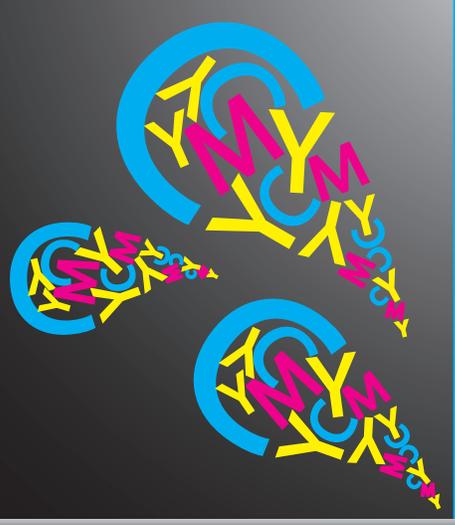


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Please follow the guidelines provided at the back of this *Journal*.

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New Directions in Career Technical Education: The Effect on Visual Communication Programs

by Ivan Bradley, M.Ed. • California Polytechnic State University

A New Direction

The pendulum has swung once again in secondary education, leaving behind 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 moving 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 toward 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 entering the 21st century U.S. workforce (Partnership for 21st Century Skills, 2015). Various forces have directly or indirectly influenced this, including (1) world competition, (2) economic and budget concerns, (3) business strategies (i.e. outsourcing), and (4) technological and demographic changes. Nationally, education is changing philosophically and moving from *No Child Left Behind* to a College and Career Readiness concept that includes (1) teaching literacy across all content areas, (2) moving from recall to application and demonstration and (3) 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, including the National Governors Association and the Council of Chief State School Officers. Common Core encapsulates this philosophy 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: (1) Reading (recently revised to include standards for literature and informational text), (2) Writing, and (3) 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.

Also, the CDE in 2013 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. First, eight *Mathematical Practice Standards* (identical for each grade level), such as “make sense of problems and persevere in solving them.” Second, there is *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 (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 the curriculum and aligning it to Common Core Language Arts and Math Standards the teachers will be able to identify areas of strength and weakness of integration of academics within their courses. Not surprisingly, the process reaffirms that all CTE courses do 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*, found 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).

The article *ROCP: Connecting thinking and doing*, written by Randi Scott and Peter Birdsall for the California Administrators Association, sums 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 learning and innovation skills: *Critical Thinking and Problem Solving, Communication and Collaboration, and Creativity and Innovation*. These skills are crucial to success in visual

communication work where applying processes and procedures to 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, and issued newly revised standards in January 2014 to develop “Programs of Study” in order to prepare students for high-skill, high-wage and high-demand occupations. Standards for Career Ready Practice (2014) describe the fundamental knowledge and skills that students need to prepare for 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 the *Arts, Media, and Entertainment Industry Sector*. Also, it can be found in *Design, Visual, and Media Arts Pathway* (CTE Model Curriculum Standards: Arts, Media, and Entertainment, 2013), finally it can be found in *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

Notice the similarity of the Standards for Career Ready Practice and Knowledge and Performance Anchor Standards.

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 apply to 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 multi-color 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, 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) 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.

Perkins funds are to be used for CTE program improvement. Examples of these include (1) strengthening the integration of academic and CTE, (2) curriculum development, and (3) purchasing of equipment to ensure that the classrooms have the latest technology. They are not to be used for other non-CTE programs, pay for 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. The program must maintain an advisory committee.

The Perkins Act, which started in 1984, has been very beneficial to CTE programs. 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 (1) funding specialists in work-based learning, (2) establishing regional collaborative relationships and partnerships, (3) developing and integrating standards-based academics with a career-relevant, (4) sequencing curriculum following industry-themed pathways, (5) providing articulated pathways to postsecondary education aligned with regional economies, and (6) strengthening existing CTE programs (Cde.ca.gov, 2015).

Trends in CTE Education

As of April 2015, there were 1,325 high schools in California with an enrollment 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 educa-

tion 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 visual communications CTE programs to be on the same level of importance as traditional 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, students 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 are participating. In the case of California, the draft of the 2014 revision included participation of 1,000 members from business, industry, and both postsecondary and secondary education participating.

For all industry sectors, the overall CTE Knowledge and Performance Anchor Standards closely match the Standards for Career Ready Practice. 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. One theory is that by applying academic skills contextually and in areas of occupational interest, students are more motivated to learn. What’s being learned is not just theory but 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 profession-

als and educators to define minimum competencies required for successful employment. A companion online assessment offered by PrintEd and SkillsUSA provides an opportunity for students 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 through programs 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 fulfill long-term career goals. A study by the U.S. Department of Education’s National Center for Education Statistics indicates a higher level of achievement by those students that took four or more CTE credits in high school. The study also indicated that post-secondary degree acquisition was greater (Nces.ed.gov, 2015).

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Eligibility for Publication

Members of the Graphic Communications Education Association, or students of GCEA members, may publish in the *Visual Communications Journal*.

Audience

Write articles for educators, students, graduates, industry representatives, and others interested in graphic arts, graphic communications, graphic design, commercial art, communications technology, visual communications, printing, photography, desktop publishing, or media arts. Present implications for the audience in the article.

Types of Articles

The *Visual Communications Journal* accepts four levels of articles for publication:

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2. Juried articles are submitted to the editor and are distributed to jurors for acceptance/rejection. Juried articles are typically reviews of the literature, state-of-the-art technical articles, and other nonempirical papers. Jurors make comments to the author, and the author makes required changes. The decision of the jurors is final.
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All manuscripts must be received by the editor no later than December 15th to be considered for the spring *Journal* or by June 15th to be considered for the fall *Journal*. Include digital copies of all text and figures. Prepare text and artwork according to the instructions given in these guidelines. Be sure to include your name, mailing address, e-mail address, and daytime phone number with your materials. E-mail all materials to the editor (address shown below).

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- All articles must be submitted in electronic form on a CD-ROM or as an email attachment.
- Submit a Microsoft Word document, maximum of 10 pages (excluding figures, tables, illustrations, and photos). Do not submit documents created in page-layout programs.
- Word documents must have been proofread and be correct.
- Call out the approximate location of all tables and figures in the text. Use the default style “Normal” on these callouts. The call-outs will be removed by the designer.
- Use the default Word styles only. Our designer has set up the page layout program styles to correspond to those style names.
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 - ◆ Normal

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- Be sure that submitted tables and other artwork are absolutely necessary for the article.
- Write a caption for each graphic, include captions in a list at the end of your Word document.
- Electronic artwork is preferred and should be in PDF or TIFF format.
- Send all artwork files and hard copies of these files with your submission.

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- Set up tables in separate documents, one document for each table.
- Do not attempt to make it “pretty.” Use the default Word style “Normal” for all table text. Do not use any other formatting.

- Do not use hard returns inside the table (“enter” or “return”).
- Get the correct information into the correct cell and leave the formatting to the designer.
- Tables will be formatted by the designer to fit in one column (3.1667" wide) or across two columns (6.5" wide).

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- Scan photographs at 300 ppi resolution.
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- Screen captures should be as large as possible.
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