Issue Brief: Career-Themed Curriculum

January 2017

Introduction

In 2014–15, the high school graduation rate reached a record high of 83 percent (U.S. Department of Education 2016). Despite the gains, over half a million students still drop out of high school each year (U.S. Department of Education 2015). High schools have adopted various strategies designed to keep students who are at risk of not graduating in school and on track for earning the credits required to graduate. "At-risk" students are defined as those failing to achieve basic proficiency in key subjects or exhibiting behaviors that can lead to failure and/or dropping out of school. Dropout prevention strategies are diverse; they vary in type of program, services offered, frequency, intensity, and duration of contact with target students.

The U.S. Department of Education (Department) sponsored the **National Survey on High School Strategies Designed to Help At-Risk Students Graduate (HSS)**, which aimed to provide descriptive information on the prevalence and characteristics of dropout prevention strategies for at-risk students. The survey collected data in the 2014–15 school year from a nationally representative sample of 2,142 public high schools that focused on 13 specific high school improvement strategies[1] identified by a panel of external experts and senior Department officials. This brief on **career-themed curriculum** is the second in a series of briefs being released this year with key findings about these high school improvement strategies.

Definition of Career-Themed Curriculum

The HSS defined **career-themed curriculum (CTC)** as a sequence of courses that integrate core academic and career and technical education (CTE)[2] themes. In this brief, CTC includes not only specific CTE coursework that individual students elect to take, but also such approaches as schoolwide reforms or instructional strategies (e.g., career academies, interdepartmental team teaching), college and career preparation (dual enrollment, college and career counseling), and applied learning opportunities (project-based learning, work-based learning, employer involvement).[3] These approaches may be a

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[1] The survey examined 13 strategies that are designed to improve high school outcomes for at-risk students. These strategies are: (1) academic support classes, (2) academic tutoring, (3) accelerated academic programs, (4) career-themed curriculum, (5) case manager, (6) competency-based advancement, (7) credit recovery, (8) early warning systems, (9) mentoring, (10) middle to high school transitions, (11) personalized learning plans, (12) social services, and (13) student support teams. See http://www2.ed.gov/about/offices/list/opepd/ppss/reports-high-school.html for the series of briefs.

[2] The *Carl D. Perkins Career and Technical Education Act of 2006* (*Perkins IV*) defines career and technical education as a sequence of courses that, among other things, provides students with "coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in current and emerging professions." (See section (3)(5) of *Perkins IV*, available at https://www.gpo.gov/fdsys/pkg/BILLS-109s250enr/pdf/BILLS-109s250enr.pdf).

[3] Examples of these approaches include career academies, Early College High Schools with a CTE focus, New Tech High Schools, and Project Lead the Way. Information on career academies is available from the National Career Academy Coalition (http://www.ncacinc.com) and the Career Academy Support Network (http://casn.berkeley.edu), information on Early College High Schools is available from Jobs for the Future (http://www.jff.org/initiatives/early-college-designs), information on New Tech High Schools is available from the New Tech Network (http://www.newtechnetwork.org), and information on Project Lead the Way can be found at https://www.pltw.org.

single specialized program targeted to a subset of students or the organization of the whole school that extends to all students. The HSS examined a broad spectrum of high schools that implemented different CTC approaches. These different approaches to CTC were designed to help engage students in high school, encourage them to graduate, and ensure that more students obtain the skills required for success in college and future careers. Some CTC approaches[4] identified in the HSS have a more rigorous evidence base, and those approaches are discussed in the following section.

Research on CTC

Educators can use a variety of approaches to provide CTC. While some CTC approaches have higher levels of evidence about their efficacy, other approaches have little or no evidence. This section focuses on CTC approaches that researchers have studied more rigorously, which include CTE courses, career academies, dual enrollment, and college and career counseling. While there is a lack of rigorous research on some CTC approaches, such as work-based learning and employer involvement, the following approaches have at least a moderate level of evidence:

Participation in CTE courses. CTE coursework is designed to prepare students for work in a specific occupational field or for related postsecondary education or training. Research suggests that student participation in CTE courses has no effect on student academic achievement and high school graduation outcomes (Agodini and Deke 2004; Bozick and Dalton 2013).

Career academies. Career academies developed four decades ago as a dropout prevention strategy targeted to students who were at risk of school failure, but now career academies serve a more diverse set of goals and students. Academies are typically implemented as a school-within-a-school program that offers students a sequence of coursework organized around broad career themes. Research shows that participation in a career academy has a positive effect on labor market outcomes but no effect on high school or postsecondary outcomes. An experimental study found that students who participated in career academies earned on average 11 percent ($2,088) more per year than students in the non-career academies group, an increase of $16,704 in total earnings over the eight years of follow-up after high school graduation (Kemple and Willner 2008).[5]

Access to college and career counseling. Research also suggests that programs that provide students with *access to college and career counselors* who can provide information about postsecondary options may help keep students in school. The programs, which typically include career advising, visiting college campuses, and developing students' knowledge of financial aid assistance, had positive effects on students staying in and completing high school (Constantine 2006; Dynarski 1998).

Dual enrollment. Dual enrollment is another strategy that schools can offer to encourage students to take more rigorous coursework, including academic and technical courses at the college level, to potentially earn college credit while still in high school. Research suggests that students who participated in dual enrollment programs were more likely to complete college – and in particular, earn a bachelor's degree – than their peers who did not (An 2013). Dual enrollment policies vary; in some high schools, students attend dual enrollment classes taught by college faculty on a college

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[4] See Exhibit 3 and the Appendix (survey question 112) for a full list of the CTC approaches.

[5] This study conducted a randomized controlled trial that included youth who applied to career academies starting at grade 9 or 10. Many of these students were from low-income or single-parent households that received public assistance or food stamps.

campus, while others involve college or specially trained high school teachers providing college-level coursework in the high school.

Survey Findings on CTC

This brief describes the prevalence of CTC as a high school dropout prevention strategy. It does not measure the effectiveness of the strategy but instead describes the kinds of schools that offer CTC and the approaches to implementing the curriculum. The analysis included an examination of five school characteristics: (1) size, (2) poverty, (3) locale, (4) graduation rate, and (5) type. Only statistically significant differences within a school characteristic (at $p < .05$) are discussed; non-statistically significant differences are not reported. School characteristics were defined in the following ways:

School size. School size categories consisted of small schools (fewer than 500 students), medium schools (500–1,199 students), and large schools (1,200 or more students) based on 2013–14 Common Core of Data (CCD) student enrollment data.

School poverty. Poverty levels were based on 2013–14 CCD free or reduced-price lunch (FRPL) and total school CCD enrollment data. The poverty categories were low-poverty schools (below 35 percent students with FRPL), medium-poverty schools (35–49 percent students with FRPL), and high-poverty schools (50 percent or more students with FRPL).

School locale. School locale included three mutually exclusive locales from the CCD: rural schools, suburban/town schools, and city schools.

Graduation rate. School classification by graduation rate was based on three categories: low graduation rate (67 percent or lower graduation rate), medium graduation rate (68 to 89 percent graduation rate), and high graduation rate (90 percent or higher graduation rate).

School type. School type was based on a school's identification as a CTE school (defined in this study as a school that focuses on preparing students for work in a particular occupation industry) or a regular comprehensive high school, charter, magnet, or alternative school. In this brief, we examined CTE schools compared with all the other categories of schools (described collectively as "non-CTE" schools).

Summary of Key Findings

- In 2014–15, about half of U.S. high schools (51 percent) offered a CTC to some or all students.

- The prevalence of CTC varied by school size, type, and graduation rate, with large schools more likely to offer a CTC than small schools, and high-graduation-rate schools more likely to offer a CTC than low-graduation-rate schools.

- One quarter (25 percent) of all high school students participated in a CTC.

- High schools more commonly targeted CTC to students based on their grade level (53 percent) and through staff recommendations (49 percent).

- High schools provided CTC in a number of ways; a majority of schools provided students with CTE courses (92 percent), project-based learning (69 percent), work-based learning (65 percent), a specialized career academy or pathway (55 percent), or individualized college and career counseling (53 percent). These approaches varied by school size, school locale, and school type.

What is the prevalence of CTC and what type of schools offer the curriculum?

In 2014–15, 51 percent of all public high schools nationwide offered some type of CTC to some or all of their students, although the prevalence of this strategy varied by school type and size, as well as by graduation rate (Exhibit 1).[6] There were no significant differences by school locale or poverty level.

Differences by school size. Large schools were more likely than small schools to offer some type of CTC either through a targeted program for some students or as a way to provide instruction to all students (71 percent versus 44 percent).

Differences by graduation rate. Low-graduation-rate schools were less likely than high-graduation-rate schools to offer some type of CTC (39 percent versus 54 percent).

Differences by school type. Nearly all CTE schools reported that they implemented a CTC (97 percent) compared with non-CTE schools (50 percent).

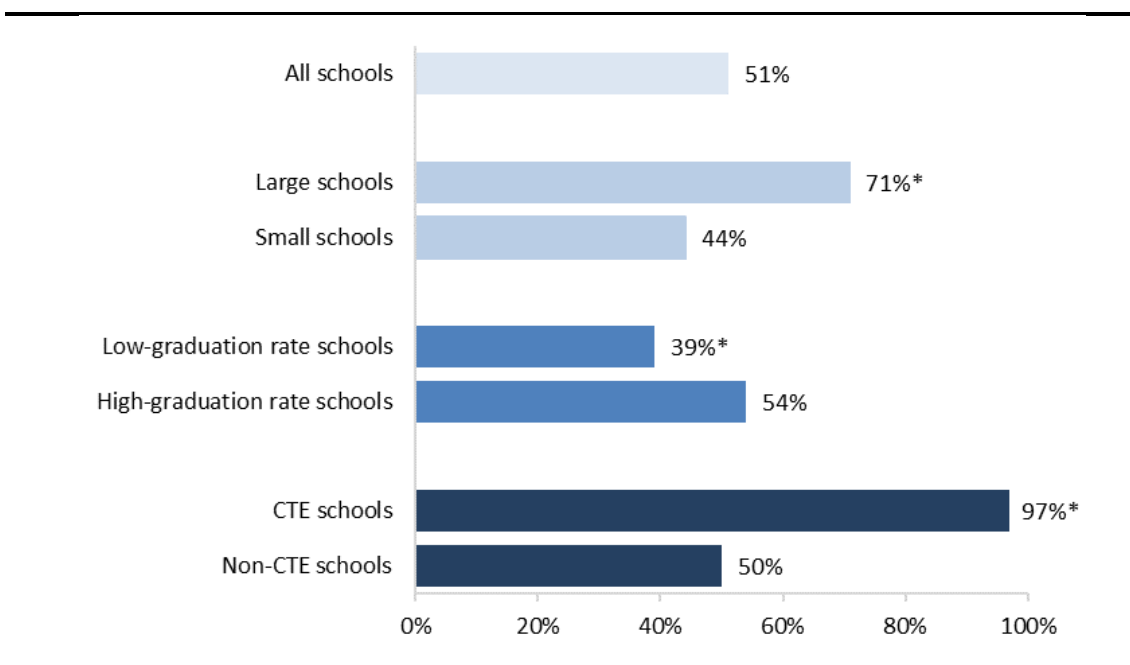### Exhibit 1. Percentage of high schools that offered a CTC by school type, size, and graduation rate, 2014–15

Exhibit reads: In 2014–15, 51 percent of all high schools offered any CTC.

*$p < .05$.

NOTE: An asterisk is placed on one case per comparison. Differences across school characteristics with two categories were based on comparisons between the two groups.

Unweighted n = 1,925.

SOURCE: HSS survey of high school administrators, 2015 (Question 109).

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[6] According to the Schools and Staffing Survey (SASS) study, in 2011–12, 76 percent of all public schools serving students in grades 9 to 12 offered CTE courses, 25 percent offered a specialized career academy, and 56 percent offered work-based learning or internships outside school (defined as programs in which students earn course credits for supervised learning activities in paid or unpaid workplace assignments) (U.S. Department of Education 2013).

How many students participated in a CTC?

In 2014–15, an estimated one quarter of all high school students nationwide (25 percent) participated in a CTC, even though a majority of students (62 percent) attended a high school that offered a CTC, suggesting that most such curricula are not offered schoolwide.

How did high schools target students for participation in a CTC?

High schools most frequently reported targeting the curriculum to students based on their grade level (53 percent) or through recommendations by staff (49 percent) (Exhibit 2). The grade level targeting may have been due, in part, to the fact that some CTE programs, like career pathways, start at a particular grade level (i.e., do not include all grade levels within a high school). For example, the California Partnership Academies, which offer career pathways, serve students in grades 10 to 12.

Exhibit 2. Student subgroups or needs that high schools targeted for participation in a CTC, 2014–15
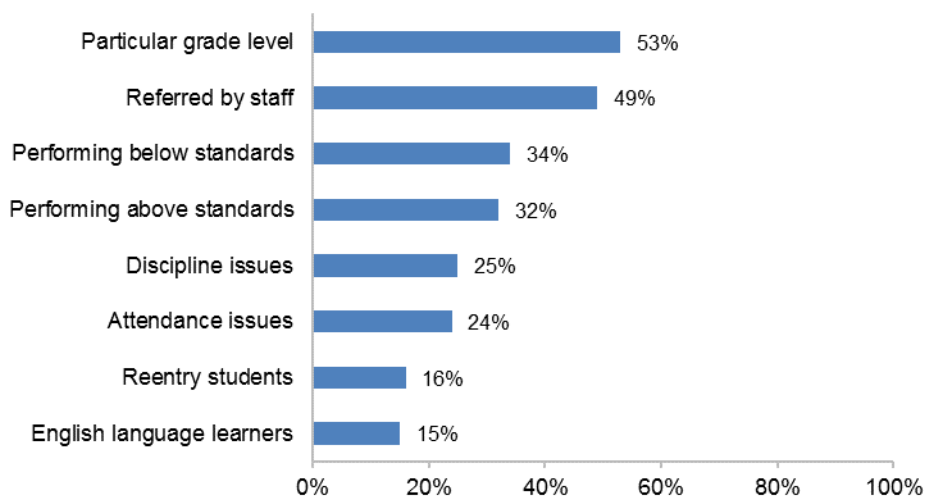

Exhibit reads: Among high schools that offered any CTC in 2014–15, 53 percent targeted students at a particular grade level to take the curriculum.

Unweighted *n* = 806 high schools.

SOURCE: HSS survey of high school administrators, 2015 (Question 111).

> *Differences by school locale.* There were some differences with which types of students were targeted for a CTC by high school locale. The main differences were in the percentage of schools that targeted two different types of students – reentry[7] and English learner (EL) students. City schools were more likely to target reentry and EL students for CTC participation compared with suburban and rural schools. There were no differences in which students were targeted for CTC by high school graduation rate, size, or poverty levels.

How did high schools implement their CTC?

High schools used different approaches when implementing a CTC. The most common approaches that high schools used to implement CTC were providing students with individual CTE courses (92 percent),

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[7] Reentry students are those that dropped out of high school and then reenrolled.

project-based learning (69 percent), work-based learning (65 percent), a specialized career academy or pathway (55 percent), or individualized college and career counseling (53 percent) (Exhibit 3). Only 9 percent of high schools that offered CTC implemented all eight approaches examined in this survey. The prevalence of CTC approaches varied by school type, size, and locale.

Differences by school size. Large schools were more likely to offer particular approaches compared with small schools, such as a specialized career academy or pathway (71 percent versus 42 percent), dual enrollment (54 percent versus 37 percent), work-based learning (73 percent versus 59 percent), and employer engagement (41 percent versus 29 percent).

Differences by school locale. City schools were more likely to offer a specialized career academy or pathway compared with rural schools (62 percent versus 49 percent) and were more likely to use interdisciplinary team teaching (35 percent versus 17 percent). In contrast, rural schools were more likely to offer individual CTE courses compared with city schools (94 percent versus 86 percent).

Differences by school type. CTE schools were more likely to implement distinct CTC approaches than non-CTE schools, including project-based learning (89 percent versus 68 percent) or individualized career and academic counseling (71 percent versus 53 percent). Overall, CTE schools were more likely to implement a larger number of CTC approaches compared with non-CTE schools (six versus four). This is consistent with the mission of a CTE school, which is to help develop a student's career interests and develop their technical skills.

Exhibit 3. Percentage of high schools reporting the implementation of CTC approaches, by school type, size, and locale, 2014–15

CTC Approach	All schools that offered	CTE	Non-CTE	Large	Small	City	Suburban	Rural
Career and technical education courses	92%	90%	92%	95%*	89%	86%*	93%	94%
Project-based, hands-on learning	69%	89%*	68%	71%	66%	73%	68%	67%
Work-based learning experiences	65%	74%	65%	73%*	59%	69%*	69%	58%
Specialized career academy or pathway	55%	79%*	54%	71%*	42%	62%*	56%	49%
Career and academic counseling	53%	71%*	52%	50%	51%	55%	52%	51%
Dual enrollment	45%	67%*	45%	54%*	37%	46%	46%	44%
Employer engagement	35%	63%*	34%	41%*	29%	39%	37%	31%
Interdisciplinary teams of teachers from different subject areas	25%	55%*	24%	27%	21%	35%*	26%	17%

Exhibit reads: Among high schools that offered any CTC in 2014–15, 92 percent provided CTE courses; differences in the proportion of CTE and non-CTE schools that provided CTE courses were not significant (90 percent compared with 92 percent).

*$p < .05$.

NOTE: The asterisk is placed on one case per comparison. Differences across school characteristics with two categories were based on comparisons with two groups: CTE schools compared with non-CTE schools, large compared with small high schools. Differences across school characteristics with three categories were based on goodness-of-fit across all three categories.

Unweighted n = 974 high schools.

SOURCE: HSS survey of high school administrators, 2015 (Question 112).

Methodology

The *National Survey on High School Strategies Designed to Help At-Risk Students Graduate* was a survey of 13 high school strategies that are designed to improve graduation rates among students at risk of dropping out and was administered in the 2014–15 school year. The 13 strategies are: (1) academic support classes, (2) academic tutoring, (3) accelerated academic programs, (4) career-themed curriculum, (5) case manager, (6) competency-based advancement, (7) credit recovery, (8) early warning systems, (9) mentoring, (10) middle to h school transitions, (11) personalized learning plans, (12) social services, and (13) student support teams.

The purpose of the survey was to inform education practitioners and policymakers about the prevalence, characteristics, and students served by these strategies in U.S. public high schools. The descriptive study did not measure the effectiveness of particular strategies but instead examined implementation factors in high schools across the country. The study team identified the 13 strategies and designed survey items for each strategy with input from a panel of external experts in the field and senior Department officials.

The researchers selected a nationally representative sample of high schools[8] using a random sampling approach, stratifying high schools based on graduation rate (from ED*Facts*)[9] and locale code (from NCES 2013–14 Common Core of Data). The survey collected data from high school principals (or designees knowledgeable about programs and strategies) at sampled schools. The survey response rate was 90 percent. The survey responses, after cleaning and processing, were analyzed in SAS and Stata using descriptive techniques that apply the appropriate statistical population weights to account for stratification by graduation rate and locale.

Results reported in this brief reflect the full survey sample unless otherwise noted and are representative of U.S. public high schools nationwide. References in the text to differences between subgroups based on sample data refer only to differences that are statistically significant using a significance level of 0.05.

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[8] All U.S. public high schools providing instruction to 12th grade students in the fall of 2010 were included unless (1) the lowest offered grade was 11th grade or higher, (2) there were fewer than five students in grades 9 through 12, (3) the percentage of students enrolled in grades 9 through 12 was under 20 percent of the total school enrollment and the total number of students in grades 9 through 12 was fewer than 20, or (4) the school name contained one of nine keywords indicating juvenile detention center or hospital. Of the 103,813 total schools listed in the 2010–11 CCD, 22,447 high schools met the criteria to be included in the sampling frame.

[9] There were 3,302 schools without graduation rate information in the 2010–11 ED*Facts* public use data set. The researchers used an imputation approach to assign these schools to either the high- or low-graduation rate stratum. The imputation process began by examining the distribution of the high-/low-graduation rate classification for the 19,145 schools by sampling locale. The percentage of schools classified as high graduation rate was calculated separately for each locale sampling stratum; 68.4 percent of rural schools were classified as high graduation rate, 63.0 percent of suburban schools were classified as high graduation rate, and 41.0 percent of city schools were classified as high graduation rate. The research team randomly assigned each of the 3,302 schools with unknown graduation rates to the high graduation rate stratum with probability 68.4 if the school was classified as rural, with probability 63.0 if the school was classified as suburban, and with probability 41.0 if the school was classified as urban. The sample size was adjusted upwards to account for potential misclassification due to this method. In analysis, the researchers used the restricted-use 2013–14 ED*Facts* data and graduation rates published on school and district websites to fill in this missing data.

References

Agodini, R., and J. Deke. 2004. *The Relationship Between High School Vocational Education and Dropping Out.* Princeton, NJ: Mathematica Policy Research, Inc.

An, B. P. 2013. "The Impact of Dual Enrollment on College Degree Attainment: Do Low-SES Students Benefit?" *Educational Evaluation and Policy Analysis 35* (1): 57-75.

Berger, A., L. Turk-Bicakci, M. Garet, M. Song, J. Knudson, C. Haxton, K. Zeiser, G. Hoshen, J. Ford, J. Stephan, K., Keating, and L. Cassidy. 2013. *Early College Early Success: Early College High School Initiative Impact Study*. Washington, DC: American Institutes for Research.

Bozick, R., and B. Dalton. 2013. *Career and Technical Education and Academic Progress at the End of High School: Evidence from the Education Longitudinal Study of 2002*. Research Triangle Park, NC: RTI International.

Carl D. Perkins Career and Technical Education Act of 2006, Pub. L. No. 109.270, 109th Cong. Available at https://www.gpo.gov/fdsys/pkg/BILLS-109s250enr/pdf/BILLS-109s250enr.pdf

Constantine, J. M., N. S. Seftor, E. S. Martin, T. Silva, and D. Myers. 2006. *Study of the Effect of Talent Search Program on Secondary and Postsecondary Outcomes in Florida, Indiana and Texas.* Washington, DC: U.S. Department of Education.

Dynarski, M., L. Clarke, B. Cobb, J. Finn, R. Rumberger, and J. Smink. 2008. *Dropout Prevention: A Practice Guide* (NCEE 2008-4025)*. Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance.

Dynarski, M., P. Gleason, A. Rangarajan, and R. Wood. 1998. *Impacts of Dropout Prevention Programs: Final Report*. Princeton, NJ: Mathematica Policy Research.

Kemple, J. J., and C. J. Willner. 2008. *Career Academies Long-term Impacts on Labor Market Outcomes, Educational Attainment, and Transitions to Adulthood.* New York, NY: MDRC.

U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. 2016. "Table 1. Public High School 4-Year Adjusted Cohort Graduation Rate (ACGR)." Available at https://nces.ed.gov/ccd/tables/ACGR_RE_and_characteristics_2014-15.asp.

U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. 2015. "Table 219.57. Population of 15- to 24-Year Olds Enrolled in Grades 10 through 12, Number Who Dropped Out (Event Dropouts), Percentage Who Dropped Out (Event Dropout Rate), and Percentage Distribution, by Selected Characteristics: 2014." Available at https://nces.ed.gov/programs/digest/d15/tables/dt15_219.57.asp.

U.S. Department of Education. August 2013. *Characteristics of Public and Private Elementary and Secondary Schools in the United States: Results from the 2011-12 Schools and Staffing Survey.* NCES 2013-312. Washington, DC: Institute of Education Sciences, National Center for Education Statistics.

This section asks about **Career-Themed Curriculum.** For the purposes of this survey, career-themed curriculum is a sequence of courses that integrate core academic and career/technical education themes.

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109. **In the 2014-15 school year, does your school provide students a career-themed curriculum?**
(Please select only one)
{Only allow one selection}

	Yes	No
	☐	☐

If the user responds "Yes" to Q109, ask Q110 through Q112. Otherwise skip to Q113.

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110. **On average, approximately what percentage of high school students in your school participates in career-themed curriculum in the 2014-15 school year?**   {Slide bar for 0% to 100%}

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111. **Are any of the following subset(s) of students targeted for taking this career-themed curriculum?**
(Check all that apply)

Students with attendance issues (e.g., truancy)	☐
Students with discipline or behavioral issues	☐
Students performing below standards or grade level	☐
Students performing above standards or grade level	☐
Students in a particular grade level, regardless of performance	☐
Students recommended by high school staff (e.g., counselor or teacher)	☐
Re-entry students	☐
English Language Learners	☐
Other	☐

       (Please Specify_____)

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112. **Are any of the following included in your schools' career-themed curriculum approach?**
(Check all that apply)

Project-based, hands on learning ☐

Career and technical education courses ☐

Interdisciplinary teams of teachers from different subject areas who teach the same group of students ☐

Work-based learning experiences that are designed to help students extend and deepen classroom work (e.g., job shadows, internships, community service) ☐

Specialized career academy or pathway organized around a specific career area (e.g., health, hospitality, engineering) ☐

Individualized career and academic counseling to strengthen students' career and postsecondary awareness and explore opportunities beyond high school ☐

Integration of postsecondary education and training that allows students to participate in education and training while they are still in high school and leads to credit toward a postsecondary degree or certificate or industry recognized credential ☐

Employer engagement to provide work-based learning opportunities and mentoring to students, or provide professional development for staff, or collaborate on curriculum development ☐

The full survey is available at: http://www2.ed.gov/about/offices/list/opepd/ppss/reports-high-school.html