



Educators and
Employers:
Providing Education
with a Purpose

Volume 20-4: *Creative Steps to College and Career Readiness*

This is the print version of the newsletter released online.

For the online version, go here: http://www.cordonline.net/connections/20_4

ANTICIPATION and APPETITE

David Bond, Director, NCPN



Our National Career Pathways Network newsletter normally is only sent to NCPN members, but I want to whet the appetites of members *and* nonmembers for the wonderful professional development opportunities that are available this fall.

This newsletter is full of articles that should cause you to anticipate some great things to come in October. The article about the Florida Career Pathways Network should cause those in Florida to look forward to their FCPN annual symposium. The remaining articles are written by scheduled presenters at the NCPN conference in Dallas, to be held October 20–23. The NCPN conference attracts attendees from all 50 states, Puerto Rico, some U.S. territories, and a few other countries.

We hope these articles will whet your appetite for the kinds of things that can be learned from practitioners across the country. I'm sure you are proud of what is going on in your state or region, but we can all benefit from sharing with others who are also doing great things.

The next issue will also have several articles by upcoming NCPN conference presenters. If you want to see those, make sure your NCPN membership is current. An up-to-date membership will also ensure that you qualify for a reduced conference registration rate. You can check your membership status by e-mailing Linda Locke at llocke@cord.org.

Anticipate great things and bring your appetite for learning to Dallas. I hope to see you there.

Florida Career Pathways Network Annual Symposium: *A Vehicle of Delivery for Professional Development and Best Practices*

Kelli S. Kennedy, FCPN President, and Jeraline Marsh, FCPN Vice President

Over the past several years, the Florida Career Pathways Network (FCPN) has moved toward developing a forum that brings educational and business practitioners involved with Career Pathways and career and technical education (CTE) together to discover innovative approaches, identify solutions to shared challenges, and provide

a platform for networking with fellow stakeholders.

Through the annual FCPN Symposium, sessions were designed and presented to cover a broad spectrum of topics to include Career Pathways, programs of study (development and

implementation), Adult Career Pathways, middle school alignment, career academies/small learning communities, collaborative partnerships, accountability, guidance/counseling, and professional development.

The format that FCPN uses was developed from a need for Tech Prep practitioners to support and share what worked for them. FCPN began the symposium for the purpose of sharing the ideas that worked best in an informal setting. The symposium has evolved with the emergence of Career Pathways into a platform for practitioners working in initiatives related to Career Pathways to share their ideas and challenges. FCPN was never intended to be the largest conference but one that presents meaningful and innovative content to meet the needs of practitioners who implement Perkins legislation, as well as the needs of all Career Pathways stakeholders.

Each year FCPN seeks “best practice” submissions from across the state from which model practices

are selected and featured at the symposium. Many of these practices have also been recognized in the National Association for Tech Leadership’s publication *Cultivating Success: Tech Prep Best Practices Across the United States*.

This year FCPN would like to broaden the opportunity to collaborate with others involved with Career Pathways/Tech Prep and CTE and cordially invites practitioners from across the U.S. to join us at the 2010 FCPN Symposium on October 6–8 in Naples Grande.

For information, including registration and housing, contact FCPN president Kelly Kennedy (kenned1k@fc.manatee.k12.fl.us) or president-elect Jeraline M. Marsh (marshj@palmbeach.k12.fl.us). FCPN is also on the web at www.fcpn.net and Facebook – Group: FCPN.

Kennedy and Marsh will present on other topics at the 2010 NCPN conference in Dallas, Texas (Oct 20–23), on Friday at 2:00 (Marsh) and Saturday at 8:30 (Kennedy).

Alamo Area Academies

Gene Bowman, Executive Director, Alamo Academies

The Alamo Area Academies, an innovative training and educational partnership, provide education, experience, and job opportunities for high school students seeking to jump-start their futures and make seamless transitions from high school to college and/or to the workplace. Qualified students receive training in high-wage, high-demand occupations during their junior and senior years of high school. The students earn one year of college credits and enjoy paid internships that introduce them to careers in key local industries.

Participating employers benefit through access to a continuous pipeline of skilled entry-level workers trained to their specifications.

This part-time program was designed to enable participating students to remain enrolled in their home high schools. During their junior and senior years these students take approximately half of

their classes at their high schools and the remainder at the community college. They retain their UIL eligibility, and many participate in extracurricular athletic or academic activities. The academy program provides flexibility to offer its programs in the morning or afternoon according to the needs of the home high school.

Graduates from the two-year program earn 24–35 college semester hours *at no personal cost*. Each earns a Level I Certificate of Completion through a community college along with his or her high school diploma. Sophomore students from all the independent school districts, charter schools, and private high schools are eligible.

This one-of-a-kind, nationally recognized, award-winning academies program brings together the collective efforts of the following partners:

- The cities of San Antonio, New Braunfels, Seguin, and Floresville
- The Alamo Colleges
- All greater San Antonio area school districts and many private and charter schools
- Aerospace companies
- Information technology firms
- Advanced technology and manufacturing companies, the San Antonio Manufacturers Association, the New Braunfels Manufacturers Association, and the Seguin Economic Development Council
- Healthcare industry and local hospitals
- Port San Antonio
- The Greater San Antonio Chamber of Commerce and the chambers of commerce of New Braunfels and Seguin
- Workforce Solutions Alamo

Each partner brings a unique contribution to the Academies. The Alamo Colleges provide facilities, equipment, and instruction; the school districts provide textbooks and roundtrip transportation from students' home campuses to the college sites; employers pay the salaries of their summer interns; and the cities fund staff salaries and operating costs. The Academies are also supported by Workforce Solutions Alamo and have received grants from the U. S. Department of Labor and the Texas Governor's Office. Academy students use community college instructors, classrooms, equipment, and laboratories to prepare for careers in the aerospace, information technology and security, advanced technology and manufacturing, and healthcare. These careers match four of the six industry clusters identified by Workforce Solutions Alamo as high-wage, high-skill growth industries essential to the prosperity of San Antonio and surrounding region.

Conceptual model—The Academies provide a bridge between the K-12 and postsecondary

systems, creating a path to lifelong learning. The Bureau of Labor Statistics states that “80% of the fastest growing jobs in the US require some education past high school.” The Academies pipeline supports the graduation initiatives outlined in the Texas Higher Education Coordinating Board's “Closing the Gaps” higher education plans. Moreover, the Academies support San Antonio's economic development efforts by helping to recruit, train, and retain qualified employees in the aerospace, advanced technology and manufacturing, information technology and security, and healthcare sectors.

Industry-paid internships—The Academies offer students an industry-paid internship in the summer between their junior and senior years. Students work full time for eight weeks for participating employers, earning approximately \$2,560. Local industries have agreed to provide hiring preference to successful interns after they graduate. The industry partners that have provided summer internships in recent years have included Lockheed Martin, Boeing, ITM, 433rd Airlift Wing, M-7, Standard Aero, PSI, Chism Company, SWBC, AT&T, Cox Manufacturing, and Kinetic Concepts. This summer (2010) the Methodist Healthcare System, the CHRISTUS Santa Rosa system, Morningside Ministries and Connolly Memorial Medical Center became the first employers to host nursing interns. In addition, the majority of our industry partners have tuition reimbursement programs for our graduates.

Graduate data:

- 608 graduates (98% continued higher education; obtained jobs in aerospace, advanced technology and manufacturing, or IT; or joined the military.)
- Graduates awarded over \$1,026,000 in scholarships
- Gender: Male: 82%; Female: 18%
- Ethnicity: Hispanic: 64%; Caucasian: 30%; African-American: 4%; Asian: 2%

- Average starting hourly wage all graduates: \$10.63 per hour
- Average starting pay approx. \$32,100: Salary: \$22,103 (\$10.63 × 2080 hrs) plus ~\$9,997 in benefits

For more information, contact Gene Bowman at 210-485-0826 or obowman@alamo.edu. The Alamo Academies are on the web at www.alamo.edu/academies www.facebook.com/AlamoAcademies.

Bowman will present at the 2010 NCPN conference in Dallas, Texas (Oct 20–23), on Friday at 11:15.

GRADUATION PLACEMENTS (2002–2010)

Academies	Graduates	Targeted Industry Jobs	Other Jobs	Military	Higher Ed	Moved/Unknown
Aerospace Academy	280	181	12	9	72	6
Information Technology & Security Academy	243	8	0	9	220	6
Advanced Technology & Manufacturing Academy	82	40	0	0	39	3
Health Professions Academy	3	0	0	0	3	0
Total	608	229	12	18	334	15
Percentage		38%	2%	3%	55%	2%

College and Career Ready: A Partnership Leading to Success

Crystal B. Taylor, Director of Outreach and Recruitment, Thomas Nelson Community College, Hampton, Virginia

Many school divisions across the country implement systemic secondary curriculum change to include coursework that is relevant and rigorous and that provides a learning environment supportive of challenging academic coursework. As a result, participation in accelerated learning opportunities such as Advanced Placement, International Baccalaureate, and Dual Enrollment has increased (Lerner and Brand). In Virginia, partnerships to enhance K–12 education by developing and implementing strategies that will improve high school student readiness for success in college are encouraged. Virginia and four other Southern Regional Education Board (SREB) states—Kentucky, Maryland, Texas and West Virginia—are participating in an SREB initiative designed to improve students’ college and career readiness

(SREB). The goal is to ensure that college-readiness standards in reading, writing, and mathematics are emphasized in every Virginia public high school classroom, reducing the need for college students to take remedial courses and boosting college graduation rates for two- and four-year degrees (SREB).

Many Virginia community colleges are working actively and cooperatively with school divisions to improve student achievement at the postsecondary level. School divisions are partnering with local community colleges to build a system that assists with identification of strengths and weaknesses and helps students improve their skills while they are still in high school. This system also connects students with the resources needed to be successful in college. To prepare all high

school students to succeed in college-level coursework and become career ready, many school divisions have established teams to identify systemic strategies that support academic rigor within their curricula.

A local partnership—Partner for Success—between a community college and a school division was developed to improve college readiness for all high school students. This partnership will investigate the development of an instructional intervention plan for students who need additional assistance in becoming college ready. The overall goal of Partner for Success is to prepare all high school students to succeed in college-level courses. At the National Career Pathways Network (NCPN) conference in Dallas, Texas, in October 2010, there will be a presentation on how this partnership was formed and its initial steps implemented. The session will be titled *College and Career Ready: A Partnership Leading to Success!*

The partnership was initiated through discussions with the school division superintendent. These discussions focused on college readiness data such as the following:

- Number of high school graduates and those participating in dual enrollment
- Career Pathways program enrollments and success of recent high school graduates
- COMPASS placement and success in developmental education

A team of community college and school division staff was formed to develop and investigate strategies that would provide each high school student with opportunities to transition successfully from high school to college. The plan included the outreach efforts (ACT) of early intervention testing of all 10th-grade students in the division and dual enrollment opportunities.

Review of progress and future planning are under way to consider curricular interventions and college transition initiatives. In Virginia, community colleges and school divisions are making a commitment to collaborate on initiatives that increase the number of students who are college and career ready. Join us at the National Career Pathways Network conference for this presentation on how your college or school division can *partner for success*.

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- Virginia Community College System (VCCS) (2007). College Readiness Report: How Virginia's Community Colleges Are Addressing the Academic Weaknesses of Recent High School Graduates. Richmond, VA: Author
- For more information, contact Crystal Taylor at taylorcb@tncc.edu. She will present at the 2010 NCPN conference in Dallas, Texas (Oct 20–23), on Friday at 8:30.*

Building the Education-Career Connection

Callie Wise, Trainer, TCIDS Program, Tennessee Board of Regents

As educators in the K–12 system are all too aware, time is of the essence. For nine months out of the year, school teachers and counselors direct, influence, and encourage student learning. According to the Center for Disease Control, the average life expectancy in the United States is 77.7 years. That translates to a maximum of 25,920 hours of education within an average life span consisting of 680,652 hours of life. In other words, 26.2% of a student's lifetime will be spent in the classroom. The limited amount of time we have to impact a child's education is mind-boggling. Add to this limited amount of time the further constrictions created by testing, holidays, teacher workdays, football pep rallies, and family/personal/behavioral issues, and it is amazing that any learning takes place at all.

At a counselor conference in east Tennessee in March 2010, a high school counselor told me during my session that she literally had to give twelve different tests to almost 400 students that year. There are, at best, 270 school days in a year. This counselor had more students than she had days in the year. On top of that, she was expected to test these students repeatedly and help them plan for college or careers after school as well as deal with the everyday personal problems students carry with them into school.

The TCIDS program that I work with at the Tennessee Board of Regents is a collaborative contracted program with the Tennessee Department of Education. TCIDS stands for the Tennessee Career Information Delivery System. Through the collaboration with the education department, our program has created a simple, easy-to-use one-stop website for career education and career planning at the K–12 level, no passwords or registration required. The TCIDS website consists of three main sections: (1) TCIDS (<http://tcids.tbr.edu>), which is the general career information site consisting of career interest

surveys and job and college databases; (2) Pathways (<http://pathways.tbr.edu/>), the official state website for career cluster information and programs of study approved by the department of education; and (3) The Virtual Career Center (<http://careers.rodpc.org/>), a job search resource for anyone wanting help with resumes, interviewing, or career planning.

The TCIDS program, as a whole, is a full career management website that is free and available to anyone with Internet access, students and adults alike.

The primary goal of TCIDS is to provide accurate, timely career information to the citizens, in particular the students, of Tennessee to increase career awareness and options for training and education in our state. It is also meant to be easy-to-use and assist counselors and teachers with meeting the demands of the Tennessee Department of Education's curriculum standards as well as Governor Phil Bredesen's Tennessee Diploma Project, which is focused on career and college readiness in high school.

To that end, the TCIDS team developed a portion of the TCIDS website called The Classroom Corner, which will be featured in a session at the 2010 NCPN conference in Dallas. The Classroom Corner is a ready-made lesson plan site that provides downloadable lesson plans in Word document or PDF format. Some of the lesson plans are short one-day activities, and another section includes a five-day career week activity, with an optional two-day extension activity in resume writing and interviewing. The state curriculum standards for career education that are met with these lesson plans are included as well to ease documentation for teachers and counselors. The lessons can be adapted to suit student needs and learning abilities, making them shorter or longer as needed.

With the increasing demands on educator time, the TCIDS program has served as a vital resource to our state’s educators in providing career education. It is the hope of the TCIDS team to continue to add lesson plans and information to the TCIDS websites that will enhance the hard work that our educators already perform.

For more information, contact Callie Wise at callie.wise@tbr.edu. She will present at the 2010 NCPN conference in Dallas, Texas (Oct 20–23), on Saturday at 9:45.

Destination College

Alicia Huppe, Associate Dean of Recruitment and Programs for New Students, Collin College, Preston Ridge Campus-F127, Frisco, Texas

“Destination College”—a catch phrase to some—is a mission to those who strive to guide parents and students on the path to higher education.

Five years ago officials at Collin College, a community college district serving about 46,000 students throughout Collin County, Texas (an area just north of the Dallas metroplex), realized a need for preparing county residents for the college admissions process. Mandated by initiatives at the national and state levels, Destination College strives to make students and parents ready for college.

In 2006, Collin College hosted a workshop for area high school parents titled “Destination College.” Each of the 350 people who attended gained valuable information regarding academic expectations, navigating the admissions process, translating the language of higher education, and exploring financial resources in preparing for the college process. It solidified the need for this type of information, and Collin College officials listened.

Since then, Destination College has evolved into a full-fledged department that hosts about 20 workshops per year. During the 2009–2010 school year, Destination College reached more than 3500 students and parents through workshop participation. In addition, staff members travel to school districts to talk with students, counselors, and parents on their home campuses to discuss best practices in the college admissions process,

regardless of where students plans to attend college.

Along the way, Collin College administrators and faculty and staff members have worked with area high school curriculum directors and counselors on curriculum alignment initiatives in the areas of math and English. The ultimate goal is to provide resources to help students become college ready. A question often asked is, “What does being college ready entail?” Destination College adheres to the belief that being college ready means being prepared to navigate the complex road to college and possessing the knowledge and skills necessary to succeed upon admission.

Destination College focuses on how students can find the right college and obtain and complete college applications, provides guidelines for applying for financial aid, and hosts a series of test-taking strategy workshops designed to enhance testing performance levels on high-stakes achievement tests. Ever-evolving and striving to offer timely and helpful advice to students and parents, the Destination College department works to provide current and relevant resources, materials, and data that are useful to the people it serves.

Each year, attendees of the parent workshop receive an 80+-page parent resource guide. This publication comprises checklists, resources, instructions, and guidelines on the college going process. A wealth of resources can also be found

on the Destination College website—
www.collin.edu/destinationcollege.

For the 2010–2011 school year, Destination College will host sessions on writing effective application and scholarship essays, being a cyber-smart student, avoiding being a helicopter parent, and exploring college majors and careers. All workshops are free.

The program will also continue a partnership with the Princeton Review that allows students to get up-to-date information on what colleges and universities throughout the nation are looking for and what to expect on the ACT and SAT. Students will also be given a chance to take practice tests before attempting the real thing.

While the majority of programs take place during the academic year, Destination College also offers a Math Summer Bridge program to graduating high school seniors and students who have not yet begun college mathematics sequences.

Taught by professors over a three-week period, the bridge program engages students in two hours of instruction, four days a week. The end result is that

students increase math placement test scores and are better prepared for their first college math classes. The intent is to bypass developmental classes, thus saving the student time and money. The program was first offered in 2008 and in 2010 received 120 student applications.

Members of the Destination College staff look forward to sharing their experiences at the National Career Pathways Network conference in October. Presenters will share tips and lessons learned and will ask conference attendees for ideas and suggestions regarding college preparation programs.

Attendees will learn more about the history and growth of the department and will receive a list of programs being presented through Destination College, along with reference materials. We look forward to seeing you in Dallas!

For more information, contact Alicia Huppe at 972-377-1749 or ahuppe@collin.edu. She will present at the 2010 NCPN conference in Dallas, Texas (Oct 20–23), on Friday at 3:15.

Spurring US Innovation Through Technology, Engineering, Arts, Mathematics and Science (TEAMS) Integration

Jim Brazell, Radical Platypus Group, a VentureRAMP Company

(This article and the following by David Thornburg address different aspects of the same topic.)

On July 1, 2010, Hawaii's Jeff Piontek delivered the closing keynote of the National Educating Computing Conference (NECC) by declaring: "It's no longer STEM. It's STEAM." His presentation slides had white typeface for the words *science*, *technology*, *engineering*, and *mathematics* (STEM) and bold red typeface for the word *arts*. The educator drew enthusiastic applause from the crowd of thousands.

The term STEM was coined by Dr. Judith Ramaley when she was assistant director of the education and human resources directorate at the National

Science Foundation (NSF) from 2001 to 2004 (Chute, 2009). Ramaley's concept of STEM situates learning in the context of solving real-world problems or creating new opportunities—pursuit of innovation. Spurred by a public and private sector push for global competitiveness, STEM has become a lightning rod for education in 2010.

People involved in the movement to integrate STEM and the arts use the acronym "TEAMS" or "STEAM." Advocates from both the world of science and the world of the arts have converged in a grassroots movement. The movement is about transformative practices in education that unify knowing and doing—theory and application.

According to the NSF, the great scientific and technological breakthroughs are expected at the intersection of disciplines. Related to TEAMS, the National Science Teachers Association (NSTA) and the Arts Education Partnership (AEP) both have emerging practices. On January 11, 2010, NSTA published "Reaching Students Through STEM and the Arts." The article describes efforts underway across the U.S. focused on integrating science, technology, engineering, arts, and mathematics (STEAM) curricula.

In 2007, the Arts Education Partnership (AEP) released *Arts Integration Frameworks, Research and Practice: A Survey of the Literature on Arts Integration* as a free online book. The book is a complete survey of the literature related to arts integration. Today, integrated technology, engineering, arts, mathematics, and science (TEAMS) initiatives are grassroots and emerging but not yet part of the formal national STEM innovation agenda.

During President Barack Obama's April 2009 visit to the 146th congress of the National Academy of Science he announced more planned investment in STEM education, research, and commercialization than America spent to answer Russia's Sputnik and ultimately to pioneer space travel to the moon. In his shadow are Eisenhower's investments in the National Science Foundation (NSF), NASA, and the defense research and development office DARPA.

Today, the questions and circumstances are different than they were in the Sputnik Era; however, the goal is the same—innovation. On July 28, 2010, the Father of the U.S. Global Positioning System, Col. (Dr.) Francis "Duke" Kane, read this article.

Duke's response is: "STEM represents the knowledge, tools, and processes to invent the future. However, the arts are what make us human. They are inseparable."

Emerging TEAMS Innovation in Florida, New York and Texas

"We are witnessing a new Renaissance," Bob explains, "where TEAMS work and disciplines are the key to Florida's creative enterprise from film to educational technology to medicine." On Friday, June 18, 2010, Bob Allen spoke to the Florida Association of Arts Education (FAAE) about the importance of integrating technology, engineering, arts, mathematics, and science (TEAMS). To Allen, integration of STEM and the arts is a no brainer. Allen is the chief storytelling officer of IDEAS, an innovation studio that was spun out of Disney in Orlando.

Florida is a critical state in terms of TEAMS-based education because cultural and technical arts industries accounted for \$28 billion dollars in revenue in 2007 with forecasted job growth exceeding biomedical and defense (as a percentage) between 2008 and 2018 (Harper, 2008). The arts are also viewed systemically in Florida across many STEM high technology industries.

TEAMS programs underway in Florida include: (1) the Florida High Tech Corridor Council techPATH program, (2) the Orlando Science Center's Otronicon video game initiative, (3) University of Central Florida's Interactive Entertainment Academy (FIEA), and (4) coordination across career and technical education (CTE) industry advisory boards for STEM; information technology (IT); and arts, A/V technology, and communications (ARTS).

On April 7, 2010, Texas Governor Rick Perry launched GameOn! Texas to discuss video games, film, new media, and educational strategies for the state.

Dr. Peter Raad from the Guildhall at Southern Methodist University (SMU) stated, "STEM and arts are two sides of the same coin."

Texas projects integrating STEM and the arts include: (1) spaceTEAMS, a P-20 STEM-ARTS-IT diversity initiative feeding San Antonio's emerging national cyberspace defense and hacker

competition Cyber Patriot sponsored by the Air Force Association, (2) the Guildhall Academy and its masters program in game design and summer camp for K-12 game designers, (3) Spencer Zuzolo's Game Camp for middle school, high school, and college students, (4) P-20 initiatives being staged by the Texas State Technical College System Associate Vice Chancellor of STE(A)M, and (5) CTE-academic integration across all Texas high schools supported by the Texas Education Agency.

New Visions for Public Schools launched Quest to Learn in New York City. The sixth-to-twelfth grade school is designed around theories of engagement and learning embedded in the arts, play, games, and creativity. In 2008, New York City launched a bold initiative to make career and technical education (CTE) innovation a city-wide priority.

CTE programs in New York City and the state are supported by an emphasis on the arts including standards that support arts inclusion, while the grand CTE experiment in the city redefines traditional "vocational education" and "general education" by integrating arts, academics, and career education for all students in select schools.

What is common across Florida, Texas, and New York is an emerging model that unifies arts, humanities, and CTE to redefine "general education" and the idea of a "well-rounded student."

The well-rounded student of the 21st century is academically prepared and able to put knowledge into action to solve real-world problems and opportunities.

In these states, legacy general education is giving way to a quiet revolution. The revolution consists of technologies that once cost hundreds of millions of dollars but are now available for thousands, along with courageous teachers who dare ask: "What kind of world do you want to live in today, and can you imagine and design it?"

Jim Brazell is a technology forecaster, author, public speaker, and consultant. Brazell's mentor and collaborator is Col. (Dr.) Francis X. "Duke" Kane, who was recognized in March of 2010 as the father of the global positioning systems (GPS/NAVSAT).

Brazell will present at the 2010 NCPN conference in Dallas, Texas (Oct 20–23), on Thursday at 4:00.

Engineering and TEAMS Education Synonymous

David Thornburg, CEO, Thornburg Center for Professional Development

(This article and the preceding by Jim Brazell address different aspects of the same topic.)

In the preceding article, Jim Brazell suggests that we replace the STEM nomenclature with TEAMS to represent the importance of the arts (A) as critical to the other elements (technology, engineering, math, and science). This perspective has great value and sets the stage for asking whether there is a core activity or content area that easily subsumes the others. The reason for even asking this question comes from one of my strong beliefs. Instead of looking at existing stovepipes of subjects, I think it is essential to look at the combination as a whole. A TEAMS practitioner

does not say, "Now I'm doing math; now I'm doing science, etc." Instead she incorporates all these subject areas seamlessly when solving a problem. This does not mean that there is no room for individual subjects in the content areas, but that there needs to be a place and time when students get to experience them as a whole.

To see why I feel so strongly about this, some personal background is in order.

I was fortunate to grow up in a home where disciplinary boundaries were absent. My mother was a member of the Bauhaus movement when it moved to the US. She worked with Lazlo Moholy-Nagy from whom she learned many things as an

artist. One of these was that machine tools were as important as paints to artists in this project. The fame and influence of this school of thought remains strong today in schools of design all over the world. Later in life, when I was at the famed Xerox Palo Alto Research Center (home to the first true personal computer, Ethernet, desktop user interface, and many other innovations), we were part of an interdisciplinary team. We had scientists, engineers, artists, mathematicians, and technology inventors on our staff, and we worked together.

It is no surprise that we invented the future, and that many of our innovations are still in common use. While each of us had major skills in one area, we collaborated and gained an appreciation for the insights and skills of people with different backgrounds. When teaching graduate courses part-time in the design division at Stanford University in the early 1980s, I taught a “programming” class using this approach where students worked in two-person teams—one engineer and one artist per team.

To me, the benefits of looking at TEAMS as a whole are obvious. Furthermore, the most natural subject to embrace all of the TEAMS areas is engineering. My reason for choosing this subject is that while you can explore science, math, art, and technology by themselves, you need all of these subjects to be a competent engineer.

And now we come to a problem. While our academic schools have (generally) rich programs in science, math, and art (and some teach programming and other pure technology courses), it is the rare high school that offers a course in engineering, leaving that area to the career and technical education (CTE) schools. When I speak on this topic at education conferences, I find only a small percentage of educators who have backgrounds in engineering. As a result, misperceptions of the field abound, and, with everything else on our plates as educators, the idea of adding yet another discipline to the list seems absurd. That said, we need to do something about this. In my view, engineering and TEAMS education are synonymous. Schools have art rooms, laboratories, and libraries but rarely have well-equipped shops where students can develop their hands along with the development of their minds. If your school is an exception, you are on the right track. If not, champion the cause of TEAMS—our future depends on the skills of those still in our classrooms, and in our high-tech world of today, we all need to join the team for TEAMS.

For more information, contact David Thornburg at dthornburg@aol.com. He will present at the 2010 NCPN conference in Dallas, Texas (Oct 20–23), on Friday at 9:45.

Connections

Mark Whitney, Editor

David Bond, Director, NCPN

Connections is published by the National Career Pathways Network, an organization of educators and employers dedicated to the advancement of Career Pathways, Tech Prep, and other CTE initiatives. NCPN assists its members in planning, implementing, evaluating, and improving workforce education programs. NCPN was founded by CORD, a national nonprofit organization that has been leading change in education for over twenty years.

Questions about *Connections*?

Contact: Mark Whitney, NCPN, P.O. Box 21689,
Waco, TX 76702-1689; 254-772-8756 ext. 315; or
mwhitney@cord.org

Visit NCPN on the web at www.ncpn.info.

Save the date!

The 2010 conference will be held October 20–23 at the Sheraton Hotel (formerly Adams Mark) in downtown Dallas, Texas. Visit ncpn.info often for the latest information.

