

The School District of Philadelphia
Office of Research and Evaluation

Garrett A. Morgan Technology and Transportation Education Program

Evaluation Report for 2011-2012 Award

The School District of Philadelphia



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The School District of Philadelphia
Garrett A. Morgan Transportation and Technology Education
Program (GAMTTEP)
2011-2012 Award
Evaluation Report

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Executive Summary

Introduction

The purpose of this report is to describe the activities and outcomes of the U.S. Department of Transportation's Federal Highway Administration's Garrett A. Morgan Technology and Transportation Education Program (GAMTTEP), which awarded \$100,000 to The School District of Philadelphia (The District) for programming during the 2011-12 school year. The program was developed in the Office of Career and Technical Education with four major implementation goals: provide career and education transportation symposia to interested high school students, collaborate with the Community College of Philadelphia (CCP) to deliver an Automotive Technology course to seniors, collaborate with CCP to provide a one-week transportation summer camp to two cohorts of middle grades students, and provide eight-week summer internships to District students enrolled in the Career and Technical Education (CTE) transportation program.

Process Findings

Data collection for the program was ongoing throughout the year. Data-based formative feedback was provided to the program office during quarterly evaluation meetings, at which quarterly reports were distributed. Some process findings include:

- The program produced two transportation symposia, one on December 16, 2011 at Mastbaum High School and another on May 18, 2012 at The District's administrative office.
- The program was successful in strengthening community partnerships with the automotive industry as evidenced by community partner representation at symposia and feedback e-mails.
- Symposia speakers represented a wide variety of jobs, sectors, and educational programs available to students.
- Two sections of the CCP Automotive Technology course were offered to 30 students at West Philadelphia High School in the spring.
- Summer camp was held for two consecutive weeks for 28 students and the summer internships were provided to twelve student participants.
- Females and minorities were represented by the symposia speakers, a woman-only symposium forum, and in their participation in the CCP course, summer camp, and summer internships.

Outcome Evaluation

Program outcomes were measured using feedback surveys, grades, journal analysis, and activity observations. Some of the main outcome findings are:

- The symposia were highly regarded by presenters and well-received by students. Students were most interested in practical information regarding careers.

- The Automotive Technology course was provided to 30 students, of which 60% received a C grade or higher. Students who participated in the course had the opportunity to engage in many automotive repair activities, such as rebuilding engines and state inspections. The course also provided guest speakers from the industry.
- Summer camp provided hands-on learning opportunities and real-world experiences for 28 participants. Students created a hydrogen-fuel-cell-powered modeled car and attended daily field trips to local industry companies.
- The program provided hands-on experience to students who were enrolled in the CTE program in the way of internships, symposiums, and a college automotive course.
- Internships were provided to 12 students at various local transportation public and private industry providers. Some of the interns were offered work-study positions and one student received a job offer after their internship finished.

I. Introduction

This report presents the findings and activities of the Garrett A. Morgan Technology and Transportation Education Program (GAMTTEP) awarded to the School District of Philadelphia (The District) in 2011 and implemented during the 2011-12 school year. The GAMTTEP is a one-year award of \$100,000 from the U.S. Department of Transportation's Federal Highway Administration (FHWA) to provide educational opportunities to students interested in STEM careers in the transportation field. Minorities and women were a special focus of the grant proposal. The program was administered by The District's Office of Career and Technical Education (CTE). The GAMTTEP program manager was a CTE employee who implemented the program while also maintaining other CTE responsibilities. The District's Office of Research and Evaluation (ORE) designed and implemented the evaluation to provide formative and summative feedback of program initiatives to CTE.

The program was developed with four major implementation goals:

1. Provide career and education transportation symposia to interested high school students;
2. Collaborate with the Community College of Philadelphia (CCP) to deliver an Automotive Technology course to seniors;
3. Collaborate with CCP to provide a one-week transportation summer camp to two cohorts of middle grades students; and
4. Provide eight-week summer internships to District seniors enrolled in the CTE automotive program.

II. Evaluation Design and Methods

The Office of Research and Evaluation (ORE) designed the evaluation around three evaluation questions exploring the program's implementation and outcomes. These research questions are as follows:

1. How did the program prepare students for careers in the transportation field?
2. How, and to what extent, did the program expose minorities and women to STEM transportation careers?
3. In what ways did the program produce sustainable impacts?

Data Collection

1. Program Attendance Record Review

Attendance records from the CCP course, May 18, 2012 symposium, summer camp, and summer internship were reviewed.

2. Site Visits

The ORE evaluator visited the CCP course on April 17, 2012 and attended the transportation symposium on May 18, 2012.

3. Community College of Philadelphia Course Documents Review

The Automotive Technology course instructor provided an enrollment list and the college administration provided a course summary, which included total classroom hours provided and grade distributions.

4. Summer Camp Participant Survey

A student survey was administered to summer camp cohort 1 on July 19, 2012 and to cohort 2 on July 26, 2012. The surveys were administered prior to the final field trip (the Simeone Foundation Car Museum for cohort 1 and the Philadelphia International Airport for cohort 2).

5. Summer Internship Survey

Surveys were administered to the summer interns by the program staff during their final weeks of the program. The program manager ensured a high response rate by requiring participants to return the surveys before receiving their final paycheck.

6. Summer Internship Student Journals

The program manager provided interns with a student journal that provided prompts for written daily reflection on their experiences. The seven collected journals were provided to ORE for analysis.

III. Evaluation Results

1. How did the program prepare students for careers in the transportation field?

CAREER AND TECHNICAL EDUCATION SYMPOSIA

The program coordinated two symposia during the 2011-12 school year. They were held at Mastbaum High School on December 16, 2011 and at The District's central administrative office on May 18, 2012. The purpose of the symposia was to connect high school students interested in transportation careers and enrolled in CTE programs with schools and industry representatives in Philadelphia and the surrounding area.

The Mastbaum High School symposium was presented exclusively to Mastbaum students studying to work in transportation careers. The program manager estimates that there were about 90 students in attendance. The eight symposium presenters were from the following organizations: The City of Philadelphia Office of Fleet Management; CCP; Morris Racing; Newark Toyota; PENN-DOT; Southeastern Pennsylvania Transportation Authority (SEPTA)¹; along with an industry consultant, Leslie Porter-Cabell. SEPTA brought a hybrid bus to the symposium that students were encouraged to board and learn about the hybrid model. Morris Racing brought a racecar to the symposium and the Office of Fleet Management brought a police vehicle.

¹ Both a technician and human resources representative were present.

Practical information for plans following high school was provided by the CCP representative, who discussed what it is like to work in an auto tech shop and what students need to do to be admitted into college. In addition, PENN-DOT and SEPTA representatives discussed jobs available in the industry. The program manager encouraged students and presenters to provide feedback on the symposium. The ORE evaluator reviewed e-mails from symposium presenters and students. Overall, respondents regarded the symposium as a success and expressed interest in further collaboration. Students conveyed interest in the symposium, expressed motivation for careers in the transportation industry, and were satisfied that there were opportunities to ask questions. Students regarded the real-world focus of the presenters as meaningful and enjoyed learning about the SEPTA hybrid bus. Feedback e-mails from industry participants provide support that the symposium was well-regarded by presenters. The event was documented by an article published on The District’s website and linked directly from the homepage banner. This symposium was provided at no cost to the grant.

The second symposium held on May 18, 2012 was promoted to all District CTE students pursuing transportation careers; however, any interested CTE student was welcome to attend. Attendance records show that there were 137 total students in attendance from six District high schools (Table 1). A barrier to participation identified by the program manager was prom at Swenson and King high schools, for which students traditionally do not attend school. Of the total participants, 22 (16%) were female. Despite the low ratio of female participants, 50% of the speakers were female. In addition, all the speakers were either minorities or women, which represented the student population in attendance.

Table 1. Student participation in May 18, 2012 symposium by school and gender

School	Number of Students	Number of Females	Percentage Female
Mastbaum High School	76	19	25%
Randolph Technical High School	30	1	3%
Swenson Technical High School	14	1	7%
Martin Luther King High School	5	0	0%
West Philadelphia High School	6	1	17%
Thomas A. Edison High School	6	0	0%
Totals	137	22	16%

Source: Attendance records provided by the program office

There were 15 presenters from a variety of industry companies, government service providers, industry organizations, and schools. The presenters included representatives from Temple University, community outreach from Congressman Chaka Fattah’s office, Ryder Truck Rental, PENN-DOT, US-DOT, The Faulkner Organization (auto dealerships), Philadelphia Conference of Minority Transportation Officials (COMTO), Universal Technical Institute, Transportation Workers Union, Philadelphia Airport, Philadelphia Regional Port Authority, City of Philadelphia Fleet Management, and the Automotive Dealers Association. Representatives from the various companies and organizations included human resources representatives, technicians, and college recruiters.

The ORE evaluator attended the symposium and took notes on speaker content. The agenda was broken into three distinct parts: morning and afternoon presentations in the auditorium, a college and career fair where participants could talk to representatives and receive literature from the various companies, and a woman-only session that featured women presenters and female participants. The presentations in the auditorium featured speakers who shared their personal stories of how they entered the industry. They also provided information on what their company does and whom they employ. Student questions were recorded by the evaluator and pertained to specific steps for how to get a job, how much they can expect to make, and how to prepare for careers in the industry. Student interest was gauged by the number of questions a particular speaker received. The most interesting speaker shared very specific information on how to get a job, such as how to behave in a job interview. Based on the student questions, they were most interested in practical information regarding steps to take following high school. Thirteen female participants attended the woman-only session. Speakers addressed advice for pursuing a transportation career and techniques for identifying and dealing with sexual harassment. One student asked the panel about how to be assertive in the work place and when to compromise. The college and career fair began at lunch and spanned throughout the afternoon. Representatives from nineteen local industry organizations participated, as well as twelve post-secondary schools from seven different states (as far away as Western Ohio).

Similar to the first symposium, the program manger encouraged presenters and students to provide feedback. Ten presenters wrote e-mails regarding their impressions of the event and all regarded it as a success. Many presenters regarded the opportunity to meet other professionals in the field as a benefit of participating. One presenter summarized the experience as follows:

“The participants who addressed the students proved to be excellent role models, who achieved great things in life by applying themselves. If they were listening to the presentations (and I truly believe they were), the students should have come away with an idea of what opportunities exist in the technical fields, and more importantly, how to go about taking advantage of those opportunities.”

Industry Symposium Presenter

Student reflections were collected from 31 participants via e-mail and journal entries. Themes from the student reactions are listed below, in order of highest to lowest frequency.

1. I was able to meet people in the industry.
2. I received information on careers.
3. I received info on college.
4. I learned what you need to do to get a job.
5. I enjoyed learning about the speakers’ background stories.
6. I received information on transportation businesses.
7. I learned that women are entitled to the same opportunities as men.

Information on careers was a high priority for students. Three respondents indicated that they gave out their resume. Many students cited the Faulkner Human Resources Representative speaker, specifically the information she provided on how to get a job: arrive at a job interview 15 minutes early and there are opportunities to move up in a company if you are serious and work hard. This is also the speaker who received the most student questions at the large group presentations. One student described it as follows:

"I appreciate the opportunity that I had to listen and speak to professionals. ...The symposium helped me understand that I need to have good grades, attendance, and a diploma to be in the automotive industry. I had good connections with UTI, Lincoln Tech, and Keenan Auto Body. I took advantage of the experience and gave out my resume to them."

Male Student Symposium Attendee

Overall, industry representatives valued the symposium for its organization and networking opportunities, and students were most interested in practical information on how to obtain a job in the field.

In addition to the two symposiums coordinated by the GAMTTEP program manager, there was a third symposium that was provided by COMTO. It was open to all interested students from the area, and promoted to District students by the GAMTTEP program manager. The COMTO symposium, focused on aviation, was called the 7th Annual Youth Explosion and was held at SEPTA headquarters on March 17, 2012. The program manager also recruited a speaker for the conference, a minority helicopter pilot from 6ABC Action News. There were eight event speakers, including World War II Tuskegee Airmen. Scholarship information was also distributed at the event. The program manager estimated that about 40 total students were in attendance. Television coverage of the event was shown on the local ABC TV news affiliate. This conference also provided an opportunity for students and Mr. Herring to network with high-level SEPTA and aviation officials.

AUTOMOTIVE TECHNOLOGY COLLEGE COURSE

A two-credit college automotive technology course, AT100, was offered by CCP at West Philadelphia High School (West) for high school students (Table 2) enrolled in the automotive technology program. Two sections were offered and both took place in the automotive workshops at West. The course met five days per week for 1 hour-45 minute sessions from March 19 through May 23, 2012. A total of 30 students were enrolled and each section acquired 75 total hours of class time. Twelve of the students were female (40%).

The evaluator visited the class on April 17, 2012 and observed an entire class meeting of the section that was mostly grade 12 students. There were nine students in attendance and the instructor provided three objectives for the period: move a car to the lift, mount an engine on a work stand, and clean-up the work space. While most students were in the auto repair shop, some students read and studied in the adjacent classroom. The instructor explained that he

was interested in adapting the course to fit the students' needs. For example, for his student who aspired to become an English teacher, she engaged in a writing lesson on what it would be like to be a mechanic. During this period, there were three students who worked in the classroom, all female. The instructor's approach to managing the learning environment in the auto repair shop was consistent with what would be expected in a college course. All students had opportunities to engage in the activities, but for those who elected to disengage from class, the instructor did not provide additional prompting or intervention. The instructor also commented that he would have preferred the course begin sooner in the school year, as the seniors were especially difficult to motivate at the end of the school year. While this format seemed conducive to a course with highly technical skill building and close monitoring for safety, additional support from the high school staff may have prevented the high failure rate (see Table 3). The students who engaged in the course received careful monitoring and feedback from the instructor and had the opportunity to do a variety of mechanical activities with real cars and professional equipment. The syllabus also showed that a wide range of topics were covered through the duration of the course.

Table 2. CCP course grade distribution

Grade	Total students enrolled
10	2 (7%)
11	15 (50%)
12	13 (43%)

Source: CCP class list provided by CCP 04/17/12

Of the 30 total students in the course, 12 (40%) received a D grade or lower (Table 3). To help students from failing a college course before ever graduating high school, CCP agreed to change the enrollment of these 12 students to a non-credit course, retroactive to the beginning of the semester. When asked about the low pass rate, the program manager agreed that school support was lacking. In addition, the program manager noted that students at West might be rostered as automotive students without their expressed interest, such as the aspiring English teacher who was working on a course-related writing assignment during the site visit.

Table 3. Final grade distribution

Grade	Total students (n=30)	Percentage
A	2	7%
B	5	17%
C	11	37%
D	2	7%
F	10	33%

Source: CCP final report 07/09/12

SUMMER 2012 CAMP

The program and its educational contractor CCP offered a one-week summer camp to two cohorts of middle-grade students. Camps were held the weeks of July 16 and July 23, 2012, Monday through Friday, 9:00 am to 3:00 pm and were lead by a District CTE instructor and a CCP instructor. Participants met at CCP West everyday, where they learned about and built a hydrogen-fuel-cell-powered model car. Participants took the cars they built home with them at the end of the week. In addition, participants attended a field trip each day of the camp. Field trips were made to the SEPTA bus depot, City of Philadelphia Fleet Management, Philadelphia Regional Port Authority, Philadelphia International Airport, Simeone Foundation Automotive Museum, and the North Penn Mazda/VW Dealership.

Camp participant demographics are shown in Table 4. There were 11 female participants (38%) and most students were in grade 8 (52%). There were 28 students who participated in the program, including one student who participated in both cohorts. Of the 24 participant survey respondents, four reported wanting a job that is STEM-related. Though most of the camp participants did not report interest in a STEM career in transportation, the program was consistent with its purpose, which was to expose students to the possibilities in transportation careers.

Table 4. 2012 Summer camp participant sex and grade

Cohort	Total	Grade 7	Grade 8	Grade 9	Male	Female
Week of July 16	12	4 (33%)	6 (50%)	2 (17%)	9 (75%)	3 (25%)
Week of July 23	17	8 (47%)	9 (53%)	0	9 (53%)	8 (47%)
Total	29*	12 (41%)	15 (52%)	2 (7%)	18 (62%)	11 (38%)

Source: Spreadsheets provided by program office

*One male grade 8 student participated during each week and is counted twice in the chart

The summer camps provided middle grades students with exposure to careers in the transportation field. While only a small percentage of student survey respondents identified a STEM career when asked about their future plans (17%), the feedback surveys indicate that participants had positive experiences at the camp. The design of the camp provided students with both hands-on learning experiences and direct contact with the transportation industry. The model hydrogen-fuel-cell-powered car gave students the unique experience of building a car with a college instructor. The field trips provided students with exposure to industry facilities and the opportunity to meet workers in the industry and learn about jobs. When asked about what they learned from the camp experience, 17 (71%) identified STEM-related technical information (e.g., stating something about the hydrogen fuel cell) and 15 survey respondents (63%) cited a fact about the local automotive industry. In addition, six respondents (25%) reported that building and experimenting with the hydrogen-fuel-cell model car was their favorite part of camp, while other respondents identified their favorite field trip destination. A complete summary of participant survey data is included in Appendix E.

SUMMER 2012 TRANSPORTATION INTERNSHIPS

Summer internships were offered to students in grade 11 and 12 from schools with transportation CTE programs. Criteria for application included teacher referral with recommendation, interview with the GAMTTEP program manager, and acceptable student performance and attendance data at school. Twelve internship positions were filled across the nine different locations. Of the twelve selected interns, two were going into grade 11 (17%) and 10 were going into grade 12 (87%). All interns were from one of two schools: Randolph High School (42%) or Mastbaum High School (58%). Regarding women and minorities' composition, all selected students identified as a racial minority and two were female (17%). The internship locations included four new-car dealerships, three separate departments within Amtrak, the City of Philadelphia Fleet Management, and an independently owned auto repair company. Internships were from July 2 through August 24, 2012. The GAMTTEP program manager and two CTE employees made weekly site visits to oversee the interns. Three of the interns' CTE teachers also provided support during site orientations. Of the twelve internships, one industry partner elected not to complete the full term of the internship. The remaining interns worked an average of 281 total cumulative hours (range 200 to 325). All interns were approved to work eight hours per day, five days per week for eight weeks, but schedules varied per industry partner. Interns were paid \$8 per hour.

Due to the variation in intern experiences, the evaluation focused on the collection of qualitative data to better understand how the internship changed the student with regard to learning and future plans. Intern learning and feedback were assessed through reflection journals and a feedback survey.

Journals were provided to all students at the beginning of the internship. Students were instructed to record a journal entry at the end of each day, responding to one of fifteen journal entry prompts. Journal prompts emphasized goal setting and reflection. These prompts provided the participants with the opportunity to describe the activities of their experience and also how their experiences functioned to teach them new skills. A total of seven intern journals were collected and average entries per journal were 14 (range 11 to 19).

Student journals were analyzed for themes using four research questions, detailed below.

How did participants describe their goals for the internship?

All collected journals described goals related to gaining new knowledge and skills. The stated goals in all participant journals pertained to seeking preparation for a future career in the industry. These goals characterize the student cohort as interested in the industry and motivated to learn.

What skills did participants acquire during their internship?

Participants discussed both technical skills and social skill development in their journals. Many students wrote about their ability to understand the perspective of others. For example, one journal entry expressed an understanding for the responsibilities of his supervisor with regard

to safety and another entry described the importance of understanding the customer's perspective, even if the problem seems simple to a technician. Communication was another strong theme throughout the journal entries. Participants discussed the importance of technical communication within the work environment with regard to describing vehicle problems to co-workers. Participants who worked with customers also discussed how to communicate effectively with customers and strategies for interacting with customers who are upset.

What was the overall impression participants had of their internship experience?

All but one of the participants indicated a preference for their internship work environment over the classroom setting. The one exception was desk job placement, for which the participant complained of sitting. Some specific feedback regarding the jobs includes enjoyment; of being busy, satisfaction with their mentor, and learning many new technical skills.

How did the experience influence participant perception of work readiness?

Consistent with the common goal participants shared regarding knowledge and skill acquisition, many participants identified lack of experience and skills as their areas of need when asked to reflect on their performance. Participants also provided personal qualities needed for success in their respective jobs, such as being responsible, having a good work ethic, cooperating with others, honesty, having a sense of humor, and willingness to learn. Many participants also regarded patience as an important quality for success at work. One participant summed up the experience as a "reality check" in that the work environment is very different from school.

The CTE supervisors administered student surveys during site visits at the end of the internship. A total of 11 surveys were collected, one from each of the remaining interns. The purpose of the student survey was to document both student reaction to the internship and the opportunities for learning. Constructed-response style questions were used to allow students to convey their personal reactions without the constraints of multiple choice. Findings are reported below. Responses from various items are triangulated to answer the research questions regarding how the program affected its youth participants.

What attracted participants to the transportation industry?

Many participants conveyed an interest in cars and mechanics as their primary reason for pursuing a career in transportation. However, quite a few participants more specifically indicated that they wanted to do something that they could feel confident doing.

How did the internship program affect the future plans of its participants?

Survey responses indicate that participation in the program provided clarification regarding their future plans. Participants reported knowing more specifically what they did or did not want to do in the future pertaining to the level of on-the-job activity, which type of company they would like to work for, the settings they would like to work in, and one participant indicated developing an interest in management. In addition, one participant responded that

the experience showed him how much he still has to learn about being a technician. All participants reported that they would consider doing their internship job in the future. *Which types of intern experiences did participants find most exciting? Least interesting?* There were many aspects of the varied internship experiences that students found exciting. Some students cited exposure to equipment and opportunity to learn new skills as most exciting, while other mentioned the interpersonal experiences with co-workers and customers. One student's response in particular conveys the excitement and confidence of on-the-job experience: "(Your) age isn't what makes you smarter. It all depends how much you really wanna learn and how determined you really are to pursue your goals."

The only respondent who expressed a preference for being in the classroom over the internship was also the only participant with a desk job in customer service. This participant expressed dislike for sitting all day. (She was also pregnant).

What skills did participants acquire during their internship?

Participants reported many technical skills. Among the responses, participants reported learning how to operate high voltage equipment safely, dismount a fuel tank from a vehicle, perform an alignment, rebuild an engine, trouble shoot vehicle problems, operate lifts, wire sirens and police lights, remove and replace an axle, change drum brakes, and remove a transmission. In addition to highly technical skills, participants also reported workplace skills that may readily be generalized to other professional settings. These skills include how to organize an inventory room using numbers, enter invoices, balance vendor statements, and write checks.

In addition, the internship provided participants with the opportunity to interact with management, co-workers, and customers to develop social skills for professional settings. Among the responses, participants described learning what it is like to work with technicians, how to deal with difficult customers, and how to take phone calls. All survey respondents described their relationships with their manager positively. Descriptions of co-workers were also positive, describing in particular how co-workers taught them new things and made them feel comfortable in the new setting.

In addition to the student perspective, supervisor feedback surveys were administered. Surveys were administered online via e-mail to intern supervisors. For supervisors who did not respond to prompts to complete the online survey, phone interviews were conducted. All supervisors provided feedback: via e-mail for the supervisors of six participants and via phone for the supervisors of five participants. The feedback was mostly positive. One student received an unfavorable review from a supervisor, but the remaining feedback ranged from satisfactory to one supervisor who described his intern as "the perfect kid to come here." The supervisor survey had 18 Likert-type items across 4 domains: teamwork (n = 4), professionalism (n = 6), openness to feedback (n = 4) and oral communication (n = 4). When responses were analyzed as percent indicating "almost always," feedback on oral communication stood out as the lowest-rated domain by supervisors (42% "almost always" responses, compared to over 60% for each of the other domains). This trend was also true when data were analyzed as

percent of responses receiving the rating of “sometimes” or lower. This supervisor feedback was consistent with participant journal and survey data, which indicated that students had the most to learn with regard to communication. Supervisor feedback was the most positive with regard to the openness to feedback domain. This further supports the finding that students were motivated to learn, an indication of a good selection process.

2. How, and to what extent, did the program expose minorities and women to STEM transportation careers?

The May 18, 2012 symposium included four female presenters during the large group presentations (50% of the morning session). Many of the speakers chose to address their experiences as a woman in an industry that is comprised largely of men. One speaker talked about her experiences in college when she was discouraged by a male professor for her interest in science and how that experience empowered her to continue with school and receive her degree in engineering. Another female speaker talked about how she persisted with her education and career even when faced with the responsibility of a child while she was still in high school.

Participants responded well to the personal stories of hardship. One male student remarked in a reflection journal entry that he learned that “a girl can do what boys can do in life” which suggests that male participants also benefited from the female representation of the speakers. Additional women presented at the all-woman session in the afternoon, summarized in the symposium overview above and referenced by a female student here:

“Also the speakers were great, and as a girl in this industry I really appreciated how all the women came together and talked about being a (woman) in the industry.”

Female Student Symposium Attendee

As noted earlier, all presenters at the symposium were female or from a racial minority group. Ensuring that racial minority students attend the symposium was not an issue, as 89% of students enrolled in automotive mechanics or auto body repair courses in 2011-12 were non-white. One student had this to say about the symposium:

“There were a lot of inspirational guest speakers that spoke of their background and where they came from and I realized that most of them came from the hood and that they are not that different from us.”

Male Student Symposium Attendee

This student reflection suggested that students from low-income families who recognize their economic class as a disadvantage with regard to their future appreciated success stories of others in the same situation.

The CCP course enrolled 12 females (40% of total enrollment). This was a good representation of female students, considering that females comprised only 29% of total students at West

Philadelphia High School enrolled in Automotive Mechanic Technology courses last year. All students enrolled in the course identified as a racial minority. Female enrollment at the summer camp was 11 (38% of total enrollment). While this representation was less than half, it still exceeded the percent of District students enrolled in CTE transportation courses during the 2011-12 school year, which was 10%. Among the program's initiatives, female representation was lowest for the internships, 2 of 12 (17%), which reflects actual female distribution in the transportation courses at the District. All the selected interns identified as a racial minority, seven (58%) were Black/African America and five (42%) were Hispanic/Latino.

Overall, the program made a deliberate effort to attain relatively moderate to high rates of female representation in its program presenters and student participants. Racial minorities comprised 89% of all District students enrolled in automotive technology courses during the 2011-12 school year and were adequately represented at events and as participants. The program's attention to race was apparent in the racial make-up of the symposium speakers and its participation and promotion of the COMTO event.

3. In what ways did the program produce sustainable impacts?

EXPOSURE TO STEM CAREERS

The program provided students with exposure to a variety of careers in the transportation industry. This exposure has the possibility of impacting student motivation to learn or the development of their future plans. The symposiums, CCP course, and summer camp provided participants with the opportunity to meet industry representatives and ask questions. As evidenced by the questions students asked at the symposium, they were interested in practical information that they could use in their plans for the future. Information on how to behave in a job interview, find job postings, and how much various jobs in the industry pay was valued by students. The CCP course also brought in industry representatives working in management, training, and human resource department for the city, local dealerships, and public transportation. Summer camp field trips provided a similar small-group experience for students to meet industry employers and ask questions.

EMPLOYMENT OPPORTUNITIES FOR STUDENTS

While the symposiums, CCP course, and summer camp provided participants with the opportunities to meet industry representatives, the internships provided students the opportunity to build relationships with industry employers that lead to future opportunities for some. The Senior Service Director of a dealership requested to have his intern back again next summer as a work-study opportunity. The same was true for the Facilities Director at Amtrak, who asked that his intern come back next summer for work-study and also recommended that he consider an electrical engineering degree following high school. The Fleet Maintenance Supervisor for the City of Philadelphia also asked if his intern could return. Finally, a mechanic shop offered their intern an after-school job position. These outcomes provided sustainability

to students in the form of future employment opportunities and positive recommendations from the industry, which can be an asset to college applications.

The training that students received also had a sustainable impact for students. For the seven students who received an A or B in the CCP course, the skills learned were an asset to their future plans after graduation. According to a final report provided by CCP administration at the end of the course, students engaged in practical hands-on experience, including disassembling and reassembling two engines, performing a vehicle safety inspection, performing a tire rotation, diagnosing a moon roof problem, and participating in math and science experiments related to heat and electricity. In addition, students wrote a resume and cover letter that they can use to market the skills the learned in the course.

IV. Conclusions

The GAMTTEP program was implemented throughout the 2011-12 school year. The program provided a variety of educational opportunities to automotive CTE students. For example, a District student enrolled in the automotive CTE program had the opportunity to attend three symposiums with industry and education contacts, take a college-level course in Automotive Technology for college credit (West Philadelphia High School only) and apply for a paid eight-week internship for one of a variety of industry partners. In addition, the program took steps to include female students, most notably at the May 18, 2012 symposium.

If implemented in the future, the program might consider how students are enrolled in the CCP course so that students who are serious about the opportunity have access to enroll. Perhaps providing one section at two different schools would have allowed for selective enrollment of students. Also, the program might consider the feasibility of opening the symposium up to District students who have an interest in transportation STEM careers but are not enrolled in the CTE program.

Overall, the GAMTTEP program implemented many activities of high quality with little staff resources. Its success may be attributed to the careful planning and documentation of a part-time but fully committed program manager.

APPENDIX A: CCP COURSE SYLLABUS

**Automotive Technology 100
Introduction to Automotive Technology
WPHS - Proposed
Spring 2012**

Course Times:

MTWRF Period 3 and 4 or period 7 and 8 – March 19 to May 31

Instructor:

Mark N Valesey
Automotive Technology
609 521 6447 - text
mvalesey@ccp.edu

Office Hours:

Office hours will be by appointment and will be held shortly before and after class.

Course Description:

This course is designed to provide students with a broad base fundamental knowledge necessary for successful progression in both the Automotive Technology Program and in industry. Topical coverage includes automotive systems overview, shop safety, automotive tools, measuring, fasteners, service information, vehicle maintenance, career planning, and ethical shop behavior and practice. Upon completion, students should have a clear understanding of the Automotive Technology Program, the automotive service industry, basic shop skills, career opportunities, and the steps necessary to be successful in the field.

Upon successful completion of this course students will be able to:

1. Explain the evolution of automobile service
2. Identify careers in the automotive service industry
3. Perform the steps necessary to apply for a job in the automotive service industry
4. Discuss how to start a new job
5. Explain the requirements for becoming an ASE certified technician
6. Identify and exhibit safe work practices in the automotive shop
7. Explain OSHA and MSDS
8. Identify automotive fasteners and perform thread repair
9. Use automotive hand tools properly and safely
10. Use automotive power tools and shop equipment properly and safely
11. Properly and safely raise a vehicle using vehicle lifting and hoisting equipment
12. Properly use standard automotive measuring equipment
13. Explain and use scientific principles and materials related to the automotive industry
14. Utilize math, charts and calculations related to the automotive industry
15. Utilize automotive service information
16. Identify vehicle and emissions ratings of vehicles
17. Perform preventive maintenance and service procedures on modern automobiles
18. Explain operational theory and basic maintenance of gasoline engines
19. Define basic electricity
20. Identify braking system components and performance standards
21. Identify wheel and tire components, specifications and repair

APPENDIX A: CCP COURSE SYLLABUS

Course Agenda	
Day	Content
1	New Student Orientation and Review syllabus
2	Chapter 1 Automotive Background & Overview Complete Worksheet 2 Assign Homework for Chapter 1
3	Chapter 2 Careers in the Automotive Service Industry Complete Worksheet 4 Assign Homework for Chapter 2
4	Chapter 3 Starting a Career in the Automotive Industry Complete Worksheet 3 Assign Homework for Chapter 3
5	Chapter 4 Working as a Professional Service Technician Complete Worksheet 6 Assign Homework for Chapter 4
6	Chapter 5 Technician Certification 5 Complete Worksheet 7 Assign Homework for Chapter 5
7	Chapter 11 Vehicle Lifting and Hoisting Complete Worksheet for Chapter 11 Introduction to Multipoint Vehicle Inspections Assign Homework for Chapter 11
8	Chapter 6 Shop Safety Complete Worksheet 8 & 9 Multipoint Vehicle Inspections Assign Homework for Chapter 6
9	Perform a Multipoint Vehicle Inspection
10	Chapter 7 Environmental and Health Concerns Complete Worksheet 10 Assign Homework for Chapter 7
11	Chapter 8 Fastener and Thread Repair Complete Worksheet 11 Assign Homework for Chapter 8
12	Review Homework 1 – 7
13	Test 1 – Chapters 1 – 7
14	Review Test 1
15	Chapter 15 Service Information Complete Worksheets 24 to 28 Assign Homework for Chapter 15
16	Chapter 16 Vehicle Information and Emission Ratings Complete Worksheet 29 Assign Homework for Chapter 16
17	Chapter 9 Hand Tools Complete Worksheet 12 Assign Homework for Chapter 9
18	Chapter 10 Power Tools and Shop Equipment Complete Worksheet 13 & 14 Assign Homework for Chapter 10
19	Chapter 12 Measuring Systems and Tools

APPENDIX A: CCP COURSE SYLLABUS

20	Chapter 12 Measuring Systems and Tools Complete Worksheet 16 to 21 Assign Homework for Chapter 12
21	Chapter 13 Scientific Principles and Materials Complete Worksheet for Chapter 13 Assign Homework for Chapter 13
22	Chapter 14 Math, Charts and Calculations Complete Worksheet for Chapter 14 Assign Homework for Chapter 14
23	Review Homework Chapters 8 to 16
24	Test 2 – Chapters 8 to 18
25	Review Test 2
26	Predelivery Inspection
27	Perform a Predelivery Inspection
28	Chapter 17 Preventative Maintenance Gasoline Engine Operation, Parts and Specifications Assign Homework
29	Chapter 17 Preventative Maintenance Gasoline Engine Operation, Parts and Specifications Complete Worksheets 30 to 38
30	Electrical Fundamentals Assign Homework
31	Electrical Fundamentals Complete Worksheets 146 to 154
32	Electrical Fundamentals Complete Worksheets 146 to 154
33	Brake System Components and Performance Standards
34	Brake System Components and Performance Standards
35	Brake System Components and Performance Standards
36	Tires and Wheels
37	Tires and Wheels
38	Tires and Wheels
39	Review Homework for Chapter 17 to the end
40	Review for Written Final – Chapter 17 to the end
41	Written Final Exam
42	Review for Hands-on Final
43	Hands-on Final Exam

APPENDIX A: CCP COURSE SYLLABUS

Student Evaluation

In terms of learning outcomes, student evaluation will be based on the following:

- Unit Exams (25%)
 - Test 1 and 2 = 5% each
 - Final exam in-class with hands-on component = 15%
 - The final exam is on the last day of class and cannot be made up
- Homework (25%)
- Lab evaluation (Task Completion) (50%)
 - Lab assignments and evaluations will be conducted by instructor to make sure you can do the assigned tasks.

Grade	Numerical Average	"Real Life"
A	90-100	Outstanding, You're going places!
B	80-89	A very good worker
C	70-79	You do what needs to get done
D	60-69	Passed up for raises and promotions
F	59 and below	You're FIRED!!

Laboratory Assignments:

Students will be required to complete at least one lab assignment per section of study. Some sections of study will have multiple lab assignments

Exams:

The exams will evaluate what the students have completed in the classroom and the lab. They will consist of short answer questions based on ASE related test material and sample questions. Light essay questions and hands-on skills may also apply. All tests are open book. The final exam will be written and hands-on.

Attendance and Preparation:

Students will be encouraged to treat the education process like gainful employment with compensation being a comparable grade. Attendance is mandatory. Only an excused absence can be made up at a later time. If it is deemed that the student is abusing the use of excused absences, this privilege will be revoked. If you are unable to attend class or will be late, please call me. *The Community College of Philadelphia states that missing four (4) classes is worth two weeks of missed work. The student may be dropped from the course at that time.*

Note: For this course, missing eight days of class will constitute a course failure.

Absent	= - 5 points	Safety Violation = -3
Absent at end of class	= - 2 points	
Late	= - 1 point	other (defined by both instructor and student) = -1 to -5
Not Prepared	= - 1 point	
Failure to assist in cleanup	= -3 points	

Spring Break for this class is the first week of April.

Lockers and changing areas are available to students in the restrooms of the Autotech center. It is strongly advised that students bring a change of "work clothes" for lab periods and wear appropriate "shop durable," closed toe footwear.

Cell Phones

Must be turned off while in class is in session.

20 points will be deducted from your grade if your phone is found operational during class.

APPENDIX A: CCP COURSE SYLLABUS

Plagiarism

Students **must** do their own work; plagiarism **will not** be tolerated.

Students who are caught your assignment, test, homework will be counted as a zero for the first offense, if you are caught a second time your total test grade will lose 50 points, if there is a third time you will be removed from class.

Disability

Students registered with the Center on Disability **must** inform the instructor by the end of the first week if special accommodations are required.

Failure to follow these rules can lead to personal injury, loss of property or life.

APPENDIX A: CCP COURSE SYLLABUS

General Shop Safety Rules

EYES

Appropriate eye protection must be worn at all times in the shop and lab area. One Pair of safety glasses is given to the student at the beginning of the program. It is the responsibility of the student to have these glasses for class. If student does not have their glasses, they can not take part in the lab, and no credit will be given for the lab.

Eye protection must be worn in this building where an eye danger is present. When welding or cutting with a torch, use welding goggles or facemask to protect against flash.

FEET

Appropriate footwear must be worn in the shop and lab areas. Appropriate footwear must have an oil resistant sole. Leather boots or shoes with steel toes are preferred. Open toe footwear (sandals), sneakers, or heels are not permitted in the shop or lab areas.

CLOTHING

Appropriate clothing must be worn in the shop and lab areas at all times. Long pants must be worn. Any loose clothing must be tied back or secured (long shirts, ties, or jackets).

HANDS

Chemical resistant gloves must be worn when handling acid, solvent, or any chemical that poses an exposure health threat. Please see the MSDS chart for more information. Leather gloves should be used when welding or handling hot items.

HAIR

Long hair must be tied back and tucked into a shirt collar.

EARS

Use hearing protection while using air tools or near loud equipment.

FIRE/FIRST AID

Know the location of fire extinguishers and first aid stations.
SMOKING is **NOT** permitted in the building.
Be aware of open flames, sparks, or other ignition sources.

EXHAUST

If a car is running, make sure the exhaust vent system is hooked up and operational.

DRIVING

You must have a valid driver's license and the supervision of either an instructor or the instructional aide to move a vehicle in the shop. This includes test drives and moving vehicles on and off of lifts. Vehicles **MUST** be driven in a safe, courteous manner.

TOOLS

Do **NOT** leave hand tools on floor or near machinery.

ALWAYS use the right tool for the job.

Hoarse play of any type will result in dismissal and/or course failure. The shop and lab areas are dangerous environments; treat them as such.

APPENDIX A: CCP COURSE SYLLABUS

AT 100 – Student Evaluation – Spring 2012

Task	Points	Points Earned	Instructor Notes
Test 1	5		
Test 2	5		
Final	15		
Homework 1	1		
Homework 2	1		
Homework 3	1		
Homework 4	1		
Homework 5	1		
Homework 6	2		
Homework 7	2		
Homework 8	1		
Homework 9	2		
Homework 10	2		
Homework 11	2		
Homework 12	2		
Homework 13	1		
Homework 14	1		
Homework 15	2		
Homework 16	1		
Homework 17	2		
Lab – 1, 3, 4, 6 + 7	2		
Lab – 15	2		
Lab – 8, 9 and safety test*	5		
Lab – 30 – Multipoint Insp.	2		
Lab – 10	2		
Lab – 11	2		
Lab – 24 to 29	2		
Lab – 12	2		
Lab – 13 + 14	4		
Lab – 16 to 21	5		
Lab – 22	1		
Lab – 23	1		
Lab – 30 – Predelivery Insp.	2		
Engine Labs – 30 to 38	4		
Electrical Labs – 146 to 153 and 170	4		
Brakes Labs – 284, 285, 287, 296, 303, 304, 307, 308, 309, 310 and 313	5		

APPENDIX A: CCP COURSE SYLLABUS

Tires and Wheels Labs – 331, 332, 333, 335, 337, 338, 339, 342, 343, 351, 354, 355 and 357	5		
Total Points	100		
Less Absence	x 5		
Less Late	x 1		
Less absent at end of class	x 2		
Less Safety Violations	x 3		
Failure to cleanup	x 3		
Total Deductions			
Total for Grade			

APPENDIX A: CCP COURSE SYLLABUS

Required Labs Signoff Sheet – AT 100 – West Philadelphia High School – Spring 2012

Day	Worksheet Number	Worksheet Name	Instructor Initials
1	NA	Course Introduction	
2	2	Vehicle Service Facility Visit "Virtual"	
3	4	Cover Letter	
4	3	Resume	
5	6	Working as a Professional Service Technician	
6	7	ASE Technician Certification	
7	15	Vehicle Hoisting	
8	8	Shop Safety Checklist	
	9	Fire Extinguisher	
9	30	Multipoint Vehicle Inspection	
10	10	Material Safety Data Sheets (MSDS)	
11	11	Fasteners and Thread Repair	
12	NA	Review Homework 1 – 7	
13	NA	Test 1 – Chapters 1 – 7	
14	NA	Not Applicable – Review Test 1	
15	24	VIN Code	
	25	Vehicle Service History	
	26	Technical Service Bulletin	
	27	Service Manual Usage	
	28	Vehicle Safety Certification Label	
16	29	Vehicle Emission Control Information	
17	12	Hand Tool Identification	
18	13	Power Tools and Shop Equipment Safety	
	14	Survey	
		Oxy-Acetylene Torch Usage	
19	16	Micrometer	
&	17	Vernier Caliper	
20	18	Feeler Gauge	
	19	Straight Edge	
	20	Dial Indicator	
	21	Telescopic Gauge	
21	22	Scientific Principles and Materials	
22	23	Math, Charts and Calculations	
23	NA	Review Chapter 8 to 16 Homework	
24	NA	Test 2 – Chapters 8 to 16	
25	NA	Review Test 2	
26	30	Predelivery Inspection	
27	30	Perform a Predelivery Inspection	
28	NA	Lecture – Gasoline Engine Service	

APPENDIX A: CCP COURSE SYLLABUS

29	30 31 32 33 34 35 36 37 38	Safety Check Windshield Wiper Blade Service Engine Oil Dipstick Test Engine Oil Change Cooling System Inspection Accessory Drive Belt Inspection Tire Rotation Lubrication Service Fluids Check	
30	NA	Lecture – Electrical Fundamentals	
31 & 32	146 147 148 149 150 151 152 153 170	Battery Specifications Key Off Battery Drain Battery and Capacity Tests Electronic Memory Saver Usage Service and Replace Battery Battery Charging Jump Starting Reinitialization Lighting System Diagnosis	
33	NA	Lecture – Brake Systems	
34 & 35	284 285 287 296 303 304 307 308 309 310 313	Identify and Interpret Brake Concerns Brake System Component Operation Brake Performance Identification Brake Fluid Drum Brake Identification Drum Brake Problem Diagnosis Disc Brake Identification Disc Brake Diagnosis and Service Install Wheel and Torque Lug Nuts Brake Pad Wear Indicator System Parking Brake Operation	
36	NA	Lecture – Tires and Wheels	

APPENDIX A: CCP COURSE SYLLABUS

37 & 38	331	Tire Identification	
	332	Tire Pressure Monitoring System	
	333	Tire Inspection and Air Loss	
	335	Tire Rotation	
	337	Install Wheel on Vehicle	
	338	Tire Replacement	
	339	Tire Repair	
	342	Diagnose Suspension Concerns	
	343	Suspension Inspection/Component Replacement	
	351	Airbag System and Steering Wheel Service	
	354	Suspension and Steering Lubrication	
	355	Steering Problem Diagnosis	
	357	Inspect and Replace Steering Components	
39	NA	Review Chapter 17 to end	
40	NA	Review for Written Final	
41	NA	Written Final	
42	NA	Review for Hands-on Final	
43	NA	Hands-on Final	

APPENDIX A: CCP COURSE SYLLABUS

Auto Electrical and Electronic Systems – AT 100

I _____, have read and understand the course outline for AT 100 for the spring of 2012.

The course outline, requirements for attendance, assignments, grading and classroom & safety rules covered.

I agree to all the requirements of the class.

In the event I cannot make it to class, I agree to contact Mr. Valesey using one of the following means.

mvalesey@ccp.edu

Text - 609 521 6447

Signature

Date

Telephone Number

E-mail Address

In the event I cannot make it to class, I agree to contact Mr. Valesey using one of the following means.

mvalesey@ccp.edu

Text - 609 521 6447

Safety Glasses Agreement

I received a pair of safety glasses. I understand that it is my responsibility to have them for class every day, and that they must be worn if I am working in the shop. If I should lose my safety glasses I am responsible for replacing them and I will not be allowed to work in the shop without them. They are available for purchase at the college bookstore.

Student Name (printed)

Student Signature

Date

Garret A. Morgan Transportation Education Program: Summer Camp Survey

Grade you will be in next year: _____

1) What job would you like to have when you get older?

Why do you want this job?

2) Where would you like to go to high school?

3) Name two things you learned this week at camp:

1. _____

2. _____

4) What two things did you like best about this week at camp?

5) Which did you like least?

6) If you could work for one of the transportation companies you have seen so far this week, which job would you want?

Why do you want this job?

7) Would you recommend this summer camp to your friends? YES
NO If NO, *why not?*

8) I am : FEMALE MALE

**Garrett Morgan Technology and Transportation Education Program
Transportation Intern Survey**

This survey asks some questions about what careers you may be interested in. The questions are part of a study to learn how students decide what type of careers they are interested in. By answering the questions, you are agreeing to participate in this study. Completing this survey is voluntary and you may stop at any time. If you don't feel comfortable answering a question, just leave it blank. Your answers won't affect your school grades. All your answers will be kept private. The questions about your background will only be used to describe the students completing this survey.

NAME: _____

1. What job was your ideal job before your internship experience? _____

2. What is your ideal job now? _____

3. Why have you chosen to pursue a career in transportation?

4. What would you say is important in your choice of a specific job position?

5. What did you find most exciting about your internship?

6. How would you describe your relationship with your manager/supervisor?

7. How would you describe your relationship with your co-workers?

8. List two new things you learned during your internship?

1. _____

2. _____

9. What two activities did you enjoy the most? Why? Please be specific.

1. _____

2. _____

10. What work activities did you enjoy the least? Why? Please be specific.

11. Was there anything you wished you had learned more about or done more of during your internship?

12. Overall how would you describe your internship experience? Would you recommend this program to your friends?

13. Would you consider working for this company in the future?

14. Would you consider doing this job in the future?

THANK YOU

Garrett Morgan Supervisor Assessment for Summer Internship

1. Info

Student Name:

Company:

Supervisor Name:

2. Teamwork/Collaboration: The student...

	Never	Rarely	Sometimes	Often	Almost Always
1. Is an active listener	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. respects others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. understands multiple viewpoints	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. as a member of a team, makes positive contributions to group projects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. Professionalism/Work Ethic: The student...

	Never	Rarely	Sometimes	Often	Almost Always
5. maintains good attendance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. is punctual	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. adheres to workplace rules	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. demonstrates a good attitude	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. completes tasks in a timely manner	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. works hard	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Garrett Morgan Supervisor Assessment for Summer Internship					
4. Openness to feedback/Supervision: The student...					
	Never	Rarely	Sometimes	Often	Almost always
11. accepts constructive feedback without getting defensive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. can incorporate feedback to improve job performance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. can incorporate feedback to alter behavior	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. accepts feedback without reacting in a negative manner	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Oral Communication: The student...					
	Never	Rarely	Sometimes	Often	Almost Always
15. articulates thoughts and ideas effectively in a variety of settings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. uses workplace vocabulary successfully	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. makes positive contributions to conversations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. makes herself or himself understood by a variety of audiences	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*6. Comments and goals: please describe your overall experience and impression of the intern					
<div style="border: 1px solid black; height: 100px; width: 100%;"></div>					

APPENDIX E: 2012 SUMMER CAMP PARTICIPANT SURVEY DATA

Total participants: 29 (week 1 n=12, week 2 n=17, one student participated both weeks)

Total respondents: 24

Would you recommend this camp to a friend?

	n	% of total
Yes	23	96%
No	1	4%

What job would you like to have when you get older?

	n	% of total
STEM career	4	17%
Other	18	75%

Where would you like to go to high school?

	n	% of total
CTE Transportation school	0	0%
Art-related school	3	13%
Science-related school	3	13%

Name two things you learned this week at camp.

	n	% of total
Identified STEM-related technical information	17	71%
Identified an industry fact	15	63%
How to build a hydrogen-powered car	8	33%

APPENDIX E: 2012 SUMMER CAMP PARTICIPANT SURVEY DATA

What two things did you like best about camp?²

		n	% of total
Week 1	Car museum	2	18%
	Airport	6	55%
	SEPTA	2	18%
	Building the car	4	36%
Week 2	Car museum	5	38%
	Port authority	2	15%
	SEPTA	5	38%
	Airport	1	8%
	Car dealership	2	15%
	Building the car	2	15%
	The trips, general	2	15%

What did you like least?

		n	% of total
Week 1	Car museum	3	27%
	Port Authority	4	36%
	SEPTA	2	18%
	Nothing	1	9%
	Lunch	1	9%
Week 2	Car museum	3	23%
	Port authority	2	15%
	SEPTA	2	15%
	Lunch	2	15%
	Nothing	2	15%

If you could work for one of the transportation companies you have seen so far this week, which job would you want?

		n	% of total
Week 1	SEPTA	2	18%
	Airport	8	73%
Week 2	SEPTA	6	46%
	Airport	1	8%
	Car dealer	1	8%
	None	1	8%
	I don't know	1	8%

² Surveys were administered on Thursday. At the time of administration, Week 1 participants had not yet visited the car museum and Week 2 participants had not yet attended the airport trip.