

**Information Technology and Arts, A/V & Communications Visioning Forum
Metropolitan Community College, Institute for the Culinary Arts Building 22
October 25, 2011**

The first activity was to listen to the business and industry perspective of the needs that they see and then to hear from the high school and postsecondary faculty of the opportunities that are currently available in schools around the state. These are the report outs from each of the groups. **Information Technology** had 5 groups, while **Arts, A/V and Communications** had three groups.

Small Group Work

Group A: Information Technology	
<i>Tech Skills Students Need</i>	
Communication skills • Problem solving skills • Project management skills • Relational skills • Passion/Life-Long Learning • Global outlook • Time Management • Validate Internet and changes in information • Analyze information • Decision making • Critical thinking • Occupational skills • Exposure • Integrate work between classes • ACM/IEEE Curriculum – out of web • Jargon – clearly defined • Computer applications • Exposure to possible technology	

Group B: Information Technology	
<i>Business/Industry</i>	<i>School - What's taught</i>
Visionary • Flexibility • Critical thinking • Problem solving - application of theory of system vs. functionality • Adapt to various needs within company • Awareness of more than what to do to complete a process • Know formulas in excel • The one with certification is given a stronger look for job • Oral written, social communication (1. ability to communicate message clearly and effectively and 2. Understand effectiveness of technology and communicate it in different social media • Decompose a problem • Understand fundamentals vs. tools and concepts • Technically able to operate with crutches - take what they've learned and adapt • Relatable skills • Resourceful • Learning how to learn regardless of the tool • Foundational learning skills • Understand mechanics and components	<ul style="list-style-type: none"> • File management skills • Accessibility • How to make connections between tools • Problem Based Learning – Scenario based learning listening

Group C: Information Technology	
<i>Job Skills</i>	<i>Education</i>
Demonstrated problem solving • Know how to learn • Perfected their craft • Core skills to adopt – ex – SDLC vs. Agile • Core computer architecture • Practice/Organizational Involvement • Tools/SFW • Ability to break things down • Innovation • Communication skills • Teamwork • Application of technology to business needs – end user • perspective – business knowledge • Soft skills • Business analytics/social media	<ul style="list-style-type: none"> • Applicability of skills to problem • Appropriate business behavior • Clear messages • Critical thinking • Basic maturity skill and level/practices • Problem – based learning – tie to real world. • Partner with industry

Group E. Information Technology

<i>Job Skills</i>	<i>Education</i>
<p>Communication (oral, written/audience, interpersonal, presentation) •Generalizing specialist •Logic, problem solving •Analysis •Computational thinking •Teamwork •Agile focus •Independent - interdependent •Not necessarily GPA but skill set, self motivated •Not tied to degree •Entrepreneurial</p>	<p>No child left behind •Budget and Number of students •Restricted curriculum •Compliance across district vs. magnet programs/schools •Distance learning – not popular in high schools •Synchronous and asynchronous •Works for nontraditional students, later in program •Career academy •Job shadowing •Final project – presentations, independent design • Business communication, documentation, audience focus •Contextual – communication •Math/science – problem solving •Career interest at high school level? •Problems to solve in every class •Skills beyond job – able to talk to those who interface •Debugging</p>

Group D: Information Technology

<i>Job/Need</i>	<i>Education</i>
<p>Problem solving – debugging •Logic •See big picture •Data collections •Integrate systems • Teamwork •Self motivated •Internet searching for solutions •Basic programming syntax •Project management (process) •Communication skills – email, technical writing, oral presentations, analysis, virtualization, meeting skills •Basic computer environment •Networking - business etiquette •Database •Scripting skills •Operating system (GUI/command line)</p>	<p>Post secondary CSS •HTML •Networking •Logic •Computer support •Workplace communication – team work – difficult people •Active directory •Cisco routers/firewalls •Hands on hardware •Problem based learning •Capstone •Database •Reports •Research •Terminology •Intro to IT Class networking •Web •Project management •ITIC •Time management case study – solve tech problems •Windows DOS •Apple •Linux •GUI/Command Line •Remoting UMD group projects •Office •Operating system</p> <p>Secondary Word •Power point •Internet skills •Database •Web design •Programming •HTML •Visual Basic Java Script •Networking •PC Support •Operating systems •Digital media and multimedia •Graphic basics/ Design</p>

Group A. Arts/AV Technology and Communications

Business
<ol style="list-style-type: none"> 1. Application understanding (in-depth) <ol style="list-style-type: none"> a. features b. Macros for efficiency 2. Productivity 3. Detail oriented 4. Communication (written) skills 5. Ethics 6. Soft skills (work habits) 7. Understanding file formats 8. Problem solving 9. Design needs meet aspects from concept to finished product <p>Basic grammar, spelling and punctuation skills</p>

Group B. Arts/AV Technology and Communications

<i>Needs</i>	<i>Have</i>
<p>Willingness to “try” •Confidence or “swagger” with technology (it can be solved) •The benefit of error messages •Use technology to your advantage to learn •Ability to logically and creatively solve a problem •Ability to change as the technology changes •Need both creative/design and analytical problem solving skills (left brain/right brain) •Coursework vs. career path •Ethical/fair usage •Knowing how to get from point a to point b •Clearly identify what they want to do with technology (not just simply “liking computers”) •</p> <p>Policy makers to come on board • Wireless broad band knowledge •Basic HTML (hyper text mark-up language) •Basic CSS (Cascading Style Sheets) •E-news/Email marketing •Building blocks of the web</p> <p>Mobile device/apps/ i-Pad course •Merge A/V and Broadcast Journalism •Open – source programming •Adobe creative suite •Java script</p> <p>e-portfolios •foundational art course/visual communications •drawing/composition/ design/color theory</p> <p>•telecommunications – pathway no longer belongs in the Arts/AV •Communication field (should be networks systems pathway)</p>	<ul style="list-style-type: none"> • Still in the 20th Century • Still print based • Privacy/security issues inhibiting some schools to “move on” • Students engaged with mobile technology • (all?) Many student use technology but don’t know how it works • Not enough \$\$ for the “next big thing” and training for new technology • Not all schools have internet access

Group C. Arts/AV Technology and Communications

<i>Job Skills - Trends</i>	<i>Education</i>
<p>Manufacturing – similar to other manufacturing – printing process •Basic core – not tech skills •Logic – reasoning</p> <p>•Problem solving •Trend – technology •How does software apply to business world •Comfortable with auto functions</p> <p>•Intra/interpersonal skills •Organization</p> <p>Coordination •Problem solving – solution teaches communication – listen, comprehend •Old school to new technology still a need •Writers – need</p> <p>Creativity – proofing •Creative writing •Explore career options</p> <p>•Meshing traditional fields to overall field – classes meshed together •Use skills - other careers: graphics, writing skills, research</p> <p>Ready for changing work •Niche industries – broad skills where could be applied - wide set of skills</p>	<p>Preconceived idea of career category - students don’t have the basics •Understanding how communication works through network • Disconnect between “now and then” journalism school •Decentralized industry – understand technology in all forms – self employed journalist</p> <p>• Younger employees – ability to communicate to all ages.</p>

Large Group: Morning Discussion

This is a summary of the large group discussion of the previously recorded small group thoughts. Seth asked the group looking in to the future of related careers what are some of the big “Ah-ha’s” that surfaced during the small group conversations?

Specific to Information Technology Career Cluster:

- Communication and Literacy – no “text-ese” for proposals
- Problem-solving skills and logic
- Systems view – generalist understanding
- Integration
- Ability to work with people, to build relationships, over long distance using technology
- Entrepreneurial spirit in thinking - think outside the box, problem solving

Specific to Arts, AV, Communications Career Cluster:

- Willingness to “make” the career – make the job for yourself (entrepreneurship/communication)
- Mobile Medias – adoption and use the manipulation of...
- Fundamentals - concepts, databases from database standpoint rather than a product

What’s offered at secondary and postsecondary for related education in Nebraska?

- Less textbook – solving for real world problems
- Integrate technology into the classroom is happening, breadth is possible when integrated across the curriculum
- Surprised me that school administrators feel that all students are familiar with technology because they have access to it – pleased to see technology classes are updating and adapting but concerned that it’s an elective class
- Not really educating students on the careers around Technology
- Instead of talking about the technology that a school or classroom has or doesn’t have, instead increase the learning and higher thinking skills – ask the question - what are we doing and why are we doing this? Do a better job of telling the story of why the technology is useful rather than
- Surprised that Distance Learning hasn’t taken off as we had hoped
- Business and Industry has totally embraced webinars and web conferencing
- A project has to be conceived in multiple formats (print, mobile, webpage, etc.) and the desire to revisit the project to adapt to new technologies
- Too many specific skills rather than the broad adaptable skills that aren’t going to be outdated in a few years
- Too many students learn a software or program and don’t know how to troubleshoot to solve the problem.
- Teaching a student how to use Microsoft Office as a typewriter is not going to be that valuable for an employer, instead go in depth on how to use the applications to solve problems and use the tools - that will help employers
- Surprising that the expectation is that what is learned in 7th grade will sustain them through secondary and college/on the job – we wouldn’t expect the College Athletic program to seek a middle school student for a college team...
- How do we have depth but have breadth as well?
- Start with the basic skills then build on them
- Technology is a tool – we can’t teach them some concepts without teaching the tool with the understanding that the tool may change as technology advances
- It is a real mistake to evangelize on one product (tool); this is the time to teach foundational skills and concepts
- The expectation that any education system that can produce a fully ready employee to walk into an employer fully ready is insane, the employer needs to be prepared to teach the specifics of the software the employee needs to be successful in the workplace
- You can self teach using technology – and become proficient in the proprietary application
- “Teach carpentry not hammers”
- Weakness in writing and creative writing – students don’t know how to write in complete sentences and don’t know how to write creatively

Afternoon Small Group Work

The groups divided into small working groups after Seth asked the following key questions:

What should Nebraska promote as model programs of study?

- *IT & Arts/AV: Over a cluster level POS?*

- *Telecommunications – Is this field part of IT, Arts, AV or both*
- *Admin Services – Includes IT Apps 1 and 2 - are these appropriate for an IT POS?*

Prior to moving into the small groups, discussion ensued around moving Telecommunications from Arts/AV Communications to Information Technology Career Cluster:

- Getting the information from point A to point B – we would advocate a change in the name of the pathway from Telecommunications
- Telecommunications – is the Network systems pathway
- What is there to be gained by taking it out of one and putting into the other?
- Let IT be the conduit to networking
 - If you're in IT - telecommunications is using the telephone/ pipeline
 - If you're on the AV side

Report out for Arts, AV, and Communications

Recommendations:

Would like to have a **Cluster Pathway** which would include Info Tech 1 and two other courses

Two Pathway Programs of Study Identified

1. Journalism/ AV Tech (combined Pathway 1 & 2)
2. Digital Design (formerly printing technology)

Summary Notes of Discussion:

- Film and Journalism should be combined – should be called “Journalism” thinking into the future, the difference between broadcasting, reporters, radio, etc. all coming together on the web – together they are journalism
- So few opportunities for film around the state – the skills they will learn in video and editing broadcast will transfer to filmmaking – more crossover
- Printing Technology and the industrial process is very lucrative, but not a lot of places to do it. Not a lot of student demand for the courses
- Demand for Design and Visual Communications – poster, website, appealing print media have beyond applications

The **Three Programs of Study** with general competencies to be covered in each:

Program of Study	Journalism (AV Tech, Film , Journalism and Broadcasting)	Design and Visual Communication (printing tech)	Arts/AV Cluster
Competencies to be addressed	Reporting, writing, editing Photography Video story telling/editing Broadcast (video/audio) Publication – print, online, on-air Videography Video editing Ethics Media literacy Digital audio editing	Design (Color theory, composition, layout, fonts/lettering (in design) Vector Art Program (Now adobe future?) Raster Art Program (Photo editing) Copyright/ethics Drawing: Illustration, Cartooning, Packaging Design Web Design Print Design 3D Animation Videography Color theory Photography Adobe creative suite Digital media (Creative process)	1 st course – Intro to Media, history, terms, trends Apps Media Design – Desktop Publishing Web Design Ethics Careers – differing mediums digital and mobile technology Social media Interview Organize Edit information media
	Professional Development: Teacher Opportunities: Workshops, Cam STN (student television network), Informal internships, Distance learning, Nebraska Teachers Summit?, Industry Partnerships		

Report Out for Information Technology

After small group discussion, each reported their recommendations:

Group 1

- Pathways
 - Information Support Services
 - Network and Telecommunications Systems
 - Combined web w/ programming and software development Web and Software Development
 - Web now is a lot more dynamic, these two are a lot more interrelated
- Do have a Cluster-level POS
 - With Apps 2, Programming, Web Development

Group 2

- IT Fundamentals – survey/exposure to all components of the IT cluster – careers
- Three POS
 - Systems (what is composed of the systems required to meet business needs)
 - Software
 - Networking
 - With topics of security and data analytics across all three
- Some discussion about a cluster-level POS but no specific plans

Group 3

- Process to identify common spots
- Recommend a common entry point (class) and common end point (project)
- One cluster-level POS that includes the following skill sets

- Database
- Hardware
- Scripting/HTML
- Programming language

Group 4

- Have a IT fundamentals/survey course
- Have a POS in each of the four pathways
 - Driven by dual-credit options

Group 5

- Create a survey course for IT
- Move web design to Arts, A/V Tech & Comm.?
- Recommend POS in each pathway

After large group report out and discussion, four programs of study were agreed on. Each Program of Study should:

1. All start with the same “Survey” or “Foundations” course
2. IT Applications is prerequisite set of skills but are not within the pathway Program of Study

Program of Study	Cluster Level POS	Network and Telecommunications Systems	Web and Software Development	Information Support Services
Competencies to be addressed	Capstone with: Community College Survey Course: 1002 (MCC) or 1100 (CCC)- is the collection of three courses which include the Survey Course and the “IT Topics Course” OR Apps 2 Programming Web Development	Home networking OSI model Protocols Ethernet LAN technologies WAN technologies Terminology: cellular, VOIP, satellite, wireless, microwave Routing Switching media – fiber, copper, etc. Masks – subnet, wildcard Voice, video, data networks, topologies (IP v.6) Punch downs Wire termination IPV4 Access lists Security Firewalls Encryption	Web development – HTML/Java Script/CSS Programming I - flow, control, loops, conditional -taught in .Java Script? Problem Solving /Logic (build in?) <ul style="list-style-type: none"> ● Problem/Tasks ● Problem based learning Objects Entities Data Individual and team projects/assignments throughout Programming 2 <ul style="list-style-type: none"> ● Object oriented (minimal scope) ● Methods/procedures ● AP Test Concepts ● Data Structure/array Make it fun!	IT Fundamentals <ul style="list-style-type: none"> ● Build hardware ● Systems - operating systems ● Apps development Web Development (HTML, CSS, JAVA Scripting) Program/ App Development <ul style="list-style-type: none"> ● Java ● Gaming Design and Development ● Scripting ● Database

Survey Course Concepts and Topics (foundational course for all Programs of Study)

1. Careers and understanding the IT industry
 - a. Computer hardware and operating systems and Systems design
 - b. Telecom
 - c. Application Software
 - d. Coding
 - e. Database
 - f. Programming

- g. Networking
- h. Data Storage
- i. Data analytics
- j. Security

- k. Project management
- l. Accessing and evaluating information
- m. Internet/web

IT Topics Course includes: Web design, programming/app development, hardware/OS/tech support and networking

Cluster Capstone Course: soft skills, exit assessment, scenarios based learning, customer service, peer reviewed, project management, has to be with a business, full cycle project, case based.

Additional topics to cover when designing the courses:

Information Systems and Support

- Hardware
- Computers, Building/Repair, peripherals
- Storage
- Links to networking H/W
- Mobile devices
- Projectors, monitor, speakers, printers

Operating systems and tools/utilities

- Install, configure
- Updates (inc. drives, firmware)
- Security (inc. A/V, Spyware, malware), accounts/ DAP Encryption
- Back up/ DR (data recovery), monitoring of systems and application
- Network basics (TCP/IP, Internet Protocols)
- Commands, Explorers

Tech Support and Services

- Troubleshooting
- Researching Solutions
- Help Desk (H/W and S/W)
- Efficiency, Communications, Time/Project Management

Current Trends

- Cloud and Virtualization
- Green Computing