oppaga
OFFICE OF PROGRAM POLICY ANALYSIS & GOVERNMENT ACCOUNTABILITY

October 2007 **Report No. 07-40**

Career Academy Students Perform Better Than Other Students During High School; Later Outcomes Vary

at a glance

Due to reporting limitations, performance data is available for only half of Florida's high school career academies. However, the performance of those Florida students that can be measured is consistent with national research. As in other states, Florida's career academy students outperform similar students while in high school, but exhibit few differences after graduation. During high school, Florida career academy students are less likely to be chronically absent, more likely to score at grade level on math and reading FCAT tests, and more likely to graduate than similar students who did not attend career academies.

The overall post-graduation outcomes of career academy students resemble those of similar traditional high school students. However, these outcomes vary among different types of career academies. Students who study at career academies focused on law and health are more likely than other students to attend college. Among high school graduates who do not attend college, career academy students who chose career areas culminating in industry certification earn higher wages than other students.

Scope

As directed by the Florida Legislature, this report provides information about the educational, income, and career outcomes of Florida's high school career academy students. This report is a companion to OPPAGA's July 2006 report that examined career academies operating in Florida's public schools, the extent to which they implement nationally recognized core elements, and the number of academies that lead to industry certifications. [1]

Background

Career academies seek to simultaneously prepare students for college and the workforce by linking academic skills to career training. The academies are intended to

- increase students' academic performance;
- decrease the risk that students will be absent from or drop out of high school due to lack of interest;
- prepare students for college; and
- enable students who do not go to college to obtain high-wage employment.

Career academies select their career themes in order to (1) meet labor market needs, (2) provide students with certification that lead to higher paying jobs, and (3) meet the interests of students. In Florida, high school career academies address career areas such as business, engineering, finance, health science, hospitality, information technology, and law. In 2005-06, Florida's school districts reported operating 544 career academies. [2]

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[1] *More Than Half of the State's School Districts Have Career Academies, Most Operating in 2004-05 Incorporated Nationally Recognized Core Elements,* Report No. 06-55, July 2006.

[2] OPPAGA survey of the 67 Florida school districts.

Program funding. School districts receive state funds for career academies through the Florida Education Finance Program, which allocates funds for all full-time equivalent (FTE) students enrolled in public schools. In addition to these funds, the 2007 Legislature approved weighted funding for career academies that award industry certifications. The Legislature also funded the SUCCEED Florida grants program over the last three years to establish career academies that integrate academic and career curricula through a career-based theme. The Legislature appropriated $6 million in 2005, $3.9 million in 2006 and $5.5 million in 2007 to provide SUCCEED Florida grants to school districts. [3]

Methodology

To examine the performance of career academy students, OPPAGA analyzed two cohorts of public school students.

- To evaluate high school performance, we studied 20,900 career academy students and a comparison group of 238,462 traditional students enrolled in 9th to 12th grades during the 2004-05 school year. [4]
- To examine post-graduation outcomes, we studied two groups of students from the graduating class of 2002-03: 1,594 career academy students and a comparison group of 67,164 traditional students. These students had been out of high school for two years when we examined their 2005 incomes, career fields, and post-secondary participation.

Appendix A provides a full description of the methodology and data limitations.

Findings

While there is limited information available on the outcomes of Florida's high school career academies, the data that are available show that Florida's outcomes are consistent with findings from other states. [5] Career academies appear to be achieving several of their goals. During high school, career academy students tend to have lower absenteeism, better performance on the FCAT, and higher graduation rates. Generally, post-high school outcomes are similar for career academy and traditional students, although there are some significant exceptions. Students who attended a career academy with a theme that requires additional education (such as law) are more likely to attend college than other career academy and traditional students. Among all high school graduates that do not go to college, students who attended career academies that offer industry certifications are more likely to earn above the median income.

Career academy students perform slightly better than traditional students while in high school

Career academies are achieving one of their core goals, which is to improve the academic performance of students during high school. As shown in Exhibit 1, when compared to similar traditional students, a higher percentage of career academy students graduated from high school and scored at or above grade level on the reading and math FCAT tests. In addition, fewer career academy students were chronically absent. Although these differences are not large, they are statistically significant.

Exhibit 1
Career Academy Students Perform Well During High School

High School Performance Category	Career Academy	Traditional High School
Graduate High School	93%	89%
FCAT Math (Percentage at Grade Level)	86%	83%
FCAT Reading (Percentage at Grade Level)	40%	35%
Chronic Absences (21 or more days)	7%	9%

Note: The percentages were calculated by OPPAGA using Florida Department of Education data and controlling for students' 8th grade absences and FCAT scores as well as their high school mobility and demographic factors such as exceptionalities and English Language Learner status.

[3] School districts also receive funds for career academies from other sources. According to school district reports, in the 2005-06 school year, 36% of the state's career academies received funds from federal grants, 23% received funds from businesses, and 16% received funds from private grants.

[4] OPPAGA selected the 2004-05 school year because we conducted a career academy survey during that school year. The survey results were used to validate the department's 2004-05 career academy student data.

[5] The data Florida school districts report to the Department of Education often does not correctly identify whether or not a student attended a career academy. As a result, we could not analyze information about students in 186 of the 379 Florida career academies that operated during the 2004-05 school year. In addition, information on each academy's career theme or industry certification was limited to schools with only one career academy.

As might be expected, career academies focusing on science, technology, engineering and math were the most likely to have students performing at or above grade level in math. Ninety-five percent of the students in these academies scored at or above grade level on the FCAT math test. These career academies also had the strongest reading performance, as 78% of their students scored at or above grade level in reading. In addition, 96% of these students graduated with a standard diploma, which was second only to academies of law, which graduated 100% of their students. We found no strong relationship between the career theme of an academy and attendance.

Overall, the college participation of traditional and career academy students is similar, but there is some variation by career theme

Career academy and comparable traditional students attend postsecondary institutions at the same rate. Among students who were scheduled to graduate in 2003, one-third (33%) of both career academy and traditional students completed at least one college class within two years of their scheduled high school graduation. Similarly, both 24% of the career academy students and 24% of traditional students completed at least one semester at a Florida community college or state university within two years of their scheduled high school graduation date. [6]

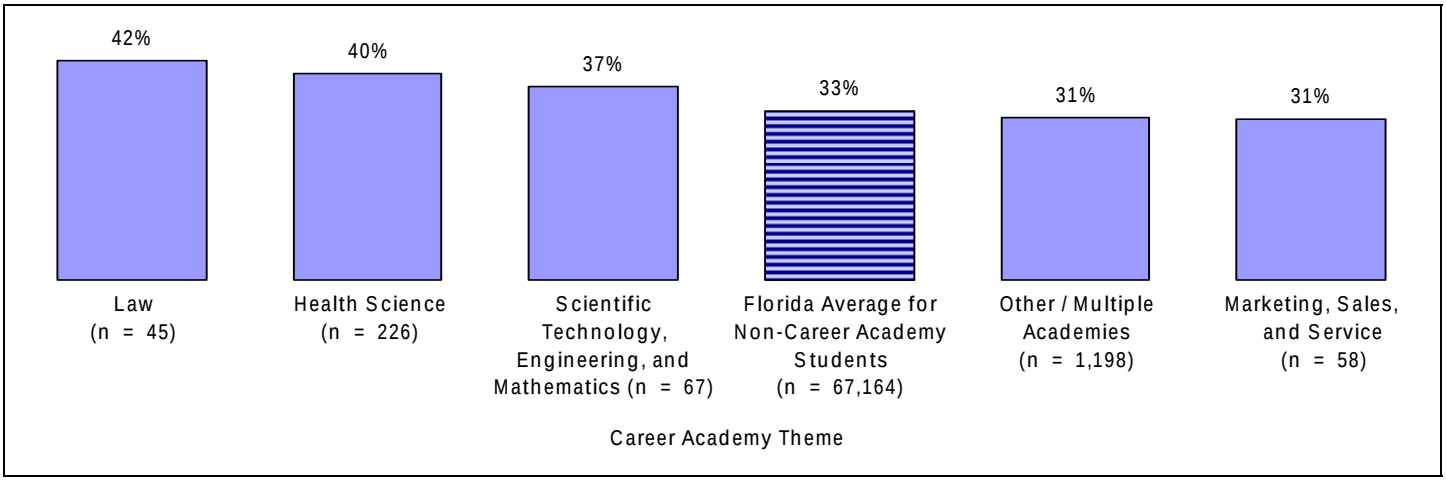
However, students who attended a career academy with a career theme that required additional education (such as law) were more likely to attend college than either other career academy or traditional students. For example, 42% of students who attended academies with a legal career theme attended college, as shown in Exhibit 2. Because OPPAGA could only identify the career theme of academies at schools with one career academy, students who attended schools with multiple career academies are listed in the exhibit as "multiple."

Among students who did not go to college, overall income is similar, but students who attended career academies that lead to industry certification earn higher incomes

Among the students of the 2003 graduating class, most who did not attend college had not yet entered fulltime employment by 2005. These students' median income for 2005 was $5,397, which was below the minimum wage of a full-time employee, $11,800. OPPAGA found no overall difference in the percentage of former career academy and traditional high school students who earned incomes above the median.

[6] The Department of Education tracks and provided OPPAGA data on Florida high school students who, after high school, attended public postsecondary institutions in Florida. Similar data was not available through the department for students who attended private or out-of–state postsecondary institutions. The college participation rates reported here were measured two years after the students' scheduled high school graduation date. Students who start college more than two years after high school graduation will cause this percentage to increase.

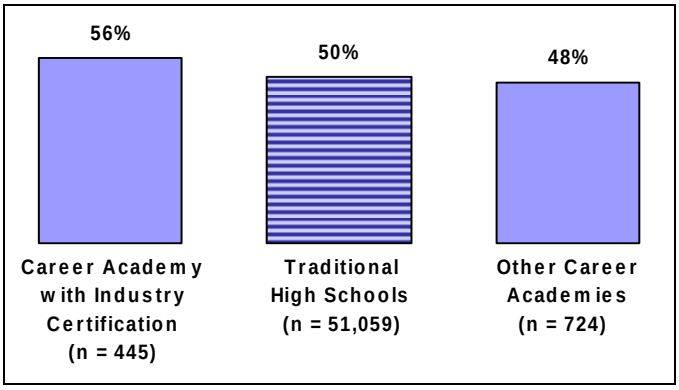
Exhibit 2
College Participation Differs by Career Theme



Source: OPPAGA analysis of Florida Department of Education data. College participation is based upon completion of at least one college class following high school graduation.

However, a higher percentage of students who attended career academies leading to industry certification earned above the median income. As shown in Exhibit 3, the percentage of non-college attending former career academy students who earned above the median income was 6 percentage points higher than traditional students and 8 percentage points higher than other career academy students.

Exhibit 3
More Students from Career Academies Leading to Industry Certification Earn Above the Median Income



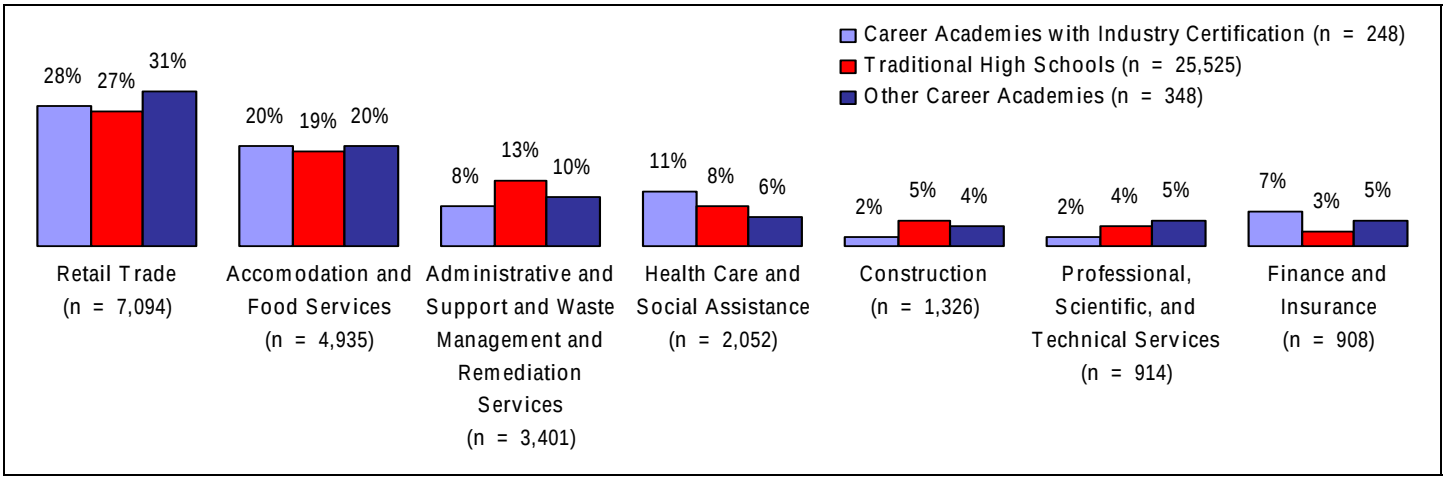
Source: OPPAGA analysis of Florida Department of Education data.

Students who attended career academies that lead to industry certification are more likely to work in the health care and social assistance or the finance and insurance sectors

As shown in Exhibit 4, the largest numbers of students in the 2003 graduating class subsequently were employed in the retail trade and accommodation and food service industries during 2005. However, a higher percentage of students who attended career academies with industry certifications subsequently worked in the health care and social assistance or finance and insurance sectors than did other students. We were unable to determine whether most former career academy students worked in industries related to their academies' career themes because many of these students attended high schools with multiple academies. [7]

[7] We could tell that the 11% of former career academy students who later worked in the health care and social assistance field represented 27 of the 248 students who attended a career academy leading to industry certification. Twelve of these students attended a health science academy and 15 attended a high school with multiple career academies. A similar problem occurred with the former students of career academies that lead to industry certification who later worked in the finance and insurance industry. Most of these students (14 of 17) attended a high school with multiple career academies.

Exhibit 4
Students Who Attended Career Academies That Lead to Industry Certification Are More Likely to Work in Health Care and Social Assistance or Finance and Insurance



Source: OPPAGA analysis of Florida Department of Education data. Of the 26,121 students from the class scheduled to graduate in 2003 who earned above the median in 2005, this chart depicts those who worked in an industry field that employed at least 900 people from the cohort.

Florida's outcomes are similar to those in other states

Published studies of career academies in other states have reported results similar to those we found for Florida's career academy students. These studies have reported that career academy students have lower dropout rates and higher academic performance than traditional students. Similarly, we found that Florida career academy students score higher on the FCAT and are less likely to drop out and more likely to graduate than other high school students.

With regard to post-high school outcomes, national studies have found that while career academy students are more likely to work in a field related to their academy's career theme, these students generally do not have higher incomes than other high school graduates. This is similar to our finding of no large college attendance or income differences between Florida's career academy graduates and traditional high school graduates. However, as noted above, our analysis found higher incomes among graduates from career academies that lead to industry certification.

The Department of Education needs to address deficiencies in career academy student data

A difficulty in assessing Florida's career academies is that the student data reported to the Department of Education is incomplete. The department needs to resolve these data problems so that the Legislature can more accurately identify career academy outcomes. This is particularly important given the investment the Legislature has made in career academies through SUCCEED Florida grants and the weighted funding approved for career academies that lead to certification. Two types of data problems hinder analysis of career academy outcomes.

Career academy students are often mislabeled. The data school districts report to the department often does not correctly identify whether or not students attend a career academy. As a result, we could not analyze information on students who attended 186 of the 379 Florida career academies that operated during the 2004-05 school year. Matching school districts' survey responses against Department of Education career academy data determined that there were 25,629 unidentified career academy students in these 186 career academies. In addition, 3,979 students were incorrectly identified in the data as career academy students. These problems are likely to persist unless the department takes additional steps to validate the career academy data reported by school districts.

A factor that may contribute to this data problem is the lack of a clear and complete state definition of career academies. The definition that the Department of Education provides to school districts does not clearly distinguish between career academies and other types of career and technical programs. For example, one school that does not operate career academies, but that does offer vocational, agricultural, and business technology courses, reported 93% of its students as career academy students.

The department's definition also does not address two key elements that national literature holds are central to the definition of career academies: business and higher education partnerships, and small learning communities. The absence of these elements in the department's definition may cause schools with career academies that meet these elements to not report the career academy status of their career academy students.

Data does not identify industry certification. A second data problem is that student data collected by the department does not allow school districts to specify if a career academy leads to industry certification or if the certification is one that the Agency for Workforce Innovation has identified as a "high level" certification. OPPAGA identified certification information for this report by surveying school districts, as the department does not routinely collect this information. The department should begin collecting this information in order to allow future analysis of the career outcomes of students who attended career academies that lead to industry certification. The department has addressed a third problem we noted while doing our study, the lack of statewide information about academies' career themes, by introducing a new data element for the 2006-07 school year. [8]

[8] However, it will be several years before this variable can be used to match students' post-high school outcomes to their academies' career themes because most of the students that are now tracked with this variable are still in high school and will not become high school graduates working in careers for several more years.

Recommendations

To ensure that the Legislature receives needed information about the outcomes of career academies, the Department of Education should take the actions described below.

- The department should verify data reported by school districts about career academies and notify districts of missing student data. This verification should include comparing career academy data from year to year to identify new career academies as well as those no longer operating. In addition, the department should compare school district career academy information to the list of career academies that is maintained by the department's Division of Workforce Education.
- The department should expand its definition of career academies to include business and higher education partnerships as well as small learning communities.
- The department should collect data that identifies whether a career academy leads to industry certification and whether the certification is identified by the Agency for Workforce Innovation as a high level certification.

Agency Response

In accordance with the provisions of s. 11.51(5), *Florida Statutes,* a draft of our report was submitted to the Commissioner of Education to review and respond. The Commissioner's written response is reprinted herein in Appendix B.

OPPAGA supports the Florida Legislature by providing evaluative research and objective analyses to promote government accountability and the efficient and effective use of public resources. This project was conducted in accordance with applicable evaluation standards. Copies of this report in print or alternate accessible format may be obtained by telephone (850/488-0021 or 800/531-2477), by FAX (850/487-3804), in person, or by mail (OPPAGA Report Production, Claude Pepper Building, Room 312, 111 W. Madison St., Tallahassee, FL 32399-1475). Cover photo by Mark Foley.

Florida Monitor: www.oppaga.state.fl.us

Project supervised by Jane Fletcher (850/487-9255)
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Gary R. VanLandingham, Ph.D., OPPAGA Director

Appendix A

Methodology

To examine career academy students' high school performance and post-high school outcomes, OPPAGA examined two groups (cohorts) of students. Both groups included career academy and traditional students. Group 1 included all 9th-12th graders who attended public schools in 2004-05. The Department of Education provided OPPAGA with five years of student data (2000-01 through 2004-05) for the students in Group 1. This allowed OPPAGA to compare career academy students to others while controlling for those students' FCAT performance and absenteeism prior to entering high school. OPPAGA used this group to compare the FCAT scores and the attendance rates that are displayed in Exhibit 1. Group 1 also was used to evaluate the accuracy of the career academy flag in the student data that school districts report to the department.

Group 2 included students who were scheduled to graduate from public high schools in spring of 2003; this group was comprised of students who were in 9th grade during the 1999-00 school year. Group 2 was used to measure graduation rates (Exhibit 1), college participation (Exhibit 2), income (Exhibit 3), and industry fields (Exhibit 4). The Department of Education provided OPPAGA six years of student data (1999-00 through 2004-05) for Group 2.

Data sources and validation

All student data in this report was provided by the Florida Department of Education's Data Warehouse. In addition to demographic, attendance, FCAT scores, and diploma information, each student record included the student's high school ID number and a flag indicating whether the student's school district reported the student as a career academy student. The Department of Education informed OPPAGA that although school districts had been reporting career academy data since 1998, the information was not used by the department and had not been checked or validated. This was a potential problem because the department's data definition did not clearly distinguish between career academies and other career education programs or magnet programs. Therefore, it was possible that students who had not attended career academies had been erroneously flagged as career academy students.

To check the accuracy of the department's data, OPPAGA compared the school ID numbers of the career academy students in the Department of Education's data to the school ID numbers of the career academies reported to OPPAGA during our school district career academy survey. The survey information included the number of career academy students in each school, the year each career academy began operating, the themes of the schools' career academies, and whether the career academies were designed to lead to industry certification for their students. This allowed us to compare the number of career academy students at each school as collected by the department to the number of career academy students at each school as collected by OPPAGA.

OPPAGA evaluated only those career academy students who (1) had a career academy flag in the department's data, (2) attended a school that was identified in OPPAGA's career academy survey as having career academies, and (3) attended a school where at least 20 other students at the school had a career academy flag. Cases in which OPPAGA could not determine whether or not the student was a career academy student were dropped from the analysis. For example, students were dropped if they were flagged as a career academy student in the department's data but their school reported no career academies to OPPAGA. In addition, there were cases where schools reported career academy students to OPPAGA but the department's data flagged

no students at the school as a career academy student. In these cases, none of the schools' students were included in the analysis.

Group (cohorts) selection

OPPAGA applied the same selection criteria to both career academy and traditional students in order to ensure that performance and outcome differences were not merely the result of differing selection criteria. OPPAGA excluded students from the analysis if they did not attend the same school for most of the school year (October through March). This was necessary because some students attended a career academy for only part of the year, and so could not necessarily be defined as career academy students.

The Department of Education provided OPPAGA with student data for all Florida high school students in 2004-05 (Group 1) and all Florida 9th graders in 1999-00 (Group 2). OPPAGA selected students into Group 1 based upon the criteria described above including that the student attended the same high school for most of 2004-05. In addition, students were dropped from the analysis if they did not have a student record from eighth grade. Students were selected into Group 2 if they met the criteria described above and were in the student database for at least four years (1999-00 through 2002-03). OPPAGA's application of the data validation and group selection rules resulted in the following student headcounts for the two groups below.

- Group 1 (Grades 9-12 in 2004-05). This group included 20,900 career academy students and a control group of 238,462 traditional students
- Group 2 (Grade 9 in 1999-00). This group included 1,594 career academy students and 67,164 traditional students.

Statistical analyses using logistic regression

This report's findings regarding career academy and traditional students' FCAT scores, absenteeism, and high school graduation rates which are reported in Exhibit 1 are based upon logistic regression models. We also used logistic regression models to test for differences between career academy and traditional students in college participation and income. These models control for multiple independent variables including mobility (the frequency at which students changed schools), English Language Learner status, and socio-economic status. These statistical models also include a variable that is coded 1 for career academy students and 0 for others. We used the likelihood ratios for the career academy variable in each model and the mean of the covariates to calculate the percentages reported in Exhibit 1.

The following are summaries of the dependent variables in these logistic regression models. The summaries are followed by a table showing the coefficient and statistical significance of the career academy variable in each logistic regression model.

FCAT grade level. The dependent variable in the logistic regressions for math and reading was coded 1 if a student scored between levels 3 and 5 on their respective math and reading FCAT exams. The dependent variable was coded as 0 if the student scored at level 1 or 2. The student population included all the students in the 2004-05 cohort who had a 2005 FCAT score. Because the FCAT is, by state law, given to students in grades 3-10, this group included 9th and 10th graders, but not 11th and 12th graders. In addition, the models included an independent variable that was equal to each student's 8th grade FCAT score. Students who did not have an 8th grade FCAT score or who took the same grade level test (i.e., took the 9th grade test in both 2004 and 2005) were not included in this analysis.

Chronic absences. The dependent variable in this logistic regression was coded 1 if the student was chronically absent (absent 21 or more days in a 180 day school year) during the 2004-05 school year. To control for student's attendance histories, OPPAGA factored in the 8th grade attendance records of students as an independent variable. The population analyzed was all Group 1 students (2004-05 high school students) who had an 8th grade attendance record.

Graduation rates. OPPAGA used two different logistic regression models to determine whether career academy students were more likely to complete high school. One model had a dependent variable coded as 1 if the student earned a standard diploma. The dependent variable was coded 0 otherwise. The second model had a dependent variable coded as 1 if a student fulfilled any type of high school completion requirement. Both models factored in students' 8th grade FCAT scores to control for students' academic level prior to entering high school. In both models career academy students were more likely to complete high school.

The population for both high school completion models was Group 2 students (1999-00 9th graders) who were still in the department's data system in 2003. This selection criteria was necessary because half of the career academy students in Group 2 attended a career academy their senior year of high school. In other words, if they were not seniors when OPPAGA categorized their career academy status, then they would not have been counted as career academy students. In order to pick a comparable comparison group of traditional students OPPAGA had to also pick traditional high school students who were still enrolled in 2003 (their scheduled senior year). This likely made the overall high school completion rates found in this report higher than they would be if students were selected when they were in 9th grade and followed forward to determine if they graduated. However, the bias caused by this selection rule affects both career academy and traditional students equally.

Postsecondary participation. OPPAGA examined three models to determine whether career academy students were more or less likely to attend a public postsecondary institution than others. The three models had dependent variables coded as 1 if the student completed at least 3, 12, or 15 hours of postsecondary coursework respectively. All three models measured Group 2 students (9th graders in 1999-00). The college participation data goes through the 2004-05 academic year, which is two years after the cohort was scheduled to graduate from high school. We found no difference between career academy and other students regardless of which dependent variable was used.

Income. The dependent variable was coded as 1 if the student earned more, than the median income ($5,397) of their cohort (Group 2) in their second year after high school. The year measured was 2005. Those earning below the median were coded as 0.

Table A-1
Career Academy Variable in Logistic Regressions

Outcome That Was Tested	Logistic Coefficient of Career Academy Variable	Significance (0.05)	Likelihood (Odds Ratio)
Standard Diploma	0.418	0.000	1.519
Any Graduation Requirement	0.365	0.000	1.441
Math FCAT	0.264	0.000	1.302
Reading FCAT	0.200	0.000	1.222
Chronic Absences	-0.330	0.000	0.719
Postsecondary Participation	0.016	0.772	1.016
Median Income (Completers of career academies compared to traditional high school completers)	0.001	0.984	1.001
Median Income (Completers of career academies with certification compared to all other high school completers)	.243	0.012	1.276

Appendix B

FLORIDA DEPARTMENT OF EDUCATION

September 24, 2007

Mr. Gary R. VanLandingham
Director
Office of Program Policy Analysis
and Government Accountability
111 West Madison Street, Suite312
Tallahassee, Florida 32399-1475

Dear Mr. VanLandingham:

Please find attached the response to the preliminary and tentative audit findings and recommendations concerning *Career Academy Students Perform Better Than Other Students During High School; Later Outcomes Vary.*

If you have any questions, please contact John M. Franco, Inspector General, at 850-245-0403 or email john.franco@fldoe.org.

Sincerely,

Jeanine Blomberg

Jeanine Blomberg
Commissioner

JB/jmf/br

Attachment

325 W. GAINES STREET • TALLAHASSEE, FL 32399-0400 • (850) 245-0505 • www.fldoe.org

Florida Department of Education
Response to Draft Report Dated August 2007
Career Academy Students Perform Better Than Other Students During High School; Later Outcomes Vary
September 17, 2007

Recommendations

1. The department should verify data reported by school districts on career academies and notify districts of missing student data. This verification should include comparing career academy data from year to year to identify new career academies as well as those no longer operating. In addition, the department should compare school district career academy information to the list of career academies that is maintained by the Division of Workforce Education.

Beginning with the 2006-2007 school year, the Master School Identification file (MSID) included two new elements to identify and provide information about schools with career academies. The first element (Career Academy) indicates the number of career academies at a school and the second element (Career Academy Type) indicates the type of structure (school within a school or wall–to-wall/school-wide) used for career academies at the school.

Districts are now required to report the *Career Academy Participant* information for survey periods 2 (October), 3 (February), and 5 (End-of-Year). In addition, the *Career Academy Participant* data element was revised to reflect the updated definition of a career academy and to enable districts to identify a career academy student by an appropriate Career Cluster designation. In September 2006, a technical assistance (TA) paper was developed and disseminated to assist with reporting requirements.

The Florida Department of Education is developing a process to verify reported data. Staff members of the Secondary Career and Technical Education Initiatives Unit will review school districts' survey responses from Survey 5 (end of 2006-2007 year) and Survey 2 (October 2007) reports. Districts will be contacted between October and December to verify reported data. Districts will have an opportunity to correct data before the February survey. This process will continue after each survey to ensure that career academy participants are accurately reported in the MSID file and that the career academy is still in operation.

An up-to-date list of schools with career academies will be maintained on the Division of Workforce Education web site at www.fldoe.org/workforce.

2. The department should expand its definition of career academies to include business or higher education partnerships and small learning communities.

All publications—printed and electronic—emphasize that the essential core elements of a career academy includes business or higher education partnerships and instruction delivered through small learning communities. The FLDOE will update the *Career Academy Participant* data element to reflect this definition.

3. The department should collect data that identifies whether a career academy leads to industry certification.

The FLDOE is adding a data element for the 2007-2008 school year that will be collected in the 2008 (Survey 5) end-of-year report. The element will specify if a student is in a career academy which leads to industry certification.

In addition, the FLDOE is creating a permanent database for industry certifications/technical skill attainment. This database will be used to satisfy statutory requirements of the 2007 Florida Career and Professional Education Act and The Carl D. Perkins Career and Technical Education Act of 2006 (Perkins IV).