

ATEA

American Technical Education Association

Journal

53rd National Conference on Technical Education

“Technical Education: Innovations to Build Tomorrow’s Workforce”

Hosted by the Alabama Community College System

Orange Beach, Alabama | March 9-11, 2016

ALABAMA



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Region 6: Lin Zhou,
Bates Community and Technical College, Tacoma WA

ATEA JOURNAL

A REFEREED JOURNAL PUBLISHED
BY THE AMERICAN TECHNICAL
EDUCATION ASSOCIATION

Minneapolis, Minnesota

Vol. 42, No. 2 ISSN 0889-6488

Indexed and abstracted in Current Index to
Journals in Education (CIJE)

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Publication guidelines for articles can be obtained at www.ateaonline.org.

Layout

Shelly Fitterer, Dunwoody College
of Technology—*Journal* layout

The *ATEA JOURNAL* is the official journal of the American Technical Education Association, Inc., and is published twice annually (fall and spring) by the American Technical Education Association, Inc., Dunwoody College of Technology, 818 Dunwoody Boulevard, Minneapolis Minnesota 55403, 612-381-3315, e-mail skrebsbach@dunwoody.edu. Web site www.ateaonline.org. All members of the Association receive this *ATEA JOURNAL*. Corporate/business members \$500 per year. Institutional members \$500 per year. Individual members \$75 per year. Retired persons \$30 and student members \$15. Life membership \$600.

The American Technical Education Association (ATEA) was founded in 1928 and incorporated as a non-profit professional education association in 1960. In 1973 the national headquarters was moved from Delmar, New York to Wahpeton, North Dakota. In 2012 ATEA relocated to the Dunwoody College of Technology, Minneapolis, MN. ATEA is the only autonomous and non-affiliated international association devoted solely to the purposes of postsecondary technical education. ATEA is the leading association for the postsecondary technical education with emphasis on professional development. Educators and individuals from business and industry come together at conferences to discuss the latest trends and developments in technology. The organization is dedicated to excellence in the quality of postsecondary technical education with emphasis on practical teaching ideas and best practices.

Fall/Winter 2015-16 | Vol. 42 No. 2

From the Executive Director and Managing Editor



The American Technical Education Association Journal presents both recaps of the fall regional conference and summaries of the content. This fall we added President's Roundtables. Region 5 discussed accreditation and faculty credentialing; and Region 3 discussed industry certifications to move students through to employment to meet the workforce needs. Region 5 was held in Sioux Fall, South Dakota, hosted by Southeast Tech with great support from Lake Area Technical Institute in Watertown South Dakota and

Region 3 was hosted by Gateway Technical College at the Racine campus and workshops on the S C Johnson iMET Center for Innovation, Sturtevant, Wisconsin. We appreciate the sponsorships of the Region 3 conference by National Coalition of Certification Centers, NC3, Snap-on Tool, S C Johnson, Gateway Technical College and Madison College.

ATEA is pleased that we are a non-partisan forum for government leaders to speak on behalf of technical education and workforce development. South Dakota Governor Dennis Daugaard was the keynote speaker at Region 5. Congresswoman Susan Brooks, Indiana, spoke at the 52nd national conference and Governor Robert Bentley of Alabama is invited to be the closing keynote at the 53rd national conference hosted by Alabama Community College System.

The 53rd National conference entitled "Technical Education: Innovations to Build Tomorrow's Workforce," is hosted by the Alabama Community College System. Chancellor Mark Heinrich and Dr. Tim Alford, Chief Workforce Officer, are the co-chairs. Mechatronics and technical leadership development are featured in the Plenary Sessions. The breakouts will be welding, advanced manufacturing, soft skills, allied health care and other areas. We are being joined by representatives of the Automotive Manufacturing Technical Education Collaborative and the "Leadership Capacity Building for Manufacturing and Manufacturing Related Programs" NSF funded project with Ivy Tech Community College, Indiana. Both groups have National Science Foundation grants. ATEA seeks to make connections for members and attendees with networks and programs through presentations and through social networking events.

The conference will have a special "President's Reception" in honor of President Paul Young, ATEA Board President 2015-2017. Dr. Young's letter invites you to the conference but I also want to let you know about the reception in honor of his national service and service in Wyoming to technical education. The reception is hosted by Wyoming Board of Cooperative Higher Education Services.

The national conference is the time we recognize and award outstanding students, faculty and programs in technical education and an outstanding business with the Silver Star award presented jointly with the National Technical Honor Society. This year the American Technical Education Association will be presenting its highest award, the Jean Koch Outstanding Technical Education Achievement Award to Dr. Harry Bowman, ATEA Board of Trustee and Executive Director, Emeritus, Council on Occupational Education. The awards luncheon is March 10 at the conference at Perdido Resort, Orange Beach, Alabama.

Thank you to ATEA Journal editor Dr. Nasser Razek, University of Dayton, Dayton Ohio, for the reviewed and refereed section. He and his committee forwarded for publication two outstanding articles and one for Krystal Kleer. Thank you to Dr. Razek for his professional expertise and dedication to technical and career education. We encourage you to publish in the ATEA Journal.


Sandra Krebsbach

president's letter



Greetings to all of our ATEA members and friends!

We are winding down the fall semester here on the campuses of the Northern Wyoming Community College District.

It has been a busy fall for our tech programs. Enrollments are up and we are still placing nearly 100% of our graduates in the regional workforce despite the downturn in the energy markets. I know all of you are enjoying the lower gas prices, but we're hoping to see an end to that soon!

It was great to see a number of you at the Region V conference in Sioux Falls and congratulations to Southeast Tech for putting on a spectacular program with valuable content for all of our attendees. The Region III meeting just a couple of weeks later in Racine was also a huge success. As we are adding more and more value to our regional meetings we are seeing results in the turnout of technical

program faculty and administrators. Thank you for continuing to build our brand with these terrific professional development opportunities for our faculty and staff.

With the New Year upon us, we'll all soon be trying to remember to write "2016" instead of "2015" on our checks and other paperwork. And that means that our 53rd National Conference is right around the corner. The 2016 event is being hosted by the Alabama Community College System. Chancellor Dr. Mark Heinrich and Chief Workforce Officer, Dr. Tim Alford invite you to Orange Beach, Alabama March 9-11, 2016. The conference addresses the critical need for workforce and technical education transition to innovate. The title of the conference is, "Technical Education: Innovations to Build Tomorrow's Workforce." Mechatronics will be a key area addressed as will developing future technical education leaders. PLEASE TRY TO COME AND BRING REPRESENTATION FROM YOUR CAMPUS.

Wishing all the best to you and your family for this holiday season,

Paul Young

President, ATEA

Association Updates

Elected to the Executive Council



At the Fall Board of Trustee Meeting, Dr. Bryan Albrecht, President of Gateway Bank was elected to the Executive Committee as 2nd Vice President. Dr. Albrecht is the ATEA Region 3 President hosting the fall 2015 Regional Conference. He has been a member of the ATEA Board of Trustees since 2014. He is the past Chair of the Association

of Career and Technical Education and serves on the Board of the American Association of Community Colleges. He is one of the founding presidents and past Chair of the National Coalition of Certification Centers (NC3).

Jean Koch Outstanding Technical Education Achievement Award




The ATEA Board of Trustees voted to award the Dr. Harry Bowman it highest award, the Jean Koch Outstanding Technical Education Achievement Award. The award will be presented to Dr. Bowman at the March 10 Awards Luncheon, held in conjunction with the national conference hosted by the Alabama Community College System in

Orange Beach, Alabama March 9-11.

hosts

Invitation letter from Alabama Community College System

Post Office Box 302130
Montgomery, AL 36130-2130



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www.accs.cc

MARK A. HEINRICH, PH.D.
Chancellor

October 16, 2015

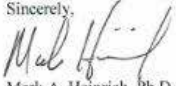
Dear Conference Participants:

The Alabama Community College System is honored to host the 53rd American Technical Education Association National Conference at the Perdido Resort in Orange Beach, Alabama, March 9-11, 2016.


The conference theme, *Technical Education: Innovations to Build Tomorrow's Workforce*, is appropriate and timely. Harvard University predicts that in 2018 only 33% of all jobs will require a four-year degree, while the overwhelming majority will be middle-skilled jobs requiring technical skills and training at the credential or associates degree level. The question from employers, "where are the workers?" has been expanded to "where are the workers with skills?"

The Conference Planning Committee has scheduled a full agenda of speakers, training sessions, and workshops that address a variety of technical education topics. Tours have been scheduled to showcase the aviation and maritime industries in Alabama's Gulf Coast region. I encourage you to take advantage of all the conference has to offer, enjoy networking opportunities among professionals in the field, and we welcome you to the white-sand beaches of Alabama's Gulf coast.

Sincerely,



Mark A. Heinrich, Ph.D.
Chancellor



Tim Alford, Ed.D.
Chief Workforce Officer

MAH/TA/lb

Alabama Community College System

The Alabama Community College System (ACCS) consists of 25 comprehensive community and technical colleges, Marion Military Institute and the Alabama Technology Network (ATN). ACCS is committed to providing a unified system of institutions delivering excellence in academic education, adult education, and workforce development. ACCS serves approximately 250,000 people annually through all of its entities, with over 120,000 of those served enrolled in credit courses. [About ACCS – www.accs.cc](http://www.accs.cc)



Dr. Mark Heinrich

Dr. Heinrich's higher education career spans more than 30 years, during which he's held leadership roles in academic, student service and technical/vocational areas. Prior to his appointment in 2012 to Chancellor he was the president of Shelton State Community College, Tuscaloosa Alabama. He holds BS

and MS degrees from Tennessee Technical University and a doctorate from the University of Alabama.



Dr. Tim Alford

Dr. Alford, Chief Workforce Officer, for the Alabama Community College System, has experience in both the educational and workforce areas. Alford has previously served as the mayor of Enterprise, Alabama and as a teacher, principal, assistant principal, assistant superintendent, superintendent and

Dean of Development at Enterprise State community College, Enterprise, Alabama. He holds a bachelors, masters and doctorate from Auburn University, Auburn, Alabama.

schedule

2016 ATEA 53rd NATIONAL CONFERENCE SCHEDULE

Perdido Resort, Orange Beach, Alabama | March 9-11

Tuesday, March 8

7:00 – 8:00 pm Registration

Wednesday, March 9

7:30 – 9:00 am Awards Committee Meeting

8:00 am – 12:00 pm Exhibitor set up for Trade Show

8:00 am – 4:00 pm Registration

9:00 am – 12:00 pm ATEA Board of Trustee Meeting

12:00 – 12:45 pm **Strolling Lunch Opens the Trade Show**

12:00 – 4:45 pm Trade Show Exhibit Area Open

1:00 – 4:00 pm

Plenary Sessions: Ballroom

Session I: “Leadership Capacity Building for Manufacturing and Manufacturing-related Programs. NSF DUE – 1304391, Ivy Tech’s Leadership Model for Deans and Chairs of Technical Programs”

Moderator: Steve Wendel, Director – National Center for Manufacturing Education (NCME), Sinclair Community College, Dayton, Ohio

Panelists:

- Sue Smith Vice President for Technology and Advance Science Programs, Ivy Tech Community College, Indiana
- Aco Sikoski, Campus President - Valparaiso, Ivy Tech, Valparaiso Indiana
- Suzan Perry, Dean, Technology Division, Ivy Tech CC, Valparaiso
- Vearl Turnpaugh, Associate VP for Career and Technical Education, Ivy Tech Community College, Indiana
- Niaz Latif, Dean School of Technology, Purdue University, Calumet, Indiana

Break

Session 2: “Mechatronics: Transforming Skill Sets for High Paying Career Pathways in Automotive, Aerospace and Advanced Manufacturing. Key Collaborations that have transformed Competency Based Education through NSF Funding.”

Moderator: Mary Kaye Bredeson, Executive Director, Center of Excellence for Aerospace and Advanced Materials, Everett, Washington

Panelists:

- Danine Alderete-Tomlin, Executive Director, Automotive Manufacturing Technical Education Collaborative, (AMTEC) for the Kentucky Community College System. AMTEC is an NSF ATE National Center of Excellence in Automotive Manufacturing.
- Beverly Hilderbrand, Director of CARCAM- Gadsden State Community College, Gadsden, Alabama
- Tennessee College of Applied Technology and Nissan Murfreesboro, Tennessee
- Gene Bowman, Executive Director Alamo Academy, Aerospace and IT, Advanced Manufacturing, San Antonio Texas
- Mary Batch, Assistant Manager, Human Resource Development, Toyota Motor Manufacturing, Texas

Light refreshments in the Trade Show

2:00 – 2:30 pm

2:30 – 4:00 pm

4:00 – 4:45 pm

5:30 – 7:30 pm

ATEA President's Reception and Conference opening event

Hosted by: Board of Cooperative Higher Education Services, Gillette, Wyoming, in honor of Dr. Paul Young, ATEA President, President of Northern Wyoming Community College District, Sheridan, Gillette and Buffalo campuses

Welcome by: Dr. Mark Heinrich, Chancellor of the Alabama Community College and Co-Chair, Dr. Tim Alford, Chief Workforce Officer

Comments: Dr. Paul Young, ATEA President

Thursday, March 10

7:00 am – 12:00 pm

TRADE Show Exhibit area open

7:00 – 7:45 am

Coffee available in Exhibit Area

7:00 – 8:00 am

Breakfast seating in Ballroom

7:45 am

Chancellor Heinrich's Panel

8:00 – 9:00 am

Chancellor Dr. Mark Heinrich's Panel and Breakfast

“Technical Education and the Gulf Coast Regional Economy”

Panelists:

- Statewide Business and Industry Representatives

9:10 – 9:55 am

Concurrent breakout session 1

9:55 – 10:10 am

Coffee break in the exhibit hall

10:15 – 11:00 am

Concurrent breakout sessions 2

11:10 – 11:55 am

Concurrent breakout session 3

12:00 pm

Trade Show Closes

12 – 1:30 pm

ATEA National Awards Luncheon

- Outstanding Technical Student, Technical Teacher, and Technical Program.
- Silver Star Award jointly awarded with the National Technical Honor Society, to business with exemplary practice in support of technical education and students.
- Special presentation of the Jean Koch Outstanding Technical Educator Achievement Award.

2:00 – 4:00 pm

Business and Industry Tours

- AUSTAL
- Port of Mobile
- Battleship USS Alabama
- Airbus –TBC

4:30 – 5:00 pm

Buses return to Perdido

Open evening

Friday, March 11

7:30 – 8:30 am

Regional Meetings

9:00 – 10:30 am

Brunch

Keynote speaker: Honorable Robert J. Bentley, Governor of Alabama invited

10:30 – 11:15 am

ATEA Annual meeting



2016 TRADE SHOW INFORMATION FOR EXHIBITORS

Activity: AMERICAN TECHNICAL EDUCATION ASSOCIATION'S
53rd National Conference on Technical Education Trade Show

Dates: Wednesday, March 9 –Thursday, March 11, 2016

Location: Perdido Beach Resort, 27200 Perdido Beach Blvd., Orange Beach, AL 36561

Hotel Reservations: 1-800-634-8001

Mention ATEA for conference rate of \$121 plus tax

Hosted by: Dunwoody College of Technology Minneapolis Minnesota

Contact: ATEA for registration and exhibit questions please call...

Michael Martinez

In-House Expo

5161 Traceway Drive

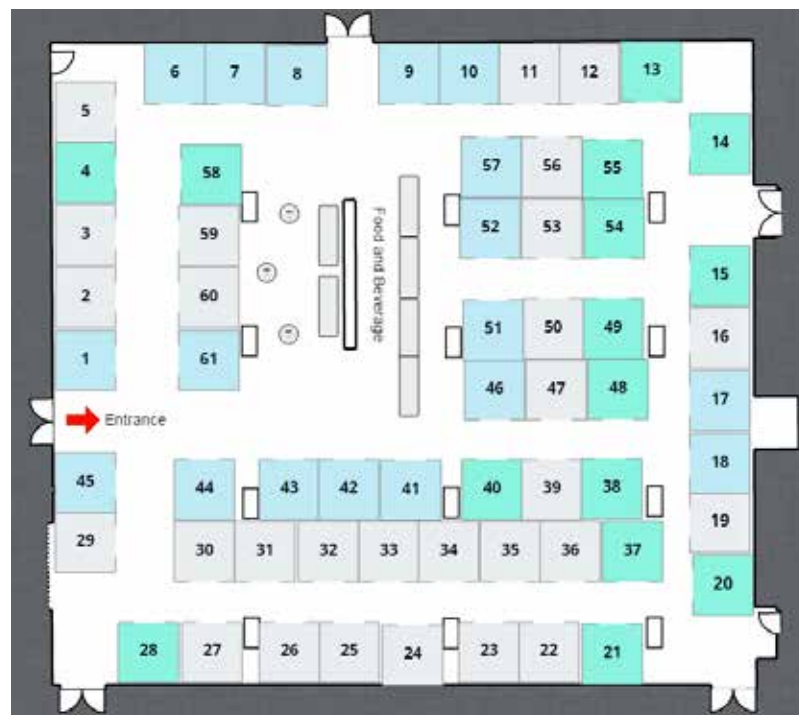
Nashville, TN 37221

info@in-houseexpo.com

Phone: 615-915-1148

Fax: 615-915-1152

Exhibit Booth Configuration and Costs:



Standard 8' X 8' Booth:

- Premium Booth Space (Blue) are \$1,000
- Deluxe Booth Space(Green) are \$900
- Standard Booth Spaces(Grey) are \$800
- Additional Booth Spaces will be discounted 20%
- ATEA business members who exhibited last year can reserve a standard space for \$650
- Each booth space will get (1) 6' x 30" work table, (2) event chairs, (1) Identification Sign)
- Each exhibitor's name and address will be listed in the program.
- Exhibitors' Web sites will be linked to the conference Web site.

ATEA Member Discount:

- New exhibitors who area ATEA Members will receive a 20% off of their final booth cost.

Exhibit Hours

TUESDAY, MARCH 8

3:00am - 4:30pm

Decorator setup

4:30am - 6:00pm

Exhibit setup by prior arrangement

WEDNESDAY, MARCH 9

8:00 am- 12:00 pm

Exhibit setup

12:00 pm-12:45

Opening Strolling Lunch in Exhibitor Space Get acquainted with the Exhibitors

4:00 to 5:00

Refreshments in the Exhibitor Space

THURSDAY, MARCH 11

7:00am - 7:45 am

Coffee with Exhibitors

7:30am - 12:00pm

Exhibits open –

9:55 am -10:55 am

Break in exhibit area

12:00 pm

Exhibit area closes all items removed by 4:00 pm

Graduate/Undergraduate Credit offered at Conference

The University of Akron Teaching and Training Technical Professionals Program will be offering workshop credit for attendees at ATEAs National Conference. Participants will be able to earn one or two graduate or undergraduate credits. Those interested in earning credit must be registered prior to the start of the conference.

One can register by contacting Susan Petsche in our Outreach Office at susan3@uakron.edu or 330-972-8056. Cost per credit hour is \$150.00. All paperwork and follow-up assignments are submitted electronically.

Cost per credit hour is \$150. All paperwork and follow-up assignments are submitted electronically.

tours

2016 ATEA 53rd National Conference Tours

ATEA industry tours are an integral part of conference professional development and professional connections. The tours focus on the economy and training that supports the region. The Alabama conference focuses on Alabama's advanced manufacturing, maritime industry and the role of the Port of Mobile in the southeastern United States and the Gulf of Mexico.

Austal



Austal is an Australian global ship builder with a manufacturing facility in Mobile, Alabama where they produce US Navy destroyers. All participants in this tour must complete a form and return to the ATEA national office by February

28. The form is online. At the time of the tour each person must have proof of Citizenship either a U S passport or both a US Driver's License and US Birth Certificate.

Port of Mobile



The Port of Mobile is a deep water port in Mobile, Alabama. It is the only deep water port in Alabama ranked by the Army Corps of Engineers as the 12th largest

port by tonnage in 2013. It has 41 berths, 127,000 jobs direct or indirect and contributes \$507 Million in direct or indirect taxes to Alabama.

USS Alabama Battleship



The USS Alabama was the sixth ship of the United States Navy named after the US state of Alabama. Alabama was commissioned in 1942 and served in World War II in the Atlantic and Pacific theaters.

AirBus PLANNED

Airbus made history with the start of operations in A320 Family jetliner final assembly line in Mobile, Alabama. It is a \$600 million U. S. Manufacturing Facility that opened last year. The headquarters are based in Toulouse, France with other production facilities in Germany, Spain and the United Kingdom.

CORPORATE MEMBERS





SPONSORSHIP SIGN-UP FORM

**American Technical Education Association
53rd National Conference on Technical Education**

March 9-11, 2016
Perdido Beach Resort
27200 Perdido Beach Blvd.
Orange Beach, AL 36561

ATEA Host: Alabama Community College System

A variety of sponsorship opportunities are available for the ATEA National Conference on Technical Education.

This is a great way to advertise your company, product or service to conference attendees.

Your support will be greatly appreciated.

Contact Person _____

Company _____

Address _____

Phone _____ Fax _____

E-mail _____

Event Sponsorships:

_____ Platinum - \$10,000 -ATEA President's Reception

Gold - \$5,000-each

_____ Opening Lunch in the Trade Show

_____ Chancellor's Breakfast Panel,

_____ Friday Keynote brunch

_____ Silver - \$3,000- Thursday late afternoon Refreshment Break

Coffee Break - \$500

_____ Early morning Thursday

_____ Mid morning Thursday

____ **Check enclosed** (Payable to ATEA) ____ **Charge my Credit Card** ____ Visa ____ MasterCard ____ AmEx ____ Disc

Card # _____ Exp Date _____

Signature _____

CALL ATEA with credit card information: 612-381-3315

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Minneapolis, MN 55403

Question regarding sponsorship please contact:

Michael Martinez
Phone: 615.915.1148 FAX 615.915.1152
E-mail: info@in-houseexpo.com

Region 3 President's Roundtable

October 25, 2015, SC Johnson iMET Center, Sturtevant, Wisconsin



How Technical Education can respond to industry partners need for more graduates with more technical content and less unnecessary work in programs to provide the graduates more quickly.

Dr. Bryan Albrecht, President Gateway Technical College, Kenosha, Wisconsin.

Participants: Deb Stencil, Dean of Educational Support Services, Northcentral College, Wausau; Jed Jensen, Dean of Technical Programs,

Gillette College, Gillette, Wyoming; Deborah Davidson, Vice President, Business and Workforce Solutions, Gateway Technical College; Marie Price-Seeger, Vice President of Academic Affairs, Dawson Community College, Glendive Montana; Roger Tadajewski, Executive Director of National Coalition of Certification Centers (NC3), and Stephanie Sklba, Government Relations, Gateway Technical College.

Dr. Albrecht, President of Gateway Technical College moderated the discussion which concluded:

Specific programs and certifications designed to move students through industry recognized certifications are the answer to meet employer needs. Certificates can be incorporated into a stackable curriculum of advancing certificates or into credit programs.

Industrial Certificate Movement:

Roger Tadajewski spoke of the rapid and possibly exponential growth of NC3 certificate programs because of the network it builds among faculty and institutions and specific industries: aviation, energy, transportation and energy. Students are directly employable.

Certification programs can meet specific demographic needs as well as industry needs. Deborah Davidson described the Boot Camp Program a 14-week training program at Gateway Technical College. The Boot Camp moves the under and unemployed back into the workforce with a skills set in CNC Machine Operation which is needed by industries, now. The program is intense and they are experiencing 95% placement rate. There are standards for admission which are important to assure success for the student.

Deb Stencil of Northcentral College, Wausau, Wisconsin, that all colleges in the Wisconsin Technical College System submitted the industry credentials/certifications they offer into a common spreadsheet. It would be helpful to be able to standardize the process of identifying and updating this work, and utilizing a proactive approach to offer more industry

credentials/certifications to students.

An emerging expertise is a clearinghouse function on certificates. Jed Jensen, Dean of Technical Programs, at Gillette College, Gillette, Wyoming, "Each industry will have a nationally recognized certificate." Students with certificates, even if specific to an industry, can pull out those skills and show competency at a certain level. Certificates can also be embedded in a curriculum. Certificates identify the skills threshold for a sector and for a region.

How ATEA can engage members in leveraging



industry certificates

Recognition and support of students in technical programs can be exciting. There is the Career and Technical Education Signing Day on February 18 at Washburn Technical Institute, Topeka, Kansas, which is now expanding through the network of schools participating in NC3 certification. The students sign that they are attending a technical college, receive a hat. The event is live streamed among the technical colleges. In 2016 NC3 plans to link its 40 colleges participating in certifications to the broadcast. ATEA members could join in on February 18, 2016.



Dominick Cariello
Badger Fluid System Technologies

Mr. Cariello spoke to the Region 3 conference at the Oct. 25 opening dinner on "Innovation in Today's World." He emphasized the importance of employability skills in career success as well as technical skills.

Region 5 President's Roundtable

October 7, 2015, Holiday Inn, Sioux Falls, South Dakota

"Post-Secondary Technical Programs in the current Accreditation and Federal Regulatory Environment: Challenges and Opportunities."

President Paul Young, Northern Wyoming Community College District and President of the American Technical Education Association Board of Trustees and Presidents Jeff Holcomb, President of Southeast Tech and convened presidents and their representatives from Region 5 in a Roundtable Discussion held on October 7, 2015 prior to the opening of the ATEA Region 5 conference hosted by South East Tech.

Participants: John Richman, President, North Dakota State College of Science, Wahpeton, North Dakota; Michael Cartney, President Lake Area Tech, Watertown, South Dakota; Terry Janis, President, White Earth Tribal and Community College, Mahnomon, Minnesota; Harvey DuMarce, Sisseton Wahpeton College, Sisseton, South Dakota; James King, Vice Chancellor, Tennessee Colleges of Applied Technology, ATEA Past President; Monty Johnson, Senior Dean, Minnesota State Community and Technical College, Wadena, Minnesota; Betty Reynard, President, Lamar State College Port Arthur, Port Arthur, Texas and ATEA Trustee; Lin Zhou, Senior Dean, Bates Technical College, Tacoma, Washington, representing President Langrell ATEA Trustee ; James Sherrard, Three Rivers Community College, Norwich Connecticut, ATEA Trustee; Ron McCage, retired President, CTECS, ATEA Trustee.

The discussion focused on the challenges technical programs have with present accreditation practices, particularly traditional academic timelines and standards applied to technical programs.

Right now we have 'one model fits all' approach." Accreditation was regionally based on proximity and travel which is no longer a necessary factor however regional is preferable to accreditation run by the U S Department of Education. It is time for a change that identifies and recognizes credit that enables the student to go to work through certificates and recognizes attributes that makes one successful on the job. At present these are not recognized and do not transfer.

Question: *Are faculty credentialing requirements from our accreditors impacting the ability to provide industry responsive technical education at your institution?*

Industry increasingly stresses marketable degrees and wants to know, "What does the student know?" and "What can the student do?" There are concerns about accrediting bodies' restrictions on hiring faculty. The impact threatens the economic viability of rural life. Colleges and institutes in rural areas may not be able to hire faculty with both technical expertise and educational bachelor or masters' degrees.

Question: *Is funding for technical education an overall issue?*

The state funding models varying. Some encourage leveraging equipment donations for a state match; some are local property based, some no local funding at all, and some local funding for facilities. In the case of Tribal colleges the Tribes contribute. In all situations the case needs to be made to policy makers of the value of technical education, especially the value of funding the education of low income students. They are a target market worth the investment in technical education. At the same time, there seems to be a shift of more of the burden on the student through debt and less on the states. Technical education does require an investment but there is a return in a skilled employee for industry as well as preventing the negatives of unemployment and underemployment.

ACTIONS FOR ATEA:

1. Have ATEA assist schools in framing Education as an Opportunity and show the Value it has for the state
2. Get industry involved – Create a Skill Workforce Advocacy Council
3. Have ATEA become a clearing house for Value Proposition

Discussion of working programs

"Promise Programs" –What possibilities exist?

- a. 'Build Dakota' in South Dakota – tied to employment in state after graduation
- b. "Tennessee Promise"
 - i. Has the support of Governor Haslem
 - ii. Program is not tied to a post-graduation obligation but the student must stay continuously enrolled to quality, this helps with completion.
 - iii. It is a LONG PROCESS – it is not an "overnight kind of thing."
 - iv. Funding in Tennessee is from lottery funds. All lottery money is tied to scholarships
 - v. In Tennessee it created an ENGAGED CONVERSATION ABOUT POST SECONDARY EDUCATION FOR PARENTS AND STUDENTS THAT OTHERWISE MAY NOT HAVE CONSIDERED POST SECONDARY EDUCATION AN OPTION.
 - vi. There is a community service component
 - vii. There are mentors for each student
 - viii. Challenges included:
 1. Incoming students not as prepared for academics
 2. Quickly finding enough high quality adjunct faculty due to increased enrollments
 - ix. Tennessee Reconnect is for independent adult Tennessee residents and provides 16 credits no financial payment obligation.
 - x. Fall 2015 the Tennessee Colleges of Applied Technology saw a 26% growth in enrollment.

Each Model of full funding for the student is per state at this time, there is not a Federal Program

Region 3 Conference



Gateway Technical College was the host of the ATEA Region 3 conference. This conference was a new model for ATEA, one with all hands on workshops and some awarded certificates. It mixed high school instructors invited by Gateway with ATEA attendees from postsecondary institutions. The conference generated significant sponsorships; thank you to the National Coalition of Certification Centers NC3 for a \$10,000 sponsorship; S C Johnson, Snap-On and Gateway for \$5000 each and to Madison College for \$2500. Thank you to ATEA Vice President Bryan Albrecht for taking the lead on bringing back Region 3.

Highlights:

Deborah Davidson, Vice President of Business and Workforce Solutions, Gateway Technical College, presentation on Boot Camp, a 14 week intense training program in CNC, Welding or Industrial Repair for unemployed and underemployed workers. It is developed and offered in conjunction with Southeast Wisconsin Workforce Development Center and regional employers. It has all of the components of a successful program for training, placement, and retention and for changing lives. For full set of Powerpoint slides contact ATEA office at info@ateaonline.org or go to www.ateaonline.org home page.

Highlights from Deborah Davidson's presentation on Boot Camp

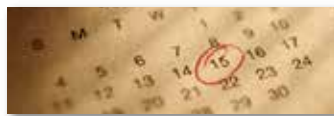


History of Boot Camps (cont'd)

- ▣ Measure student's skill development in the program and their ability to learn
- ▣ Pre-test and post-test - NOCTI Precision Machining
- ▣ Determine the speed of delivery - new model

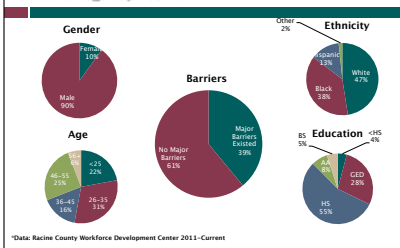


Boot Camp Program Structure



- ▣ Simulate work environment
- ▣ Strict attendance requirements
- ▣ Mandatory tutoring
- ▣ 14 weeks/5 days a week
- ▣ 8 hours per day
- ▣ 520-hour program

Demographics



Boot Camp Statistics

Results	Total # Boot Camps	Total # Completing Program
CNC	22	313
Industrial Machine Repair	4	42
Welding & Weld/Fab	10	114

Cumulative Completion Rate: 80%

CNC Boot Camp #18 Completion Ceremony



Keynote:

Roger Tadjewski, Executive Director of the National Coalition of Certification Centers NC3.

NC3 has experienced rapid growth in campuses offering NC3 certifications and in the areas of certification which are aviation, transportation, horticulture and energy. The industry certificates are for Fiat Chrysler, Starrett, Snap-On and Trane. The heart of NC3 is train the trainer. Faculty are trained in cohorts and rely on one another as they implement new technologies and programs. The student does not pay for the certifications.



Region 3 2015 Conference

Host: Gateway Technical College
Kenosha, WI



Region 5 “Rock on Tech Ed”



South Dakota Governor
Dennis Daugaard

Region 5 did is “rock” in all regards from outstanding tours; to attendance at 211; to the speaker, Bryan Dodge, who inspired and entertained; to the social the opening night; and to Governor Dennis Daugaard who gave the keynote encouraging technical careers and thanking the faculty who provide those courses and skills.

Co-Chairs, Dana Wolff and Bobbie Talcott, (pictured lower left) designed and guided the Region 5 conference delivering ATEA quality and showcasing their city, Sioux Falls, and neighboring Watertown with tour destinations. The conference reflected the energy and economic diversity of Sioux Falls and the region.

Governor Daugaard’s Keynote Summary points:

South Dakota has advantages in job growth and business development because the state does not have personal income tax, corporate tax, business inventory tax, person property tax or inheritance tax. It also has a low cost of living, 88% of the average cost of living in the nation.

South Dakota has a 3.7% unemployment rate and in Sioux Falls it is 2.8%. The challenge is a “skills to jobs” match. It is almost a one to one, one person with the skills for the job. South Dakota needs welders, machinists, nurses, and engineers.

South Dakota depends on two year degree holders for its workforce. Technical education is a priority. He encouraged communication to students and parents that they “have their eyes open,” looking beyond the dream of a college education to what is the pathway to a career from your education. South Dakota built 12 regional Career and Technical Education High Schools, one just opening in Aberdeen. Build South Dakota is a program targeting full scholarships in areas where there is a worker shortage for both in-state and out-of-state students.

He encouraged more communication about the advantages of technical certificates and two year degrees which can be a job and little or no debt. Let parents and potential students know that technical education is both rigorous and rewarding,

The challenge in America is the 60% of those who start a bachelor’s degree do not complete it in six years. And 40% of those who do complete a bachelor’s degree will not get a job that requires the degree they hold. And many have debt.

He closed by expressing his appreciation for “what you do as an instructors to help young people get a rewarding career.”

Opposite page clockwise form the top:

Region 5 Council meeting; Keynote Bryan Dodge in a follow-up session; Southeast Tech President Jeff Holcomb and Governor Daugaard; Entertainment at the opening social; Carsforsale.com CEO Sean Coffman with ATEA tour; Dana Wolff and Bobbie Talcott Conference Co-Chairs, James King, ATEA Past President and VC of Tennessee Colleges of Applied Technology with Georgina Cavin, Debi Nowak, and Karen Winter.

ATEA Region 5 Conference

Thursday, October 6 and Friday, October 7 | Host: Mid Plains Community College, North Platte, Nebraska

Tour Union Pacific Bailey Railyard—largest in North America

Connecting commuter flights from Denver or travel Interstate 80

Watch for more information on www.ateaonline.org



Region 5 2015 Conference

Host: Southeast Technical Institute
Sioux Falls, SD



SOUTHEAST TECH

South Dakota's Workforce Solution



editor's notebook

Fall/Winter 2015-16

By Nasser Razek, Ed.D.

The role of higher education institutions is to create and disseminate knowledge. Through research and adopting the best practices of teaching, college instructors create knowledge. Dissemination part comes only when we are able to share our gained knowledge with colleagues. This happens on a small scale during local and regional meetings and conventions. However, a larger chance of sharing is manifested in publishing in journals and periodicals. This form has the potential to reach a larger audience surpassing geographical limitations. Adding the element of time, it outlives its authors.

In this issue of *The Journal*, Carrie Leopold and Steven D. LeMire share with us a new model for increasing enrollment of females in technical education. Touching upon a little bit of the history of technical education, Jenny Saplis introduces us to the role of two eminent figures of our field: Kate and William Dunwoody. From a different perspective, LeAnn Blevins tells her story of pursuing the dream in technical education. Marie Price also provides us with a Kristal Kleer manual for fostering partnerships rather than wasting energy in competing against each other.

Following the examples of these innovative instructors and innovative researchers, I encourage all the readers of our *journal* to share their research knowledge, teaching skills, and innovative ideas through writing for *The Journal*. You may be wondering, "What do I need to do to submit my writing to *The Journal*?"

First, writers have to decide which section of *The Journal* their writing fall under. *The Journal* has four main sections that can harbor original writing pieces. 1) Reviewed or Descriptive Manuscripts: Supported by the literature in the field, this style is appropriate for presentations; best practices both in the classroom and the laboratory; technical information; and problems and solutions. 2) Refereed or Research Manuscripts: Offering an opportunity to share research results with colleagues, this section contributes to the accumulated body of knowledge of postsecondary career/technical education. *The Journal* publishes a broad variety of research manuscript submissions including: reports of original research, literature reviews, theoretical manuscripts, and case studies. 3) Kristal Kleer: Presenting a quick take that explains, describes, or provides practical tips for an area of practice of technical

education, this type is characterized by a straight forward style. 4) At Issue: distinguished with a topical focus, this section deals with timely subjects and contemporary issues that might interest technical education instructors and administrators. **Second**, writers should contact one of the editors with their topic or completed piece. Once the editors receive the manuscript, it will go through a blind review process that ensures the manuscript is getting fair and objective feedback from the editorial board members. **Third**, when a decision is reached, writers will be notified with the recommendations of the reviewers. Once the manuscript is revised, it is resubmitted for the final review and awaits publication in the next available slot in *The Journal*.

Although, the submission process can be found on *The Journal* webpage, it can be easily summarized in the simple chart included below:



I leave you with certainty that you will consider writing for *The Journal*.



Nasser Razek, Ed.D. is the Editor of the *ATEA Journal*

Online Learning for Community College Students Success

by Susan J Olson, Ph.D., Professor, The University of Akron and Karen Johnson, Ph.D., Assistant Professor, University of North Texas
Submitted to *ATEA Journal*, June 30, 2015, Accepted for publication with revision November 6, 2015.

Online Community College Learner

Students who enroll in online courses at a community college are older, more likely to have dependents, and more likely to be employed full-time (Jaggars, 2014a). Those who choose to take an online course are likely white, low-income, academically prepared, and only fluent in English. These community college students have greater comfort with access to computers and technology. They take courses online for the flexibility of completing their schedule, however researchers (Jaggars, 2011) are not clear if these students enroll for convenience or this is their only option. Public Agenda (2013) study found community college students taking online courses were more likely to take fewer classes online (41%) rather than more online classes (20%).

The subject matter as well as the intensity of a course might also be factors that determine student enrollment in online courses. Students choose subjects they feel are suited to online, which does not include modern languages, public speaking, or lab sciences (Jaggars, Edgecombe, & Stacey, 2013). They also consider what they perceive to be the ease or difficulty of the course itself. They view the course as the level of difficulty as a self-taught course. Students also consider whether a course is interesting or important to them, then they were more likely to take the course face-to-face. Also the student's perception of online as being easier and taking less time still prevails (Jaggars, 2014).

Online Community College Learner Success

The literature points to four categories of characteristics that account for community college students weak performance in online courses: weak academic preparation; competing workplace and family priorities, lack of technology skills and needed technology infrastructure, and underdeveloped skills for learning independently. Students with lower GPA's, and have taken developmental reading courses were more likely not to be successful online (Xu & Jaggars, 2011). Adult students with competing priorities such as work, family responsibilities and financial aid were more likely to take online courses, but these were also factors that also contribute to non-completion of courses (Hackey, Wadis & Conway, 2013). Lack of technology and technology skills also inhibits course completion. Bork and Rucks-Ahidiania (2012) report concerns that students were registering for online courses without reliable home Internet access, and that a surprising number of students had difficulty with very basic technology skills. Community college students who were not successful online learners were also found to be having underdeveloped skills

for learning independently. Bok and Rucks-Ahidiania (2012) found that instructors believed that online students needed the discipline to log on and work with the course materials independently at least three times a week.

In one study, Harrell and Bower (2011) investigated student characteristics that predicted persistence in community college online courses. A three variable model (auditory learning style, grade point average, and basic computer skills) were identified as significant in predicting online student success. In addition, academic and student support were also suggested for community college students affected by these predictors. Courses that lack auditory components for those learners that best learn this way, those with lower grade point averages and those lacking in computer skills are less likely to be successful in the online course environment.

California Community College System offers more online credit courses than any other public higher education institution in the country, accounting for 11% of the total enrollment with one in 5 taking at least one online course in 2011-12 (Johnson & Mejia, 2014). In examining this pattern, it was learned that short-term outcomes were poor and long term outcomes were good. In a course by course analysis, student outcomes in online courses were poorer than students in traditional courses. Students were less likely to complete an online course with a passing grade. Across all types of students, a wide variety of subjects and across colleges a difference of 11-14 percentage points was found with lower success rates for the fully online student. Long-term outcomes show that students who took some online courses were more likely than those taking traditional only courses to earn an associate degree or to transfer to a four year college.

Students who take online courses were less likely to persist and attain a degree. They were 4-6 percentage points less likely to persist to the next semester, obtain a degree, or transfer to a four-year program. Achievement gaps tended to be wider for online students. Some students are appearing to be less successful online: males including those with lower GPA's, lower grades, higher withdrawal rates, and African Americans. Xu and Jaggars (2011) found that student completion rates differed for community college students with face-to-face students completing 81% of the time and only 68% of these students completing courses when offered online. Ethnicity, African American students and those with lower academic preparation had greater difficulty in online learning environments (Jaggars, 2014). The gap between online and face-to-face was wider among males, students on

financial aid, those with lower GPA averages, and Hispanic students—gaps in face-to-face classes with those groups getting wider in online classes. Low income, ethnicity first generation students are often anxious about their ability to succeed academically causing counterproductive behavior. In addition, procrastinating, not turning in assignments, and not reaching out to professors also contributed to students' counterproductive behavior (Cox, 2009).

On the contrary, findings from other studies have shown success in students' online completion rates. Among the 142 community colleges responding to the 2013 annual survey conducted by Instructional Technology Council, 35% reported that completion rates for their online courses were as good as, or better than, their completion rates for classroom based courses (Lokken & Mullins, 2014). Most (53%) indicated that retention is lower in online classes than in face to face courses. Only 20% of community college administrators indicated that student retention was higher with online courses. Reasons cited for students non-completion of online courses include: lack of student access to broadband internet access in rural areas; changing student services to address needs of off campus/online students; and belief among some students that online classes are easier to teach and pass.

Community college students preferred face-to-face courses (42%) and felt they did not learn as much online (Jaggars, 2014; Public Agenda, 2013). Students indicated a lack of faculty interaction with teachers and faculty being less accessible or not there. They also felt connection to peers and college campus was lacking and a waste of time. Problems these unprepared, low income students encounter that cause them to withdraw include technical difficulties, increased "social distance", and a relative lack of structure inherent to online courses (Jaggars, 2011). The lack of social presence and interaction found in some online courses may be due to a lack of instructor time and training. Online instructors may need to scaffold students to succeed in that environment by providing clear expectations and instructions.

Strategies for Online Learning Success

It is recommended that modifying current face-to-face instructional sessions into blocks of shorter periods of time were preferred by these learners (Olson, 2011). Community college online learners enjoyed integrating advising, academic tutoring, and team teaching into course for one-stop for all. The group requested that concrete time frame for when things are due be provided, when section starts and ends, and a defined time frame for learner feedback. Further, it was recommended that an orientation be provided for all program participants on accessing and using on-line learning modules.

Faculty training needs to focus on pedagogy and not just the technology skills (Means, Bakia & Murphy, 2014). The Quality Matters (2011) framework provides a well-researched

model for on-line course development. Faculty also needs the skills to address this at-risk population, as well as a thorough knowledge of the resources needed for these students to success in college. It is important for online instructors to actively and visibly engage with students in the teaching and learning process—perhaps with even greater intentionality than in face-to-face courses (Lorenzetti, 2014).

Online learners need to possess: basic technology; well-developed non-academic skills; time management and organization skills; and be able to recognize how and when to ask questions (help seeking skills). Students take online courses because of the flexibility of online learning to help them manage their busy schedules. Both faculty and students found online courses more difficult and time consuming than they expected (Means et al., 2014). The greatest challenge is expectations and responsible for both the faculty member and the learner. Instructors expected students to be independent learners, self-motivated, and with strong time management skills. Students expected faculty to help them with the time management skills and to motivate and inspire them through active engagement. There were different expectations between the two.

Recommendations and Conclusion

Today (Lokken & Mullins, 2014) most community colleges have at least one qualified instructional designer, compared to the early beginnings of online learning in community colleges. Overall the quality and integrity of community college's online programs have been improving over the years. The greatest growth in the use of online learning continues to be in web-enhanced and hybrid. In the last 10 years, students with the greatest challenges (ranked number 1) continued to be orientation and preparation for online learning. Access to broadband internet continues to be an issue in some rural areas. Using qualified instructional designers to design and develop high quality courses, providing high quality learning orientations for students new to online learning, and being aware of access issues your learners may have are factors to consider when designing your one courses.

Student services to address the need of off-campus students are good for all learners (on-campus, hybrid learners, and off-campus fully online learners). Student services include such functions as academic advising, library access, tutoring services and orientation programs needed to succeed. Due to increase, quality of online courses and expansion of online student services have improved online learner retention rates over the last nine years (Lokken & Mullins, 2014). The gap in retention rates between face-to-face community college learners and fully online community college learners continues to shrink.

It is clear that these students need to be taught computer literacy skills, have access to a computer, and need for short flexible meeting times with faculty (Hill, 2010; Lorenzetti,

2014; Means et al, 2014). The instructors need training in teaching this group and the use of online learning technologies.

Blended learning has been shown to work better for this at-risk student population. Jaschik (2011) and Lloyd-Smith (2010) found that students who took “blended” courses—those that combine elements of online learning and face-to-face instruction—appeared to do best of all. Saade and Kira (2009) found some adult learners returning to school may have questionable technical skills and as many as 50% of adults experience some computer-related phobia. Offering free on-campus workshops for these returning adults will help overcome these phobias and provide them with needed skills to succeed in college and add workplace-valued skills. Looking for a job today requires online skills and increasingly lifelong learning skills also require online learning skills.

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Continued from page 31

It has been estimated by many researchers and economists our nation saves an average of \$7.00 to \$15.00 in tax dollars for every dollar invested in early childhood education. Students involved in quality early childhood education are more likely to graduate from high school and earn more in their lifetime. This reduces the taxpayer costs for incarceration, welfare, and remedial education by the millions of dollars.

Dr. Robert Dugger, a leading national economist, advocates for the benefits of the economics of early childhood education. The United Way of Central Indiana hosted *The Economics of Early Childhood Summit* in February, 2014 where community, business leaders, and legislators came together to learn more. Several hundred people attended or participated via live stream. A documentary was presented entitled “Are We Crazy About Our Kids?” from the Raising of America (2014) which discussed the numerous costs and benefits of quality early childhood education, in addition to examples of numerous programs and studies. The data was clear. Quality early childhood education is the key.

Across the United States, the majority of states are not doing this. Most do not want to spend the money upfront without being “certain” it will work. Most want results now without waiting the 18 years it takes for development. If we keep waiting, think about where

we might be in 18 to 20 years. However, we must liken it to planting a seed. We plant a seed and allow it to grow, develop, and flourish. Most will succeed...a few perhaps not. The research and results are in...Are you?

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United Way of Central Indiana Summit, 2014,
www.uwci.org/events/economics-of-early-education-summit



Jane A. Hildenbrand

- ATEA, etc.
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Revamping Instructional Strategies in Technology education Towards a Student Learning. Model: A Reflection

by John B. Author, PhD, The University of Akron and Jonathan Trost, Kent State University

Overview

Beginning in the fall semester of 2009, several technology courses at a mid-sized Mid-western university were revamped from a teacher-centered model to a more student-centered model. The previous course leaders were two of the senior faculty members in the program who developed these courses at the inception of the program. These senior faculty members each had over a decade of experience teaching these courses. They had well established curriculum and teaching methods based upon their pedagogical epistemologies and because of this these courses were still being delivered in a very teacher-centered, 20th century style. The courses were de-signed for the teacher to lecture, assign homework that was graded and returned to the students at a date of the teacher's convenience. When those senior faculty members relinquished the courses to a junior faculty member (the instructor), the transformation from the teacher-centered model to the student-center model began.

The instructor began teaching these courses based upon the existing, teacher-centered model. No matter how entertaining the instructor was (or thought he was) it was obvious that the students were not engaged in their learning during the traditional lecture. They were using the computers that were in front of them or they were on some other device to update their social media status and the like. During this same time, the instructor was in the last semester of his PhD (Curricular and Instructional Studies) coursework and he was writing his dissertation; the title: Engineering and Engineering Technology Educator's Views on the Use of Classroom Technology. The instructor was right in the center of one of education's biggest issues; right in the intersection of what was and what is coming. The best practices of the 20th century were not working with the millennials. They were tuned out, turned off and they were bored.

Further, the instructor was teaching technology courses to technology students and it was clear that these students were not responding well to the chalk and talk, teacher-centered model that was in use. Many of these students were millennials and these students were also techies. These students craved technology and they were there to learn technology.

Further, in teacher-centered model used for these courses, there was a great deal of separation between the theoretical descriptions and the practical reinforcement of the concepts. The learning from the lecture to the laboratory time was not linked, the feedback was slow and somewhat meaningless

to the students by the time they received it. This pedagogy did not satisfy these students craving for technology nor was it appropriate for teaching this content. The instructor felt obligated to improve these courses using the pedagogical best practices.

Previous research shows that there is great potential to improve the pedagogy in technology education by implementing educational technology and/or discipline specific technology in-to the classroom (Michko, 2007, 2008; Fairweather, 2008; Bowe, 2010; Author, 2011). The time was right to revamp these courses, using a student-centered, learning for mastery approach that included in correct integration of technology. According to Guskey (2003) assessing classroom practices is the beginning of improving teaching and learning. These ideas led to the Q-Methodology study (Author, 2012) discussed later. This paper discusses the changes that were made in several technology courses at a mid-sized, Mid-western University beginning in the fall Semester of 2009 and the framework upon which these changes were based.

Transforming The Courses

There are several pedagogical strategies available to transform courses to a student-centered, learning for mastery model. The three pedagogical strategies that seemed appropriate for this situation were: Technological Pedagogical Content Knowledge (TPACK), Just-in-Time Teaching and the Learning for Mastery Model.

The first model was the Technological Pedagogical Content Knowledge (TPACK) framework developed by Mishra and Koehler (2006). The goal of TPACK is to focus on the complex intersections of educators' use of technology, pedagogy, and content knowledge.

While the implementation of technology into a course can improve student learning, it is also important to maintain both effective pedagogy and content knowledge along its use. It is a challenge for all educators to find the correct level of technology integration into a course, but perhaps more so for STEM educators. In the STEM fields, educators face broader challenges related to technology integration because there is often both educational technology and discipline-specific technology for these fields that adds a layer of complexity to the synthesis (Nicholas, 2011). The TPACK framework offers educators a model that will allow them to use technology such that it is more effective for students' learning and to help them move beyond simply integrating technology into their

courses (Mishra & Koehler, 2006; Doering, Scharber, Miller & Veletsianos, 2009; Ward & Kushner Benson, 2010; Nicholas 2011).

The TPACK framework focuses on *how* technology should be used in education and not *if* or *what* technology should be used in the classroom. The fundamental aspect of TPACK is the synergy of the three knowledge domains of technology, pedagogy, and content knowledge (Mishra and Koehler, 2006; Archambault & Barnett 2010; Ward, C. L., Kushner Benson, S. N. 2010; Graham, 2011; Author, 2011). The TPACK Venn diagram is shown in Figure 1.

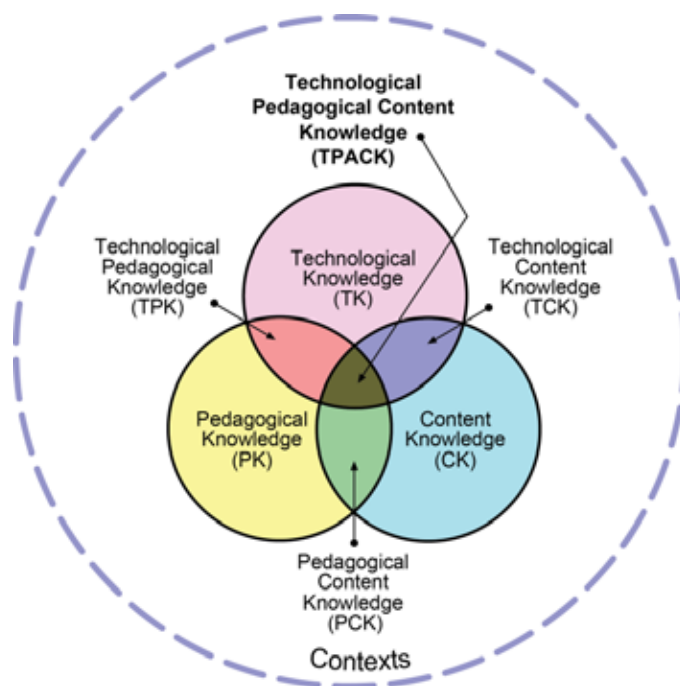


Figure 1: The TPACK Venn Diagram
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The second model was Just-in-Time Teaching (JiTT). JiTT is a pedagogical strategy that uses both classroom activities that promote active learning and online resources that are used to enhance the classroom component. This strategy was originally developed for Physics courses by Gregor Novak and his colleagues. JiTT relies on a feedback loop between web-based learning materials and the classroom (Novak et al., 1999). JiTT had its origins in the classrooms where faculty were looking for more effective ways to engage non-traditional students. Many of the instructor's students were non-traditional students, thus JiTT seemed an appropriate pedagogical strategy.

Novak et al. (1999) describe the JiTT cycle for a single classroom meeting is as follows: "Students complete reading or other preparatory work, Students complete pre-class assignment, Faculty member reviews pre-class assignments, and considers changes to classroom emphasis, Faculty member

selects quotes from pre-class assignments to refer to during class, During class, faculty member uses quotes from student work to lead discussion of the material, During class, students engage in discussion of the material with the faculty member and with one another, Faculty member creates or adjusts next pre-class assignment to best meet students' needs in light of progress made during class." Implementing a similar strategy into these technology courses allowed the instructor to stay on a topic until he was confident that a majority of the students grasped that concept. This strategy seemed to compliment the changes the instructor made based upon the TPACK framework.

The third model upon which the instructor based these changes was the learning for mastery model. Largely based upon the work of Benjamin Bloom, this model suggests that while students vary widely in their learning rates and modalities, if instructors provide the necessary time and appropriate learning conditions, nearly all students could reach a high level of achievement. Bloom developed a model that uses immediate feedback and corrective procedures, which he labeled mastery learning. A key component of mastery learning is formative assessment that identifies what students have learned well and where they still need additional work (Block & Burns, 1976; Guskey, 2003).

In this model, students should be informed about the standards of performance. In other words, the students should know what knowledge or skills are to be demonstrated and in which manner. To accomplish this, the instructor developed a rubric for the each assignment and incorporated other strategies discussed later in this paper.

It became apparent to the instructor that these three strategies complemented each other very well because they shared the common theme of student-centered learning. The instructor began to wonder how to incorporate these ideas into these courses. In fact, the instructor felt obligated to do so. The question became: how can the instructor revamp these courses to incorporate these learning strategies?

Revamping The Instructional Strategies

One of the first deviations the instructor made from the existing course design was to make use of the Learning Management System (LMS) that was available at this institution. The instructor already used this LMS to post the syllabus and other administrative information, but he was not using it to increase access to any learning material. Because the student population of this institution consisted of a blend of traditional and non-traditional students, the focus of this step focus was on increased accessibility to the learning material, mostly for the non-traditional students whose schedules may not have the flexibility typically afforded to traditional students.

The instructor was making frequent use of e-mail to communicate changes in the schedule and other updates regarding the class, including quiz dates and feedback on homework. This helped solve the problem of delayed feedback for homework that existed from the previous course design, but the instructor was just using the technology because it was available; the technology did not tie the technology to teaching and learning as described by the TPACK framework. Similarly, implementing technology in this fashion satisfied neither the JiTT model nor the Learning for Mastery model.

One of the first changes that the instructor made was to upload the Power Point presentations from the lectures onto the LMS. This provided greater access to the material covered in the classroom and also allowed those missed a class or who wanted to review the material to have access to it from anywhere, anytime. It was a way for the instructor to encourage the students to use their laptops, computers and smart phones as *part* of their learning instead of as a *distraction* from learning. The instructor found that many students brought up the Power Point presentation on the computers in the classroom or on their personal laptop during class and followed along with the instructor. This small step increased student participation noticeably and immediately. The instructor wanted to incorporate a student-centered approach to teaching and learning in order to help the students learn how to take responsibility for their learning. The first step in achieving this goal was to make them an active participant in the learning process. Maybe the pleasant surprise of this first step was that students *wanted* to come to class and they were *engaged* in the learning process.

The next change that the instructor made was to instruct the students to read the lesson ahead of time. The instructor began every lesson by asking review questions about the previous lecture and questions from the lesson of the day. The instructor included the summary slides from the previous lecture as the introduction slides for the current lecture. After the summary slides from the previous lecture were shown, the objectives for the current lecture were presented. This included an open discussion of the who, what, why, where and when of the topics to be covered. Because of the many non-traditional students, several of whom were already employed in the field and/or had a good deal of professional work experience, they were encouraged to share their relevant experiences with the class during this open discussion period. This increased student participation helped the class time to become more interactive. The above was derived from the JiTT approach as it proved to be a good fit for these courses and the student population of this program.

The next step was to get rid of the dreaded paper homework. Simply having the student answer the questions from the end of the chapter and turn them in seemed to the instructor to

be a 20th century relic. At the beginning of each class, the instructor was asking questions that were designed to stimulate a discussion about the current lesson. The lack of responses to these questions made it obvious to the instructor that most of the students were not reading the chapter; rather, they reading the question, finding the answer in the chapter and turning in the homework to get a grade. Most, if any, of the students were not rehearsing and repeating the information in a fashion that would facilitate the movement of the information into long term memory.

Even if the instructor provided quick and useful feedback from the paper homework, these types of assignments usually keep the information in short-term and working memory for a short period of time. The problem with this is that as soon as the brain decides that the information in working memory is no longer needed, it is partially or totally forgotten.

The challenge became to develop a method of delivering the material in such a way that would allow the student to rehearse and repeat this information while keeping it interesting and relevant to the course. To accomplish this, the instructor created what homework quizzes using the LMS. This idea was based, in part, upon Bloom's learning for mastery model.

The instructor developed a bank of 20-30 questions per chapter, including the questions that were at the end of the chapter. Next, the LMS randomly generated 10 questions per attempt. The students were allowed to and encouraged to take these homework quizzes up to 10 times over a period of one week. The instructor explained to the students that these quizzes are not assessments in the traditional sense, but study aids for which the instructor was giving the student up to 10 points for completion. The rules for these homework quizzes were: read the chapter, take a quiz and see how you do. Then repeat the process each day for the next week. The LMS allowed the students to receive feedback in real-time because they no longer had to wait for the instructor to grade and return the homework for feedback. This immediate feedback provided the students the opportunity to identify their opportunities for improvement and address those opportunities immediately.

This idea is supported by the findings of a study by Butler, Pyzdrowski, Goodykoontz, & Walker (2008) that studied the benefits of online quizzes in freshman mathematics courses at Rutgers University. They found that the capability to provide multiple attempts combined with ability to provide immediate feedback is a major benefit of online quizzes. Butler, et al. (2008) further state that their analysis showed that the students in the study who received immediate feedback obtained a higher homework quiz average. This may indicate that students used the immediate feedback to target objectives for self-review or objectives for which to seek out help before attempting a quiz again.

After the online quizzes were implemented in these courses, the instructor found that students came to class wanting to discuss the material. The students asked questions such as why an answer to a certain question was correct. Conversely, if they thought the answer was in error, they would cite the page number of the text book to show the instructor why they thought so. This provided the instructor with immediate feedback that many students were making use of this system and that it was having an effect on their study habits. The fact that students were coming to class with questions provided the instructor with an opening discussion for each class that was based upon student feedback.

While the first few changes made to these courses made them more student-centered, the instructor felt that the concepts from the interactive-lectures and the lab sessions were still too far apart. The class participation and attendance were better, the open discussions were made the lectures more interactive, but the instructor strived to find some way to bring the concepts and the practice closer together.

The solution to that problem for the UNIX/Linux courses was the addition of Virtual Machines (VM). A VM is run by software, such as Oracle Virtual Box, that creates an emulation of a particular computer and allows the guest operating system, in this case Linux, to run as if it were the native operating system. In a sense, the students now had two computers on the computer that was in front of them. The VM's in the UNIX/Linux courses provided the students the opportunity to perform the tasks being discussed they were being discussed.

This led to a very open classroom experience where students felt free to interrupt the lecture at any time to ask questions and get an immediate answer. This helped the instructor to check understanding immediately. The instructor paused frequently during the interactive-lecture and looked at the faces of the students. If the students looked lost or bewildered, the instructor inquired about the source of the confusion. This led to open discussions and much to the surprise of the instructor, it also often led to impromptu peer instruction as those who were grasping the material began to help their neighbors.

The addition of the VM's satisfied the TPACK framework as the technology was now part of the learning. Additionally, the addition of the virtual machines fit step six of the JiTT model, which is guided practice. According to the JiTT model, guided practice is defined as: "Immediately after instruction students are given the opportunity to apply or practice what they have just learned and receive immediate feedback. Guided practice takes place just after instruction has occurred..." (Novak et al., 1999). In this case, the guided practice was built into the interactive-lecture with the VM's. Both the TPACK framework and the JiTT model involve quickly assessing whether students understand what has just been presented.

The addition of the VM's into the lecture section fit both the TPACK framework and the JiTT model and allowed the instructor an integrated system to do just that.

With the addition of the VM's, the classroom became completely interactive. Hear it, do it, discuss it, and repeat. As the instructor lectured, many students followed along with the Power Point presentations that were on the LMS in the Windows Operating System, while simultaneously entering the commands they learned in the Linux Operating System that was running as the VM. This allowed student questions and needs to be addressed in real-time by the instructor. This made the entire lecture/classroom experience a formative assessment. The students received immediate feedback by entering the commands in the VM's; if the command worked they knew they entered it correctly, if it did not work they received an error message and the instructor could address the individual student's (or group of students') needs immediately. The conceptual framework was being taught while the students implemented the practical solution at the same time. The students became immersed in the material. It was clear that the students were all excited about learning the material.

The students would later work independently during lab time, which was often at the end of the interactive-lecture or the very next class session. These individual labs were designed to reinforce the learning from the interactive-lecture and the labs satisfied the need for independent practice after the students demonstrated understanding of the material. According to Ramlo (2007), laboratory experiences are critical to student learning, and are necessary to support quality STEM programs.

After each lesson was completed in the UNIX/Linux courses, the next class meeting was used for lab time. These labs were inclusive of all of the steps covered and practiced during the interactive-lecture. In the Hardware Support course, each student was assigned their own computer for the lab sessions. The students were encouraged to help each other in the form of peer instruction. In those labs, the student disassembled the computer and performed labs related to the components that were discussed during the lecture. In both of these courses, these labs also possessed an element of guided practice, with the instructor moving throughout the room to offer guidance as necessary. However, the primary goal of this step was independent practice.

Once the current lesson (interactive-lecture, guided practice and independent practice) were completed, one final discussion, usually before the next lecture was conducted to ensure that everyone understood the material and how it related to what was coming next. This provided closure to the lesson and helped the students to prepare for the next lesson.

Student Response To The Course Changes

The feedback provided by the students was immediate and largely positive. Students approached the instructor before and after every class meeting willingly and openly to share what they liked and/or did not like about the changes the instructor made. For this paper, an interview was conducted with one student who was in multiple courses during the implementation of these changes. The student stated: "Having the Power Point presentation ahead of time allowed for time to preview what key topics were going to be covered in class and gave time to write down questions or ideas that may be pertinent to the discussion. I felt that this proved much more effective than just reading, or for some students scanning, through the chapter and trying to guess what was going to be covered in the classroom. Having a copy of the presentation allowed me to edit the slides with my own notes, underline or stress key topics and ideas, and – ultimately – the presentation was available to use as a study guide." This statement was typical of the feedback the instructor was receiving from other students. The positive feedback from the students encouraged the instructor to continue revamping these courses.

The feedback from students provided the motivation to conduct a study regarding the students' views of these changes. The student who was interviewed for this paper further stated: "Taking the online quizzes proved effective for me because it required me to see the information repeatedly. Even when the first attempt was successful, other attempts could be taken to see further questions (information) or sometimes a question that had already been presented. Repetition is effective for me. If an answer was incorrect, it just meant that the material had to be looked at again in order to make a note of the correct answer, further presenting repeat information. Online quizzes felt like a win/win situation for me."

Nicholas (2012) conducted a study using Q-Methodology to determine the students views on the changes made in these courses. The factors that emerged from that study are discussed in detail later in this paper. As part of that study post-sort questions were asked for clarification of the student views that led to those factors. Some of those comments are included here and they are representative of the type of feedback the instructor received from the students as a whole.

Some of the respondents had a favorable view of the changes because of the convenience it offered them with studying. HSM23A stated "I am a busy person so it makes doing homework more flexible." HSM also reported "I am a big fan of using online materials and tools." HSM24A reported "It gave me material to study from without the frustration of reading the whole book." One student liked the environmental friendly aspect of the changes in the courses for taking quizzes and submitting homework on line. OSM20B stated "Before the course was online it used too much paper." The third group

of students had a favorable view of the changes because of the mastery learning opportunity that the online quizzes offered. OSF21A reported "I like having the homework as online quizzes because it forced me to study..." HSG20 stated "It helped me realize what material in the class I needed to review and study more on." And OSM20C claimed "Being able to take the quizzes multiple times reinforced the information on the quizzes."

Study guides for the upcoming test were also added to the LMS for students to prepare on their own. These consisted of all of the questions from the quiz, plus other potential questions.

All of these questions were loaded into the question library in the LMS and then each test randomly generated 40 questions from this pool. This system allowed the students to see which learning objectives are important for them to master and allowed them the opportunity to master these concepts if they put in the work.

The changes in the courses were implemented between the first and second exams of that first semester and the initial results, while anecdotal, were promising. The average scores from the first exam to the second were as follows: for the sections of the Intro to UNIX/Linux course the average went from 76.7% to 78.6% and for the Hardware support went from 67% up to 87%. While the increase in the average score for the exams was not statistically significant, what was impressive was the number of students who showed improvement from exam 1 to exam 2. The percentage of students in the Introduction to UNIX/Linux course whose score improved was 65% and for the Hardware Support course was 90%.

More importantly, the students were enthusiastic about the learning process. The student who was interviewed for this article described how that student used the system: "After all online quiz attempts were completed, the quizzes could be used as study guides for tests and/or exams. What a great study tool. This allowed me, and the other students, to be able to focus more on the material that is actually important and worry less about what may or may not be covered on the test. It also provided more time to study because it was not necessary to wait until questions and answers were turned in, graded, and returned; one or two class periods later. Less material to study, more study time, and less stress make for a better learning experience."

The Q-Study

William Stevenson developed Q-Methodology (Q) in the 1935. Q-Methodology allows researchers to identify and describe the various opinions within a group. Q-Methodology has been characterized as a mixed method with its focus on describing subjective views while utilizing the type of statistical analyses typically found in quantitative studies

(Newman & Ramlo, 2010). Q-Methodology is an appropriate choice whenever a researcher wishes to determine the various perspectives and consensus within a group regarding any topic (Brown 1980, 1993, 2008; McKeown & Thomas, 1988). Nicholas (2012) conducted a Q-Study to determine the student views at the end of the semester during which these changes were made. Some of the students were in more than one course with me during that semester. In Q-Methodology, there are three (3) sections of the results that help to provide insight into the views of those who loaded on a Factor. Those are the statements that scored highest on the sorting grid or the “most-like me” statements, those that scored lowest on the scoring grid or the “least-like me” statements and the distinguishing statements or those statements that give a Factor its uniqueness. To determine what defined the Factor, the most-like, least-like and distinguishing statements for each were examined. The statements used for and the Factor Array of the Nicholas (2012) study are included in Appendix 1. An example of the Q-Sorting grid is shown in Figure 2 below.

The Nicholas (2012) study resulted in three (3) Factors. It is

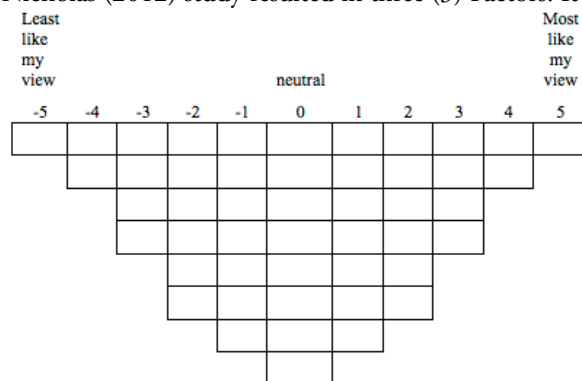


Figure 2: Q Grid Used in the Author (2012) study

common in Q-Methodology to for the researcher to name the Factors that provide some description of the participants who loaded on those Factors. On the Nicholas (2012) study the Factors were named the following: Techies (Factor 1), Blended Learners (Factor 2) and Traditional Learners (Factor 3). Two respondents did not load on any factor.

Twenty-five of the 32 participants loaded on Factor 1 which represents the students who were technically inclined and comfortable using technology. These students tended to log on to a computer frequently throughout the day to check e-mail, social networks, and the like, but they were not online all of the time. For this reason the researchers called this factor Techies. The following statements loaded highly in the Q-Sort for these students:

Statement 1 (I like having the homework as online quizzes).

Statement 23 (Having the online quizzes helped me study).

Statement 26 (I feel that the online quizzes save me time).

Statement 29 (I liked having access to the course materials from anywhere that I could get online)

This indicates that these students responded positively to the implementation of the changes in these courses.

It does not appear that age was a consideration for Factor 1 as the range of ages for this factor is 19 years to 51 years with a mean of 24 years. A Pearson's correlation was performed and the correlation between Factor 1 and age was at .029.

A review of the post-sort questionnaire of the Q-Sort revealed why those who loaded on Factor 1 had a favorable view of the changes implemented in these courses. HSM23A stated “I am a busy person so it makes doing homework more flexible.” OSM20B stated “It takes too much paper and pencil” referencing the course before the changes were implemented. OSF21A reported “I like having the homework as online quizzes because it forced me to study...” HSG20 stated “It helped me realize what material in the class I needed to review and study more on.” And OSM20C claimed “Being able to take the quizzes multiple times reinforced the information on the quizzes.”

Factor 2 – Blended Learners

Three of the 32 respondents loaded on Factor 2 which represents the students who reported being online most of the time, but still had a preference for reading the print book. The researchers gave this factor the moniker Blended Learners. The following statements loaded highly in the Q-Sort for these students:

Statement 17 (I am online most of the time, so I find the online portion of the course convenient)

Statement 29 (I liked having access to the course materials from anywhere that I could get online)

Statement 28 (I felt I could have made more use of the online tools)

This indicated that these learners liked the convenience of the CMS and would have liked more online access.

However, the following statements also loaded highly on this factor:

Statement 11 (I feel the combination of book studying and the online study guide helps me prepare the best for exams)

Statement 18 (I don't like reading online)

This indicates that while these students are online all of the time, they still find value in reading from a book and do not like reading for the purpose of studying while online.

It does not appear that age was a consideration for this Factor. The mean age for Factor 2 was 21.67 years with the range of ages of 21 years to 23 years. A Pearson's correlation was

per-formed and the correlation between Factor 2 and age was $-.132$, which indicates that age is not a determining factor for the Blended Learners.

Factor 3 – Traditional Learners

Two of the 32 respondents loaded on Factor 3 which represents the students who expressed a clear preference for traditional learning. The researchers gave this factor the moniker Traditional Learners. The following statements loaded highly in the Q-Sort for these students:

Statement 18 (I don't like reading online)

Statement 9 (I prefer to study from a book)

Statement 3 (I like doing my homework with pen/pencil and paper and submitting it in a classroom setting)

Statement 19 (I am more comfortable reading from a book)

Examination of the post-sort questions helped explain why these students preferred a book over the online section of these courses. OSM20A stated "Computers strain my eyes when reading and I like papers to highlight, etc." and OSM36 reported "I do most of my reading & studying offline, but I really like the CMS as a tool to check grades and to have access related to course material."

It does not appear that age was a consideration for this factor as the range of ages for this factor is 20 years to 36 years. A Pearson's correlation was performed and the correlation between Factor 3 and age was $.116$, which indicates that age is not a determining factor for the Traditional Learners

Conclusion, Implications And Future Research

Research indicates that student-centered learning is an effective pedagogical strategy. Further, the development of curriculum and best practices as it relates to the implementation of technology into courses will require educators to constantly update their methods, especially for those educators in STEM fields. This paper describes the changes made to several courses of a technology degree at a mid-sized Midwestern University in order to move them away from a teacher-centered model and toward a student-centered model. This paper is a reflection of why those changes were made and the processes involved.

All of these changes were based, in part, upon the theoretical framework of TPACK and the pedagogical strategies of Just-in-time Learning, and Learning for Mastery. The Nicholas (2012) study suggests that the students responded positively to these changes and that study also revealed the various perspectives that existed among those students in the courses. The self-reporting from post-sort questionnaire used in the Nicholas (2012) study provided comments such as: "I like having the homework as online quizzes because it forced me to study..." and "What a great study tool... more study

time, and less stress make for a better learning experience." The comments from the interview of a student who was in multiple courses with this instructor while these changes were being made provided further insight into those perspectives. Those statements support the idea that the students responded positively to the changes made by the instructor.

The results of the Nicholas (2012) study and the positive response of the students suggest that a student-centered approach based upon the pedagogical strategies described earlier can be an effective approach to teaching technology courses. Further, the study by Nicholas (2012) revealed the students' subjectivity or views about the changes. The results further support the assertion that the students responded well to those changes. The Nicholas (2012) study also uncovered three learning preferences among the students. Replication of this study with modifications to fit the each individual course should help determine if these results are applicable to a wider population. Respondents who loaded on Factor 1 (Techies) and Factor 2 (Blended Learners) reported that they had a positive experience with the changes made to these courses. These two Factors were comprised of 30 of the 32 respondents of the study. This indicates that students in this technology program liked the implementation of technology to these courses and the student-centered approach that were at the core of the changes made to these courses. The improvement in attendance, class participation and test scores further indicate that the student responded positively to these changes. Discovering student views about classroom practices has the potential to improve the classroom experience for both the student and the instructor.

It is clear that more research should be conducted using a variety of courses, instructors and research methodologies. While larger studies using a control group and an experimental group with the General Linear Model may provide a better statistical understanding of the effectiveness of the changes, this type of study may not be feasible for this particular situation because of the rapid changes in both educational and discipline-specific technology. The Nicholas (2012) study suggests that perhaps case studies and/or Q-Methodological studies may be more appropriate because of these rapid changes in technology. A follow up Q-Study should be conducted with revised Q statements to determine the views of students in those same classes today. The revised Q-Statements should reflect the classrooms as they are at the time of the writing of this paper. This paper suggests that students respond positively to a student-centered classroom with correctly implemented technology.

An unexpected result of implementation of these changes was that after a few semesters of using this system the instructor was able to see which concepts and/or tasks seemed to be the most difficult for the students in general. This allowed the instructor to develop new approaches to various concepts from

semester to semester. By moving to a more student-centered model, the students were teaching the instructor how to better teach them and those students who would follow. In essence, the instructor created a continuous improvement process for the courses.

Where this is only one instructor in one degree program at a mid-sized Midwestern University, it shows promise for implementation elsewhere and across disciplines. Using this reflection as a template for revamping courses from the traditional teacher-centered model to a student-centered model may prove to be an effective strategy for others.

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Linking Early Childhood Education to Career and Academic Success

by Jane A. Hildenbrand, M.S.

As a lifelong professional in the field of lifespan human development, I have long “known” and correlated the influences of the early years and experiences throughout middle childhood and adolescence to success as an adult. From the very moment a child is conceived, he begins to grow not only in terms of physical growth, but in cognition, motor (both fine and gross motor) skills, perceptual development, speech and language development, and social-emotional development. These are basic developmental domains. The child not only comes with two sets of genetic dispositions from the biological mother and father, but begins assimilating the mother’s health and lifestyle practices immediately upon conception. It is important that both parents follow healthy lifestyles, especially during the reproductive years. These are facts that have been long known. In fact, the child not only assimilates from within the mother, but from sounds and experiences outside of the mother. All of this will influence the child not only short term, but lifelong as well.

With the continued research in the area of brain development which is the foundation for all aspects of human development, we can no longer ignore the facts that early childhood education, along with parent involvement, is the key to a successful adult. Infants are born with an exorbitant number of neurons (brain cells). Children’s brains increase in size and complexity as neural connections, or networks, are formed as a direct result of new and repetitive learning experiences (Giedd & Rapoport, 2010). As children learn and grow, the active cells and neural connections gradually strengthen and begin communicating with other. The early years are the prime time for all of this neural growth to take place. From the simplest acts of cuddling, rocking, and cooing with an infant to working puzzles, creating “art”, and building with blocks as are developmentally appropriate for each age, these neurons, known as “wiring”, continue to grow and interrelate with each other. This interrelation is critical in order for the individuals to preform specific tasks. If these neurons do not grow, they will gradually die off.

Children love repetitive activities. I am sure you are all aware of a child who says “Let’s read it again!” or “Let’s do it again!” The child is innately building and bridging neurons. If a child is supported and cared for in a nurturing and learning fostered environment, they will flourish. If not, they will often give up and grow up with low self-esteem, self-defeating behaviors, a lack of motivation, and poor interpersonal skills, just to mention a few.

It does not take long to deduct that quality early childhood education is the key to successful, capable, and motivated adults. In turn, this produces healthy and confident adults with positive attitudes, critical thinking and problem solving skills, effective speaking and listening skills, and knowing how to learn, all needed in our workforce today. Additionally, in early childhood children learn the basics of reading, writing, and math. Science and technology are integrated into the curriculum. Teamwork, integrity and character, negotiation skills, and leadership skills begin budding in early childhood as the child is either supported or non-supported in their quest to deal with every day activities and interactions with others, just like we do.

Children learn through play. Play is their work. As parents, care-givers and quality early childhood educators support their play and learning at the developmentally appropriate level, children will automatically want to build upon this at the next level. This is where the soft-skill learning comes into play. In turn, children will bring forth these skills to our workforce in the areas of business, education, manufacturing, and government. We often hear “there are no jobs”. In reality, there are plenty of jobs; however, there is a lack of trained workers who would have the skills to do the work. Many lack soft skills in order to train for a career and collaborate in a work environment.

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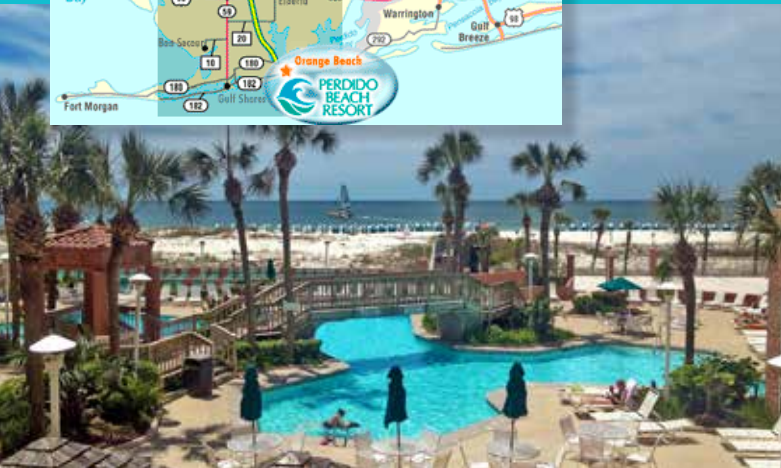


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