intended to provide useful information about each schools' experiences implementing YouScience. Students' results, as well as ambassador findings, are discussed in the third section.

[1] Student survey data from 3,068 students were included in the report analysis.

Evaluation

To assess the impact of YouScience on all students and students with various characteristics, the evaluation answers three main questions:

1. To what extent has YouScience broadened students' vision or awareness of possible career pathways?
2. Are students more willing to engage in a career pathway as a result of YouScience?
3. To what extent has YouScience enhanced students' college and career readiness?

Data gleaned from three sources—1) 2016 YouScience Student Survey, 2) 2016 Ambassador Survey, and 3) state administrative data—were used to answer the evaluation questions. A brief description of these three data sources is provided below:

1) The 2016 YouScience Student Survey is comprised of 42-items designed to gauge students' perceptions of the YouScience tool and assess their attitudinal growth over time. In particular, 19 items on the survey were designed as retrospective items that ask students about their attitudes "before" completing YouScience (pre-test) and "now" (post-test).[2,3,4,5,6] Given this design, evaluators were able to statistically measure students' growth in various areas from pre to post with a single survey administration. Those areas include:

- **Self-Awareness:** the ability to describe one's self and to identify suitable careers.
- **Career Decision Making:** confidence in one's ability to make an informed career decision.
- **Self-Empowerment & Future Confidence:** feeling hopeful and self-assured in one's future path.
- **Career Exploration**: engaging in activities that provide one with career information and expanding one's vision of career possibilities.
- **Intent to Persist**: motivation to pursue a career pathway and/or additional post-secondary education/training.

2) The 2016 Ambassador Survey is designed to assess how school-level ambassadors' introduced and utilized the YouScience tool with students at their schools, as well as their perceived usefulness and future interest in using the YouScience tool. Specifically, the survey is comprised of 19 total items that ask ambassadors to indicate a) how YouScience was administered to students (e.g., Did students complete all sections of YouScience at school? At home? Or both?), b) the degree to which follow-up guidance was provided, c) the quality of support provided by the YouScience team during implementation, d) the perceived usefulness of YouScience for students, e) the likelihood of continued usage of YouScience in the future, and f) the most valuable and most challenging aspects of the YouScience implementation.

3) State administrative data includes student demographic information (e.g., race/ethnicity) for each school in the pilot study, as well as statistics pertaining to the implementation of YouScience across all schools. This

[2] The theory behind the retrospective design is that by surveying students' attitudes after completing YouScience, their standard for assessing the changes in their knowledge, skills, or attitudes is consistent, and thus, not subject to a response shift bias. Response shift bias is defined as a "change in the participant's metric for answering questions from the pre-test to the post-test due to a new understanding of a concept being taught." Others note that the retrospective design reduces incomplete data sets, is convenient to administer given the time constraints many programs face, and is easier for program participants to complete.

[3] Lamb, T. (2005). The retrospective pretest: An imperfect but useful tool. *Evaluation Exchange, 11 (2).*

[4] Hill, L., & Betz, D. (2005). Revisiting the retrospective pretest. *American Journal of Evaluation, 26 (4),* 501-517.

[5] Klatt, J., & Taylor-Powell, E. (2005). Synthesis of literature relative to a retrospective pretest design. Presentation to the *2005 Joint CES/AEA Conference*, Toronto.

[6] Raidl et al. (2004). Use retrospective surveys to obtain complete data sets and measure impact in extension program. *Journal of Extension, 42 (2).*

data was used to assess how school demographics and implementation characteristics influence outcomes on the student survey.

Major Findings

After taking YouScience, students are statistically significantly…

- better at describing their natural abilities and identifying suitable careers (*Self-Awareness*);
- more confident in their ability to make an informed career decision (*Career Decision Making*);
- more helpful and empowered to follow their future paths (*Self-Empowerme*nt);
- more likely to engage in activities to acquire more career information and explore careers (*Career Exploration*);
- more motivated to pursue a career pathway and/or additional post-secondary education or training (*Intent to Persist*).

Overall, the results suggest that YouScience was effective in improving students' attitudes toward career decisions; however, the size of the effect of YouScience on students' attitudes was classified as small to medium. YouScience had the largest impact on students' self-awareness, or their ability to describe their natural strengths and to identify careers that are aligned with their interests and aptitudes. Female students, students receiving Free/Reduced Price Lunch (FRL), and students who spent more than 20 minutes reviewing their profile results benefit the most from YouScience. In particular, students who spent more than 20 minutes reviewing their results had effects that were twice as large in four of the five areas listed above relative to those who spent 20 minutes or less.

To determine the value of implementing YouScience to 10th graders in Georgia, the team developed three questions. The first asks, "To what extent has YouScience broadened students' vision or awareness of possible career pathways?" While this is difficult to quantify, the data reveal that after YouScience, 69% of students said that they have considered a wide range of possible careers, compared to only 51% before taking YouScience. In other words 445 more students are likely to have considered a wide range of possible careers after taking YouScience. Further, 55% of students reported that YouScience was "very" or "extremely" impactful in opening their eyes to new career possibilities.

The second evaluation question asks whether students are more willing to engage in a career pathway as a result of YouScience. After YouScience, 68% of students indicated that they can identify their college and career pathway compared to 52% before YouScience.

The third evaluation question asks whether YouScience has enhanced students' college and career readiness. A slightly greater percentage (+2 percentage points) of students expressed intent in pursuing post-secondary education or training after YouScience. Specifically, 80% said that they "agree" or "strongly agree" with this statement after taking YouScience, compared to 78% before YouScience. Further, YouScience did *not* boost the number of students who intend to graduate from high school. Both before and after YouScience, 82% (or 2,184 out of 2,672) said that they intend to graduate from high school. While students may not be more inclined toward college or training after taking YouScience, the students do show signs of being more "ready." That is, approximately 20% of the 10th graders in this study can better describe their natural abilities and identify careers that are a good fit for them.

Finally, a series of regression analyses were conducted to determine the factors—Student Demographics, Implementation Characteristics, School Demographics, YouScience Statistics— that influence the five outcome variables in this study:

1. Self-Awareness
2. Career Decision Making
3. Self-Empowerment
4. Career Exploration
5. Intent to Persist

The regression analyses reveal that female students and students on free/reduced price lunch benefit the most after having taken YouScience. Also, students in schools with a higher percentage of Limited English Proficiency (LEP) students express greater career decision-making abilities after taking YouScience. Further, students who completed the YouScience profile entirely at school (instead of starting at school and finishing at home) were better off. The same is true for students who completed the profile in two or more sittings and who received either small- or large-group follow-up.

While the 10th graders in the pilot study appear to be more aware of possible career pathways, the effect may be improved by addressing the following recommendations:

1. Provide follow-up guidance to students, and do so in small groups preferably. Large-group guidance is more effective than no feedback, and providing no feedback diminishes the value of YouScience.
2. Build YouScience into the academic year during curriculum planning so that teachers can appropriately weave it into the curriculum.
3. Schedule adequate time in the computer lab or on laptops for students to complete the YouScience profile at school.
4. Consider strategies to better communicate to both students and faculty why the YouScience profile is being used and its benefits.
5. To maximize the benefit of YouScience, schedule at least 20 minutes of time for students to review their YouScience profile results. This additional time allows students to review their entire profile and internalize the results.

Overall, the evaluation of the YouScience pilot study suggests that students express relatively small, yet meaningful, attitudinal gains from pre- to post- test. These gains are most pronounced among females, students who receive free/reduced lunch, and students who spent at least 20 minutes reviewing their YouScience results. These results are promising and point to the potential effectiveness of YouScience in enhancing students' career attitudes when students are provided sufficient time to review results. While the lack of a control group reduces the ability to establish causality in the findings, the sizable difference in effect between students who reviewed results for at least 20 minutes and those who did not provides evidence of YouScience's impact.

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I. Introduction

A. Background

Georgia's General Assembly, in an effort led by Senator Lindsey Tippins, appropriated state funds for a pilot initiative to identify an online profile that would help Georgia high school students discover their aptitudes and apply those strengths to find direction for their pathway, college, and career choices. After a committee explored various options, the Technical College System of Georgia (TCSG) partnered with YouScience to provide 20,000 licenses to Georgia 10th graders in a representative sample of high schools around the state for the 2015-2016 school year. TCSG partnered with the Governor's Office of Student Achievement (GOSA) to administer and evaluate this pilot program.

Fifty-one high schools across the state of Georgia (about one-tenth of all high schools in the state) were strategically selected to ensure diverse representation of schools and students and invited to participate in a statewide pilot of the YouScience profile. The YouScience profile consists of a series of online aptitude assessments that identify a person's natural abilities through a unique performance-based method. The YouScience results provide students with personalized, scientifically data-driven feedback on natural abilities, interests, and work styles to better inform their college and career choices (see Figure 1 and Figure 2). The results also provide students with up-to-date information on the job market and salaries for matching careers. Post-secondary training or certification requirements for each career are also stipulated, where applicable. With over 40% of the careers not requiring a college education, the YouScience Profile is designed to support all students, both college- and career-bound.

Figure 1. Sample Personalized Summary Results, YouScience Profile

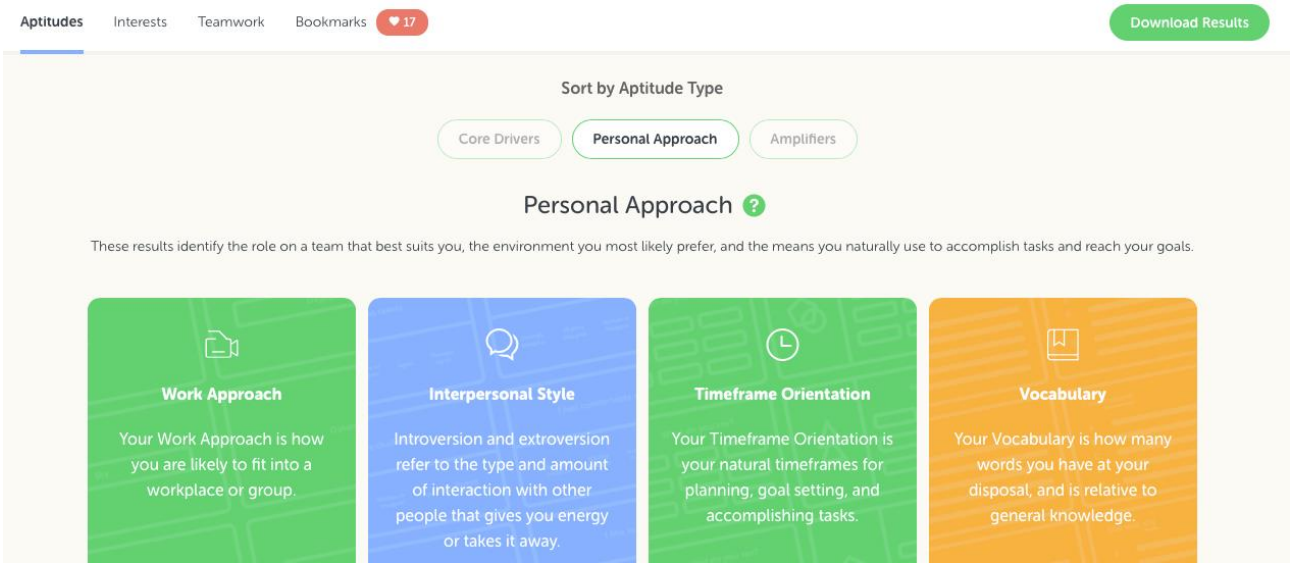
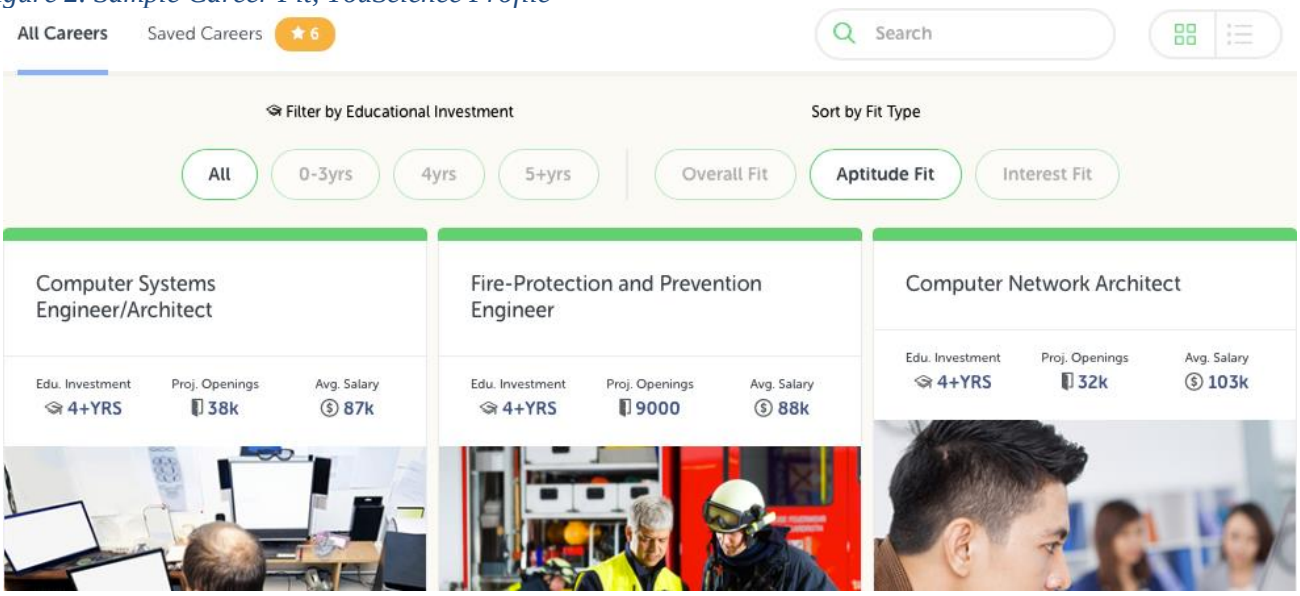


Figure 2. Sample Career Fit, YouScience Profile



The contract for the pilot study was awarded in July 2015; schools initiated the implementation of YouScience in September 2015. See Table 1 below:

Table 1. Pilot Timeline

Date	Activity
July 17, 2015	Contract Awarded
August 28, 2015	Initial Email Invitation to Districts for Participation
September – October 2015	Outreach to Secure School Agreement & Ambassador Assignment
September 29 – October 28	15 In-Person Training Sessions for 45 Schools
September 30, 2015	YouScience Implementation begins
December 1 – 3; Early January	Remote Training Sessions for 11 Schools *(9 & 2 respectively)*
December 4, 2015	Preliminary Ambassador Survey from GOSA to gauge implementation
March 11, 2016	100% of Schools administered YS Profile Exercises
March – May 2016	Student Survey administered
April – May 2016	Ambassador Survey administered
July 2016	Pilot Evaluation Report complete

B. Pilot Implementation

School Selection: The high schools invited to participate in the pilot were selected to be representative of the entire state and include a mixture of urban and rural settings. The initial sample was created to ensure that at least one high school from each of the 16 Regional Educational Service Agencies (RESA) was included, and that the percentage of students eligible for free/reduced price lunch in the sample was similar to the state's percentage of high schoolers eligible for free/reduced price lunch. Districts were approached with a target list of their high schools. A district-level decision was made in conjunction with each school's principal to participate in the pilot project. The principal then selected a school-level "Ambassador," often a guidance counselor or teacher, to work with the YouScience staff and GOSA to ensure successful implementation of the pilot. Fifty-one high schools agreed to participate in the pilot. See Appendix A for a list of all participating schools.

Training: Each Ambassador received training prior to launching the pilot at their school. Fifteen four-hour training sessions were held in strategic locations across the state from September through October. The training consisted of instructing the Ambassadors in the development of an implementation plan, communication to stakeholders, holding a YouScience student Kick-Off, administering the student profile, and conducting a results walk-through. Remote training sessions were conducted December 1-3 for late addition schools, and another session was conducted in early January with two remaining schools. The student Kick-Off dates are displayed in Table 2 and suggest that most schools (33) introduced YouScience to students during the Fall 2015 semester.

Table 2. Kick-Off Dates

Student Kick-Off Date		
	Number of Schools	**%**
September 2015	1	2%
October 2015	9	18%
November 2015	17	33%
December 2015	6	12%
January 2016	7	14%
February 2016	7	14%
March 2016	4	8%
Total	**51**	**100%**

Implementation Planning: Each Ambassador worked in collaboration with the YouScience project manager to determine the optimal implementation plan for the school setting. Many schools chose to implement YouScience during their English Language Arts (ELA) or History classes as all 10th graders must complete those courses. Once the results were ready, the students reviewed their results as part of a class assignment. Other schools incorporated the pilot into students' Career, Technical, and Agricultural Education (CTAE) course. As Table 3 suggests, 32 schools implemented YouScience as a stand-alone event during a day that has another planned activity, such as course advisement or the first day back from a vacation.

Table 3. Stand-alone or Integrated Implementation

Implementation: Stand-alone vs. Integrated		
	Number of Schools	**%**
Integrated into curriculum	11	22%
Stand-alone event	32	63%
Unconfirmed[1]	8	16%
Total	**51**	**100%**

Note. Percentages have been rounded and may not sum evenly to 100%.
[1]Unconfirmed refers to schools that did not provide information.

YS Profile Exercise Administration: The YouScience assessment may be completed on a desktop or laptop computer. Some schools allotted 90 minutes for their students to complete the YouScience assessment in one sitting. Most schools elected to have the students work through the YouScience assessment in two days, three if needed. Data provided by the Ambassadors indicates that approximately 24% of schools completed the assessment in one sitting; 58% completed it in two to three sittings; and, 18% required four or more sittings. See Table 6 for more information. A few schools elected to have their students complete the assessment at home, but this is not ideal as not all students have computer access at home. Computer lab time and reduced instructional time have been challenges to the execution of the pilot. Data gleaned from the Ambassadors suggest that most schools administered all sections of the YouScience assessment at school (78%); less than a quarter of schools (22%) had students complete sections of the YouScience assessment at school as well as at home (see Table 5).

Group Results Walk-Through: After students receive their YouScience Profile results, Ambassadors were asked to lead students through an orienting Group Results Walk-Through. Ambassadors report that most schools (approximately 53%) provided general guidance on the interpretation and application of the YouScience profile with students in a small group setting (< 30 students); 25% provided guidance in a large group setting (>30 students); and, 22% did not follow-up with students after they received their YouScience Profile results.

Completion: Schools were originally asked to have their implementation completed by the end of the fall 2015 semester. However, the implementation deadline was extended to March 11, 2016, because some schools believed that early spring semester was a better fit for their school calendar. During the fall 2015 semester, 78% of pilot schools had their students complete the assessment portion of implementation. The remaining schools completed the assessment portion of implementation during the first half of the spring 2016 semester. The YouScience Project Team provided each school with personalized assistance to adapt implementation to its unique setting.

C. Evaluation

In November 2015, GOSA contracted with an external evaluation firm, SageFox Consulting Group, to conduct the evaluation of the YouScience Pilot Study. The goal of the evaluation is to assess the impact of YouScience on students' attitudes and intentions to persist towards a career pathway and/or post-secondary/technical education. Three central evaluation questions were formulated to guide the evaluation:

1. To what extent has YouScience broadened students' vision or awareness of possible career pathways?
2. Are students more willing to engage in a career pathway as a result of YouScience?
3. To what extent has YouScience enhanced students' college and career readiness?[7]

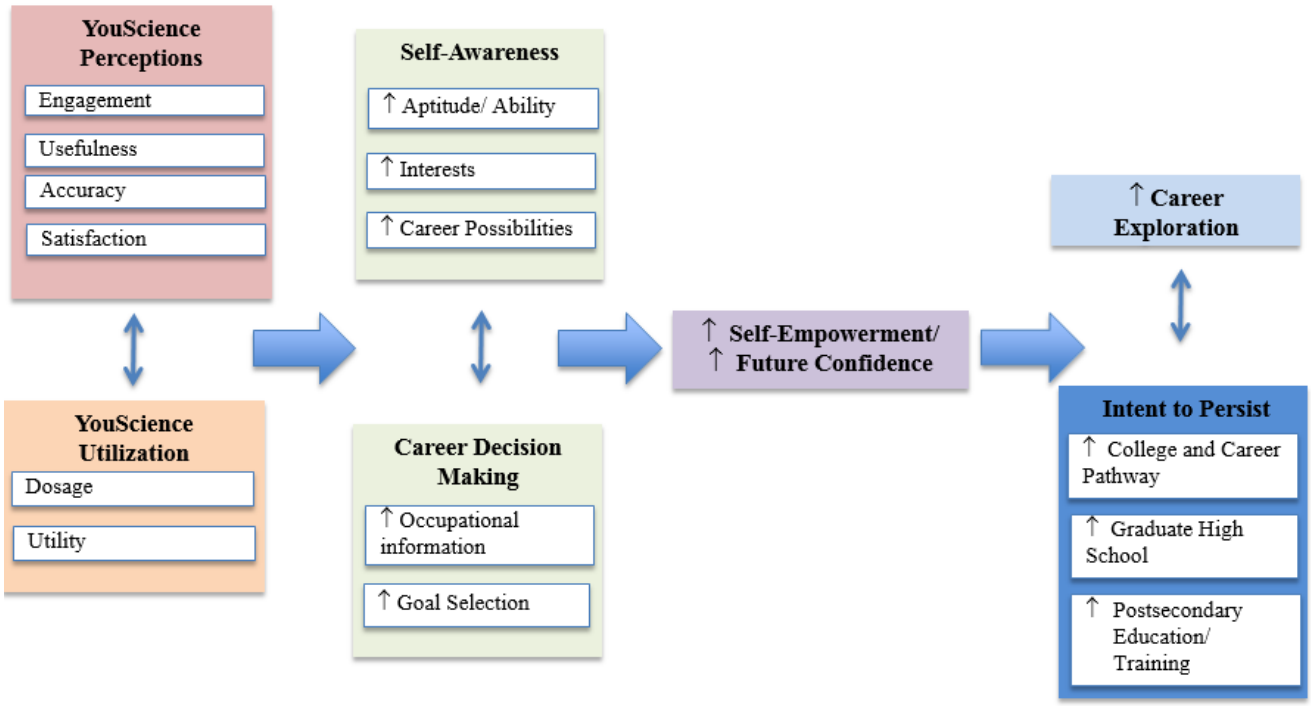
Data for the evaluation analyses were collected via a student survey that was designed using research-based survey questions derived from the empirical literature on student career development. Various YouScience stakeholders, including Ambassadors, parents, students, and the business community, reviewed and pilot tested the survey to ensure content validity—the match between the survey items and the content or subject area that they are intended to assess. Thirty-five out of the 51 pilot schools were invited to disseminate the Student Survey to their 10th grade students. See Appendix A for a list of the 35 schools. These schools were selected as a representative sample of the entire state. In addition to implementing the student survey, an Ambassador Survey was designed and disseminated across all 51 pilot schools. The Ambassador survey provided information on the implementation of YouScience from the Ambassadors. Data from this survey provides important contextual information when interpreting students' results on the student survey. It is important to note that the pilot study did not include a comparison group of students who did not participate in YouScience. This reduces the evaluation's ability to make direct, causal claims about YouScience's impact.

D. Theory of Change

The theory of change model provides a theoretical framework for establishing the processes needed to connect YouScience use with desired outcomes (e.g., self-awareness, increased hope for the future, intent to persist toward a career, etc.). This conceptual model identified major survey constructs and guided the development of the YouScience Student Survey (see Figure 3). A theory of change expresses the underlying theories or beliefs that are assumed to be critical for producing change and improvement. As the model reflects, students' perceptions/behaviors and attitudinal changes are hypothesized to lead to two essential outcomes: more career exploratory behaviors and a greater intent to persist towards additional education or training in a field of interest. That is, the ultimate intended impact of YouScience is to improve students' abilities to explore and persist towards a career by a) increasing their *self-awareness* (e.g., the ability to identify their natural abilities); b) providing them with the tools and resources to feel more confident in their *career decision making* abilities; and c) increasing their sense of *self-empowerment* (e.g., feelings of purpose and direction in life). These attitudinal shifts are contingent on students' *perceptions* of YouScience, and the degree to which they shared, explored, and discussed their results with others (*Profile Utilization*). That is, students who were engaged in the YouScience tool and explored and shared their results with others may be more likely to express attitudinal gains in the above-mentioned areas.

[7] According to Dymnicki, Sambolt, & Kidron (2013), college and career readiness involves a) setting goals and planning for college and career, b) pursuing pathways for college and career preparation, and c) cultivating core competencies of socio-emotional development (e.g., self-awareness, responsible decision making, empowerment, etc.).

Figure 3. Theory of Change Model



II. Overall Analysis

The goal of the analysis is to answer three broad evaluation questions:

1. To what extent has YouScience broadened students' vision or awareness of possible career pathways?
2. Are students more willing to engage in a career pathway as a result of YouScience?
3. To what extent has YouScience enhanced students' college and career readiness?[8]

The evaluators measured students' growth in five areas from pre to post:

- **Self-Awareness:** the ability to describe one's self and to identify suitable careers.
- **Career Decision Making:** confidence in one's ability to make an informed career decision.
- **Self-Empowerment & Future Confidence:** feeling hopeful and self-assured in one's future path.
- **Career Exploration**: engaging in activities that provide one with career information and expanding one's vision of career possibilities.
- **Intent to Persist**: motivation to pursue a career pathway and/or additional post-secondary education/training.

The above survey constructs address one or more of the evaluation questions:

	Student Survey Constructs				
Evaluation Questions	Self-Awareness	Career Decision-Making	Self-Empowerment	Career Exploration	Intent to Persist
1. To what extent has YouScience broadened students' vision or awareness of possible career pathways?	✓			✓	
2. Are students more willing to engage in a career pathway as a result of YouScience?		✓			✓
3. To what extent has YouScience enhanced students' college and career readiness?	✓		✓		✓

Note. In addition to the constructs described above, specific items on the student survey were examined and aligned to the evaluation questions.

The evaluators used paired samples significance tests to assess growth from pre to post across the above-mentioned student survey constructs. For each construct, paired samples t-tests compare the difference in the averages from the pre and post measures on the same set of participants. Differences in the pre and post averages are assigned a p-value. A p-value less than or equal to .05 is considered statistically significant, which indicates that there is sufficient evidence that the averages at pre and post are different. To further aid in understanding the magnitude of change from before (pre) to now (post), effect sizes were computed using Cohen's *d*. Effect sizes are intended to measure the practical importance of a statistically significant finding.[9] A larger effect size indicates that the change from pre to post is meaningful and points to the efficacy of YouScience in enhancing students' attitudinal outcomes.

[8] We operationalize enhanced college and career readiness as students' abilities to 1) better describe their natural abilities; 2) identify careers that are a good fit; and 3) better describe what they will do after high school.

[9] Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences* (2nd ed). Hillsdale, NJ: Lawrence Earlbaum Associates.

The analysis section is divided into three chapters (A, B, C) and organized as follows:

First, findings from the ambassador survey are described in section A. These findings contextualize students' survey results and provide information on the general implementation of YouScience across schools. The results from the student survey are presented in section B. Specifically, we assess attitudinal growth across the survey constructs using paired samples t-tests and Cohen's effect sizes (*d*). Specific survey items are also expressed in this section B to further inform the answers to the three central evaluation questions. Finally, section C uses multiple linear regression models to assess the relationships among the implementation of YouScience, student- and school-level demographics, and the student survey constructs.

A. Ambassador Survey

Data from the Ambassador survey is used to contextualize student outcomes by providing information pertaining to the implementation of YouScience across pilot schools. The Ambassador survey was administered towards the end of the semester (April-May 2016) to all pilot schools, and 51 ambassadors across the 51 pilot schools (one ambassador per school) completed the survey.

The data presented in Table 4 through Table 8 suggest that the majority of ambassadors:

- Utilized the Kick-off PowerPoint presentation as-is (45%) or with modifications (37%);
- Administered all sections of YouScience to students at school (78%);
- Indicated that the administration of YouScience took at least 2-3 sittings for students to completed; and,
- Provided students with computer lab time to view their results.

Table 4. Introduction, Ambassadors

How did you introduce YouScience to your students?	**n**	**%**
Kick-Off PowerPoint - As Is	23	45%
Kick-Off PowerPoint - With Modifications	19	37%
Other (please specify)	9	18%
Total	**51**	**100%**

Note. Highest percentage is highlighted in gray.

Table 5. Administration, Ambassadors

How did you administer YouScience to students?	**n**	**%**
Students completed all sections at school.	40	78%
Students completed all sections at home.	0	0%
Students completed some sections at school and some sections at home.	11	22%
Total	**51**	**100%**

Note. Highest percentage is highlighted in gray.

Table 6. Sittings, Ambassadors

On average, how many sittings did it take for students to complete the YouScience assessment?	n	%
1	11	22%
2-3	31	61%
4-5	6	12%
More than 5	3	6%
Total	**51**	**100%**

Note. Highest percentage is highlighted in gray.

Table 7. Computer lab time, Ambassadors

Were students given computer lab time to view their results?	n	%
Yes	37	73%
No	14	27%
Total	**51**	**100%**

Note. Highest percentage is highlighted in gray.

Table 8. Follow-up guidance, Ambassadors

After students received their YouScience Profile results, did you follow-up with general guidance on the interpretation and application of their YouScience Profile?	n	%
Yes, in a small group setting (small group being less than 30 students)	27	53%
Yes, in a large group setting (large group being more than 30 students)	13	25%
No, I did not follow-up with students after they received their YouScience Profile results.	11	22%
Total	**51**	**100%**

Note. Highest percentage is highlighted in gray.

Additional findings from the Ambassador survey are described in Appendix J. These findings suggest the following:

- Most ambassadors (over 80%) were provided with easy-to-use and helpful training materials for the administration of YouScience at their school.
- Nearly all (over 90%) reported that the YouScience team provided timely and helpful support as they implemented YouScience.
- Less than half of ambassadors (47%) agreed that the YouScience tool helped them provide higher quality advisement for students. Only 10% said that they are actively using and/or reinforcing the YouScience results with their students.
- Ambassadors were offered YouScience licenses for the 2016-2017 school year at no cost. Given this option, 32 schools (63%) agreed to continue implementing YouScience next year; 8 schools (16%) elected not to continue using YouScience; and 11 schools (21%) remain undecided.

Open-ended responses from the Ambassadors reveal that the most challenging aspects of the YouScience Georgia Pilot were 1) time to go through the results with students, 2) access and time to use the computer lab, and 3) the loss of instructional time in order to complete the profile and review results. See Appendix J. Additional observations and interviews with ambassadors largely corroborate ambassadors' survey responses and reveal the following[10]:

[10] Source: Observation notes by Katherine McEldoon, YouScience team, June 2016.

- The YouScience pilot was first communicated to districts in late August 2015 with training complete by the end of October 2015. As a result, there was limited instructional time to implement YouScience, and incorporate it into the school's curriculum.
- Not all schools provided students with the opportunity to meaningfully explore their YouScience results. Instructional time and computer lab resources were generally the two limiting factors. As a result, only about 50% of students spent more than 5 minutes reviewing their results. Discussions with select faculty members suggest that most believe that it takes about 20 minutes or more for any meaningful learning to occur.
- The YouScience pilot was supplemental to the mandatory BRIDGE (Building Resourceful Individuals to Develop Georgia's Economy) law career guidance programs.[11] Therefore, many counselors saw the program as additional work layered onto their compliance activity.
- Some schools reported network and login issues while trying to administer the online assessment.
- To address the limited computer lab time, YouScience introduced the option of a mobile platform such that students can access the tool on their mobile devices. The mobile platform was available to schools late in the spring semester (e.g., March 2016) when most had completed the pilot study.

B. Student Survey

The analyses for the Student Survey focus on differences between average scores across key survey constructs and items. The analyses were conducted using a paired samples t–test. The following analyses will focus, first, on the pre/post constructs on the student survey. For this section, in addition to a paired samples t-tests, differences in construct averages were evaluated using Cohen's *d* effect sizes.[12] Second, specific survey items are examined to further address the three central evaluation questions.

i. Pre-Post Construct Analysis

As described in Appendix E, the student survey used retrospective questions to measure students' attitudes before taking YouScience (pre) and now, after taking YouScience (post). The following survey constructs utilized this retrospective design:

- **Self-Awareness** (5-items): the ability to describe one's self and identify suitable careers.
  - Example: "I can identify which careers are a good fit for me."
- **Career Decision Making** (4-items): confidence in one's ability to make an informed career decision.
  - Example: "I have enough information to make a career decision."
- **Self-Empowerment & Future Confidence** (2-items): feeling hopeful and self-assured in one's future path.
  - Example: "I have a good sense of where I am headed in life."
- **Career Exploration** (4-items): engaging in activities that provide one with career information, and expanding one's vision of career possibilities.
  - Example: "[I have] sought information on specific careers that interest me."
- **Intent to Persist** (3-items): motivation to pursue a career pathway and/or additional post-secondary education/training.
  - Example: "I plan to continue my education or training after high school."

[11] The BRIDGE Act, House Bill 400, was signed into law in May 2010 to create an atmosphere motivating middle and high school students learn because they see a direct link between education and their dreams and plans for the future. The most critical parts of the BRIDGE Act mandate that all students in middle and high school receive counseling and regularly scheduled advisement.
[12] To compute effect sizes, the formulas derived from Daniel & Kostic (2015) were utilized. Source: Daniel, T. & Kostic, B. (2015). *RStats effect size calculator*. Available online: http://www.missouristate.edu/rstats/Tables-and-Calculators.htm.

The first step in assessing growth from pre to post on the above-mentioned survey constructs is to compute the construct averages. Given the reliability of the constructs (See Table 27), the items for each construct were averaged separately for both the Before (pre) and Now (post) responses. For instance, Self-Awareness is comprised of 5-items: *Items 10, 11, 12, 13, 14.* To compute the construct average for Self-Awareness, the individual averages were averaged across items. The construct averages are displayed in Table 9.

The next step in assessing growth is to employ a paired samples t-test. Paired samples t-tests are used to compare the values of the averages from two related samples, for example in a "before" and "now" scenario. The paired samples t-test is designed to answer the question: Is the observed difference between "before" and "now" sufficiently large enough to indicate that the "now" value is truly different than the "before" value. Before comparing the two values, a level of significance is chosen. In most cases, significance level is set at 5% or .05. That is, if the significance level is less than .05, the conclusion is that the average difference between the paired observations is significantly different. The computed p-values (or significance levels) for the paired samples t-test are displayed in Table 9. As displayed in the table, the p-values across all constructs are statistically significant at p<.001. This suggests that there is less than a .01% chance that the differences in Before and Now scores occurred by chance. In other words, there is evidence to suggest that students' attitudes significantly grew after taking YouScience. Specifically, after taking YouScience, students are statistically significantly…

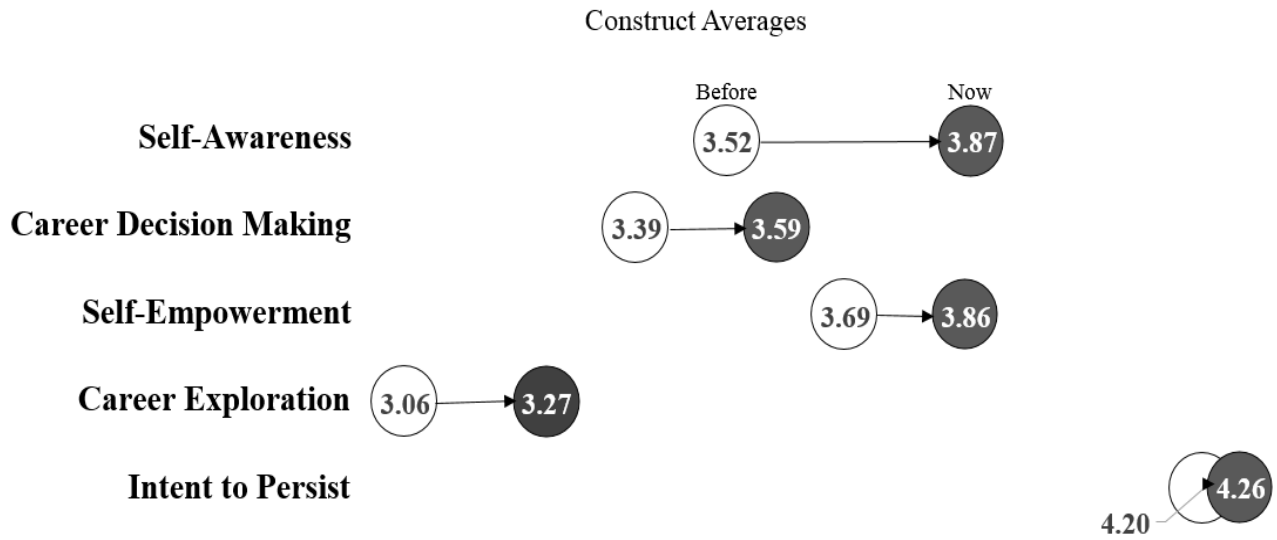
- better at describing their natural abilities and identifying suitable careers (*Self-Awareness*);
- more confident in their ability to make an informed career decision (*Career Decision Making*);
- more helpful and empowered to follow their future paths (*Self-Empowerme*nt);
- more likely to engage in activities to acquire more career information and explore careers (*Career Exploration*);
- more motivated to pursue a career pathway and/or additional post-secondary education or training (*Intent to Persist*).

Table 9. Construct Averages, Students

Construct		n	Average	*Std. Deviation*	p-value	Effect size *d*
Self-Awareness	Before	2584	3.52	*0.80*	p<0.001**	0.44
	Now	2584	3.87	*0.81*		
Career Decision Making	Before	2635	3.39	*0.86*	p<0.001**	0.26
	Now	2635	3.59	*0.82*		
Self-Empowerment/Future Confidence	Before	2616	3.69	*0.97*	p<0.001**	0.20
	Now	2616	3.86	*0.98*		
Career Exploration	Before	2652	3.06	*1.01*	p<0.001**	0.24
	Now	2652	3.27	*1.03*		
Intent to Persist	Before	2709	4.20	*0.87*	p<0.001**	0.09
	Now	2709	4.26	*0.90*		

Note. Cohen (1988) classified effect sizes as small=0.2; medium=0.5 and large=0.8. These are not hard cut-off points, but rather approximations. Paired samples t-tests were used to assess significant differences between Before and Now scores: **p<.001; *p<.01; +p<.05. Scale: 1, Strongly Disagree to 5, Strongly Agree.

Figure 4. Construct Averages



Note. Scale: 1, Strongly Disagree to 5, Strongly Agree; scale was truncated to enhance visual clarity.

In addition to computing p-values using paired samples t-test, effect sizes were calculated. According to Glass (2004), effect sizes provide more meaningful information than p-values or significance testing:

> *Statistical significance is the least interesting thing about the results. You should describe the results in terms of measures of magnitude—not just, does a treatment affect people, but how much does it affect them.*[13]

While a p-value can inform the audience whether an effect exists, the p-value will not reveal the size of the effect.[14] For this reason, effect sizes provide an understanding of the magnitude of differences. Cohen's effect sizes (d) were calculated across all five pre/post constructs. The computed effect sizes range from .09 (Intent to Persist) to .44 (Self-Awareness). An effect size is expressed in standard deviation units. For example, an effect size of .44 indicates that the average score on the post-test (*now*) was .44 standard deviations above the average score on a pre-test (*before*). In other words, the score of the average student at post-test is .44 standard deviations above the average student at pre-test. To classify the magnitude of the effect, Cohen (1988) outlined criteria for gauging small, medium and large effect sizes. Cohen's thresholds can be summarized as follows:

Table 10. Effect size (d) classification

Effect size *d*	Effect size threshold
< .20	Trivial
.20	Small
.50	Medium
.80	Large

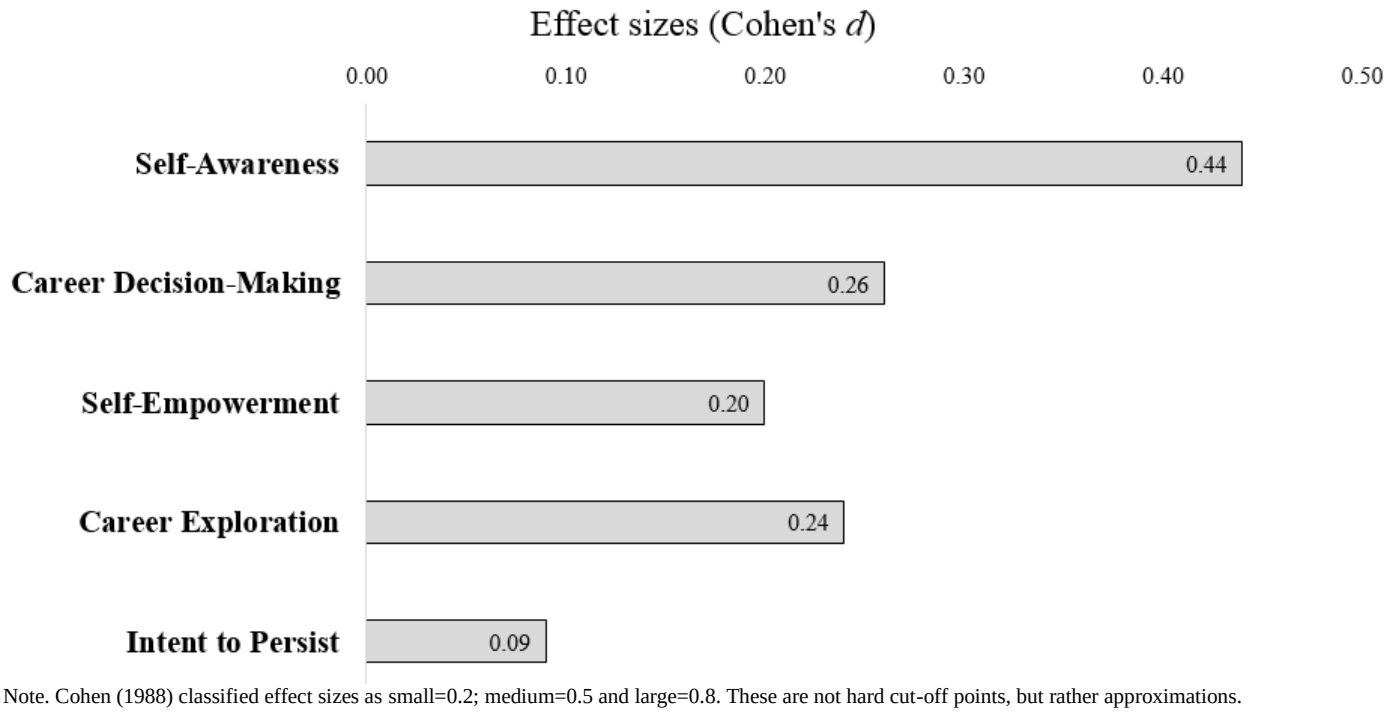
Note. The rationale for these benchmarks can be found in Cohen (1988) *Statistical Power Analysis for the Behavioral Sciences* on p. 40. According to Cohen (1988), *d* <.20 is considered trivial in size, not big enough to register as a small effect.

[13] Kline, R.B. (2004). *Beyond Significance Testing: Reforming Data Analysis Methods in Behavioral Research.* Washington DC: American Psychological Association; p. 95.

[14] It is important to note here that statistical significance testing depends on both the sample size and effect size. With a sufficiently large sample, a statistical test will almost always demonstrate a significant difference, unless there is absolutely no effect. For instance, if a sample size is very large, a significant p-value is likely to be found even though the differences might be negligible. Negligible differences may not justify an expensive or time-consuming intervention. Unlike significance tests, effect size is independent of sample size.

The classifications displayed in Table 10 were used to guide our interpretation of the results for the student survey.[15] Computed effect sizes displayed in Table 9 suggest that YouScience made a small to medium impact on students' attitudes. The effect sizes range from .09 (*Intent to Persist*) to .44 (*Self-Awareness*). YouScience was most impactful in enhancing students' self-awareness and least impactful in enhancing students' intention to persist. See Figure 5. While the effect size for *Intent to Persist* is considered trivial it should be noted that the averages for both *before* and *now* are above 4.0 on a 5-point Likert scale. This may suggest evidence of a ceiling effect, whereby students' intentions to persist are already at a level at which YouScience may no longer have an effect.

Figure 5. Effect Sizes, Constructs



Note. Cohen (1988) classified effect sizes as small=0.2; medium=0.5 and large=0.8. These are not hard cut-off points, but rather approximations.

Overall, the results suggest that YouScience was effective in enhancing students' attitudes. The size of the effect of YouScience on students' attitudes was classified as small. YouScience had the largest impact on students' self-awareness, or their ability to describe their natural strengths and to identify careers that are aligned with their interests and aptitudes. These findings suggest that YouScience has addressed the first evaluation question in that the results suggest that students are more aware of career pathways after completing the YouScience profile.

[15] Cohen's classifications are not hard cut-off points but rather approximations and should be used a general guide in the interpretation of the magnitude of the effect. In fact, other researchers advise setting more stringent criterions for interpreting effect sizes. For example, Wolf (1986) defines a Cohen's *d* of between .25 to .49 as an "educationally" significant effect size, and a Cohen's d of .50 and above as a "practically" significant effect size. [15] Hattie (2009) has argued for an even stronger criterion, saying that educational interventions with consistent evidence of effect sizes above .40 are "worth having" and those below are not "educationally significant." For more information see: 1) Wolf, F.M. (1986). *Meta-analysis: Quantitative Methods for Research Synthesis*. Beverly Hills, CA: Sage, and 2) Hattie, J. (2009). *Visible Learning: A synthesis of over 800 meta-analyses related to achievement*. London: Routledge.

a. Exploratory Analysis: Pre-Post Construct Analysis by Time in YouScience

To further explore the impact of YouScience on students' attitudes, an additional analysis was conducted to examine how time spent reviewing profile results influenced students' outcomes from before YouScience to now. Qualitative data gleaned from the ambassador survey suggests that time was a major factor in the quality of implementation. Follow-up discussions reveal that most ambassadors believe that it takes at least 20 minutes or more for students to meaningfully benefit from YouScience. As a result, it is hypothesized that students who spent more time reviewing their YouScience results online will show a large attitudinal impact. To explore this hypothesis, YouScience provided time-related data—specifically, time spent reviewing YouScience results online—for each student who took the YouScience Profile.[16] Using this student-level data, students were then assigned to one of two group classifications: 1) Students who spent more than 20 minutes reviewing their YouScience results (> 20 minutes) and 2) Students who spent 20 or fewer minutes reviewing their YouScience results (≤ 20 minutes).[17] Construct averages for each group were computed, as well as paired samples t-tests and effect sizes. The results are presented separately for each group in Table 11 and Table 12.

Overall, both groups show statistically significant increases across all constructs from before YouScience to now. This suggests that, regardless of time spent reviewing YouScience results online, students express attitudinal gains. However, the magnitude of the impact of YouScience on students' attitudes differs considerably between the two groups: Students who spent more than 20 minutes (> 20 minutes) show larger effect sizes (Cohen's *d*) than students who spent 20 or fewer minutes (≤ 20 minutes) reviewing their YouScience results online. That is, the effect sizes are more than *twice* as large for students who spent more than 20 minutes reviewing their YouScience results across four out of five constructs. See Figure 6.

[16] Students' unique identification numbers were used to link their student survey data with the time-related data provided by YouScience. Of the 3,068 students who completed the student survey, 2,562 students had identification numbers. Five hundred and six students did not have identification numbers due to technical issues accessing the student survey link via their student email accounts. Specifically, four schools encountered major technical issues with students' email accounts and opted to administer the student survey via a general link: Bartow County College and Career Academy, Burke County High School, Northwest Whitfield County High School, and Southeast Whitfield County High School. As a result, not all students who completed the student survey are represented in the follow-up exploratory analysis.

[17] Frequencies generated for each group suggest that 1,053 out of 3,068 total students spent more than 20 minutes reviewing their YouScience results online; 1,509 out of 3,068 students spent 20 or less minutes reviewing their results; 506 out of 3,068 students were not included in the analysis due to missing student identification numbers. Of the 1,509 students who spent 20 or fewer minutes reviewing their results, 1,065 spent fewer than 5 minutes and 444 spent between 5-20 minutes reviewing their results. As such, there appears to be a bimodal distribution such that 41% (1,509/ 2,562) of students spent less than 5 minutes and 41% (1,053/ 2,562) spent more than 20 minutes reviewing their YouScience results.

Table 11. Construct Averages, Students who spent more than 20 minutes

> 20 minutes						
Construct		n	Average	*Std. Deviation*	p-value	Effect size *d*
Self-Awareness	Before	953	3.52	0.81	$p<0.001^{**}$	0.57
	Now	953	3.99	0.78		
Career Decision Making	Before	973	3.35	0.88	$p<0.001^{**}$	0.39
	Now	973	3.67	0.82		
Self-Empowerment/Future Confidence	Before	970	3.71	0.96	$p<0.001^{**}$	0.28
	Now	970	3.95	0.94		
Career Exploration	Before	982	3.05	1.01	$p<0.001^{**}$	0.36
	Now	982	3.35	1.00		
Intent to Persist	Before	991	4.33	0.77	$p<0.001^{**}$	0.15
	Now	991	4.41	0.78		

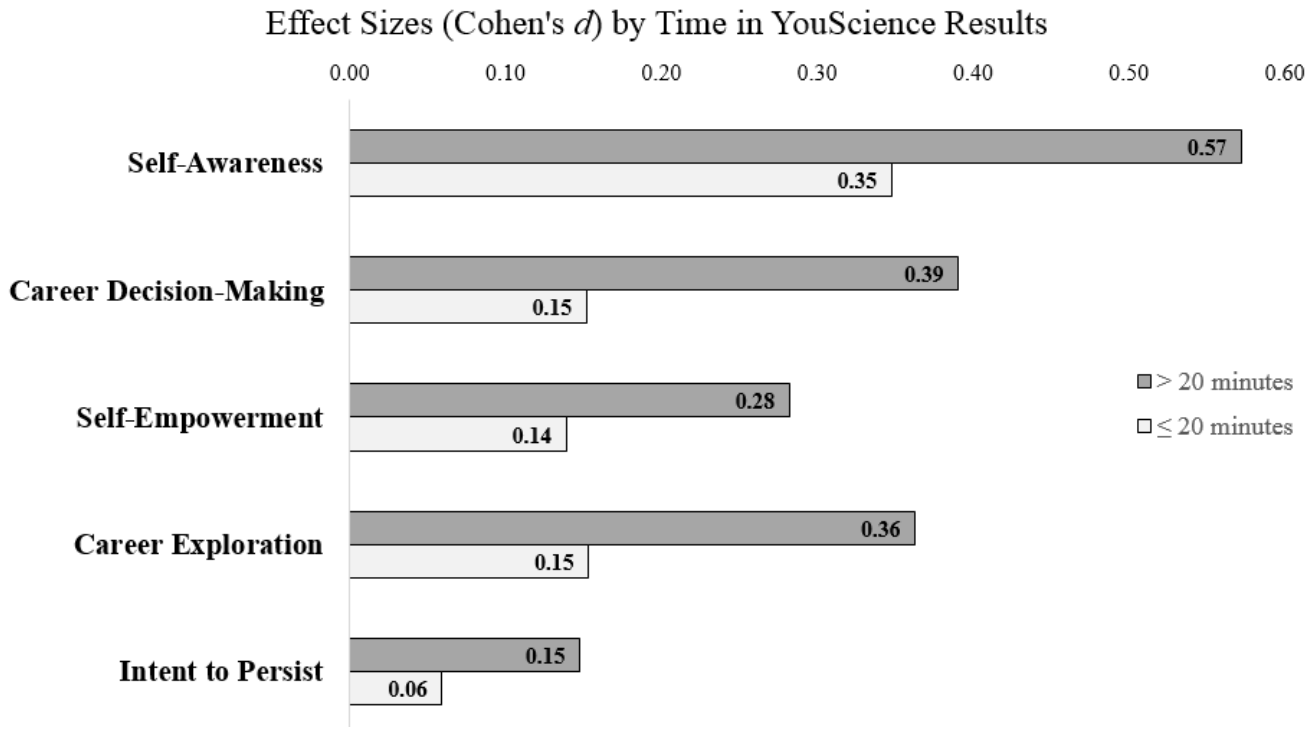
Note. Cohen (1988) classified effect sizes as small=0.2; medium=0.5 and large=0.8. These are not hard cut-off points, but rather approximations. Paired samples t-tests were used to assess significant differences between Before and Now scores: $^{**}p<.001$; $^{*}p<.01$; $^{+}p<.05$. Scale: 1, Strongly Disagree to 5, Strongly Agree.

Table 12. Construct Averages, Students who spent 20 or fewer minutes

≤ 20 minutes						
Construct		n	Average	*Std. Deviation*	p-value	Effect size *d*
Self-Awareness	Before	1261	3.53	*0.81*	$p<0.001^{**}$	0.35
	Now	1261	3.79	*0.83*		
Career Decision Making	Before	1285	3.43	*0.86*	$p<0.001^{**}$	0.15
	Now	1285	3.54	*0.84*		
Self-Empowerment/Future Confidence	Before	1272	3.70	*0.98*	$p<0.001^{**}$	0.14
	Now	1272	3.81	*0.99*		
Career Exploration	Before	1295	3.07	*1.01*	$p<0.001^{**}$	0.15
	Now	1295	3.19	*1.03*		
Intent to Persist	Before	1327	4.15	*0.89*	$p=0.030^{+}$	0.06
	Now	1327	4.19	*0.94*		

Note. Cohen (1988) classified effect sizes as small=0.2; medium=0.5 and large=0.8. These are not hard cut-off points, but rather approximations. Paired samples t-tests were used to assess significant differences between Before and Now scores: $^{**}p<.001$; $^{*}p<.01$; $^{+}p<.05$. Scale: 1, Strongly Disagree to 5, Strongly Agree.

Figure 6. Effect Sizes by Time in YouScience Results, Constructs



Note. Cohen (1988) classified effect sizes as small=0.2; medium=0.5 and large=0.8. These are not hard cut-off points, but rather approximations.

Overall, this exploratory analysis suggests that time is a critical component in maximizing students' benefits of YouScience. The data presented here reinforce ambassadors' beliefs that an educational intervention requires at least 20 minutes of review to solidify learning. While the effect sizes were markedly larger among students who spent more than 20 minutes reviewing their YouScience results online, it is important to note that the magnitude of the effect is still considered small according to Cohen (1988). That is, with the exception of Self-Awareness (d=.57), the effect sizes across four out of five constructs are below .50 among students who spent more than 20 minutes reviewing results. Still, the effect sizes for those who spent 20 or fewer minutes are considered trivial (e.g., d<.20) across four out of five constructs. Together, we can conclude that schools intending to implement YouScience should allot a minimum of 20 minutes for students to review and understand their YouScience results online. Additional exploratory analyses across all survey items may be needed to further gauge the impact of time on students' outcomes.[18]

[18] The analysis comparing the time students spent reviewing their YouScience results (> 20 minutes vs. ≤ 20 minutes) was not in the initial scope of work and was added at the end of the analysis period. This constraint allows for a high-level comparison between the two groups for each survey construct. Ideally, we recommend an additional analysis that compares the two groups across all items in the survey.

ii. Item Analysis

To further inform our answers to the three central evaluation questions, specific student survey items are examined in relation to each evaluation question. These items serve to add additional information to the analysis of the student survey constructs described in the previous section.

1. To what extent has YouScience broadened students' vision or awareness of possible career pathways?

Table 13 suggests the following outcomes in reference to evaluation question #1:

- 36% said that YouScience was helpful in exploring new careers (#22) and exploring education or training paths after high school (#24).
- After YouScience, 69% of students said that they have considered a wide range of possible careers, compared to only 51% before taking YouScience (#14). In other words 445 more students are likely to have considered a wide range of possible careers after taking YouScience.
- 55% of students reported that YouScience was "very" or "extremely" impactful in opening their eyes to new career possibilities (#9). 27% said that YouScience was "somewhat" effective at enhancing their career possibilities.
- Students express statistically significant gains in career exploration (#31-33). Specifically, the percentage of students who indicated that they engaged in the following activities either "often" or "a lot" increased by the following percentages points:
    - +12 percentage points: Before YouScience, 40% of students sought information on specific careers "often" or "a lot," compared to 52% now, after YouScience.
    - +8 percentage points: Before YouScience, 22% of students sought career advice from a teacher or advisor, compared to 30% now.
    - + 7 percentage points: Before YouScience, 45% of students spoke to family, friends, or community members about careers, compared to 52% now.

Table 13. Broadened vision or awareness, Students

To what extent has YouScience broadened students' vision or awareness of possible career pathways?							
Construct	**Item**	**n**	**Before**		**Now**		**p-value[1]**
			Average	**% Agree + Strongly Agree**	**Average**	**% Agree + Strongly Agree**	
Utilization	22. [The YouScience Profile was helpful in] exploring new careers.	3054	--	--	2.99	36%	--
	24. [The YouScience Profile was helpful in] exploring education or training paths after high school.	3034	--	--	2.91	36%	--
Self-Awareness	14. I have considered a wide range of possible careers.	2544	3.51	51%	3.87	69%	p<0.001**
Career Exploration	9. The YouScience Profile opened my eyes to new career possibilities.	3038	--	--	3.48	55%	--
	31. [I] sought information on specific careers that interest me.	2630	3.28	40%	3.52	52%	p<0.001**
	32. [I] sought career advice from a teacher or advisor.	2613	2.56	22%	2.78	30%	p<0.001**
	33. [I have] spoken to family, friends, or community members about careers that interest me.	2611	3.34	45%	3.49	52%	p<0.001**

Note. [1]Paired samples t-tests were used to assess significant differences between Before and Now scores: **p<.001; *p<.01; + p<.05. Scale: 1, Strongly Disagree to 5, Strongly Agree.

2. Are students more willing to engage in a career pathway as a result of YouScience?

Table 14 suggests the following results in reference to evaluation question #2:

- After YouScience, 68% of students indicated that they can identify their college and career pathway (#12) compared to 52% before YouScience.
- Students also made statistically significant gains in their ability to make a career decision (#26-28). After taking YouScience…
  - 56% of students said that they have enough information to make a career decision, compared to 42% before;
  - 65% of students feel encouraged about choosing a career, compared to 52% before; and,
  - 62% of students are certain about the careers that could be a good fit for them, compared to 50% before.
- After YouScience, 70% of students indicated that they plan to complete courses in a college and career pathway during high school, compared to 64% before YouScience (#34).

Table 14. Willing to engage in a career pathway, Students

Are students more willing to engage in a career pathway as a result of YouScience?							
Construct	**Item**	**n**	**Before**		**Now**		**p-value[1]**
			Average	**% Agree + Strongly Agree**	**Average**	**% Agree + Strongly Agree**	
Student Perceptions	12. I can identify my college and career pathway.	2532	3.51	52%	3.86	68%	p<0.001**
Career Decision Making	26. I have enough information to make a career decision.	2579	3.28	42%	3.57	56%	p<0.001**
	27. I feel encouraged about choosing a career.	2591	3.53	52%	3.76	65%	p<0.001**
	28. I am certain about the careers that could be a good fit for me.	2587	3.49	50%	3.74	62%	p<0.001**
Intent to Persist	34. I plan to complete courses in a college and career pathway during high school.	2657	3.84	64%	3.99	70%	p<0.001**

Note. [1]Paired samples t-tests were used to assess significant differences between Before and Now scores: **p<.001; *p<.01; + p<.05.
Scale: 1, Strongly Disagree to 5, Strongly Agree.

3. To what extent has YouScience enhanced students' college and career readiness?

Table 15 suggests the following results in reference to evaluation question #3:

- Students are significantly more self-aware of their abilities and career interests after taking YouScience (#10-11; #13). Specifically, the percentage of students who indicated that they "agree" or "strongly agree" with the following statements increased by the following percentages points:
  - +21 percentage points: Before YouScience, 53% of students could describe their natural abilities, compared to 74% now.
  - +19 percentage points: Before YouScience, 54% of students could identify careers that are a good fit for them, compared to 73% now
  - +11 percentage points: Before YouScience, 54% of students had a clear idea of what they will do after high school, compared to 64% now.

- Students feel statistically significantly more empowered and confident in their future (#29-30) after taking YouScience:
    - After YouScience, 65% have a good sense of where they are headed in life, compared to 55% before YouScience.
    - Likewise, after YouScience, 71% feel optimistic that they will find a good job in the future, compared to 63% before YouScience.
- A slightly greater percentage (+2 percentage points) of students expressed intent in pursuing post-secondary education or training after YouScience. Specifically, 80% said that they "agree" or "strongly agree" with this statement after taking YouScience, compared to 78% before YouScience (#36).
- YouScience did not boost the number of students who intend to graduate from high school. Both before and after YouScience, 82% (or 2,184 out of 2,672) said that they intend to graduate from high school (#35).

Table 15. College and career readiness, Students

To what extent has YouScience enhanced students' college and career readiness?							
Construct	**Item**	**n**	**Before**		**Now**		**p-value[1]**
			Average	**% Agree + Strongly Agree**	**Average**	**% Agree + Strongly Agree**	
Self-Awareness	10. I can describe my natural abilities.	2512	3.50	53%	3.91	74%	p<0.001**
	11. I can identify which careers are a good fit for me.	2520	3.53	54%	3.94	73%	p<0.001**
	13. I have a clear idea of what I will do after high school.	2544	3.55	54%	3.79	64%	p<0.001**
Self-Empowerment	29. I have a good sense of where I am headed in life.	2595	3.60	55%	3.80	65%	p<0.001**
	30. I feel optimistic that I will find a good job in the future.	2596	3.79	63%	3.94	71%	p<0.001**
Intent to Persist	35. I plan to graduate from high school.	2672	4.46	82%	4.45	82%	p=0.342
	36. I plan to continue my education or training after high school.	2670	4.31	78%	4.35	80%	p=0.016+

Note. [1]Paired samples t-tests were used to assess significant differences between Before and Now scores: **p<.001; *p<.01; + p<.05.
Scale: 1, Strongly Disagree to 5, Strongly Agree.

C. Regression Analysis

Multiple regression analyses were used to examine and explore relationships between contextual variables (e.g. Implementation of YouScience at the school level, Student-level demographics, School-level demographics) and outcome variables of interest (e.g., Self-Awareness). The general purpose of multiple regression is to learn more about the relationship between several independent or predictor variables and a dependent or outcome variable. Furthermore, regression analysis allows researchers to understand which variables play an important role in predicting the outcome variables. In general, multiple regression allows researchers to ask and answer the general question, "what is the best predictor of …"

For our purposes, a series of regression models were conducted to understand what variables influence the following five outcome variables:

1. Self-Awareness
2. Career Decision Making
3. Self-Empowerment
4. Career Exploration
5. Intent to Persist

Each regression model, included the following independent or predictor variables:

- Student Demographics (Race/Ethnicity, Gender, Free/Reduced Price Lunch, and Parent's highest level of education) derived from the 2016 student survey;
- Implementation Characteristics (e.g., Mode of administration, whether there was lab time to view results, and follow-up guidance) derived from the 2016 ambassador survey;
- School Demographics (e.g., % minority, % economically disadvantaged, % students with disabilities, and % limited English proficient) derived from the 2014-2015 GOSA report card data; and,
- YouScience Statistics (average time students spent reviewing their YouScience results online) derived from the YouScience online data metrics.[19]

For a detailed list of predictor variables, see Appendix K.

In addition to the above-mentioned predictor variables, pre scores for each construct (e.g., Pre Self-Awareness) were included in the model to control for baseline attitudes. The dependent variables (DVs) or outcome variables in each model included the post scores for each construct (e.g., Post Self-Awareness).

The results from the 5 regression models suggest that the following variables statistically significantly predicted one or more of the outcome variables:

- Student Demographics
    - Gender
    - Free/Reduced Lunch (FRL)
- Implementation Characteristics
    - Administration (e.g., Students completed some sections of YouScience at school and some section at home)
    - Number of sittings (e.g., 2-3 sittings)
    - Follow-up Guidance (e.g., yes, in a small group)
- School Demographics
    - % Limited English Proficiency, LEP

[19] The average time (in minutes) that students spent reviewing their YouScience results online were obtained as of June 15, 2016 from the YouScience team. This data was collected at the school-level such that an average time (in minutes) was computed per school.

- YouScience Statistics
    - Time in Online Results (in minutes)

For more information, see Appendix K.

Table 16 provides a brief summary of the major findings from the regression models. A check mark (✓) suggests that the predictor variable statistically significantly ($p<.05$) predicted the outcome variable; green highlighted check marks denote a positive relationship between predictor and outcome variables; red highlighted check marks denote a negative relationship between predictor and outcome variables. For instance, schools that asked students to complete sections of YouScience at school and at home (*How did you administer YouScience to students?)* express *less* self-empowerment than schools that administered YouScience at school only, controlling for all other variables in the model. See Figure 7.

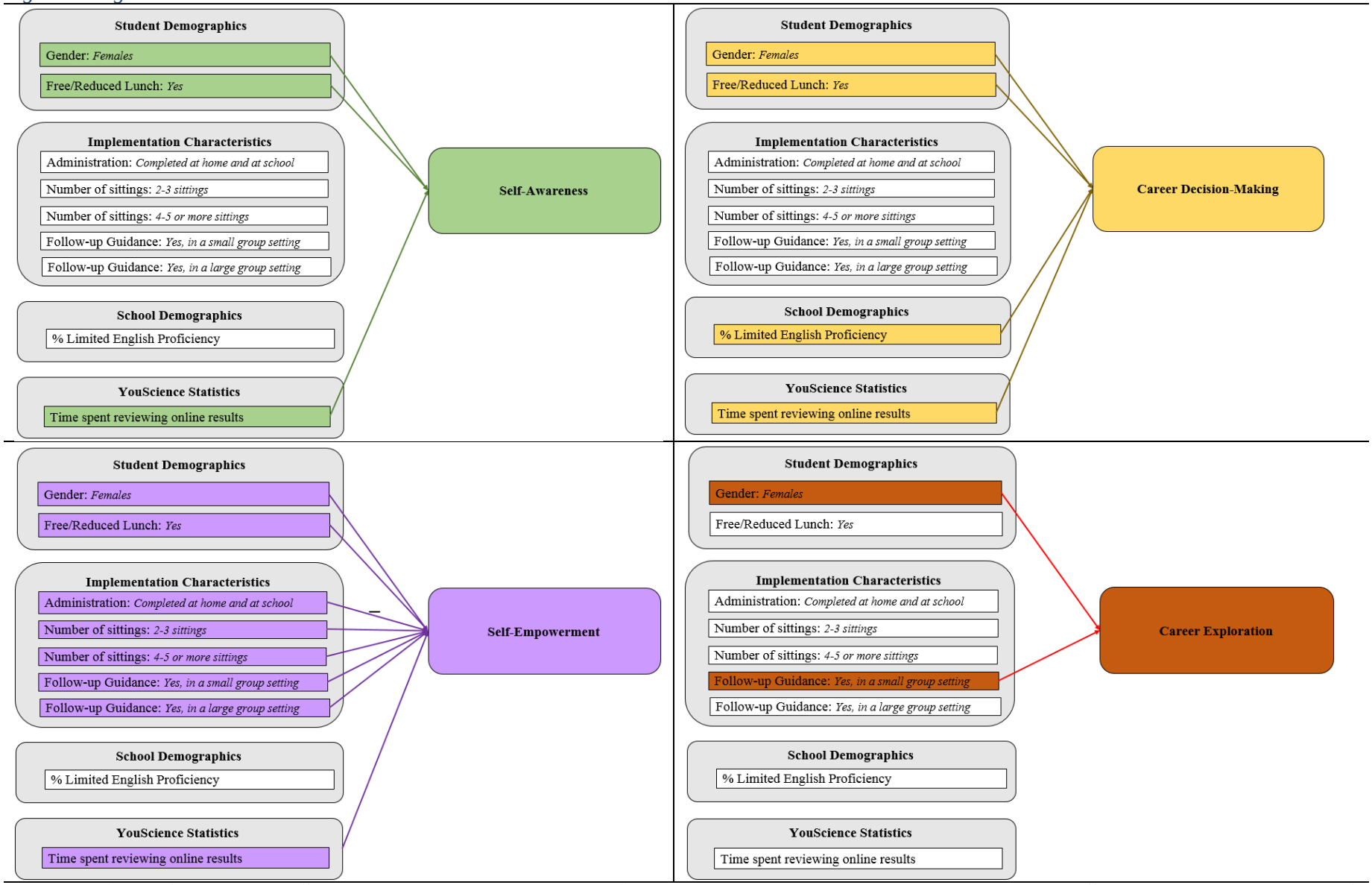
Table 16. Regression Results- Brief Summary

Predictor Variables:		Outcome Variables or DVs				
		Self-Awareness	**Career Decision-Making**	**Self-Empowerment**	**Career Exploration**	**Intent to Persist**
Student Demographics	Gender: **Females**	✓	✓	✓	✓	✓
	FRL: **Yes**	✓	✓	✓		
Implementation Characteristics	Administration: **Completed at school and home**			✓		
	Number of sittings: **Two to three sittings**			✓		
	Number of sittings: **Four to five or more sittings**			✓		
	Follow-up Guidance: **Yes in a small group**			✓	✓	
	Follow-up Guidance: **Yes in a large group**			✓		
	% LEP		✓			
YouScience Statistics	Time in Online Results- Average Minutes	✓	✓	✓		
Pre	Pre Construct Averages (e.g., Pre Self-Awareness)	✓	✓	✓	✓	✓

Note. Notice that two variables (Gender: Females and Pre Construct Averages) significantly predict each of the five student outcome variables. This suggest that female students are more likely to benefit from YouScience across a range of outcome variables. This also suggests that students sentiments in the "before" condition predict their sentiments on the "now" condition as we would expect.

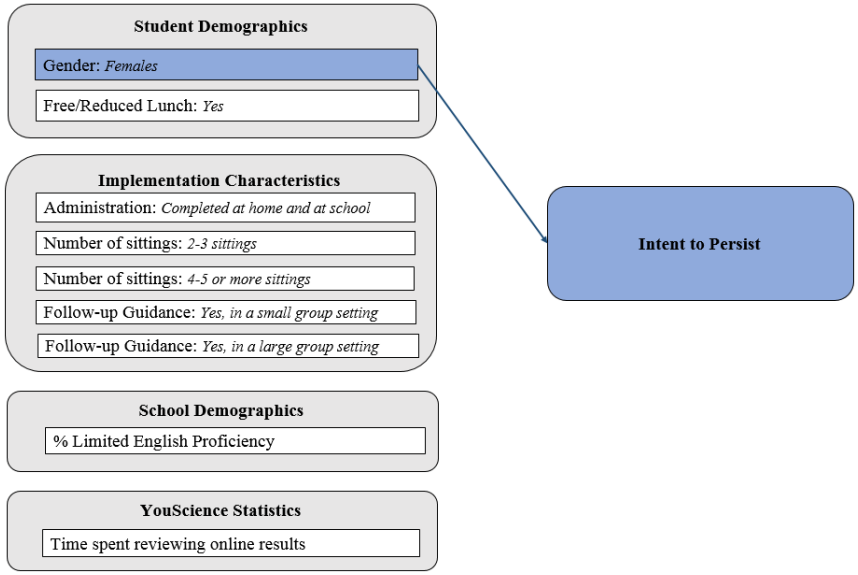
Across all outcome variables, females show higher attitudinal scores than males, controlling for baseline attitudes. Likewise, students who receive free or reduced lunch (FRL) show higher scores across most outcome variables. This suggests that YouScience is most impactful for female students and FRL students. Gains in self-empowerment was largely contingent on how schools implemented YouScience: schools that administered YouScience during school hours across two or more sittings, and provided follow-guidance to students yielded higher self-empowerment scores. Also, the more time that students spent reviewing their YouScience results online, the higher their self-awareness, career decision-making, and self-empowerment outcomes.

Figure 7. Regression Results



Note. Lines reflect significant regression coefficients; predictor variables that statistically significantly predict the dependent variable are highlighted. All regression coefficients are positive with the exception of *Administration: Competed at home and at school* which negatively predicts *Self-Empowerment.* Pre construct scores (e.g., *Pre Self-Awareness*) were controlled for in the regression models, but are not depicted in the above figures.

Continued,



Note. Lines reflect significant regression coefficients; predictor variables that statistically significantly predict the dependent variable are highlighted. All regression coefficients are positive with the exception of *Administration: Competed at home and at school* which negatively predicts *Self-Empowerment.* Pre construct scores (e.g., *Pre Self-Awareness*) were controlled for in the regression models, but are not depicted in the above figures.

In addition to understanding which predictor variable(s) statistically significantly predict the outcome variables, it is also important to evaluate the size of the standardized beta (β) coefficient. These are the coefficients you would obtain if you standardized all of the variables in the regression model, including the predictor and outcome variables. By standardizing the variable, we can compare the magnitude of the beta coefficient to see which one has more of an effect. Standardized beta coefficients tell us how increases in the predictor variables affect the outcome variable.[20] Larger standardized coefficients have a larger impact on the outcome variable. As Table 17 suggests, the time that students spent reviewing their online results had the most impact on students' self-awareness (β=.08) and career decision-making abilities (β=.10). Follow-up guidance in a small group was most impactful on students' self-empowerment (β=.13) and career exploration (β=.12). It is important to notice the significant (green) cells both horizontally and vertically. Table 15 suggests that female students showed significant gains across each of the five outcome variables and that Self-Empowerment was positively affected by all but two predictors. Further, the greatest beta coefficients are predicted by small group follow-up guidance (β=.13 and β=.12) which underscores the importance of reviewing the results with students in a small group (<30 students).

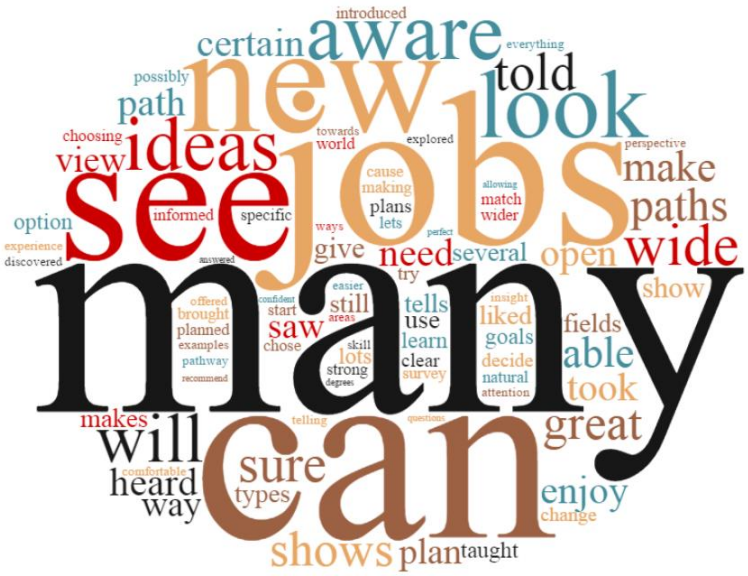
Table 17. Regression Results- Standardized Beta Coefficients (β)

Predictor Variables:		Outcome Variables or DVs				
		Self-Awareness	**Career Decision-Making**	**Self-Empowerment**	**Career Exploration**	**Intent to Persist**
Student Demographics	Gender: **Females**	β=.05	β=.05	β=.05	β=.05	β=.05
	FRL: **Yes**	β=.04	β=.04	β=.07		
Implementation Characteristics	Administration: **Completed at school and home**			β=-.04		
	Number of sittings: **Two to three sittings**			β=.07		
	Number of sittings: **Four to five or more sittings**			β=.06		
	Follow-up Guidance: **Yes in a small group**			β=.13	β=.12	
	Follow-up Guidance: **Yes in a large group**			β=.07		
	% LEP		β=.04			
YouScience Statistics	Time in Online Results- Average Minutes	β=.08	β=.10	β=.04		

Note. Green cells signify positive standardized beta coefficients; red cells signify negative standardized beta coefficients. Pre construct scores (e.g., *Pre Self-Awareness*) were controlled for in the regression models, but are not depicted in the above figures.

[20] Standardized beta coefficient have a mean of zero and standard deviation of 1. This means that a standard deviation increase of the predictor variable is associated with a standard deviation increase in the outcome variables. Since the variables have been standardized, variables with a larger standardized coefficient have a larger effect on the outcome variable.

III. Conclusions



Note. The word cloud above is a graphical representation of word frequency that give greater prominence to words that appear more frequently in a source text.[21] The content within the world cloud is from students' open-ended responses to the following survey question: "Has YouScience expanded your vision or awareness of career possibilities?" (#38).

The goal of the 2015-2016 pilot study is to assess the efficacy of YouScience on students' attitudinal outcomes and to inform whether and how it should be implemented in the future across Georgia schools. The findings from the student survey, deployed to more than 3,000 10th grade students across 34 high schools, are promising: YouScience was effective in improving students' attitudes towards career decisions. Specifically, after taking YouScience, students express statistically significant gains in every measured construct: *Self-Awareness, Career Decision-Making* abilities, S*elf-Empowerment, Career Exploration* and *Intent to Persist* towards a career pathway and/or additional post-secondary education or training. Further, students who spent at least 20 minutes reviewing their results had effects in four of the five constructs that were twice as large as those who spent 20 minutes or less. The size of the effect of YouScience on students' attitudes is small across most survey items and constructs. This means that students' attitudinal gains are statistically significant, but the magnitude of change is small. [22] *Self-Awareness* was the exception in that it achieved a small to medium effect size (d=.44) while the others remained comparatively small ($d \leq .26$). This suggests that **YouScience was particularly effective at enhancing students' abilities to describe their strengths and weaknesses and identify suitable careers** (e.g., "I can identify which careers are a good fit for me."). Open-ended responses from students highlight the utility of YouScience in enhancing their self-awareness:[23]

> *[YouScience] helped me to understand my strengths and weaknesses which helped me explore more career and college option.*

[21] This type of visualization can assist evaluators with exploratory textual analysis by identifying words that frequently appear in a set of interviews or other text. It is used for communicating the most salient points or themes in a report.
[22] Averaging the effect sizes across all constructs, YouScience yielded an effect of d=.25, which considered small by researchers. To add context to this number, a recent meta-analysis of career education interventions found an overall effect of d=.38 on students' outcomes. For more information, see: Hattie, J. (2009). *Visible Learning: A synthesis of over 800 meta-analyses relating to achievement.* New York, NY: Routledge.
[23] Selected quotes from students' open-ended responses to the following survey question are provided to further illustrate the impact of YouScience on students' attitudes: "Has YouScience expanded your vision or awareness of career possibilities?" (#38).

Before I completed YouScience I had no idea what I wanted to do, or what jobs are out there. Now I know not only real jobs that are waiting for me, but I know which jobs are most likely to be the best fit for me. I don't yet know what I want to do but I do know that YouScience has helped me and when it comes time for me to pick a job it will be easier for me than it was before.

To further enhance the impact of YouScience on students' outcomes, improvements in the implementation of YouScience at the school-level may be needed. The results from the regression analysis suggest that the following implementation strategies were effective:

a) Providing follow-up guidance to students in small or large group settings,
b) Administering all sections of the YouScience profile at school (vs. at home), and
c) Scheduling adequate time for students to complete the YouScience profile across multiple sittings to complete all sections of the YouScience profile at school.

Furthermore, data gleaned from the Ambassador survey indicate that most schools were challenged by computer access limitations and staff frustration that the YouScience Profile disrupted instructional time. Indeed, given the length and rigor of the YouScience assessment, time was a major impediment to implementation. Building YouScience into the academic year during curriculum planning may be critical for future implementation so that teachers and staff can appropriately weave it into the curriculum. There are two potential directions to address the above-mentioned issues: 1) establish expectations that the YouScience Profile and results discussion will take considerable time, or 2) explore abridged or shortened versions of the YouScience tool. Open-ended responses from students illustrate the need for a shortened assessment and follow-up guidance in interpreting their results:[24]

It took a lot of time. Test could be shortened.

It took me out of class when I could have been learning.

Too many tests to take and not enough time. These need to be done and discussed at school and not left to be done on student's time at home.

We took the test months ago and it has never been brought up [since then].

In addition to improving the implementation of YouScience, enhancing the rigor of the evaluation design may be needed in order to minimize the potential threats to internal validity. Internal validity refers to a study's ability to determine if a causal relationship exists between an intervention (in this case, YouScience) and one or more dependent or outcome variables. In other words, can we be reasonably sure that the changes in students' attitudes were caused by YouScience? Previous research in adolescent development suggests that maturation is likely to threaten the internal validity of findings.[25] A maturation effect occurs when changes in attitudes or skills over time are due to naturally-occurring internal processes (e.g., cognitive development) rather than to the intervention. One procedure to detect maturation effects is to add a control group or comparison group to the study. If the treatment group improves the same amount as the control group, then the researcher should not conclude that the intervention is causing the change. Instead, the changes may be due to maturation. However, if the treatment group improves more than the control group, then the researcher can be

[24] Selected quotes from students' open-ended responses to the following survey question are provided to further illustrate the impact of YouScience on students' attitudes: "Has YouScience expanded your vision or awareness of career possibilities?" (#38).
[25] Weis, R. (2014). *Introduction to Abnormal Child and Adolescent Psychology.* Thousand Oaks, CA: Sage.

more confident that the intervention is having an effect. Without a control group or a quasi-experimental design, the maturation effect is a major confounding variable in the interpretation of the pilot study results.[26]

Overall, the results of the pilot study indicate that students' attitudes towards career decisions improved from before taking YouScience (pre) to after taking YouScience (post). The effect of YouScience on students' attitudes, albeit small, were most pronounced among three populations of students: females, students who receive free/reduced lunch, and students who spent more time reviewing their YouScience results online (e.g., > 20 minutes). While the lack of a control group reduces the ability to establish causality in the findings, the sizable difference in effect between students who reviewed results for at least 20 minutes and those who did not provides evidence of YouScience's impact.

[26] Another possible threat to internal validity is the Hawthorne effect. The Hawthorne effect is a psychological phenomenon that produces an improvement in attitudes or performance as a result of increased attention from superiors or colleagues. In other words, behavior or attitudes are enhanced simply because individuals are aware that they are under observation. Including a carefully matched control group in the study design can isolate and/or remove the impact of the Hawthorne effect on students' outcomes.

APPENDIX A. Pilot Schools

RESA	Pilot School (alphabetized)	Evaluation School?
11	Americus Sumter High School	✓
4	Arabia Mountain High School	
14	Baker County K12 School	
1	Bartow County College & Career Academy	✓
15	Berrien High School	✓
1	Bremen High School	
10	Burke County High School	✓
6	Callaway High School	
16	Charlton County High School	✓
2	Coahulla Creek High School	
15	Cook High School	
4	Dacula High School	✓
1	Dade County High School	✓
4	Decatur High School	
7	Eagle's Landing High School	✓
5	East Jackson Comprehensive High School	
15	Echols County High School	✓
10	Glascock County Consolidated School	
1	Gordon Lee High School	✓
4	Grayson High School	✓
6	Greenville Middle - High School	✓
10	Harlem High School	✓
4	Harrison High School	✓
1	Hiram High School	✓
7	Jackson High School	
5	Jefferson High School	✓
9	Johnson County High School	✓
6	LaGrange High School	✓
6	Manchester High School	✓
4	Marietta High School	✓
4	Martin Luther King, Jr. High School	✓
5	Morgan County High School	
13	New Hampstead High School	✓
6	Newnan High School	
2	Northwest Whitfield County High School	✓
4	Osborne High School	✓
14	Pataula Charter Academy	✓
4	Pebblebrook High School	✓
13	Portal Middle/High School	✓
3	Rabun County High School	✓
10	Richmond County Technical Career Magnet School	✓
4	Riverdale High School	
4	Rockdale County High School	
2	Southeast Whitfield County High School	✓
4	Southwest DeKalb High School	
11	Taylor County High School	✓
4	Therrell High School	✓
6	THINC Academy	✓
6	Troup County High School	✓
10	Washington-Wilkes Comprehensive High School	✓
14	Worth County High School	

Note. ✓ = Schools that were asked to disseminate the student survey.

APPENDIX B. Participants

A. Participating Schools

Fifty-one high schools across the state of Georgia were strategically selected to ensure diverse representation of schools and students and invited to participate in a statewide pilot of the YouScience profile. The high schools invited to participate in the pilot were selected to be representative of the entire state and include a mixture of urban and rural settings. Table 18 summarizes key demographic statistics of the state, the pilot schools, and the schools selected for evaluation. The demographics of students in the 51 pilot schools are representative of student demographics in the state of Georgia. Around 60% of pilot students and students in Georgia receive free and/or reduced price lunch and are being raised under economic hardship. Likewise, the racial/ethnic makeup of the student population appears to be similar among the pilot schools and the state, roughly half of the students are considered to be a racial/ethnic minority.

Table 18. Demographics

	n (number of schools)	Average							
		% FRL[1]	% SWD[2]	% Economic Disadvantage	% Minority Race/Ethnicity [3]	% Majority Race/Ethnicity [4]	% LEP[5]	School Size	10th grade Class Size
Statewide	448[6]	63%	11%	62%	54%	46%	8%	2,467[7]	650[8]
Pilot Schools	51	64%	10%	63%	50%	48%	2%	1,108	285
Evaluation Sample	35	65%	10%	63%	49%	48%	3%	1,112	289

Note. [1]% FRL= Percentage of students receiving free and/or reduced price lunch. [2]% SWD= Percentage of students with disabilities. [3]Minority= Native American, Hispanic, Black, Multiracial. [4]Majority= White, Asian. [5]% LEP= Percentage of students with Limited English Proficiency. [6]Number of high schools in Georgia. [7]Statewide school size was calculated by averaging the total number of high school students in each school system in Georgia. [8]Statewide 10th grade class size was calculated by averaging the total number of 10th grade students in each school system in Georgia.

Table 19. Demographics, by Race/Ethnicity

	n (number of schools)	Average							
		% Minority Race/Ethnicity[1]	% Black	% Hispanic	% Multiracial	% Native American	*% Majority Race/Ethnicity[2]*	% Asian	% White
Statewide	448[3]	*54%*	37%	14%	3%	<1%	*46%*	4%	42%
Pilot Schools	51	*50%*	39%	9%	2%	<1%	*49%*	1%	48%
Evaluation Sample	35	*49%*	37%	11%	2%	<1%	*49%*	1%	48%

Note. [1]Minority= Native American, Hispanic, Black, Multiracial. [2]Majority= White, Asian. [3]Number of high schools in Georgia.

B. Student Survey

In total, 3,068 students completed the YouScience Student Survey across 34 schools.[27] Although 35 schools were selected to disseminate the Student Survey, one school did not comply with the request. On the Student Survey, students were asked to provide demographic information: Gender, Ethnicity/Race, Parent(s) highest level of education, Free/Reduced price lunch status. Self-reported data gleaned from the survey suggest that the demographic profile of the student responders is described below:

- The population of student survey completers consisted of slightly more females (53%) than males (44%).
- Over three-fourths of students self-identified as White (40%) or Black (36%).
- Approximately 65% of students indicated that their parent(s) have at least some college or postsecondary education.
- There was a fairly equal distribution of students who self-disclosed that they receive (49%) or do not receive (43%) free/reduced lunch (49%).

For more information, see
Table 20 through Table 23.

Table 20. Gender, Student Survey

Gender:		
	n	%
Female	1607	53%
Male	1324	44%
Other	77	3%
Total	**3008**	**100%**

Note. Highest percentage is highlighted in gray.

Table 21. Ethnicity/Race, Student Survey

Ethnicity/Race:		
	n	%
Asian	110	4%
Black	1075	36%
Hispanic	377	13%
Native/American/Alaskan Native	28	1%
White	1191	40%
Multiracial	136	5%
Other	96	3%
Total	**3013**	**100%**

Note. Highest percentage is highlighted in gray.

[27] Although 3,068 students completed the YouScience survey and indicated that they took the YouScience Profile, totals for each individual survey item may not sum to 3,068 due to non-responses.

Table 22. Parent(s) Education, Student Survey

Parent(s) Highest Level of Education:		
	n	%
Less than high school graduate	373	12%
High school graduate	667	22%
Some college or postsecondary education	494	16%
College Degree	856	29%
Graduate/Professional Degree or some graduate/professional school	609	20%
Total	**2999**	**100%**

Note. Highest percentage is highlighted in gray.

Table 23. Free/Reduced Priced Lunch, Student Survey

Free/Reduced Priced Lunch:		
	n	%
Yes	1470	49%
No	1281	43%
Prefer not to answer	248	8%
Total	**2999**	**100%**

Note. Highest percentage is highlighted in gray.

APPENDIX C. Race/Ethnicity Statistics by School

Schools[1]	*n (number of students)*	*% Minority Race/Ethnicity[2]*	% Black	% Hispanic	% Multiracial	% Native American	*% Majority Race/Ethnicity[3]*	% Asian	% White
1. Americus Sumter High School	1,001	84%	78%	5%	1%	0%	16%	1%	15%
2. Arabia Mountain High School	1,345	100%	97%	2%	1%	0%	0%	0%	0%
3. Baker County K12 School	323	82%	68%	10%	4%	0%	4%	0%	4%
4. Bartow County College & Career Academy	1,384	21%	10%	9%	2%	0%	79%	1%	78%
5. Berrien High school	797	23%	13%	8%	2%	0%	77%	1%	76%
6. Bremen High School	623	6%	4%	1%	1%	0%	94%	1%	93%
7. Burke County High School	1,162	70%	68%	1%	1%	0%	29%	0%	29%
8. Callaway High School	837	50%	44%	3%	3%	0%	49%	3%	46%
9. Charlton County High School	461	29%	26%	0%	3%	0%	70%	0%	70%
10. Coahulla Creek High School	1,008	35%	2%	29%	3%	1%	66%	1%	65%
11. Cook High School	901	43%	33%	8%	2%	0%	56%	1%	55%
12. Dacula High School	2,075	61%	39%	17%	4%	1%	40%	3%	37%
13. Dade County High School	589	3%	1%	1%	1%	0%	96%	0%	96%
14. Decatur High School	1,158	44%	35%	4%	5%	0%	56%	2%	54%
15. Eagle's Landing High School	1,382	79%	64%	11%	4%	0%	20%	5%	15%
16. East Jackson Comprehensive High School	949	21%	6%	12%	3%	0%	79%	2%	77%
17. Echols County High School	229	34%	2%	29%	2%	1%	66%	0%	66%
18. Glascock County Consolidated School	581	8%	7%	0%	1%	0%	91%	0%	91%
19. Gordon Lee High School	463	2%	0%	1%	1%	0%	98%	0%	98%
20. Grayson High School	2,850	57%	41%	11%	4%	1%	43%	5%	38%
21. Greenville Middle - High School	489	73%	67%	3%	3%	0%	27%	0%	27%
22. Harlem High School	725	23%	14%	5%	4%	0%	76%	0%	76%
23. Harrison High School	1,990	19%	11%	5%	3%	0%	82%	2%	80%
24. Hiram High School	1,634	50%	38%	8%	4%	0%	48%	0%	48%
25. Jackson High School	1,005	40%	34%	3%	3%	0%	60%	1%	59%
26. Jefferson High School	1,003	18%	8%	8%	2%	0%	82%	2%	80%
27. Johnson County High School	335	47%	45%	2%	0%	0%	52%	1%	51%
28. LaGrange High School	1,309	50%	43%	4%	3%	0%	50%	3%	47%
29. Manchester High School	475	60%	58%	1%	1%	0%	40%	1%	39%
30. Marietta High School	2,172	79%	46%	30%	3%	0%	20%	2%	18%
31. Martin Luther King, Jr. High School	1,655	99%	97%	1%	1%	0%	0%	0%	0%
32. Morgan County High School	985	35%	28%	4%	3%	0%	65%	1%	64%
33. New Hampstead High School	1,386	60%	50%	5%	5%	0%	40%	3%	37%
34. Newnan High School	2,299	35%	28%	5%	2%	0%	64%	1%	63%

Note. [1]Evaluation schools are highlighted in gray. [2]Minority = Black, Hispanic, Multiracial, and Native American. [3]Majority= Asian and White.

Continued,

Schools[1]	*n (number of students)*	*% Minority Race/Ethnicity[2]*	% Black	% Hispanic	% Multiracial	% Native American	*% Majority Race/Ethnicity[3]*	% Asian	% White
35. Northwest Whitfield County High School	1,327	30%	2%	26%	2%	0%	69%	1%	68%
36. Osborne High School	1,967	92%	36%	54%	2%	0%	8%	2%	6%
37. Pataula Charter Academy	518	17%	11%	5%	1%	0%	82%	1%	81%
38. Pebblebrook High School	2,524	91%	62%	27%	2%	0%	9%	1%	8%
39. Portal Middle/High School	415	41%	34%	5%	2%	0%	58%	0%	58%
40. Rabun County High School	663	17%	1%	13%	3%	0%	83%	0%	83%
41. Richmond County Technical Career Magnet School	444	84%	78%	4%	2%	0%	15%	0%	15%
42. Riverdale High School	1,342	96%	82%	13%	1%	0%	4%	3%	1%
43. Rockdale County High School	2,121	82%	72%	7%	3%	0%	18%	2%	16%
44. Southeast Whitfield County High School	1,357	59%	2%	55%	2%	0%	41%	1%	40%
45. Southwest DeKalb High School	1,230	99%	97%	1%	1%	0%	0%	0%	0%
46. Taylor County High School	396	44%	42%	2%	0%	0%	56%	1%	55%
47. Therrell High School	842	100%	98%	2%	0%	0%	0%	0%	0%
48. THINC Academy	No Data								
49. Troup County High School	1,323	41%	34%	3%	4%	0%	59%	1%	58%
50. Washington-Wilkes Comprehensive High School	453	58%	49%	6%	3%	0%	42%	1%	41%
51. Worth County High School	908	42%	38%	1%	3%	0%	58%	0%	58%

Note. [1]Evaluation schools are highlighted in gray. [2]Minority = Black, Hispanic, Multiracial, and Native American. [3]Majority= Asian and White.

APPENDIX D. Additional Student Demographic Statistics by School

Schools[1]	*n (number of students)*	% FRL[2]	% ED[3]	% SWD[4]	% LEP[5]
1. Americus Sumter High School	1,001	99%	98%	9%	1%
2. Arabia Mountain High School	1,345	49%	51%	3%	0%
3. Baker County K12 School	323	100%	100%	15%	0%
4. Bartow County College & Career Academy	1,384	No Data	50%	12%	2%
5. Berrien High School	797	84%	83%	12%	1%
6. Bremen High School	623	19%	20%	8%	0%
7. Burke County High School	1,162	100%	100%	10%	0%
8. Callaway High School	837	65%	65%	6%	2%
9. Charlton County High School	461	60%	59%	6%	0%
10. Coahulla Creek High School	1,008	61%	63%	9%	5%
11. Cook High School	901	57%	86%	10%	2%
12. Dacula High School	2,075	44%	46%	13%	2%
13. Dade County High School	589	55%	49%	13%	0%
14. Decatur High School	1,158	18%	22%	11%	2%
15. Eagle's Landing High School	1,382	53%	52%	13%	2%
16. East Jackson Comprehensive High School	949	59%	63%	15%	3%
17. Echols County High School	229	90%	91%	9%	4%
18. Glascock County Consolidated School	581	56%	58%	7%	0%
19. Gordon Lee High School	463	17%	18%	5%	0%
20. Grayson High School	2,850	37%	38%	12%	2%
21. Greenville Middle - High School	489	90%	85%	14%	1%
22. Harlem High School	725	44%	42%	6%	1%
23. Harrison High School	1,990	8%	8%	10%	1%
24. Hiram High School	1,634	48%	48%	11%	1%
25. Jackson High School	1,005	87%	77%	12%	1%
26. Jefferson High School	1,003	23%	27%	9%	1%
27. Johnson County High School	335	90%	60%	13%	0%
28. LaGrange High School	1,309	50%	48%	7%	2%
29. Manchester High School	475	90%	78%	15%	0%
30. Marietta High School	2,172	55%	56%	10%	7%
31. Martin Luther King, Jr. High School	1,655	70%	73%	11%	1%
32. Morgan County High School	985	38%	40%	8%	1%
33. New Hampstead High School	1,386	51%	52%	13%	1%
34. Newnan High School	2,299	46%	48%	11%	1%
35. Northwest Whitfield County High School	1,327	51%	54%	9%	4%
36. Osborne High School	1,967	79%	83%	14%	18%
37. Pataula Charter Academy	518	62%	59%	11%	3%
38. Pebblebrook High School	2,524	73%	73%	10%	10%
39. Portal Middle/High School	415	70%	70%	11%	1%
40. Rabun County High School	663	57%	58%	11%	2%
41. Richmond County Technical Career Magnet School	444	97%	97%	3%	1%
42. Riverdale High School	1,342	99%	95%	12%	4%
43. Rockdale County High School	2,121	66%	64%	8%	1%
44. Southeast Whitfield County High School	1,357	75%	77%	10%	11%

Note. [1]Evaluation schools are highlighted in gray. [2] % FRL= Percentage of students receiving free and/or reduced price lunch. [3] % ED= Percentage of students that are economically disadvantaged. [4] % SWD= Percentage of students with disabilities. [5]% LEP= Percentage of students with Limited English Proficiency.

Continued,

Schools[1]	*n (number of students)*	% FRL[2]	% ED[3]	% SWD[4]	% LEP[5]
45. Southwest DeKalb High School	1,230	69%	64%	9%	1%
46. Taylor County High School	396	68%	65%	6%	1%
47. Therrell High School	842	100%	100%	14%	2%
48. THINC Academy			No Data		
49. Troup County High School	1,323	52%	52%	9%	1%
50. Washington-Wilkes Comprehensive High School	453	94%	96%	8%	1%
51. Worth County High School	908	93%	93%	6%	0%

Note. [1]Evaluation schools are highlighted in gray. [2] % FRL= Percentage of students receiving free and/or reduced price lunch. [3] % ED= Percentage of students that are economically disadvantaged. [4] % SWD= Percentage of students with disabilities. [5]% LEP= Percentage of students with Limited English Proficiency.

APPENDIX E. Methods

Student Survey-Overview

The YouScience student survey is an online assessment, developed by a team of researchers, industry specialists, school counselors and subject matter experts, and designed to evaluate the impact of YouScience on students' attitudes and intentions to persist towards a career path and/or additional post-secondary training. The survey consisted of 42-items.

The YouScience Student Survey measures students' attitudes across the following major constructs[28]:

1. **General Background** (3-items): school information, YouScience profile and results timeline.
    a. Examples: "What school do you attend?" "When did you take the YouScience Profile?"

2. **Student Perceptions** (5-items): the degree to which one was engaged and satisfied by the YouScience tool.
    a. Examples: "In general, I found the YouScience Profile to be useful." "I would recommend the YouScience Profile to a friend."

3. **Utilization** (8-items): the frequency by which one discussed their YouScience results with others and utilized their results to guide career exploration.
    a. Examples: "To what extent did you discuss your YouScience results with a parent(s)/guardian(s)?" "To what extent was your YouScience Profile helpful in exploring new careers?"

4. **Self-Awareness** (5-items): the ability to describe one's self and to identify suitable careers.
    a. Example: "I can identify which careers are a good fit for me."

5. **Career Decision Making** (4-items): confidence in one's ability to make an informed career decision.
    a. Example: "I have enough information to make a career decision."

6. **Self-Empowerment & Future Confidence** (2-items): feeling hopeful and self-assured in one's future path.
    a. Example: "I have a good sense of where I am headed in life."

7. **Career Exploration** (4-items): engaging in activities that provide one with career information, and expanding one's vision of career possibilities.
    a. Example: "[I have] sought information on specific careers that interest me."

8. **Intent to Persist** (3-items): motivation to pursue a career pathway and/or additional post-secondary education/training.
    a. Example: "I plan to continue my education or training after high school."

9. **Career Identity Status** (1-item): the stage of development that one is at in their journey towards identifying a suitable career or vocation. .
    a. Example: "Choose the statement that best describes you: I know what I want to do as a career; I am exploring career options; I'm really not interested in finding the right career at the moment."

[28] Survey constructs are abstractions which can only be assessed indirectly through a number of survey items. Constructs are used for labeling similar survey items. Through the use of constructs, the observer can begin to classify and group attitudes of a similar nature and communicate these ideas using compact terms.

10. **Demographic information** (4-items): general demographic data
    a. Example: "Select your race/ethnicity."
11. **Open-end responses** (3-items): the degree to which YouScience expanded one's vision or awareness of career possibilities; the degree to which one has considered careers as a result of taking YouScience.
    a. Examples: "Has YouScience expanded your vision or awareness of career possibilities? If yes, how? If no, why not?" "List three careers that you are currently considering. Did you consider this career before taking YouScience or as a result?"

Except for the first question, which instructed respondents to identify their school, all of the survey items were optional. Thirty-one of the survey items utilized a five-point Likert scale whereby students responded on a 5-point scale (e.g., 1, Strongly Disagree to 5, Strongly Agree); seven items provided participants with categorical options (e.g., Female); one item asked students to select their school from a drop-down menu; and three were open response items.

One of the priorities of the pilot program is to assess the impact of YouScience on students' outcomes. While a traditional pre/post survey is one method for assessing students' attitudinal change from before YouScience to after YouScience, there were limitations in terms of time and cost to administer two separate survey instruments. As an alternative, a retrospective survey design was utilized for the Student Survey. A retrospective survey design asks participants to compare their attitudes before the intervention or program to after. This type of survey is implemented at one point in time on a single instrument that queries participants about their attitudes "then" (pre-test) and "now" (post-test). There are several advantages to employing a retrospective survey design. First, it reduces the response shift bias that threatens the validity of traditional pre/post surveys. Response shift bias occurs when participants overestimate their initial attitudes due to lack of knowledge at baseline; after the program, their deeper understanding affects their responses on the "post" survey. For example, before participating in YouScience, students may have felt that they knew which careers were a good fit for them; however, after going through the YouScience assessments and exploring their strengths, students may perceive their initial list of potential careers as limited and uninformed. Also, retrospective surveys reduce the likelihood of incomplete data sets and are easier for participants to complete. See Appendix F.

Importantly, not all of the items on the Student Survey were retrospective in design; rather students provided pre/post (or before/now) responses only to constructs 4. Self-Awareness, 5. Career Decision-Making, 6. Self-Empowerment & Future Confidence, 7. Career Exploration, 8. Intent to Persist, and 9. Career Identity Status.

The Student Survey was disseminated to students through coordination with the school ambassador and the YouScience team. Students were sent personalized URL links to the online Student Survey from the school Ambassador or school counselor. The YouScience Student Survey was administered via the online platform SurveyGizmo. Through this platform, students were sent personalized URL links to the online Student Survey from either the school Ambassador or school counselor. Typically students received one initial invitation email to complete the student evaluation survey, and one reminder email to complete the survey approximately 1-week following the initial invite. Per ambassadors' requests, students at around half of the schools (n=17) were sent 2-4 email reminders in order to maximize response rates. Several schools also provided in-person survey reminders to complete the surveys using their own mobile devices or home computers. Due to scheduling conflicts with state testing (e.g., End-of-course tests, EOCTs), a decision was made to extend the timeframe for collected student feedback. In consultation with several district-leaders, the Student Survey remained accessible until May 20, 2016.

Development of the Student Survey

The development of the YouScience Survey was driven by empirical research in the field of student identity and career development. Specifically, validated items derived from the following resources were used to generate the initial survey draft:

Bandura, A. (1977). Self-efficacy: Towards a unifying theory of behavioral change. *Psychological Review, 84,* 191-215.

Barr, R., & Gibson, E. L. (2013). *Building a Culture of Hope: Enriching Schools with Optimism and Opportunity*. Bloomington, IN: Solution Tree Press.

Bennion, L. D., & Adams, G. R. (1986). A revision of the Extended Version of the Objective Measure of Ego-identity Status: An identity instrument for use with late adolescents. *Journal of Adolescent Research, 1,* 183-198.

Betz, N.E., Klein, K.L., & Taylor, K.M. (1996). Evaluation of a short-form of career decision making self-efficacy scale. *Journal of Career Assessment, 4,* 47-57.

Chamberlin, J., Crean, T., Ellison, M. L., & Rogers, E. S. (1997). A consumer-constructed scale to measure empowerment among user of mental health services. *Psychiatric Services, 48,* 1042-1047.

Dymnicki, A., Sambolt, M., & Kidron, Y (2013). *Improving College and Career Readiness by Incorporating Social and Emotional Learning.* Washington, DC: American Institutes for Research, College and Career Readiness and Success Center.

Gordon, G. (2013). *School leadership linked to engagement and student achievement*. Omaha, NE: Gallup. Available at education.gallup.com.

Holland, J.L., Diager, D.C., & Power, P.G. (1980). *My Vocational Situation.* Palo Alto, CA: Consulting Psychologists Press.

Marcia, J. E. (1966). Development and validation of ego-identity status. *Journal of Personality and Social Psychology, 3,* 551-558.

Robitschek, C. (1998). Personal growth initiative: The construct and its measure. *Measurement and Evaluation in Counseling and Development, 30,* 183-198.

Stebleton, M.J., Soria, K.M., & Albecker, A. (2012). Integrating strength-based education into a first-year experience curriculum. *Journal of College and Character, 13,* 1-8.

Stumpf, S.A., Colarelli, S.M., & Hartman, K. (1983). Development of the Career Exploration Survey (CES). *Journal of Vocational Behavior, 22,* 191-226, 192- 226.

Taylor, K.M., & Popma, J. (1990). Construct validity of the Career Decision-Making Self-Efficacy Scale and the relationship of CDSME to vocational indecision. *Journal of Vocational Behavior, 37,* 17-31.

Following the survey guidelines developed by Kasunic (2005)[29], the Student Survey went through an iterative process of review, modification, and pilot testing. To maximize the utility of the survey, subject matter experts (SMEs) took part in this iterative development process. The SMEs were recruited from various areas - industry, education, government - and were selected for their breadth of content knowledge in student counseling, YouScience, survey design, and career and employment opportunities and state needs. The SMEs reviewed each iteration of the survey to ensure that it was asking relevant programmatic questions and incorporating age-appropriate items. A list of the SMEs is provided in Table 24.

Table 24. Subject Matter Experts

Name	Title	Institution
Leigh Colburn	Director, Graduate Marietta Student Success Center	Marietta High School
Melody Shelton	Counselor, Graduate Marietta Student Success Center	
Karin Wooden	Parent recommended by Leigh Colburn	
Crystal Mattox	School Counselor	Hiram High School
A. Clifton Myles	Instructional Support Specialist	Southwest DeKalb High School
Mark Peevy	Executive Director of Secondary Initiatives	Technical College System of Georgia
Martine Mahoney	Vice President	YouScience
Katherine McEldoon	Consulting Learning Scientist and Project Manager	
Toby Cunningham	Chief Product Officer	
Tom McKlin	Director	SageFox Consulting Group
Shelly Engelman	Senior Consultant	
Courtney Howell	Research Assistant	
Scott Bursmith	Project Manager, YouScience Project	Governor's Office of Student Achievement
Sam Rauschenberg	Deputy Director, Research, Policy, & Accountability	
Nnenna Ogbu	Research & Evaluation Specialist, RT3 Early Learning Challenge	

As described in Table 25, the SMEs reviewed several iterations of the Student Survey prior to finalization. Additionally, focus groups and pilot studies with Marietta High School Students were conducted to assess the content validity of the survey. Information pertaining to the focus group and pilot study are provided in the following section.

[29] Kasunic, M. (2005). *Designing an Effective Survey*. U.S. Department of Defense. Software Engineering Institute, Carnegie Mellon University: http://www.sei.cmu.edu/reports/05hb004.pdf

Table 25. Student Survey Development and Timeline

Timeline	Deliverable	Narrative
December 2015	Student Survey Draft #1	• An initial student survey was drafted and discussed at the first Subject Matter Experts meeting.
	Meeting #1 with Subject Matter Experts	
January 2016	Student Survey Draft #2	• A second draft of the student survey was generated based on feedback received during meeting #1
	Meeting #2 with Subject Matter Experts	• Survey Draft #2 was reviewed, discussed and modified at the second Subject Matter Experts meeting.
	Student Survey Draft #3	• Based on feedback received during meeting #2, a third draft of the student survey was generated.
	Pilot Study	• A pilot study was conducted with 11 tenth grade students at Marietta High School.
February 2016	Student Survey Draft #4	• Given feedback provided by Marietta High School students, a fourth draft of the student survey was generated.
	Feedback from SMEs	• The fourth draft was disseminated to all Subject Matter Experts via email and/or SurveyGizmo.
	Final Student Survey	• Feedback was incorporated and the Student Survey was finalized and ready for dissemination on 2/16/2016. Data collection began in March 2016.

Focus Groups & Pilot Testing

In late January 2016, the external evaluation team conducted a pilot study and focus group of the YouScience Student Survey at Marietta High School. The objective of the pilot study and focus group was to assess the extent to which the survey is appropriate, both in content and readability, for 10th grade students. The results of this pilot study were intended to provide content validity— *verification that the method of measurement actually measures what it is expected to measure*—for the survey and to inform further modifications and revisions.

The pilot study was conducted with two groups of students—Group 1 (n=7) and Group 2 (n=4)—and lasted approximately 1 hour each. Participants for the pilot study were recruited by several staff members at the Marietta High School Student Success Center. Only students who completed the YouScience Profile were asked to participate in the pilot study. See Table 26 for information pertaining to the demographic makeup of the participants.

Table 26. Pilot Study Participants

		Group 1 (n=7)	Group 2 (n=4)
Gender	Male	3	0
	Female	4	4
Race/Ethnicity	Asian	1	0
	Black	4	2
	Hispanic	1	0
	Multiracial	1	1
	White	0	1

A think-aloud protocol was used to ask students to vocalize internally-generated thoughts as they complete the survey. In survey development, think-alouds are used to assess comprehension, confidence in judgement, meta-cognition[30], and readability. The think-aloud protocol was adapted from Trenor, Miller, and Gipson (2001).[31] The following questions were used during the pilot study to facilitate discussion:

- Comprehension: *Can you state this question in your own words? What does this term mean to you?*
- Confidence in judgment: *How sure are you of your response?*
- Metacognition: *How did you arrive at your answer?*
- Readability: *Was that question easy or hard to answer?*

On average, students completed the survey in 7-8 minutes (Min: 5 minutes; Max: 20 minutes). According to survey researchers at SurveyMonkey.com[32], survey attrition rates increase for surveys that take more than 7-8 minutes to complete; as such, the current survey was completed within an appropriate time frame to maximize response rates and minimize disruption to student's school day. Additionally, students indicated that the survey was generally "clear and easy" to understand. Several students praised the survey for being both relevant and comparatively concise in length:

> *This survey is a lot shorter than the other surveys that I have taken. One of the other surveys took me like one hour to finish.*
>
> *I think you included all of the right questions. Everything was clear. You asked what you needed to ask and nothing more.*
>
> *The survey is straight to the point.*

A couple of students added that the retrospective pre/post design of the survey encouraged them to engage in self-reflective thinking as they responded to the items:

> *I feel like it made me think about my responses.*
>
> *I had to think a little bit. Hmmm…did I really change? I answered the questions honestly though.*

Based on students' feedback, there were several items and response options that required modifications. To enhance the clarity of the survey, the following improvements were made per students' feedback:

[30] Meta-cognition is "thinking about one's thinking" and refers to the processes used to asses one's understanding and performance. Meta-cognition includes a critical awareness of one's thinking and learning. Brandsford, J.D., Brown, A.L., & Cocking, R.R. (2000). *How people learn: Brain, Mind, Experience and School*. Washington, D.C.: National Academy Press.
[31] Trenor, J. M., Miller, M. K., & Gipson, K. G. (2011). Utilization of a think-aloud protocol to cognitively validate a survey instrument identifying social capital resources of engineering undergraduates. *American Society for Engineering Education*.
[32] https://www.surveymonkey.com/blog/2011/02/14/survey_completion_times/

- The instructions specified that students should consider how they felt at the beginning of the school year, before taking the YouScience Profile.
- Examples were provided in parentheses to clarify the term "college and career pathway."
- To minimize cognitive load—the total amount of mental effort needed to solve a problem—the response options for dosage-related questions were modified as follows: *Never, A little, Some, Often, A lot.*
- An identity development status item was included in the survey. Identity development status refers to the degree to which adolescents have made choices and commitments related to vocational direction.[33] To gauge identity development status, an item derived from Bennion & Adams (1986)[34] was included in the survey. This item was modified to mirror students' diction.

Survey Reliability

In addition to assessing content validity via focus groups and pilot tests, the evaluation team also computed reliability statistics on the survey constructs. Since summated scales are an assembly of interrelated items designed to measure underlying constructs, it is important to know whether the same set of items would elicit the same responses if the same questions are re-administered to the same participants. Cronbach's alpha is an index of reliability associated with the variability accounted for by the underlying construct. Alpha coefficients range in value from 0 to 1 and denote the correlation among the items; the higher the score, the more reliable the generated scale is. Nunnally (1978) indicated that .70 is an acceptable reliability coefficient.[35] Other researchers (e.g., Field, 2009) contend that an alpha coefficient of .80 or higher is considered to have achieved very good measurement reliability; an alpha of .65 is considered acceptable.[36] The Cronbach's alphas for each of construct are displayed in Table 27. All scale reliabilities were .70 or above, which indicates an acceptable internal consistency between items within each construct (Nunnally, 1978).

Table 27. Construct Reliabilities

Constructs		Cronbach's alpha	*Reliability Interpretation*
Self-Awareness (5-items: *10, 11, 12, 13, 14*)	Before	.84	*Very Good*
	Now	.88	*Very Good*
Career Decision Making (4-items: 25, 26, 27, 28)	Before	.75	*Good*
	Now	.70	*Good*
Self-Empowerment & Future Confidence (2-items: *29, 30*)	Before	.81	*Very Good*
	Now	.83	*Very Good*
Career Exploration (3-items: *31, 32, 33*)	Before	.76	*Good*
	Now	.79	*Good*
Intent to Persist (3-items: *34, 35, 36*)	Before	.84	*Very Good*
	Now	.88	*Very Good*

[33] Marcia, J. E. (1966). Development and validation of ego-identity status. *Journal of Personality and Social Psychology, 3*, 551-558.
[34] Bennion, L. D., & Adams, G. R. (1986). A revision of the Extended Version of the Objective Measure of Ego-identity Status: An identity instrument for use with late adolescents. *Journal of Adolescent Research, 1*, 183-198.
[35] Nunnally, J. (1978). *Psychometric Theory*. New York: McGraw-Hill.
[36] Field, A. (2009). *Discovering Statistics Using SPSS, 3rd Edition*. Thousand Oaks, CA: Sage Publications.

Reliability	Interpretation
.90 and above	Excellent reliability; at the level of the best measures
.80 - .90	Very good
.70 - .80	Good; in the range of most. There are probably a few items which could be improved.
.60 - .70	Somewhat low. This measure needs to be supplemented by other measures (e.g., more surveys) to determine outcomes. There are probably some items which could be improved.
.50 - .60	Suggests need for revision of measure, unless it is quite short (ten or fewer items). The test definitely needs to be supplemented by other measures (e.g., more tests).
.50 or below	Questionable reliability. This measure should not contribute heavily to the outcomes and needs revision.

From: J. C. Nunnally, Psychometric Theory. New York: McGraw-Hill, 1967, pp. 172-235.

APPENDIX F. Retrospective Survey Design

In evaluation, we often must use the most effective tools to measure impact. Research suggests that there are several disadvantage to a traditional pre/post survey and advantages to a retrospective survey. These issues are enumerated below.

Disadvantages of traditional pre/post surveys:

1. Yield more incomplete responses because
    a) Participants may not have had a clear understanding of the pre-survey items and thus choose not to answer the question
    b) Post-survey questions may not have been answered because participants felt that they already answered these questions on the pre-test.
    c) Participants may feel that the post-survey is not valuable given their previous completion of a similar survey at pre-test.
2. Are subject to the "response shift bias"
    a) Traditional pre/post surveys rely on the assumption that the scale of measurement is the same before and after an intervention. However, if participants' levels of self-knowledge changes as a result of the intervention, then this scale may also shift making comparisons before and after the intervention problematic. That is, participant's internal frame of reference of the construct being measured changes between the pre-test and the post-test due to the influence of the intervention.
    b) Howard and colleagues (1979) consistently found that the intervention directly affects the self-report metric between the pre-intervention administration of the instrument and the post-intervention administration. This recalibration dramatically robbed the analysis of statistical power.

Advantages of using a retrospective survey:

1. Data sets are complete because each individuals completes the pre/post surveys.
2. Growth may be assessed within individuals because it is easier to accurately match students' pre/post responses.
3. Retrospective surveys decrease the "response shift bias" that occurs in pre/post surveys.
    a. Howard and colleagues (1979) recommend a retrospective survey as a way to reduce the response shift bias caused by a changing metric. The response shift bias is most pronounced when it is likely that the program will change the underlying metric for the participants. For example, if participants' understanding of the variables of interest are well established and stable, the metric will not change by the intervention.
4. Retrospective surveys decrease the number of incomplete responses.

<u>For more information, see:</u>

Howard, G.S. (1980). Response-shift bias: a problem in evaluating interventions with Pre/Post self reports. *Evaluation Review,* 4, 93-106.

Howard, G. S., Ralph, K. M, Gulanick, N. A., Maxwell, S. E., Nance, D., & Gerber, S. L. (1979). Internal invalidity in pretest-posttest self-report evaluations and the re-evaluation of retrospective pretests. *Applied Psychological Measurements*, 3, 1-23.

Pratt, C., McGuigan, W. & Katzev, A. (2000). Measuring program outcomes: Using retrospective pretest methodology. *American Journal of Evaluation*, 21,341-349.

APPENDIX G. Student Survey- Constructs and Items

Survey items are organized by construct and are generally displayed in sequence, with a few exceptions. Unless otherwise noted, response options include a 5-point Likert scale: *Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4), Strongly Agree (5).*

School	Items: Now only
Select School	1. What school do you attend?[a]

[a]Note. Students selected their school from a drop-down menu.

Construct: Student Perceptions/Behaviors	Items: Now only
Timing[a]	2. When did you take the YouScience Profile?[a] 3. When did you discuss your YouScience results with your school counselor?[a]
Engaging, Useful, Accurate	*In general, I found the YouScience Profile to be…* 4. Interesting 5. Useful 6. Accurate
Satisfaction (.884)	7. I would recommend the YouScience Profile to a friend. 8. Completing the YouScience Profile was a good use of my time.
Behavior	15. List three careers that you are currently considering (open-end response) 16. Did you consider this career *before* taking the YouScience Profile or *as a result* of taking YouScience Profile

[a]Note. Response options include: *August 2015- December 2015 (Fall 2015); January 2016-May 2016 (Spring 2016); Do not know/Do not remember; I did not take the YouScience Profile; I did not discuss my results with a school counselor.*

Construct: Utilization	Items: Now Only
Dosage[a]	*To what extent did you discuss your YouScience results…* 17. With a school counselor or teacher (in a group) 18. With a school counselor or teacher (by yourself) 19. With parent(s)/guardian(s) 20. With friends/peers 21. To what extent did you spend time exploring your YouScience results on your own?
Current Utility[b]	*To what extent was your YouScience profile helpful in…* 22. Exploring new careers? 23. Confirming your career decisions and plans? 24. Exploring education or training paths after high school?

[a]Note. Response options include: *Never (1), A little (2), Some (3), Often (4), A lot (5), Don't know/Don't remember (N).*
[b]Note. Response options include: *Not at all helpful (1), slightly helpful (2), Somewhat helpful (3), Very helpful (4), Extremely helpful (5).*

Construct: Self-Awareness	Items: Before/Now
Self-Awareness	10. I can describe my natural abilities. 11. I can identify which careers are a good fit for me. 12. I can identify my college and career pathway. (For example: Culinary Arts, Early Childhood, Engineering, etc.) 13. I have a clear idea of what I will do after high school. 14. I have considered a wide range of possible careers.

Construct: Career Decision Making Self-Efficacy	Items: Before/Now
Occupational Information	25. I feel lost when I think about choosing a career. 26. I have enough information to make a career decision. 27. I feel encouraged about choosing a career.
Goal Selection	28. I am certain about the careers that could be a good fit for me.

Construct: Self-Empowerment/Future Confidence	Items: Before/Now
Personal Growth Self Efficacy	29. I have a good sense of where I am headed in life.
Hope	30. I feel optimistic that I will find a good job in the future.

Construct: Career Exploration	Items: Before/Now
Career Exploration	**To what extent did you engage in the following activities on your own:** 31. Sought information on specific careers that interest me.[a] 32. Sought career advice from a teacher or advisor.[a] 33. Spoken to family, friends, or community members about careers that interest me.[a]
	Now Only
	9. The YouScience Profile opened my eyes to new career possibilities. 38. Has YouScience expanded your vision or awareness of career possibilities? If yes, how? If no, why not? Please provide an example, if appropriate. (open-ended response)

[a]Note. Response options include: *Never (1), A little (2), Some (3), Often (4), A lot (5).*

Construct: Intent to Persist	Items: Before/Now
Courses	34. I plan to complete courses in a college and career pathway during high school. (For example: Culinary Arts, Early Childhood, Engineering, etc.)
Graduation	35. I plan to graduate from high school.
Post-Secondary Education	36. I plan to continue my education or training after high school.

Career Identity Status	Items: Before/Now
Career Identity status	37. Choose the statement that best describes you Before YouScience and Now: *I know what I want to do as a career.* *I am exploring career options.* *I'm really not interested in finding the right career at the moment.*

Demographic Items	
39. Your Ethnicity/Race:	Asian Black Hispanic Native American/Alaskan Native White Multiracial Other _____
40. Your Gender:	Female Male Other _____
41. What is your parent(s) highest level of education:	Less than high school graduate High school graduate Some college or postsecondary education College Degree Graduate/Professional Degree or some graduate/professional school
42. Do you receive free or reduced-price lunch?	Yes No Prefer not to answer

APPENDIX H. Student Survey- Response Rates per School

Overall, 3,170 total students across 34 schools completed the student survey.[37] For the purposes of analysis, 3,112 students were retained from the original total. Fifty-eight students were removed from the data set due to the following reasons:

1. Student completed less than 20% of the survey items;
2. Student provided the same answer to 10 or more questions in a row;
3. Student provided duplicate responses.

Among the 3,112 retained students, 44 students indicated that they did not take the YouScience Profile. Thus, these 44 students were removed from the final analysis. The table below reflects the response rate per school:

School	All[1]			Only those who completed YouScience[2]		
	Survey Respondents[1]	Total Participants	Response Rate	Survey Respondents	Total Participants	Response Rate
1. Americus Sumter County High School	180	319	56%	178	319	56%
2. Bartow County College & Career Academy	54	149	36%	53	149	36%
3. Berrien High School	--	--	--		--	--
4. Burke County High School	240	272	88%	240	272	88%
5. Charlton County High School	24	113	21%	24	113	21%
6. Dacula High School	264	398	66%	262	398	66%
7. Dade County High School	55	56	98%	55	56	98%
8. Eagle's Landing High School	84	337	25%	78	337	23%
9. Echols County High School	38	51	75%	38	51	75%
10. Gordon Lee High School	67	96	70%	67	96	70%
11. Grayson High School	417	740	56%	411	740	56%
12. Greenville Middle - High School	55	82	67%	55	82	67%
13. Harlem High School	9	181	5%	9	181	5%
14. Harrison High School	136	355	38%	135	355	38%
15. Hiram High School	160	322	50%	159	322	49%
16. Jefferson High School	15	103	15%	15	103	15%
17. Johnson County High School	60	74	81%	60	74	81%
18. LaGrange High School	80	225	36%	79	225	35%
19. Manchester High School	83	101	82%	83	101	82%
20. Marietta High School	153	189	81%	152	189	80%
21. Martin Luther King , Jr. High School	56	141	40%	56	141	40%
22. New Hampstead High School	9	257	4%	9	257	4%
23. Northwest Whitfield County High School	134	276	49%	124	276	45%
24. Osborne High School	123	163	75%	114	163	70%
25. Pataula Charter Academy	34	35	97%	33	35	94%
26. Pebblebrook High School	18	24	75%	18	24	75%
27. Portal Middle/High School	18	51	35%	18	51	35%
28. Rabun County High School	21	40	53%	21	40	53%
29. Richmond County Technical Career Magnet School	89	97	92%	89	97	92%

Note. Total participants reflects the approximate number of students who completed the YouScience Profile in 2015-2016 as reported by YouScience. Berrien High School was unresponsive to repeated survey requests. Response rate percentages were rounded to the nearest whole number. [1]Includes students who indicated that they "did not" take YouScience (item #2). [2]Excludes students who indicated that they "did not" take YouScience (item #2 on the student survey).

[37] Despite repeated survey requests, no responses from Berrien High School were received.

Continued,

School	All[1]			Only those who completed YouScience[2]		
	Survey Respondents[1]	Total Participants	Response Rate	Survey Respondents	Total Participants	Response Rate
30. Southeast Whitfield County High School	121	206	59%	121	206	59%
31. Taylor County High School	92	96	96%	92	96	96%
32. Therrell High School	45	139	32%	44	139	32%
33. THINC Academy	63	75	84%	63	75	84%
34. Troup County High School	64	206	31%	62	206	30%
35. Washington-Wilkes Comprehensive High School	51	103	50%	51	103	50%
Total	**3,112**	**6,072**	**51%**	**3,068**	**6,072**	**51%**

Note. Total participants reflects the approximate number of students who completed the YouScience Profile in 2015-2016 as reported by YouScience. Berrien High School was unresponsive to repeated survey requests. Response rate percentages were rounded to the nearest whole number. [1]Includes students who indicated that they "did not" take YouScience (item #2). [2]Excludes students who indicated that they "did not" take YouScience (item #2 on the student survey).

As indicated above, 44 students said that they "did not take YouScience" on the Student Survey. These students were excluded from the analysis.

When did you take the YouScience profile?		
	n	%
August 2015 - December 2015 (Fall 2015)	1304	42%
January 2016 - May 2016 (Spring 2016)	973	31%
Do not know/Do not remember	783	25%
I did not take the YouScience Profile	**44**	**1%**
Total	**3104**	**100%**

Note. The total n reflects the number of students who responded to the survey item. Not all students answered all survey items.

APPENDIX I. Student Survey- Response Rates per Item

Item (brief)	Item (full)	# of respondents	# missing	% completed
2. Completed YouScience	2. When did you take the YouScience profile? (select the best response)	3060	8	99.7%
3. Discussed YouScience	3. When did you discuss your YouScience results with your school counselor? (select the best response)	3057	11	99.6%
4. Perceptions- Interesting	4. In general, I found the YouScience Profile to be interesting.	3034	34	98.9%
5. Perceptions- Useful	5. In general, I found the YouScience Profile to be useful.	3015	53	98.3%
6. Perceptions- Accurate	6. In general, I found the YouScience Profile to be accurate.	2997	71	97.7%
7. Satisfaction	7. I would recommend the YouScience Profile to a friend.	3051	17	99.4%
8. Satisfaction	8. Completing the YouScience Profile was a good use of my time.	3044	24	99.2%
9. Career Possibilities	9. The YouScience Profile opened my eyes to new career possibilities.	3038	30	99.0%
10. Self-Awareness (Before/Now)	10. I can describe my natural abilities.	2512	556	81.9%
11. Self-Awareness (Before/Now)	11. I can identify which careers are a good fit for me.	2520	548	82.1%
12. Self-Awareness (Before/Now)	12. I can identify my college and career pathway. (For example: Culinary Arts, Early Childhood, Engineering, etc.)	2532	536	82.5%
13. Self-Awareness (Before/Now)	13. I have a clear idea of what I will do after high school.	2544	524	82.9%
14. Self-Awareness (Before/Now)	14. I have considered a wide range of possible careers.	2544	524	82.9%
15a. Open-end: List 3 careers	15a. List three careers that you are currently considering:	2891	177	94.2%
15b. Open-end: List 3 careers	15b. List three careers that you are currently considering:	2701	367	88.0%
15c. Open-end: List 3 careers	15c. List three careers that you are currently considering:	2485	583	81.0%
16a. Open-end	16a. Did you consider this career before taking the YouScience Profile or as a result of taking the YouScience Profile:	2794	274	91.1%
16b. Open-end	16b. Did you consider this career before taking the YouScience Profile or as a result of taking the YouScience Profile:	2585	483	84.3%
16c. Open-end	16c. Did you consider this career before taking the YouScience Profile or as a result of taking the YouScience Profile:	2351	717	76.6%
17. Dosage	17. To what extent did you discuss your YouScience results with a school counselor or teacher (in a group)?	3054	14	99.5%
18. Dosage	18. To what extent did you discuss your YouScience results with a school counselor or teacher (by yourself)?	3049	19	99.4%
19. Dosage	19. To what extent did you discuss your YouScience results with parent(s)/guardian(s)?	3048	20	99.3%
20. Dosage	20. To what extent did you discuss your YouScience results with friends/peers?	3044	24	99.2%
21. Dosage	21. To what extent did you spend time exploring your YouScience results on your own?	3053	15	99.5%
22. Utility	22. To what extent was your YouScience profile helpful in exploring new careers?	3054	14	99.5%
23. Utility	23. To what extent was your YouScience profile helpful in confirming your career decisions and plans?	3048	20	99.3%
24. Utility	24. To what extent was your YouScience profile helpful in exploring education or training paths after high school?	3034	34	98.9%
25. Career Decision-Making (Before/Now)	25. I feel lost when I think about choosing a career.	2549	519	83.1%
26. Career Decision-Making (Before/Now)	26. I have enough information to make a career decision.	2579	489	84.1%
27. Career Decision-Making (Before/Now)	27. I feel encouraged about choosing a career.	2591	477	84.5%
28. Career Decision-Making (Before/Now)	28. I am certain about the careers that could be a good fit for me.	2587	481	84.3%

Note. Only participants who responded to both before/now items were included in the analysis. Survey item #1 (Please select your school) was a forced response item and, thus, yielded a 100% response rate. The total number of student respondents is 3,068.

Continued,

Item (brief)	Item (full)	# of respondents	# missing	% completed
29. Self-Empowerment (Before/Now)	29. I have a good sense of where I am headed in life.	2595	473	84.6%
30. Self-Empowerment (Before/Now)	30. I feel optimistic that I will find a good job in the future.	2596	472	84.6%
31. Career Exploration (Before/Now)	31. Sought information on specific careers that interest me.	2630	438	85.7%
32. Career Exploration (Before/Now)	32. Sought career advice from a teacher or advisor.	2613	455	85.2%
33. Career Exploration (Before/Now)	33. Spoken to family, friends, or community members about careers that interest me.	2611	457	85.1%
34. Intent to Persist (Before/Now)	34. I plan to complete courses in a college and career pathway during high school. (For example: Culinary Arts, Early Childhood, Engineering, etc.)	2657	411	86.6%
35. Intent to Persist (Before/Now)	35. I plan to graduate from high school.	2672	396	87.1%
36. Intent to Persist (Before/Now)	36. I plan to continue my education or training after high school.	2670	398	87.0%
37a. Career Identity Status, Before	37a. In the column labeled "Before YouScience," select the statement that best describes you before you took the YouScience Profile.	2675	393	87.2%
37b. Career Identity Status, Now	37a. Then, in the column labeled "Now," select the statement that best describes you now that you have taken the YouScience Profile.	2675	393	87.2%
38. Open-end: Expanded Vision	38. Has YouScience expanded your vision or awareness of career possibilities? If yes, how? If no, why not? Please provide an example, if appropriate.	2382	686	77.6%
39. Demographic: Race	39. Your Ethnicity/Race:	3013	55	98.2%
40. Demographic: Gender	40. Your Gender:	3008	60	98.0%
41. Demographic: Parent's highest education	41. What is your parent(s) highest level of education?	2999	69	97.8%
42. Demographic: FRL	42. Do you receive free or reduced-price lunch?	2999	69	97.8%

Note. Only participants who responded to both before/now items were included in the analysis. Survey item #1 (Please select your school) was a forced response item and, thus, yielded a 100% response rate. The total number of student respondents is 3,068.

APPENDIX J. Ambassador Survey- Additional Descriptive Statistics

Table 28. Student Conversations, Ambassadors

Did you have personalized conversations with your students about their YouScience Profile results?		
	n	**%**
Yes	24	47%
No	27	53%
Total	**51**	**100%**

Note. Highest percentage is highlighted in gray.

Table 29. Percent Student Conversations, Ambassadors

If yes, with what percent of your students did you have personalized conversations about their YouScience Profile results?		
	n	**%**
No, I did not have personalized conversations with students about their YouScience Profile results.	25	49%
1-10%	11	22%
11-25%	2	4%
26-50%	5	10%
51-75%	4	8%
76-100%	4	8%
Total	**51**	**100%**

Note. Highest percentage is highlighted in gray.

Table 30. Parent Communication, Ambassadors

Did you communicate with students' families about the YouScience Georgia Pilot? (check all that apply)		
	n	**%**
No	8	16%
Yes, via email	11	22%
Yes, via printed letter or flyers sent home	26	51%
Yes, via robocall	12	24%
Yes, via other means (please detail below)	14	27%
Total	**51**	

Note. Highest percentage is highlighted in gray.

Table 31. Child Participation, Ambassadors

Did students' families communicate with you about their child's participation in the YouScience Georgia Pilot? (check all that apply)		
	n	**%**
No	38	75%
Yes, via letter or email	3	6%
Yes, via telephone	5	10%
Yes, in person	4	8%
Yes, via other means (please detail below)	2	4%
Total	**51**	

Note. Highest percentage is highlighted in gray.

Table 32. Perceived Support, Ambassadors

Support	n	Average	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
a) The training materials (e.g., Dropbox, binder, webinars) were easy to understand.	51	4.10	0%	0%	16%	59%	25%
b) The training materials were helpful in administering YouScience in my school.	51	4.14	2%	2%	8%	57%	31%
c) When I had questions or needed help during implementation, the YouScience team provided timely communication.	51	4.61	0%	0%	6%	27%	67%
d) When I had questions or needed help during implementation, the YouScience team provided helpful communication.	51	4.61	0%	0%	2%	35%	63%

Note. Highest percentage per item is highlighted in gray.

Table 33. Perceptions and Satisfaction, Ambassadors

Perceptions & Satisfaction	n	Average	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
a) Overall, participating in the YouScience tool was a valuable use of my students' time.	51	3.78	2%	8%	27%	35%	27%
b) Overall, participating in the YouScience pilot was a valuable use of my time.	51	3.59	6%	8%	29%	35%	22%
c) Overall, the YouScience tool has helped my school provide higher quality advisement for students.	51	3.57	2%	8%	43%	25%	22%
d) Overall, YouScience has clarified my students' understanding of who they are.	51	3.57	4%	4%	35%	45%	12%
e) Overall, YouScience has clarified my students' understanding of what careers interest them.	51	3.65	2%	4%	33%	49%	12%
f) Overall, YouScience has empowered my students to make better choices about their career pathway.	51	3.67	2%	2%	39%	41%	16%

Note. Highest percentage per item is highlighted in gray.

Table 34. Current Utility and Future Intent, Ambassadors

Current Utility and Future Intent	n	Average	Not at all likely (1)	Not very likely (2)	Undecided (3)	Very likely (4)	Extremely likely (5)
To what extent are you currently using and/or reinforcing the YouScience results with students who participated in the pilot this year?	51	2.33	27%	27%	35%	4%	6%
How likely are you to continue using YouScience at your school next year?	51	3.25	14%	14%	27%	24%	22%

Note. Highest percentage per item is highlighted in gray.

Table 35. Valuable-For you, Ambassadors

What was the most valuable aspect of the YouScience Georgia Pilot…
For you?
• *Self-exploration and career confirmation* - Accuracy of the results - Affirmation that I'm in a career suited to aptitude - I was able to participate in the assessment. - Learning my strengths - My results proved to be accurate, so I felt confident in presenting to the students how I valued the assessment. - Seeing the research into different areas and options that fit my skills - Being able to take the assessment myself • *Career tool and resource* - Better than current materials on GA College 411 - Having another career tool that students can use - Learning about different tools that are out there to help our students - This makes us aware in terms of career assessment, but the implementation of this program is not conducive for larger schools if it is not built into their curriculum. - Information available to help students make lifelong decision - More detailed information about careers available for students - Organized method to provide career exploration and information to students - The inventories were good to help get the students started on exploring career interests. - Giving young people something tangible to use in their planning for life after high school - Students were able to learn more about their aptitudes and how they correlate to abilities • *Career guidance and discussion* - Additional information to use to help students make informed decisions about classes and careers - Being able to help our students to make informed decisions about their career pathways - Career profiles - Career guidance with the students - I think that if utilized properly, the assessment can better help us advice students. - Helped in discussing careers and personal aptitudes with students - Having accurate evidence of student strengths in regards to career choice - Interacting with the students - Valuable information for pathway planning - Having the ability to provide information for advisors to share with students and parents is the most beneficial part of having each student complete the assessment - Being able to serve all the students--not just a select few - Working with the students and exploring the possibilities with the portal • *Miscellaneous* - Career interest, creative thought process for students - I like the concept of identifying strengths versus merely interest which can change. - It provided me with core drivers. - N/A - Program and information was interesting - The accuracy of the results and application to career options - The results - The training; materials - Undecided

Table 36. Valuable-For your students, Ambassadors

What was the most valuable aspect of the YouScience Georgia Pilot…
For your students?
• *Insights into self and career interests* - A better understanding of their aptitudes and broader knowledge of careers available - Being able to think about careers and themselves in a new way; many said they got clarity - Finding out about themselves and careers - Finding their strengths and areas of interest - Insight into careers and skills - Insight into selecting a future career - More detailed information about their aptitudes and abilities - Helping them to discover things about themselves that they maybe did not realize or were unaware of; helping to explore new and different career paths - Provides insight as to what their aptitudes are - Realization of strengths and weaknesses - Some changed career paths, and others learned more about themselves - Provided career choices they had not previously thought of and helped them to realize personal strength and weaknesses - The opportunity to find out information about themselves - Understanding their interest and aptitudes - Career interest, alternative thought process - Having information about themselves to use for career choices is the most beneficial aspect of YouScience - Looking at aptitudes vs. Interests - Students were able to learn more about their aptitudes and how they correlate to abilities - The assessment can help students gain some valuable knowledge about their own aptitude, interest and career options • *Expands/refines career possibilities* - Being introduce to different careers that might interest them - It gave some of my students a more specific career idea - Variety of jobs available - It provided the students with a broad look at a variety of careers. - Knowing what careers work for them and how they can still enter into any career if they follow the suggestions that given by YouScience • *Provides accurate results* - Realistic expectations based on skills - The students were able to learn about information directly related to them as opposed to the general career assessments. - The accuracy of the results and application to career options • *Accessibility of materials* - Much better materials and more in-depth resources and information - They like the computer based format and accessing it at home • *Miscellaneous* - Beneficial if they take advantage of it. - Information available to help students make lifelong decision - Information helpful to students in completing their senior capstone project - Learning & career profiles - N/A - Pathway guidance - Program and information was interesting - The results

Table 37. Valuable-For your school, Ambassadors

What was the most valuable aspect of the YouScience Georgia Pilot…
For your school?
• *Additional assessment tool* - A tool to use with all students...to expose them all to choices of careers after high school regardless of whether or not they go into the military, college, tech or trade school, or enter the work force immediately upon graduation - Additional tools to use in advisement - Awareness of what was available to our students as a tool when choosing courses in a pathway - Career profile information - Information available to help students make lifelong decision - Learning that there are programs like YouScience that makes the career path for our students easier - Providing students another tool to help reflect/discover more about themselves and future careers - The exposure for our students - Good tool with more "real life" aspects - Great addition to our current advisement program • *Efficiency and reach* - Additional career advisement for our students - As part of our overall career/college program, this filled a much needed gap with relatively a small amount of time - The school was able to provide a career research opportunity for a group of students who may not have had this opportunity at such a great magnitude - Educating students on a variety of career options • *Career pathway planning* - Valuable information for pathway planning - It gives our students head start on decisions making regarding their career pathways. - Helps scheduling for career pathways - Providing a new way to look at pathways - To better prepare students for planning for college and future endeavors • *Personalized feedback* - Connecting students with their interests - Strengthened purpose for students - Students were able to learn more about their aptitudes and how they correlate to abilities - Gave a more specific amount of feedback for students about their career choices • *General discussion and guidance* - Student guidance and support if utilized effectively - It opened discussions between administration, teachers, and students about career options. • *Miscellaneous* - As a college and career academy, students were already in pathways that interest them. They did not seem to enjoy the process or results. Many students would not finish despite multiple incentives. - Having the ability to access student results to work with a student individually or write a letter of recommendation is most beneficial for the school. - N/A (2) - Not sure - The results - Undecided

Table 38. Challenging-For you, Ambassadors

What was the most challenging aspect of the YouScience Georgia Pilot…
For you?

- *Time*
  - Finding the time that the pilot required
  - Finding time to pull students from instructional time to give assessment
  - Finding the time to complete the assessments
  - Finding the time to get the assessment completed
  - Having time to do feedback sessions with students in small groups or individually
  - Identifying time to ensure the project is implemented within the instructional day
  - Implementation time
  - Taking kids away from instructional time to go to computer lab.
  - The time it took to implement the process when other things took priority
  - Time (4)
  - Time - I was hampered by lack of time to implement the program
  - Time aspect
  - Time constraints and students missing too much of instructional time
  - Time consuming
  - Time management
  - Time: We have a lot of events, trips, speakers, test, state test, competitions, etc. It was hard to schedule time to make it happen.
  - Timing, scheduling, buy in
  - Working it in my schedule
- *Scheduling*
  - Coordinating computer access and dealing with technical issues
  - Logistics of administering!
  - Planning and all the steps for implementation
  - Scheduling (2)
  - Scheduling all of the components, time consuming
  - Scheduling and juggling my schedule to accommodate the amount of time spent on the project
  - Scheduling computer labs and keeping track of students; training to advisors
  - Scheduling it
  - Setting up lab times to administer and coordinating with teachers
  - Having another large scale assessment to plan, implement, and follow up on results during an already packed schedule of state required assessments
- *Technical issues*
  - Passwords were hidden behind bubbles so students did not know if they had actually typed the passwords correctly
  - Students could not remember email and password
  - Using school issued emails that will expire when students graduate
- *Buy-in*
  - Buy in from the faculty and staff
  - Getting the students to understand it's importance and to take it seriously
  - Getting students to complete the activities
  - Getting students to complete the exercises - completely!
  - Getting the smaller % of reluctant students to complete it
  - The most challenging aspect was getting the students to complete the assessment.
- *Miscellaneous*
  - Getting it done
  - Introducing and piloting the program along. I feel that YouScience should some sort of way request that counselors are piloting the program.
  - Not confident in interpretation of results

Table 39. Challenging-For your students, Ambassadors

What was the most challenging aspect of the YouScience Georgia Pilot…
For your students?

- *Accessibility*
  - Access to technology
  - Access to the technology, our students needed more access to computer labs
- *Time*
  - Finding the time to get the assessment completed
  - For students and teachers was losing instructional time when all are being pushed to max to increase academic achievement. Students felt it was too long, not something they needed rather than being in class
  - Identifying time to ensure the project is implemented within the instructional day
  - Time consuming
  - Time it took to take all the tests
  - Time out of class (2)
  - Time: Our students are in involved in a lot from clubs to extracurricular activities to taking collegiate courses and AP Courses. They have a lot on their plates and one more thing even if it's beneficial sometimes can be overwhelming.
  - Time
  - Students missing instructional time
  - Having time to navigate through all of the results
  - Taking the time to complete the program in addition to the requirement to do Georgia 411 at our school
  - Scheduling
- *Self-motivation and interest*
  - Focus and effort
  - Committing to look within themselves to explore new ideas
  - Getting them to be interested
  - Some have a low capacity for doing things outside of their comfort zone
  - Taking it seriously
  - Getting them to take all portions seriously
  - Getting them to take it seriously because the results would be skewed it they did not.
  - Willingness to participate
  - Getting students to "buy" into the importance to YouScience; the level of maturity of students
- *Technical issues*
  - Students could not remember email and password
  - The most challenging aspect for the students were remembering their email passwords. Some of the students had several email accounts that they used over time.
  - Not being able to log back into the program on day 2 because some students had the wrong password
- *Length of the assessment*
  - Staying the course for the entire program (finishing it all)
  - Students became bored during the process (too long)
  - Length of assessments (3)
  - Students like things short and quick; this is lengthy
  - Students staying on task for that length of time
  - The students did not like waiting 24 hours for their results. They wanted their results immediately.
- *Challenging assessment items*
  - I believe that the difficulty of some activities turned some students off….They had difficulty grasping that the activities weren't designed so that the taker would be good at every one of them. They mentioned that the program made them feel stupid.
  - Understanding the material and questions being asked
  - Completing some of the assessments were a challenge
- *Miscellaneous*
  - Fully understanding the usefulness or the program
  - Completing the follow up component
  - It was not implemented and talked up as it probably should have been
  - Taking yet another test

Table 40. Challenging-For your school, Ambassadors

What was the most challenging aspect of the YouScience Georgia Pilot…
For your school?

- *Scheduling*
  - Arranging times for all the 10th grade teachers to do their YouScience profiles at the same time so that teachers remained on the same ELA standards without getting off track from the other 10th grade teachers
  - Business classes had to be displaced from their classrooms
  - It is very hard to schedule labs when teachers need them more than counselors do.
  - Scheduling (3)
  - Scheduling and discussing results
  - Scheduling in addition to other required stuff
  - Scheduling the assessment
  - Simply coordinating it into the flow of everything else that we do as a school.
- *Access to technology*
  - Coordinating computer access
  - Access to technology
  - Lab availability
  - Lab time
  - Lack of computers and lab time.
  - Not enough computer lab access to do assessments and view results as could be effective
  - Our school has limited computer labs, so this was a challenging aspect.
  - Secure multiple labs to give assessment
  - Conflicting with teachers who needed the computer labs
- *Instructional time*
  - Concerns about the number of times students were out of class taking the assessments, and the follow ups
  - Getting students to complete tasks without significantly impacting instructional time
  - Finding time in the schedule for allow students to miss class to complete the assessments
  - Disruption of instructional time
  - Doing it at schools take away from instructional time
  - Time away from instruction
  - Way too much instructional time used
  - Logistics with teacher rigor requirements in the classroom
  - Reduced instruction time in classroom.
  - Causing students to miss instruction
- *Implementation Time*
  - Finding adequate time to go over results and getting more to finish.
  - Finding the time to complete the process when it overlapped with the counselors having the students complete Georgia 411
  - Finding time to administer to students who'd transferred in, were absent on the day of the workshop, did not engage as well as others or needed more in depth or longer feedback sessions.
  - Finding time to implement program and do make up with students who were not in attendance
  - Implementation and Follow Up
  - Identifying time to ensure the project is implemented within the instructional day
  - Hard to fit into schedule to administer as a whole group.
  - Time (4)
  - Time consuming
- *Buy-in*
  - The challenging aspect for the school was gaining the sincere support of the entire faculty/staff
  - The commitment of the entire school
  - Buy in
- *Miscellaneous*
  - N/A (2)
  - The majority of students will not do this on their own time.

APPENDIX K. Student Survey- Regression Analyses

A series of regression analyses were conducted to understand what variables—Student Demographics, Implementation Characteristics, School Demographics, YouScience Statistics— influence the following five outcome variables:

1. Self-Awareness
2. Career Decision Making
3. Self-Empowerment
4. Career Exploration
5. Intent to Persist

Regression analysis is a statistical tool for the investigation of relationships between variables. Usually, the researcher seeks to ascertain the causal effect of one variable upon another. To explore such issues, the researcher assembles data on the variables of interest and employs regression to estimate the quantitative effect of the casual variables (independent or predictor variables) upon the variable that they influence (dependent variables).

Independent or predictor variables for each regression model were comprised of student demographic characteristics derived from the 2016 student survey, implementation characteristics derived from the 2016 ambassador survey, school-level demographics derived from the 2014-2015 GOSA report card data, and average time students spent reviewing their results (average minutes per school) derived from the YouScience online data metrics.[38] The predictor variables are listed below; the coding for categorical variables are also provided to aid in interpretation of the results:

- Student Demographics
  - **Gender**: Males (0) vs. Females (1)
  - **Gender**: Males (0) vs. Other (1)
  - **Race**: Majority (0) vs. Minority (1)
  - **Free/Reduced Lunch, FRL**: No (0), Yes (1)
  - **Free/Reduced Lunch, FRL**: No (0), Prefer not to answer (1)
  - **Parent's highest level of education**: Less than high school (0); College degree or graduate/professional education (1)
  - **Parent's highest level of education**: Less than high school (0); High school graduate or some college education (1)
- Implementation Characteristics[39]
  - **Administration** (*How did you administer YouScience*?): Students completed all sections at school (0); Students completed some sections at school and some sections at home (1)
  - **Lab time to view results** (*Were students given computer lab time to view their results?*): No (0); Yes (1)
  - **Number of sittings** (*On average, how many sittings did it take for students to complete the YouScience assessment*?): One sitting (0); Two to three sittings (1)
  - **Number of sittings** (*On average, how many sittings did it take for students to complete the YouScience assessment*?): One sitting (0); Four to five or more sittings (1)
  - **Follow-up Guidance** (*After students received their YouScience Profile results, did you follow-up with general guidance on the interpretation and application of their YouScience Profile*?): No (0); Yes, in a small group setting (1)

[38] The average time (in minutes) that students spent reviewing their YouScience results online were obtained as of June 15, 2016 from the YouScience team.

[39] Variables were derived from the 2016 ambassador survey. The survey item is provided in parentheses (e.g., How did you administer YouScience?).

- **Follow-up Guidance** (*After students received their YouScience Profile results, did you follow-up with general guidance on the interpretation and application of their YouScience Profile*?): No (0); Yes, in a large group setting (1)

- School Demographics
  - % Minority (Hispanic, Black, Native American, Multiracial)
  - % Economic Disadvantage, ED
  - % Students with Disabilities, SWD
  - % Limited English Proficiency, LEP
- YouScience Statistics
  - Time in Online Results- Average Minutes

In addition to the above-mentioned predictor variables, pre scores for each construct (e.g., Pre Self-Awareness) were included in the model to control for baseline attitudes. The dependent variables (DVs) in each model included the post scores for each construct (e.g., Post Self-Awareness). The results of the regression analyses are provided in Table 41 through Table 45.[40] Statistically significant ($p<.05$) predictor variables are highlighted in green. A summary of the overall findings—spanning all regression models—is presented in Table 46 and Figure 8.

Table 41. Regression- Self-Awareness

DV: Post Self-Awareness						
		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta (β)	t	Sig.
	(Constant)	1.67	0.12		14.36	0.000
Student Demographics	Gender: **Females**	0.08	0.03	0.05	2.85	0.004
	Gender: **Other**	-0.18	0.10	-0.03	-1.89	0.058
	Race: **Minority**	0.04	0.03	0.02	1.11	0.265
	FRL: **Yes**	0.07	0.04	0.04	2.03	0.042
	FRL: **Prefer not to answer**	-0.10	0.05	-0.03	-1.86	0.063
	Parents: **College degree or Graduate school**	0.07	0.05	0.04	1.36	0.175
	Parents: **HS graduate or Some college**	0.02	0.05	0.01	0.48	0.635
Implementation Characteristics	Administration: **Completed at school and home**	-0.06	0.05	-0.03	-1.22	0.223
	Lab time to view results: **Yes**	-0.02	0.05	-0.01	-0.49	0.625
	Number of sittings: **Two to three sittings**	0.09	0.06	0.04	1.37	0.170
	Number of sittings: **Four to five or more sittings**	0.14	0.09	0.05	1.67	0.096
	Follow-up Guidance: **Yes in a small group**	0.07	0.05	0.04	1.30	0.193
	Follow-up Guidance: **Yes in a large group**	-0.06	0.06	-0.04	-1.11	0.265
School Demographics	% Minority	0.00	0.00	0.02	0.51	0.611
	% ED	0.00	0.00	0.04	1.28	0.200
	% SWD	0.00	0.01	0.00	0.08	0.939
	% LEP	0.00	0.00	0.01	0.54	0.592
YouScience Statistics	Time in Online Results- Average Minutes	0.00	0.00	0.08	3.63	0.000
Pre	Pre-Self-Awareness	0.52	0.02	0.51	29.86	0.000

Note. $R^2= .30$; Adjusted $R^2=.29$; $F(19, 2425)=54.47$, $p<.001$.

[40] Each table provides regression statistics for each predictor variable in the model. The key terms include the following: **Unstandardized B** = values for the regression equation for predicting the dependent variable from the predictor variable. For instance, coefficient for every unit increase in female, we expect a .08 unit increase in Post Self-Awareness score, holding all other variable constant. **Std. Error** = standard errors associated with the coefficient. **Standardized Beta** = coefficient obtained if all variables were standardized including the predictor and dependent variables. By standardizing the variables, all variables are interpreted as being on the same scale. Thus, it is possible to compare the magnitude of the coefficients to see which one had more of an effect on the dependent variable. Larger standardized Betas are associated with larger t-values and lower p-values (sig.). **t and Sig** = the t-statistics and their associated 2-tailed p-values are used in testing whether a given coefficient is significantly different from zero using an alpha of .05.

Summary of Table 41: A multiple regression was run to predict students' self-awareness using student demographics, implementation characteristics, school demographics, and YouScience statistics as predictor variables. Baseline or Pre self-awareness scores were also included in the model as a control variable. Together, the variables statistically significantly predicted students' self-awareness after taking YouScience (post), $F(19, 2425)=54.47$, $p<.001$, $R^2=.30$. In particular, three variables significantly predicted students' self-awareness after taking YouScience: Gender, FRL, and Time in Online Results. Specifically…

- **Females** express greater self-awareness after taking YouScience than males ($\beta=.05$, $p=.004$).
- Students who receive **free/reduced lunch** express greater self-awareness after YouScience than students who do not ($\beta=.04$, $p=.042$).
- Students who spent more **time (in minutes) reviewing their YouScience** results online express greater self-awareness than students who spent less time reviewing their online results ($\beta=.08$, $p<.001$).

It should be noted that students' baseline scores for self-awareness (*Pre Self-Awareness*) predicted students' self-awareness after taking YouScience (*Post Self-Awareness*).

Overall, the results of the regression model suggest that, controlling for other variables, female students, students who receive free/reduced lunch, and students who spent more time reviewing their YouScience results online show enhanced self-awareness after taking YouScience.

Table 42. Regression- Career Decision-Making

DV: Post Career Decision-Making						
		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta (β)	t	Sig.
	(Constant)	1.53	0.11		13.71	0.000
Student Demographics	Gender: **Females**	0.08	0.03	0.05	3.00	0.003
	Gender: **Other**	0.01	0.10	0.00	0.07	0.945
	Race: **Minority**	-0.02	0.03	-0.01	-0.59	0.556
	FRL: **Yes**	0.07	0.03	0.04	1.98	0.048
	FRL: **Prefer not to answer**	-0.01	0.05	0.00	-0.26	0.796
	Parents: **College degree or Graduate school**	0.05	0.05	0.03	1.01	0.315
	Parents: **HS graduate or Some college**	-0.01	0.05	-0.01	-0.27	0.786
Implementation Characteristics	Administration: **Completed at school and home**	-0.08	0.04	-0.04	-1.91	0.056
	Lab time to view results: **Yes**	-0.04	0.05	-0.02	-0.87	0.382
	Number of sittings: **Two to three sittings**	0.12	0.06	0.05	1.90	0.058
	Number of sittings: **Four to five or more sittings**	0.13	0.09	0.05	1.53	0.126
	Follow-up Guidance: **Yes in a small group**	0.07	0.05	0.04	1.40	0.162
	Follow-up Guidance: **Yes in a large group**	-0.03	0.06	-0.02	-0.62	0.536
School Demographics	% Minority	0.00	0.00	0.02	0.54	0.591
	% ED	0.00	0.00	0.01	0.54	0.590
	% SWD	-0.01	0.01	-0.04	-1.90	0.057
	% LEP	0.01	0.00	0.04	2.09	0.037
YouScience Statistics	Time in Online Results- Average Minutes	0.00	0.00	0.10	4.90	0.000
Pre	Pre- Career Decision-Making	0.54	0.02	0.56	34.21	0.000

Note. $R^2= .34$; Adjusted $R^2=.34$; $F(19, 2472)=68.52$, $p<.001$.

Summary of Table 42: A multiple regression was run to predict students' career decision-making abilities using student demographics, implementation characteristics, school demographics, and YouScience statistics as predictor variables. Baseline or Pre career decision-making scores were also

included in the model as a control variable. Together, the variables statistically significantly predicted students' career decision-making abilities after taking YouScience (post), F(19, 2472)=68.52, p<.001, R^2=.34. In particular, four variables significantly predicted students' career decision-making abilities after taking YouScience: Gender, FRL, and % LEP, and Time in Online Results. Specifically…

- **Females** express greater career decision-making abilities after taking YouScience than males (β=.05, p=.003).
- Students who receive **free/reduced lunch** express greater career decision-making abilities after YouScience than students who do not (β =.04, p=.048).
- Schools that have a higher percentage of students who are **Limited English Proficiency (LEP)** learners express greater career decision-making abilities (β=.04, p=.037) after taking YouScience.
- Students who spent more **time (in minutes) reviewing their YouScience** results online express greater career decision-making abilities than students who spent less time reviewing their online results (β=.10, p<.001).

It should be noted that students' baseline scores for career decision-making (*Pre Career Decision-Making*) predicted students' career decision-making after taking YouScience (*Post Career Decision-Making*).

Overall, the results of the regression model suggest that, controlling for other variables, female students, students who receive free/reduced lunch, schools with a higher percentage of LEP learners, and students who spent more time reviewing their YouScience results online show enhanced career-decision making abilities after taking YouScience.

Table 43. Regression- Self-Empowerment

DV: Post Self-Empowerment						
		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta (β)	t	Sig.
	(Constant)	1.25	0.13		9.76	0.000
Student Demographics	Gender: **Females**	0.11	0.03	0.05	3.37	0.001
	Gender: **Other**	-0.14	0.11	-0.02	-1.27	0.204
	Race: **Minority**	0.01	0.04	0.01	0.35	0.729
	FRL: **Yes**	0.14	0.04	0.07	3.45	0.001
	FRL: **Prefer not to answer**	-0.01	0.06	0.00	-0.16	0.872
	Parents: **College degree or Graduate school**	0.05	0.06	0.03	0.99	0.321
	Parents: **HS graduate or Some college**	0.05	0.05	0.02	0.84	0.399
Implementation Characteristics	Administration: **Completed at school and home**	-0.10	0.05	-0.04	-1.99	0.047
	Lab time to view results: **Yes**	-0.02	0.05	-0.01	-0.36	0.718
	Number of sittings: **Two to three sittings**	0.18	0.07	0.07	2.47	0.014
	Number of sittings: **Four to five or more sittings**	0.21	0.10	0.06	2.18	0.030
	Follow-up Guidance: **Yes in a small group**	0.24	0.06	0.13	4.11	0.000
	Follow-up Guidance: **Yes in a large group**	0.14	0.06	0.07	2.16	0.031
School Demographics	% Minority	0.00	0.00	-0.01	-0.49	0.623
	% ED	0.00	0.00	0.00	-0.06	0.955
	% SWD	-0.01	0.01	-0.03	-1.64	0.101
	% LEP	0.01	0.00	0.03	1.55	0.122
YouScience Statistics	Time in Online Results- Average Minutes	0.00	0.00	0.04	2.06	0.040
Pre	Pre- Self-Empowerment	0.60	0.02	0.59	37.11	0.000

Note. R^2= .38; Adjusted R^2=.38; F(19, 2462)=81.01, p<.001.

Summary of Table 43: A multiple regression was run to predict students' self-empowerment using student demographics, implementation characteristics, school demographics, and YouScience statistics as predictor variables. Baseline or Pre self-empowerment scores were also included in the model as a control

variable. Together, the variables statistically significantly predicted students' self-empowerment after taking YouScience (post), $F(19, 2462)=81.01$, $p<.001$, $R^2=.38$. In particular, eight variables significantly predicted students' self-empowerment after taking YouScience:

- **Females** express greater self-empowerment after taking YouScience than males ($\beta=.05$, $p=.001$).
- Students who receive **free/reduced lunch** express greater self-empowerment after YouScience than students who do not ($\beta=.07$, $p=.001$).
- Schools that **administered YouScience sections both at home and at school** exhibit *lower* self-empowerment scores than schools that administered YouScience at school only ($\beta=-.04$, $p=.047$).
- Schools that **administered YouScience in two or three sittings** exhibit *higher* self-empowerment scores than schools that administered in one sitting only ($\beta=.07$, $p=.014$).
- Schools that **administered YouScience in four, five or more sittings** exhibit *higher* self-empowerment scores than schools that administered in one sitting only ($\beta=.06$, $p=.030$).
- Schools that provided **follow-up guidance to students in a small group setting** exhibit *higher* self-empowerment scores than schools that provided no follow-up guidance ($\beta=.13$, $p<.001$).
- Schools that provided **follow-up guidance to students in a large group setting** exhibit *higher* self-empowerment scores than schools that provided no follow-up guidance ($\beta=.07$, $p=.031$).
- Students who spent more **time (in minutes) reviewing their YouScience** results online express greater self-empowerment than students who spent less time reviewing their online results ($\beta=.04$, $p=.040$).

It should be noted that students' baseline scores for self-empowerment (*Pre Self-Empowerment*) predicted students' self-empowerment after taking YouScience (*Post Self-Empowerment*).

Overall, the results of the regression model suggest that, controlling for other variables, female students, students who receive free/reduced lunch, and students who spent more time reviewing their YouScience results online show enhanced self-empowerment after taking YouScience. Likewise, implementation characteristics of the school impacted self-empowerment. That is, schools that administered YouScience at school only across multiple sittings (>1), and provided follow-up guidance to students in the interpretation of their results (either in a small or large group setting) express enhanced self-empowerment.

Table 44. Regression- Career Exploration

DV: Post Career Exploration						
		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta (β)	t	Sig.
	(Constant)	0.82	0.12		6.76	0.000
Student Demographics	Gender: **Females**	0.09	0.03	0.05	3.00	0.003
	Gender: **Other**	-0.05	0.11	-0.01	-0.40	0.688
	Race: **Minority**	0.01	0.04	0.01	0.39	0.694
	FRL: **Yes**	0.06	0.04	0.03	1.60	0.110
	FRL: **Prefer not to answer**	-0.08	0.06	-0.02	-1.26	0.209
	Parents: **College degree or Graduate school**	0.03	0.06	0.01	0.53	0.597
	Parents: **HS graduate or Some college**	0.02	0.05	0.01	0.32	0.751
Implementation Characteristics	Administration: **Completed at school and home**	-0.07	0.05	-0.03	-1.30	0.193
	Lab time to view results: **Yes**	-0.04	0.05	-0.02	-0.71	0.481
	Number of sittings: **Two to three sittings**	0.07	0.07	0.03	0.97	0.334
	Number of sittings: **Four to five or more sittings**	0.15	0.10	0.04	1.59	0.112
	Follow-up Guidance: **Yes in a small group**	0.24	0.06	0.12	4.11	0.000
	Follow-up Guidance: **Yes in a large group**	0.10	0.06	0.05	1.59	0.111
School Demographics	% Minority	0.00	0.00	-0.03	-1.17	0.241
	% ED	0.00	0.00	0.04	1.66	0.097
	% SWD	0.00	0.01	0.01	0.63	0.526
	% LEP	0.01	0.00	0.02	1.24	0.215
YouScience Statistics	Time in Online Results- Average Minutes	0.00	0.00	0.03	1.76	0.079
Pre	Pre- Career Exploration	0.66	0.02	0.64	42.32	0.000

Note. R^2=.44; Adjusted R^2=.43; F(19, 2499)=102.95, p<.001.

Summary of Table 44: A multiple regression was run to predict students' career exploratory behaviors using student demographics, implementation characteristics, school demographics, and YouScience statistics as predictor variables. Baseline or Pre career exploration scores were also included in the model as a control variable. Together, the variables statistically significantly predicted students' career exploratory behaviors after taking YouScience (post), F(19, 2499)=102.95, p<.001, R^2=.44. In particular, two variables significantly predicted students' career exploration scores after taking YouScience:

- **Females** express greater career exploratory behaviors after taking YouScience than males (β=.05, p=.003).
- Schools that provided **follow-up guidance to students in a small group setting** exhibit *higher* career exploration scores than schools that provided no follow-up guidance (β=.12, p<.001).

It should be noted that students' baseline scores for career exploration (*Pre Career Exploration*) predicted students' career exploration after taking YouScience (*Post Career Exploration*).

Overall, the results of the regression model suggest that, controlling for other variables, female students, show enhanced career exploratory behaviors after taking YouScience. Likewise, schools that provide follow-up guidance to students in a small group setting express higher career exploration.

Table 45. Regression- Intent to Persist

DV: Post Intent to Persist						
		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta (β)	t	Sig.
	(Constant)	0.84	0.10		8.16	0.000
Student Demographics	Gender: **Females**	0.08	0.02	0.05	3.39	0.001
	Gender: **Other**	0.02	0.08	0.00	0.19	0.846
	Race: **Minority**	-0.02	0.03	-0.01	-0.70	0.481
	FRL: **Yes**	0.05	0.03	0.03	1.65	0.099
	FRL: **Prefer not to answer**	-0.05	0.05	-0.01	-1.04	0.298
	Parents: **College degree or Graduate school**	0.01	0.04	0.01	0.30	0.762
	Parents: **HS graduate or Some college**	-0.01	0.04	-0.01	-0.23	0.819
Implementation Characteristics	Administration: **Completed at school and home**	-0.03	0.04	-0.02	-0.91	0.362
	Lab time to view results: **Yes**	-0.06	0.04	-0.03	-1.40	0.160
	Number of sittings: **Two to three sittings**	0.06	0.05	0.02	1.10	0.271
	Number of sittings: **Four to five or more sittings**	0.09	0.07	0.03	1.27	0.205
	Follow-up Guidance: **Yes in a small group**	0.08	0.04	0.04	1.75	0.079
	Follow-up Guidance: **Yes in a large group**	-0.01	0.05	-0.01	-0.31	0.759
School Demographics	% Minority	0.00	0.00	0.00	-0.11	0.910
	% ED	0.00	0.00	0.03	1.65	0.099
	% SWD	0.00	0.00	-0.01	-0.58	0.562
	% LEP	0.00	0.00	0.02	1.11	0.265
YouScience Statistics	Time in Online Results- Average Minutes	0.00	0.00	0.03	1.80	0.073
Pre	Pre- Intent to Persist	0.77	0.01	0.74	56.32	0.000

Note. R^2= .57; Adjusted R^2=.57; F(19, 2571)=181.17, p<.001.

Summary of Table 45: A multiple regression was run to predict students' intent to persist using student demographics, implementation characteristics, school demographics, and YouScience statistics as predictor variables. Baseline or Pre intent to persist scores were also included in the model as a control variable. Together, the variables statistically significantly predicted students' intent to persist after taking YouScience (post), F(19, 2571)=181.17, p<.001, R^2=.57. In particular, one variable significantly predicted students' intent to persist scores after taking YouScience:

- **Females** express greater career exploratory behaviors after taking YouScience than males (β=.05, p=.001).

It should be noted that students' baseline scores for intent to persist (*Pre Intent to Persist*) predicted students' intent to persist after taking YouScience (*Post Intent to Persist*).

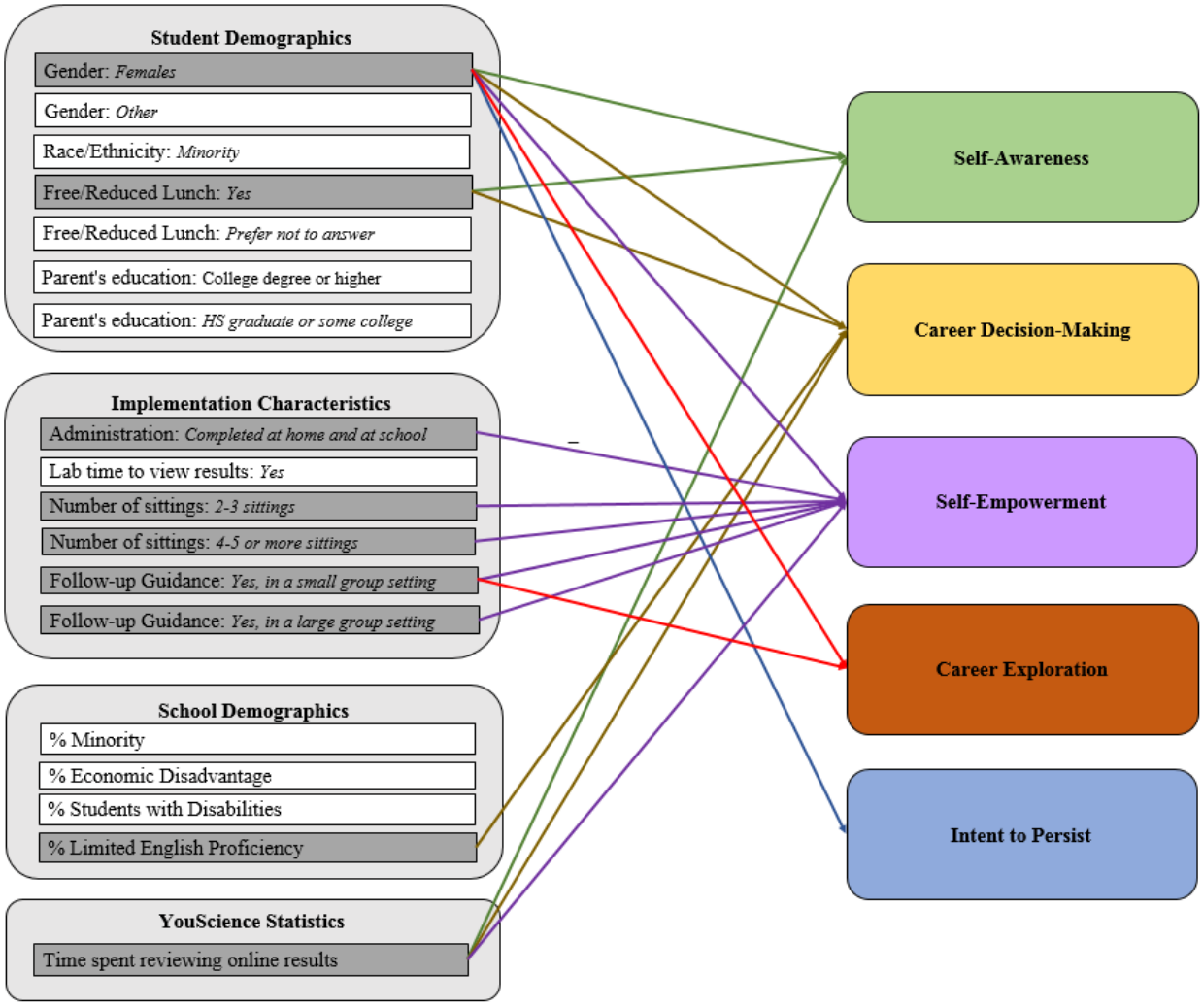
Overall, the results of the regression model suggest that, controlling for other variables, female students show enhanced intent to persist after taking YouScience. No other predictor variables were statistically significant.

Table 46 provides a brief summary of the major findings from the regression models A check mark (✓) suggests that the predictor variable statistically significantly ($p<.05$) predicted the outcome variable; green highlighted check marks denote a positive standardized Beta coefficient; red highlighted check marks denote a negative standardized Beta coefficient. For instance, schools that asked students to complete sections of YouScience at school and at home (*How did you administer YouScience to students?)* express *less* self-empowerment than schools that administered YouScience at school only, controlling for all other variables in the model. Across all outcome variables, females show higher attitudinal scores than males. Likewise, students who receive free or reduced lunch show higher scores across 3 out of 5 outcome variables than students who do not receive free or reduced lunch. Self-empowerment was largely contingent on how schools implemented YouScience: schools that administered YouScience during school hours across two or more sittings, and provided follow-up guidance to students yielded higher self-empowerment scores. Also, the more time that students spent reviewing their YouScience results online, the higher their self-awareness, career decision-making, and self-empowerment outcomes.

Table 46. Regression Results- all variables

		Outcome Variables or DVs				
Predictor Variables:		**POST Self-Awareness**	**POST Career Decision-Making**	**POST Self-Empowerment**	**POST Career Exploration**	**POST Intent to Persist**
Student Demographics	Gender: **Females**	✓	✓	✓	✓	✓
	Gender: **Other**					
	Race: **Minority**					
	FRL: **Yes**	✓	✓	✓		
	FRL: **Prefer not to answer**					
	Parents: **College degree or Graduate school**					
	Parents: **HS graduate or Some college**					
Implementation Characteristics	Administration: **Completed at school and home**			✓		
	Lab time to view results: **Yes**					
	Number of sittings: **Two to three sittings**			✓		
	Number of sittings: **Four to five or more sittings**			✓		
	Follow-up Guidance: **Yes in a small group**			✓	✓	
	Follow-up Guidance: **Yes in a large group**			✓		
School Demographics	% Minority					
	% ED					
	% SWD					
	% LEP		✓			
YouScience Statistics	Time in Online Results- Average Minutes	✓	✓	✓		
Pre	Pre Construct Averages (e.g., Pre Self-Awareness)	✓	✓	✓	✓	✓

Figure 8. Regression Results- all variables



Note. Lines reflect significant regression coefficients; variables highlighted in gray statistically significantly predict one or more outcome variables. All regression coefficients are positive with the exception of *Administration: Competed at home and at school* which negatively predicts *Self-Empowerment.* Pre construct scores (e.g., *Pre Self-Awareness*) were controlled for in the regression models, but are not depicted in the above figure.

APPENDIX L. Student Survey- Dashboard

THE GOVERNOR'S OFFICE OF
STUDENT ACHIEVEMENT

YouScience Student Survey: Results

School: **All**

Number of students who completed survey: **3068**

Summary of Major Findings

Construct	Major Findings:
Perceptions:	46% of students felt that YouScience was a good use of their time.
Self-Awareness:	After taking YouScience, the percentage of students who said that they can describe their natural abilities increased from 53% to 74%.
Career Decision-Making:	The percentage of students who said that they have enough information to make a career decision increased from 42% before to 56% after taking YouScience.
Self-Empowerment:	After taking YouScience, 65% of students said that they have a good sense of where they are headed in life, compared to 55% before YouScience.
Career Exploration:	55% of students reported that YouScience opened their eyes to new career possibilities.
Intent to Persist:	After taking YouScience, the percentage of students who indicated that they plan to complete courses in a college and career pathway during high school increased from 64% before to 70% after. The percentage of students planning to continue their education or training after high school increased from 78% before to 80% after taking YouScience.

Note. For more information, please see Detailed Findings below. Percentages described in the table above were calculated by adding the percentage of students who said either "Agree (4)" or "Strongly Agree (5)" on a 5-point Likert Scale (1, Strongly Disagree to 5, Strongly Agree) on related items.

Detailed Findings

Student Perceptions

			# of Students	Average	Assessment	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
Perceptions	In general, I found the YouScience Profile to be…	4. Interesting	3034	3.61	Near optimal	9%	5%	25%	39%	23%
		5. Useful	3015	3.49	Below optimal	9%	7%	30%	36%	18%
		6. Accurate	2997	3.42	Below optimal	7%	7%	36%	35%	14%

Note. Assessment: Above optimal, ≥4.00; Near optimal, <4.00 & ≥ 3.50; Below optimal, <3.50. Percentages are rounded and may not sum to 100%.

		# of Students	Average	Assessment	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
Satisfaction	7. I would recommend the YouScience Profile to a friend.	3051	3.34	Below optimal	10%	9%	34%	32%	15%
	8. Completing the YouScience Profile was a good use of my time.	3044	3.29	Below optimal	11%	11%	32%	31%	15%

Note. Assessment: Above optimal, ≥4.00; Near optimal, <4.00 & ≥ 3.50; Below optimal, <3.50. Percentages are rounded and may not sum to 100%.

Utilization

To what extent did you discuss your YouScience results...		# of Students	Average	Assessment	Never (1)	A little (2)	Some (3)	Often (4)	A lot (5)	Don't know/ remember
Dosage	17. With a school counselor or teacher (in a group)	3054	2.20	Below optimal	38%	17%	20%	8%	7%	11%
	18. With a school counselor or teacher (by yourself)	3049	2.02	Below optimal	46%	15%	17%	8%	5%	10%
	19. With parent(s)/guardian(s)	3048	2.19	Below optimal	42%	16%	16%	9%	8%	8%
	20. With friends/peers	3044	2.42	Below optimal	31%	20%	22%	11%	9%	8%
	21. To what extent did you spend time exploring your YouScience results on your own?	3053	2.56	Below optimal	23%	24%	26%	13%	8%	7%

Note. Assessment: Above optimal, ≥4.00; Near optimal, <4.00 & ≥ 3.50; Below optimal, <3.50. Students who indicated "Don't know/remember" were not included in the average. Percentages are rounded and may not sum to 100%.

To what extent was your YouScience profile helpful in…		# of Students	Average	Assessment	Not at all (1)	Slightly (2)	Somewhat (3)	Very (4)	Extremely (5)
Utility	22. Exploring new careers?	3054	2.99	Below optimal	14%	20%	30%	24%	11%
	23. Confirming your career decisions and plans?	3048	2.91	Below optimal	16%	19%	32%	22%	11%
	24. Exploring education or training paths after high school?	3034	2.99	Below optimal	15%	19%	29%	25%	12%

Note. Assessment: Above optimal, ≥4.00; Near optimal, <4.00 & ≥ 3.50; Below optimal, <3.50. Percentages are rounded and may not sum to 100%.

Self-Awareness

			# of Students	Average	p-value	Δ	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
Self-Awareness	10. I can describe my natural abilities.	Before	2512	3.50	0.000	▲ 0.41	3%	9%	35%	39%	14%
		Now	2512	3.91	*significant*		3%	2%	21%	48%	26%
	11. I can identify which careers are a good fit for me.	Before	2520	3.53	0.000	▲ 0.41	3%	10%	33%	38%	15%
		Now	2520	3.94	*significant*		3%	3%	21%	43%	30%
	12. I can identify my college and career pathway.	Before	2532	3.51	0.000	▲ 0.34	5%	11%	32%	34%	19%
		Now	2532	3.86	*significant*		4%	5%	23%	39%	30%
	13. I have a clear idea of what I will do after high school.	Before	2544	3.55	0.000	▲ 0.25	5%	11%	30%	31%	23%
		Now	2544	3.79	*significant*		5%	6%	25%	34%	31%
	14. I have considered a wide range of possible careers.	Before	2544	3.51	0.000	▲ 0.36	4%	11%	34%	33%	18%
		Now	2544	3.87	*significant*		3%	5%	23%	39%	30%

Note. Paired samples t-tests were used to assess statistically significant differences between "before" and "now" scores; p-values at or below 0.050 are statistically significant. Δ= Now - Before. Percentages are rounded and may not sum to 100%.

Career Decision-Making

			# of Students	Average	p-value	Δ	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
Occupation Information	25. I feel lost when I think about choosing a career. (n)	Before	2549	2.74	0.001	-0.08	21%	22%	29%	17%	11%
		Now	2549	2.66	*significant*		25%	21%	26%	19%	9%
	26. I have enough information to make a career decision.	Before	2579	3.28	0.000	0.29	7%	15%	36%	27%	15%
		Now	2579	3.57	*significant*		6%	9%	30%	35%	20%
	27. I feel encouraged about choosing a career.	Before	2591	3.53	0.000	0.23	5%	8%	35%	34%	18%
		Now	2591	3.76	*significant*		4%	5%	26%	40%	25%
Goal Setting	28. I am certain about the careers that could be a good fit for me.	Before	2587	3.49	0.000	0.25	5%	10%	34%	30%	20%
		Now	2587	3.74	*significant*		5%	5%	27%	36%	26%

Note. Paired samples t-tests were used to assess statistically significant differences between "before" and "now" scores; p-values at or below 0.050 are statistically significant. Δ= Now - Before. (n) negatively worded statement. Percentages are rounded and may not sum to 100%.

Self-Empowerment/ Future Confidence

			# of Students	Average	p-value	Δ	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
Personal Growth	29. I have a good sense of where I am headed in life.	Before	2595	3.60	0.000	0.20	5%	9%	31%	32%	23%
		Now	2595	3.80	*significant*		5%	5%	25%	36%	29%
Hope	30. I feel optimistic that I will find a good job in the future.	Before	2596	3.79	0.000	0.15	3%	5%	29%	34%	28%
		Now	2596	3.94	*significant*		4%	3%	22%	36%	35%

Note. Paired samples t-tests were used to assess statistically significant differences between "before" and "now" scores; p-values at or below 0.050 are statistically significant. Δ= Now - Before. Percentages are rounded and may not sum to 100%.

Career Exploration

To what extent did you engage in the following activities on your own:			# of Students	Average	p-value	Δ	Never (1)	A little (2)	Some (3)	Often (4)	A lot (5)
Career Exploration	31. Sought information on specific careers that interest me.	Before	2630	3.28	0.000	▲ 0.24	7%	16%	37%	22%	18%
		Now	2630	3.52	*significant*		7%	9%	32%	29%	23%
	32. Sought career advice from a teacher or advisor.	Before	2613	2.56	0.000	▲ 0.22	29%	19%	30%	13%	10%
		Now	2613	2.78	*significant*		24%	16%	29%	18%	12%
	33. Spoken to family, friends, or community members about careers that interest me.	Before	2611	3.34	0.000	▲ 0.15	9%	15%	31%	23%	22%
		Now	2611	3.49	*significant*		9%	11%	28%	26%	26%

Note. Paired samples t-tests were used to assess statistically significant differences between "before" and "now" scores; p-values at or below 0.050 are statistically significant. Δ= Now - Before. Percentages are rounded and may not sum to 100%.

		# of Students	Average	Assessment	Not at all (1)	Slightly (2)	Somewhat (3)	Very (4)	Extremely (5)
Career Possibilities	9. The YouScience Profile opened my eyes to new career possibilities.	3038	3.48	Below optimal	10%	8%	27%	34%	21%

Note. Assessment: Above optimal, ≥4.00; Near optimal, <4.00 & ≥ 3.50; Below optimal, <3.50. Percentages are rounded and may not sum to 100%.

Intent to Persist

			# of Students	Average	p-value	Δ	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
Courses	34. I plan to complete courses in a college and career pathway during high school.	Before	2657	3.84	0.000	▲ 0.16	4%	5%	26%	32%	32%
		Now	2657	3.99	*significant*		4%	4%	22%	30%	40%
Graduation	35. I plan to graduate from high school.	Before	2672	4.46	0.342	▼ -0.01	2%	1%	15%	12%	70%
		Now	2672	4.45	*not significant*		3%	1%	13%	12%	70%
Post-Secondary Educ.	36. I plan to continue my education or training after high school.	Before	2670	4.31	0.016	▲ 0.03	2%	2%	18%	18%	60%
		Now	2670	4.35	*significant*		3%	2%	15%	19%	62%

Note. Paired samples t-tests were used to assess statistically significant differences between "before" and "now" scores; p-values at or below 0.050 are statistically significant. Δ= Now - Before. Percentages are rounded and may not sum to 100%.

Career Identity

37. Choose the statement that best describes you, both Before YouScience and Now.		Before		Now		Δ (Now - Before)	
		# of Students	%	# of Students	%	# of Students	%
Uninterested	I'm really not interested in finding the right career at the moment.	224	8%	152	6%	▼ -72	▼ -3%
Exploring	I am exploring career options.	1570	59%	1350	50%	▼ -220	▼ -8%
Decided	I know what I want to do as a career.	881	33%	1173	44%	▲ 292	▲ 11%
Total		**2675**	**100%**	**2675**	**100%**		

Note. This item is intended to provide exploratory data on students' career identities; as such, only descriptive statistics are provided. Percentages are rounded and may not sum to 100%.

Student Background

When did you take the YouScience profile?		
	# of Students	%
August 2015 - December 2015 (Fall 2015)	1304	43%
January 2016 - May 2016 (Spring 2016)	973	32%
Do not know/Do not remember	783	26%
I did not take the YouScience Profile	0	0%
Total	**3060**	**100%**

When did you discuss your YouScience results with your school counselor?		
	# of Students	%
August 2015 - December 2015 (Fall 2015)	362	12%
January 2016 - May 2016 (Spring 2016)	812	27%
Do not know/Do not remember	825	27%
I did not discuss my results w/ my counselor	1058	35%
Total	**3057**	**100%**

Ethnicity/Race:		
	# of Students	%
Asian	110	4%
Black	1075	36%
Hispanic	377	13%
Native American/Alaskan Native	28	1%
White	1191	40%
Multiracial	136	5%
Other	96	3%
Total	**3013**	**100%**

Gender:		
	# of Students	%
Female	1607	53%
Male	1324	44%
Other	77	3%
Total	**3008**	**100%**

Free/Reduced Priced Lunch:		
	# of Students	%
Yes	1470	49%
No	1281	43%
Prefer not to answer	248	8%
Total	**2999**	**100%**

Parent(s) Highest Level of Education:		
	# of Students	%
Less than high school graduate	373	12%
High school graduate	667	22%
Some college or postsecondary education	494	16%
College Degree	856	29%
Graduate/Professional Degree or some graduate/professional school	609	20%
Total	**2999**	**100%**

Note. Shaded cells indicate highest percentage per category. Percentages are rounded and may not sum to 100%.