New Education Directions in and Recommitment to Career Technical Education— How does It Effect Visual Communication Programs?

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Abstract

The pendulum has swung once again in secondary education, leaving the teach-to-the-test philosophy of *No Child Left Behind*, which provided a one-size-fits-all approach to teaching and learning. The direction is back to where it was when there were wood and metal shops in high schools and graphic arts was a common elective course. A number of initiatives, laws, and funding are driving this paradigm change in education, and in particular to Career Technical Education, referred to as CTE.

Curriculum

Common Core

A number of recent studies, such as "Are They Really Ready To Work?" have indicated that high school graduates lack the necessary basic knowledge and applied skills for new entrants to the 21st century U.S. workforce. (Partnership for 21 St Century Skills, 2015) Various forces have directly or indirectly influenced this including: world competition, economic and budget concerns, business strategies (i.e. outsourcing), as well as technological and demographic changes. Nationally, education is changing philosophically moving from *No Child Left Behind* to a *College and Career Readiness* concept which includes the following: teaching literacy across all content areas, moving from recall to application and demonstration, and using the *Smarter Balanced Assessment* rather than the "answer is C" traditional testing method. More importantly it is a change from "learn to do" to "do to learn."

The standards were developed beginning in 2009 as a joint effort between two national groups made up of state officials: the National Governors Association and the Council of Chief State School Officers. Common Core encapsulates this philosophy and has been accepted and is being implemented currently by many states. At this time, 45 states have fully or partially adopted Common Core standards though some states are revising or considering pulling out over concerns about local control of education and curriculum. California has adopted these standards and districts are aligning their CTE curriculum to Common Core Language Arts and Mathematics.

There are 32 College and Career Readiness Anchor Standards for English Language Arts that fall within four skill areas: Reading (recently revised to include standards for literature and informational text), Writing, Speaking and Listening, and Language. "The K–12 grade-specific standards define end-of-year expectations and a cumulative progression designed to enable students to meet college and career readiness expectations no later than the end of high school." (Common Core State Standards Initiative, 2015) The following is a reading standard:

> R1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

This example aligns well with CTE curriculum where students read manuals, technical publications, and equipment specifications.

Even more specific and relevant to CTE courses, in 2013 the CDE released English Language Arts & Literacy Standards in History/Social Studies, Science, and Technical Subjects. These standards are like the original Language Arts Standards but with more specific wording. They include "increased attention to informational text, textual evidence, and text complexity." (California Common Core State Standards English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects, 2013) Here is the R1 standard as written for these standards:

> R1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.

The California Common Core State Standards Mathematics *(CA CCSSM)* are constructed differently. The CA CCSSM includes two types of standards: Eight *Mathematical Practice Standards* (identical for each grade level), such as "Make sense of problems and persevere in solving them," and *Mathematical Content Standards* (different at each grade level). Together these standards address both "habits of mind" that students should develop to foster mathematical understanding and expertise and skills and knowledge—what students need to know and be able to do. At the high school or higher Math level, the CA CCSSM are organized into both model courses and conceptual categories. The model courses for higher mathematics are organized into two pathways: traditional and integrated. The traditional pathway consists of the higher mathematics standards organized along more traditional lines into Algebra I, Geometry, and Algebra II courses. The integrated pathway consists of the courses Mathematics I, II, and III. (California Common Core State Standards- Mathematics, 2013)

So what does this mean to the visual communications teacher? By looking at their curriculum and aligning Common Core Language Arts and Math Standards to it they are able identify areas of strength and weakness of integration of academics within their courses. Not surprisingly, the process reaffirms what CTE teachers know, that all CTE courses do and, historically have done, an excellent job of providing instruction and learning for both academic and applied subject matter. A study by School Improvement Research Group, University of California, Riverside, 2004 *Longitudinal Study Technical Report of ROCP Programs*, which are CTE courses, found among other things that "[Regional Occupational Centers and Programs] ROCP students employment in jobs [after high school] pay significantly higher wages than those held by a Control Group of their peers" and "students raise their grade point averages [while taking ROCP courses] by about three-tenths of a point – comparable with a Comparison Group of similar students who did not take ROCP courses." (Mitchell, 2006)

In the article "ROCP: Connecting thinking and doing," written by Randi Scott and Peter Birdsall for the California Administrators Association, they sum up an analysis of the study by saying, "All too often, CTE has been subverted by an artificial and harmful dichotomy. It's not just the suggestion that "thinking and doing" are independent rather than interdependent, but the implication that thinking is more important than doing. Aside from the fact that this dichotomy is at complete odds with the science of learning, it creates the illusion of a zero-sum game where academics can only win if ROCP and CTE lose." (Scott & Birdsall, 2009)

21st Century Skills

The American Federation of Teachers working with the Partnership for 21st Century Skills, are developing a new educational accountability system, *Framework for 21st Century Learning*, that includes as a critical part of the model, Learning and Innovation Skills: *Critical Thinking and Problem Solving, Communication and Collaboration, and Creativity and Innovation.* These certainly are crucial to success in visual communication work where critical thinking utilizing processes and procedures, to creatively create communication products, done working with others with specialized skills, is the norm. (P21.org, 2015)

CTE Model Curriculum Standards

The state of California has identified 15 Industry Sectors and 58 Career Pathways; issuing newly revised standards in January 2014, in which to develop "Programs of Study" to properly prepare students for

high-skill, high-wage and high-demand occupations. Standards for Career Ready Practice (Standards for Career Ready Practice, 2014) describe the fundamental knowledge and skills that students need to prepare for transition to postsecondary education, career training, or the workforce. These are not just for CTE programs but are to be integrated into core curriculum as well. Each Industry Sector contains *Knowledge and Performance Anchor Standards*, and *Pathway Standards* with *Performance Indicators*. Visual Communication occupations can be found in both Arts, Media, and Entertainment Industry Sector-Design, Visual, and Media Arts Pathway. (CTE Model Curriculum Standards: Arts, Media, and Entertainment, 2013), and Manufacturing and Product Development Industry Sector- Graphic Production Technologies Pathway)

Standards for Career Ready Practice
1. Apply appropriate technical skills and academic knowledge.
2. Communicate clearly, effectively, and with reason.
3. Develop an education and career plan aligned with personal goals.
4. Apply technology to enhance productivity.
5. Utilize critical thinking to make sense of problems and persevere in solving them.
6. Practice personal health and understand financial literacy.
7. Act as a responsible citizen in the workplace and the community.
8. Model integrity, ethical leadership, and effective management.
9. Work productively in teams while integrating cultural and global competence.
10. Demonstrate creativity and innovation.
11. Employ valid and reliable research strategies.
12. Understand the environmental, social, and economic impacts of decisions.

Knowledge and Performance Anchor Standards
1.0 Academics
2.0 Communications
3.0 Career Planning and Management
4.0 Technology
5.0 Problem Solving and Critical Thinking
6.0 Health and Safety
7.0 Responsibility and Flexibility
8.0 Ethics and Legal Responsibilities
9.0 Leadership and Teamwork
10.0 Technical Knowledge and Skills
11.0 Demonstration and Application

Did you notice how similar Standards for Career Ready Practice and Knowledge and Performance Anchor Standards are?

Pathway Standards
For the *Arts, Media, and Entertainment- Design, Visual, and Media Arts Pathway*, there are eight Pathway Standards:

A1.0 Demonstrate ability to reorganize and integrate visual art elements across digital media and design applications.

A2.0 Apply artistic skills and processes to solve a variety of industry-relevant problems in a variety of traditional and electronic media.

A3.0 Analyze and assess the impact of history and culture on the development of professional arts and media products.

A4.0 Analyze, assess, and identify effectiveness of artistic products based on elements of art, the principles of design, and professional industry standards.

A5.0 Identify essential industry competencies explore commercial applications and develop a career specific personal plan.

A6.0 Analyze characteristics of subgenres (e.g., satire, parody, allegory, pastoral) that are used in poetry, prose, plays, novels, short stories, essays, and other basic genres.

A7.0 Demonstrate an understanding of the elements of discourse (e.g., purpose, speaker, audience, form) when completing narrative, expository, persuasive, or descriptive writing assignments.

A8.0 Understand the key technical and technological requirements applicable to various segments of the Media and Design Arts Pathway.

Note that standards A6.0 and A7.0 relate primarily to the "media" portion of the pathway dealing with literature and discourse. Each of the pathway standards for all industry sectors has competencies or goals called performance indicators. This is an example from standard A1.0, which has nine indicators:

A1.1 View and respond to a variety of industry-related artistic products integrating industry appropriate vocabulary.

One can see how these indicators relate directly to knowledge and skills taught in CTE courses. For this indicator, learning the terms points, picas, leading, and line length, would certainly apply for a visual communication course such as Graphic Communication.

The *Manufacturing and Product Development- Graphic Production Technologies Pathway* also contains standards associated with curriculum for graphic arts courses. The pathway has fourteen standards:

A1.0 Apply the basic graphic design principles to achieve effective visual communication.

A2.0 Demonstrate an understanding of the psychology of color and color theory as it relates to visual communication.

A3.0 Apply graphic design software and desktop publishing as a means of creating effective communication.

A4.0 Demonstrate technical illustration and vector drawing skills.

A5.0 Adhere to the prepress process and procedures required to reproduce single-color and multicolor printing.

A6.0 Apply the processes and procedures involved in producing image files for the reproduction of single-color and multicolor products.

A7.0 Develop a proficiency in applying the processes and procedures required for the reproduction of printed products and the image transfer process.

A8.0 Understand various binding and finishing processes.

A9.0 Demonstrate an understanding of the screen printing process.

A10.0 Understand the analog and digital photographic applications.

A11.0 Apply various animation and motion graphic software to create dynamic visual communication outcomes.

A12.0 Demonstrate a proficiency in digital video production and the postproduction process.

A13.0 Understand and apply integrated graphic multimedia technologies, combining graphics, photographic imagery, motion graphics and animation, video, and special effects.

A14.0 Identify the different industries that utilize graphic design and identify other potential business opportunities for graphic design applications.

It should be noted, that for both of the pathways described, and for that matter, any of the 58 pathways, the standards are not meant to comprise an all-inclusive course. Rather courses and curriculum are to be designed and draw upon these standards and their competencies to provide rigor and relevance.

The California Department of Education recently aligned each set of pathway standards to English Language Arts, Mathematics, and Literacy in History/Social Studies, Science, and Technical Subjects standards.

Funding
Carl Perkins
Long the stalwart of financial funding assistance for CTE programs, the Carl D. Perkins Career and Technical Education Act (Perkins), most recently was reauthorized in August 2006. This federal act was established to improve career-technical education programs, integrate academic and career-technical instruction, serve special populations, and meet gender equity needs. (Cde.ca.gov, 2014) The funding is to help ensure that career and technical programs are academically rigorous and up-to-date with the needs of business and industry. The law allows for state and local flexibility on how the money is spent though there are some specific regulations for how it is spent, and how schools and programs qualifiy to receive it.

Perkins funds are to be used for CTE program improvement. Examples of these include: strengthening the integration of academic and CTE, curriculum development, and purchasing of equipment to ensure that the classrooms have the latest technology. They are not to be used for other non-CTE programs, paid directly to students, facility construction or remodeling, consumable supplies, and a number of other categories.

CTE programs that are supported by Perkins funding need to meet certain guidelines:
1. The program is to teach student leadership, which may include participation Career Technical Student Organizations like FFA, DECA, and SkillsUSA
2. CTE programs are taught by CTE credentialed teachers
3. Sequence of pathway courses that include an industry- based exam
4. Maintain an advisory committee

The Perkins Act, which started in 1984, has been very beneficial to CTE programs, in many cases keeping them from becoming "out of date," or even worse, ended. The extra time and commitment to obtain funds is certainly worthwhile for programs, and ultimately students.

California Careers Pathways Trust Grant
In July 2014 the California legislature passed Ed Code providing $250 million in grants made available for kindergarten through grade fourteen career pathways programs that accomplish the following: fund specialists in work-based learning, establish regional collaborative relationships and partnerships, develop and integrate standards-based academics with a career-relevant, sequenced curriculum following industry-themed pathways, provide articulated pathways to postsecondary education aligned with regional economies, and strengthen existing CTE programs. One example of this is duel enrollment of high school students in community college CTE courses. (Cde.ca.gov, 2015)

Trends in CTE Education
There are 1,325 high schools in California with an enrollment, as of April 2015, of 1,772,017. (Cde.ca.gov, 2015) Of these schools, 554 offer some form of CTE visual communication related course(s) such as

Graphic Communications, Graphic Arts Technology, or Computer Graphics and Media Technology. Nearly 42% of high schools in California offer visual communication classes, but only approximately 3% of all high school students, 36,135, are enrolled in one of these types of courses. (Dq.cde.ca.gov, 2012)

ROCP and Other CTE Programs

A great example of CTE providing a strong educational experience that develops *College and Career Readiness* skills is California's Regional Occupational Centers and Programs (ROCPs), which has a 40-year history of maximizing opportunities for students to achieve marketable skills through regional delivery of career technical education that integrates core academics. There are 72 of these programs offering at least 150 visual communication related courses. (Course Matrix, 2010) A number of these courses are termed "community classrooms" whereby part of the curriculum is on-the-job training in which students intern with industry partners in addition to in-class instruction. ROCPs have demonstrated great success in providing training and educational services by maintaining strong connections with California's business and industry, community colleges, workforce investment boards and its youth councils, and other entities such as linked learning and career partnership academies.

Conclusion

The climate is right in education for CTE programs, such as those that teach visual communications, to be on a level of importance with academic courses. CTE courses model *common core* concepts of application and demonstration, along with preparing students to analyze and describe their problem solving. In doing so, student develop strong 21st Century skills.

To further maintain rigor and relevance when creating or modifying curriculum, CTE educators should embrace state defined standards for the particular industry sector and pathway. The standards, including their indicators (competencies), change as does the demands of the industry. To provide input and ensure that the updated, research-based CTE standards are world-class, stakeholders (in the case of California for the draft of the 2014 revision), 1,000 members from business, industry, and both postsecondary and secondary education participated.

The overall CTE Knowledge and Performance Anchor Standards, for all industry sectors, closely match the Standards for Career Ready Practice defined for all students. This not only supports academics in CTE courses, but also provides added opportunity for students to develop academically. It has been shown that students enrolled in CTE courses typically achieve better than students that haven't had a CTE experience. By the application of academics, contextually in areas of occupational interest to students, they are more motivated to learn. What's being learned is not just theory but real and relevant. (National Research Center for Career and Technical Education, 2006) (Stern & Stearns, 2006)

Organizations associated with the visual communication industries, such as, PrintEd and Graphic Arts Education and Research Foundation; also utilize industry professionals and educators, to define minimum competencies required for successful employment. A companion online assessment, offered by PrintEd and SkillsUSA, provides an opportunity for student to be assessed and obtain a certificate. (Gaerf.org, 2015)

This recommitment to Career Technical Education and its newfound status is reflected in increased financial support for program and curriculum development and refinement, such as the California Careers Pathways Trust Grant. CTE curriculum that is created following state CTE standards for courses that are part of a sequence of "pathway" courses, is often critical to obtain other funding, as is the case with the Carl D. Perkins Career and Technical Education Act.

Lastly, CTE prepares students with industry specific and occupational "soft skills" for success in careers that fulfills their long-term career goals and in their private lives as well. A study by the U.S. Department of Education, National Center for Education Statistics, indicates a higher level of attainment by those that took four or more CTE credits in high school, than those students with fewer or no CTE credits. (Nces.ed.gov, 2015) The study also indicates that post-secondary degree acquisition is greater.

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