

## Utilizing Career Pathways, Digital Tools and Social Technologies for Transforming Student Advising, Enrollment, Retention and Job Placement

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### Abstract

Milwaukee Area Technical College (MATC) was tasked with the development of career path information for our students. The IT faculty team, under the direction and leadership of the Associate Dean, created the Information Technology Pathways model.

The Associate Dean invested significantly in infrastructure and planning to ensure cross-team knowledge exchange. We also wanted to enhance awareness and increase student engagement via social media platforms like Facebook, Twitter, LinkedIn, YouTube, and MeetUp.

This study was designed to create pathways and curriculum that other programs could replicate; other departments can now benefit from the template and design strategies developed to enhance the IT curriculum and pathways. These pathways and the dialogues have led to increased training requests and pooled training.

Our MATC case study is a good example that identifies and shares pathways, curriculum development, and partnering with advisory committees to gain input for incorporating instructional technology in the classroom based on student needs.

**Purpose:** This article describes a dynamic and innovative pathway model for instructors to service student, parents, counselor, and employer needs around digital and social technologies that support student enrollment, retention and provide collaborative learning opportunities for improved job placement.

The goal is to produce graduates that bring relevant and reliable skill sets that match current business and industry needs. The two primary reasons for enrolling are preparing for a job and career change. In addition, it provides training for a career ladder for training employees who need to advance, many employers are moving incumbent workers along this career path as well.

**Methodology/Approach:** A case study

**Findings:** The integration of pathways including certificates, embedded technical diplomas, associate degrees, online community through digital, mobile and social technologies, MeetUp, LinkedIn, Google Apps, groups, Netlab, Blackboard Learn & Internships.com, have a positive influence on student advising, enrollment, retention and job placement. Many of the social media tools are free so they did not involve increased funding but mostly involved legwork, making them effective tools for reaching new students.

**Research Limitations:** The research was limited to the IT faculty population at MATC, and did not include data collected from students outside the USA to find out what role cultural mores, attitudes and gender play in the learning process.

**Practical Implications:** Workplace employers are increasingly experiencing a skills mismatch and the growing retirement gap. Thus, institutions of higher education are under increased scrutiny regarding the preparedness of their graduates for the workforce. This study provides curriculum design strategies that foster community, utilize mobile, social media and support student learning and retention through effective course design.

The sharing of best practices will help the next generation of students with pathways that are connective and progressive and empower them with marketable, stackable credentials. The study provides an entry point for all learners and a bridge to further opportunities on a pathway at any point to gain support and structure for job entry, advancement and higher wages. This is important since there is an increased demand for a credentialed workforce. The end result will be a larger pool of qualified workers and a better pipeline to fill skilled jobs, which subsequently will result in higher employee retention and loyalty.

Pathways enable students, faculty and leadership a familiar path of program offerings and job prospects. In addition, this model can be used to inform policy and practice related to performance funding, college affordability, and alignment of higher education and workforce needs, as well as for new research on topics including: state-level labor market outcomes for certificates and degrees; returns to for-profit college credentials; the impact of the federal grants and loans on earnings and employment; challenges in using labor market outcomes data in performance funding systems; and how post-college earnings data can be used to help students make better program and career choices.

It is necessary to rethink the academic work environments based on social media tools and applications like Google Groups, MeetUp, Blackboard Building Blocks or LinkedIn, in accordance with the learning needs, skills, and competencies of students.

**Keywords:** Learning technologies; Career pathways; Social learning; Online education; Learning; Employment outcomes for higher education; Social media

## Background

The world is changing and educational training is rapidly evolving with new technologies and tools increasingly placing more responsibility and self-directed learning opportunities in the hands of students. We know there is a high demand for IT professionals in the workforce, both locally and globally. There is a need for high impact workforce solutions to expand pathways and partnership initiatives across the country to strengthen training and leverage resources. We wanted to provide resources to help students optimize their education and job opportunities to find success beyond the classroom. In turn, we wanted to leverage pre-existing resources (like Facebook) for additional impact, student support and retention.

IT jobs are routinely hard to fill. There is a need for the Pathways and tool options so students can customize to their interests and needs. There is an urgently high demand for IT skills in the workforce. Exposing students to IT careers and helping them develop IT skills will not only prepare students to succeed in an in-demand career field, it will also keep large employers by addressing their hiring needs. Urban communities, in particular, are increasingly looking to career pathways programs to help meet their workforce needs, and public two year colleges are often central to the partnerships that make pathways programs work. Beginning in 2013, strategic planning, and implementing career pathways in high-demand industries like information technology started. This abstract documents and shares key strategies to provide information and tools to help employers stay competitive and to recruit, prepare, support and find students IT jobs at a public two year college.

The MATC IT team believes it needs to ensure that it's listening to employers and their needs. We feel employer engagement in the process is vital. Our team made a point to listen to employer input and treating employers as partners, not like vendors or customers. Employer engagement is about discovering ways to work together for a shared outcome that creates shared value across many employers. Employer advisory committees were invited at the onset and met regularly. These committees worked closely with our IT faculty team of content experts and the associate dean, with a practical, problem solving focus to implement suggestions from industry in our pathway design and to gain an understanding of occupational opportunities based on shared level of understanding.

The strategic focus was to work with employers to identify important credentials, and have these employers engaged in program design to address their particular challenges. We were in close contact with in-person, audio and google hangouts online to provide a forum for discussion and sharing to create a common structure and strategy for the pathway. We wanted to keep the circle of employer engagement continuously expanding by ensuring that every meeting and pathway offered value to employers and the state's workforce [1].

From an administrative and management perspective, the pilot's primary objective is to provide a better way to inform and guide students. We also align resources and tools to support this. In other words, determining priorities as well as the nature and format of resources to be used. This may include tools to be developed, co-authorship opportunities, review and recommendation of technological improvements, and piloting resources at the college. The

result was the development of a comprehensive IT career pathways for students, incumbent entry-level employees and continuing education. The IT Pathways career map is a living document with new courses or programs being added as demand for services increases.

## Evidence-1

Only one in ten organizations report having all the IT skills they need. This means organizations in every industry, across every sector of the economy, are seeking to hire individuals with IT skills. HR managers rank hiring for software development, and specifically mobile development, among their top priorities. (Dice.com hiring survey of 1,059 hiring managers and recruiters in 2013. Among the top priorities, #2 was mobile developers, #5 was software developers.) Between now and 2020, the IT sector will add 2.5 million jobs. This isn't a fad-demand for skilled IT workers will continue to grow!

The number two highest paying IT job is a software developer with a median annual salary of \$90,530 By gaining software development skills and learning about IT related post-secondary pathways in the region, students will be well on their way toward earning a secure, family sustaining income.

Of the top 10 hardest jobs to fill, number 4 is IT staff. We are experiencing a talent shortage in IT, which means qualified graduates in the field will have their pick of jobs. Plus, they'll be filling a critical need for large employers in the region, encouraging big companies to stay here rather than move overseas.

Seventy-five percent of surveyed students and educators feel that today's grads are unprepared to meet the demands of the IT workforce. Getting students started on building IT skills in high school will allow them to enter college and the workforce with more preparation under their belts and a better chance of success.

## Evidence-2

Once enrolled in college, many students don't graduate. Tactics like paid work experience and continued mentoring and support in post-secondary program are effective in increasing post-secondary persistence.

Delaying entry into college by as much as one year after high school is associated with poorer persistence and attainment. ("Retention and Persistence in Post-Secondary Education" <http://www.tgslc.org/pdf/persistence.pdf>) Helping students connect to a college during high school will encourage them to enroll in that college immediately upon graduating from high school, which will give them a better chance at college success. Career Pathways can provide this.

## Evidence-3

In Wisconsin, 68.6% of students who start at 4 year institutions

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complete degree within six years. That rate is 47.09% for students who start at 2 year institutions. (NSC Signature Report: Completing College: A State-Level View of Student Attainment Rates measuring Fall 2007 cohort.) At UWM, the 6-year graduation rate is 42.7%. The 4-year graduation rate is a mere 14%. (National Center for Educational Statistics) At WCTC, 19% of students who started in Fall 2008 finished their degree within the time it was designed for. (Education-portal.com) At MATC, 9% of students attain their degree in the normal program time, and 21% in twice the normal program time (National Center for Education Statistics). Getting students engaged in hands on learning opportunities are highly effective tactics for improving college retention and success. ("The Ten Most Effective Retention Strategies for Community/Technical Colleges." <http://www.dixie.edu/reg/SEM/DCrockettTenMost.pdf>). Job placement services and other opportunities for low income minority students to get paid work experience improve college retention because they lower financial strain, increase self-confidence, and encourage social integration. ("Retention and Persistence in Post-Secondary Education" <http://www.tgslc.org/pdf/persistence.pdf>).

How can we do a better job of helping high school students and their parents? By talking to and serving high school students and their parents, after their chosen career area or field of study is determined. We can connect education and training strategies or clusters around their areas of study. Now, students can step out and back in. Courses are embedded, so all credits will count and they can earn some of them in high school. This optimizes the process and success of the individual. Students can see how each step in the career path leads to better family sustaining wages. Instead of lots of inconsistencies across the school system, we are looking at fixing the system through collaboration, sharing what we have done, working towards a common goal and common documents. We feel it is imperative that we understand the needs of both our students and other community stakeholders. This is how we will grow as a college.

MATC was tasked with addressing the issue of 700,000 adults without any credential beyond high school in the workforce. Critical components include the flexibility students can enter the pathway at various locations. These are road mapping tools for youth and adults. Job centers have restructured services and trained staff to orient clients to career pathways. Now colleges are as well, ours has Milwaukee Area Technical College, you come into a pathway now, not a program. This model has actively engaged student services at all colleges.

While the traditional approaches in the past preferred learning to act "under order", a new look at the learning as constructing their own knowledge has resulting in a change of theoretical concepts. In addition, technological progress, especially the rise of social and mobile

technologies, has provided instructors and students with a bevy of tools for producing and integrating interactive learning environments [2]. Information technology is now being conducted with new digital and social tools and knowledge management skills have quickly become a basic necessity. Through technology, information is now instantly available on mobile devices (smartphones, phablet and tablets), social communities and online resources. The ramification is that technology literate people are increasingly able to find and use information to function while computer illiterate people are unable to keep up with the educational and societal demands required to gain employment in the knowledge economy (Figure 1).

We want to help students repurpose both their social and professional networks by utilizing their existing contacts to find employment. This will be helpful in connecting with the region recruiter before they apply on the websites etc.

### MATC and learning technologies

MATC provided us with valuable insight and experience of online learning environments. Dr. Fisher is with Milwaukee Area Technical College. She works with faculty and students in the IT programs. IT Support, IT Development which includes both Mobile Apps & IT Web and Software Developer, IT Networking, IT Security and IT Social Media.

Drawing from our personal experiences at MATC and our backgrounds in other online, mobile and social learning experiences, we will provide best practices, examples, screencasts and advice for course designers, educators and others interested in designing curriculum that fosters the creation of learning communities and peer support networking among students. In addition, we will illustrate how the integration of digital, social and/or mobile technologies into the course design works as a tool to support student learning. MATC has 200 academic programs, nearly 400 transfer options leading to bachelor's degrees, and a Pre-College Education division that helps adults complete high school, prepare for college or enter the workforce. The public, urban college has a full-time equivalent enrollment of about 13,000 students at its four campuses. Almost 4 out of 5 students are part-time. It serves a total of 43,000 students including community education, workforce training, and customized business training and workshops.

### Using Technology to Foster Student Motivation

From a cognitive and metacognitive perspective, learning control and actively influence their learning activities determines why and to what extent self-regulating options are taken. Student motivation in courses is driven by a need to achieve internal personal goals, as well as



Figure 1: Social Media Student Support Tools [1].

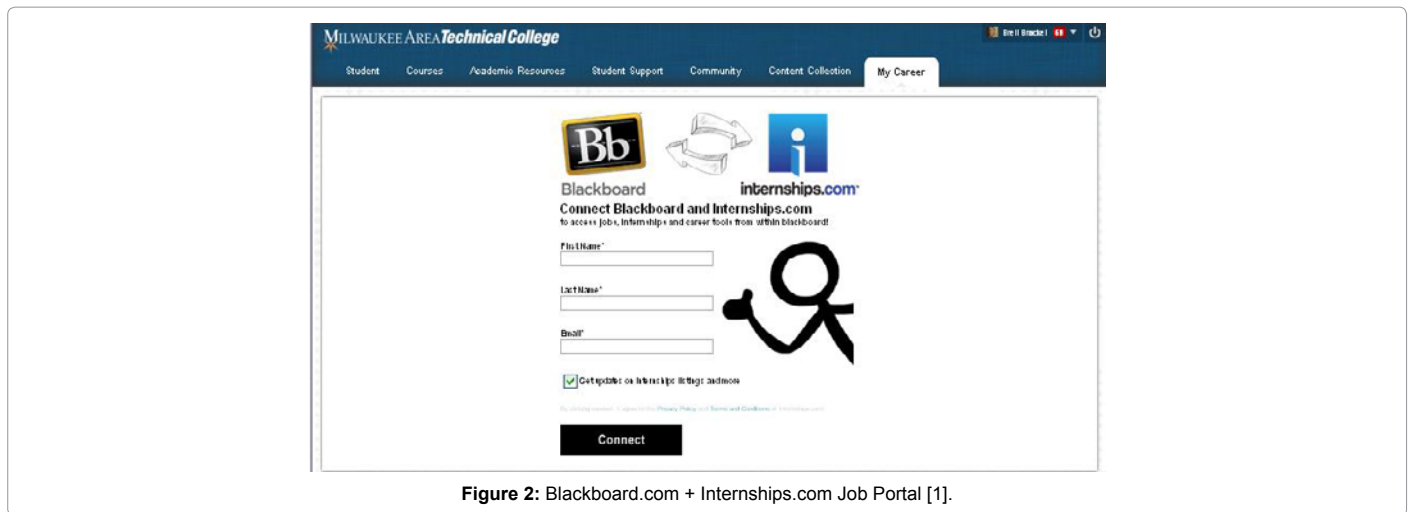


Figure 2: Blackboard.com + Internships.com Job Portal [1].

a need to meet the expectations of their peers [3].

To what extent the learner participates in the online learning community is largely determined by two factors: the structure of the course; and, its projects and activities that permit the learner to fulfill the dual identity as an individual and member within the learning community. Therefore, learners not only need to know what steps to take in order to be successful in the learning process, but must also discover and tap into internal motivations to be successful.

We want to help students manage, organize and control the process of finding the perfect opportunity in the workforce. Our Blackboard learning management system has a new building block within Blackboard Learn and Internships.com we are implementing that focuses on supporting student careers. It has more than 51,000 active internship positions from more than 28,000 companies located in cities and towns across all 50 states (Figure 2).

### Role of the instructor

The instructor must serve dual roles: first, to act as a course moderator who manages a carefully balanced mix of activities and projects that will foster social motivation, and, second, serve as a conduit to the information and knowledge that initially motivated the students to join the program. While the course moderator is available to assist students, it is also important that students are given a wide breadth of parameters to explore their own intrinsic interests.

According to Sharp, "If people have the sense of autonomy, they are more likely to be motivated by things that are personally important to them, and less likely to be motivated by externally imposed rewards or threats. Intrinsic motivation is a key to self-regulated learning, because it persists beyond the immediate circumstances and enables the individual to be truly self-motivated".

The strategies that fostered a sense of self-regulation and worked well for students enrolled at MATC included: incremental deadlines, student guided discussions, learning blueprints, communities outside the classroom, small group projects, narrative feedback and evaluations from peers, self-reflection activities and student created rubrics.

These activities also help the instructor support self-regulation, while at the same time fostering the socialization process of the student within the context of the group and individual learning environments. Another key course design factor that contributes

toward increased student self-regulation and motivation is to provide them with opportunities to share their newly acquired knowledge with their classmates. Each Netlab has many individual labs for example ITSEC-124 has 20 labs, so I assign a lab every two weeks. This allows students to login to Netlab and select the time they would like to work on that lab and reserve it under their name. When the reservation expires, students login and reserve another time on Netlab. We can limit the duration for each reservation - usually to about 4 hours. In short, learners not only need to know the right pathways and tools to be successful in the learning process, but must also discover and tap into their own motivation and feel confident in their own understanding to be a successful learner. Pathway options enable participants with different levels of expertise. These are also key skills that will better prepare them to work in the collaborative economy of the 21<sup>st</sup> Century workplace. Instructors have worked to connect program graduates with employers by establishing relationships with recruiters with HR companies who know the quality of the training and IT programs and the candidates who complete the training.

### Designing for student motivation

The ability of students to find immediate relevance in their major field of study, pathway, and coursework motivates them to delve further into informal learning activities and sustain their level of participation in the course. Students will gain a better understanding of the material when they can link what they are learning with what they are doing.

In most institutions of learning, theory and practice must be encapsulated in the learning, otherwise students will not have the opportunity to practice and learn from peers. Conversely, in a business setting, the support mechanism is strong and the pressure to apply ideas is inherent because of job expectations and the motivation to retain employment. There is no guarantee that the self-regulation works; the human elements of having poor instructors, not knowing or having current technology skills are potential roadblocks. Program and course designers and instructors must make changes and adapt or identify what types of accountability will manifest a sense of motivation and ownership. For example, students at MATC identify posts they made to the asynchronous threaded course discussion, which they feel moved the class forward by contributing to their understanding. This ownership, along with other markers for success, including intention to complete the course; early submission of work; degree of interaction in the course, and course relevance all are related to course motivation and drives the student to modify their behavior for success.

**Designing for student retention and career coaching:** There are a number of diverse approaches taken by community colleges. We have expanded our team and gotten advisors, recruiter/job developer staff involved. Some of the IT Team strategies used on a regular basis for program students, include; 1) Resume Writing & Job Application Workshops and Reviews; 2) Interview Workshops; 3) Mock Interview Sessions, most recently with technical recruiters assisting our students in the final course; 4) Professional Forums and Panel Discussions, with industry executives; 5) Targeted Job Fairs for both High School & College with “job clubs”; 6) Etiquette Dinners; 7) Established referral type relationships with High School IT instructors and major employers in the area with shadowing programs and “day in the life” visits for students, and; 8) Sharing updates, events, job prospects and program offerings using LinkedIn, Facebook, Google, Twitter. Most of these offerings are available on different days and times, and accessible via multiple campuses. In addition, we ensure course alignment with industry certifications. These are roots to success; skills that participants will need to succeed in the workplace are role played in classrooms through peer learning. Students are taught to see themselves and each other as resources who work collaboratively on problems. This strategy builds the critical soft skills that employers describe as essential for productive employees. We also generate data reports from Tech Connect of employers who have posted positions at the college. If you have particular students that have gained employment or an upcoming graduate, who has secured an offer, we have captured a video interview to merchandise their success.

**Cloud tools for students as customized support:** Learning, hands-on experience setting up a network takes place in the cloud as well as in the classroom. To what extent the learning participates in the online learning community or lab is largely determined by the structure of the course and its ability to provide the learning with projects and activities which will allow them to fulfill their dual identity as an individual and member within a learning community. Faculty and advisory boards have communities online too in the Google groups (Figure 3). Support for

student retention has broadened to include cloud options for learning for students. In this manner, students are becoming more involved in supporting their learning in a tool (ours is Netlab) for learners that helps keep doing coursework at their convenience and access which helps keep them motivated and contributes to higher student retention rates. It minimizes time wasted by narrowing in on a major, service lapses by offering cloud and web resources, eliminates unnecessary redundancy, and offers instruction in the most useful format. We use LabSims and net lab as tools to do this. Pathway, program and course design should include the use of technologies and activities which foster “modeling-mirroring” (Hung, 2002) opportunities which allow learners to build interest, relevance and motivation to participate in the community, as well as construct their learning experience in the course.

**The NETLAB Example:** The tool we use for cloud is NETLAB PE (Professional Edition) Server System, which MATC uses for students to access courses. Currently, the NETLAB server system has five Information Technology courses available. Cisco equipment pods have been assigned to the Cisco part of AAON (Accelerated Online Networking Course). ITNET 157-502 the New VMware Certified Professional (VCP) course is using the NETLAB vSphere 5 ICM Pods at the Mequon campus. Each NETLAB PE server only allows 32 pods or 160 virtual computers to run at one time. The combined classes have 74 pods and 351 virtual computers. At MATC, we look forward to increased equipment availability and to make NETLAB a district wide resource. We researched the equipment needed to accomplish an incremental expansion of NETLAB that will allow further expansion for the use of NETLAB and submitted a Capital Budget request to assist in that growth objective. Faculty training planning example for NETLAB. Training provided instructors the information necessary to utilize NETLAB in their classes. We asked for content ideas, and provided the following topic suggestions as thought starters for faculty:

- As an instructor what process do I follow to utilize NETLAB in one of my classes?

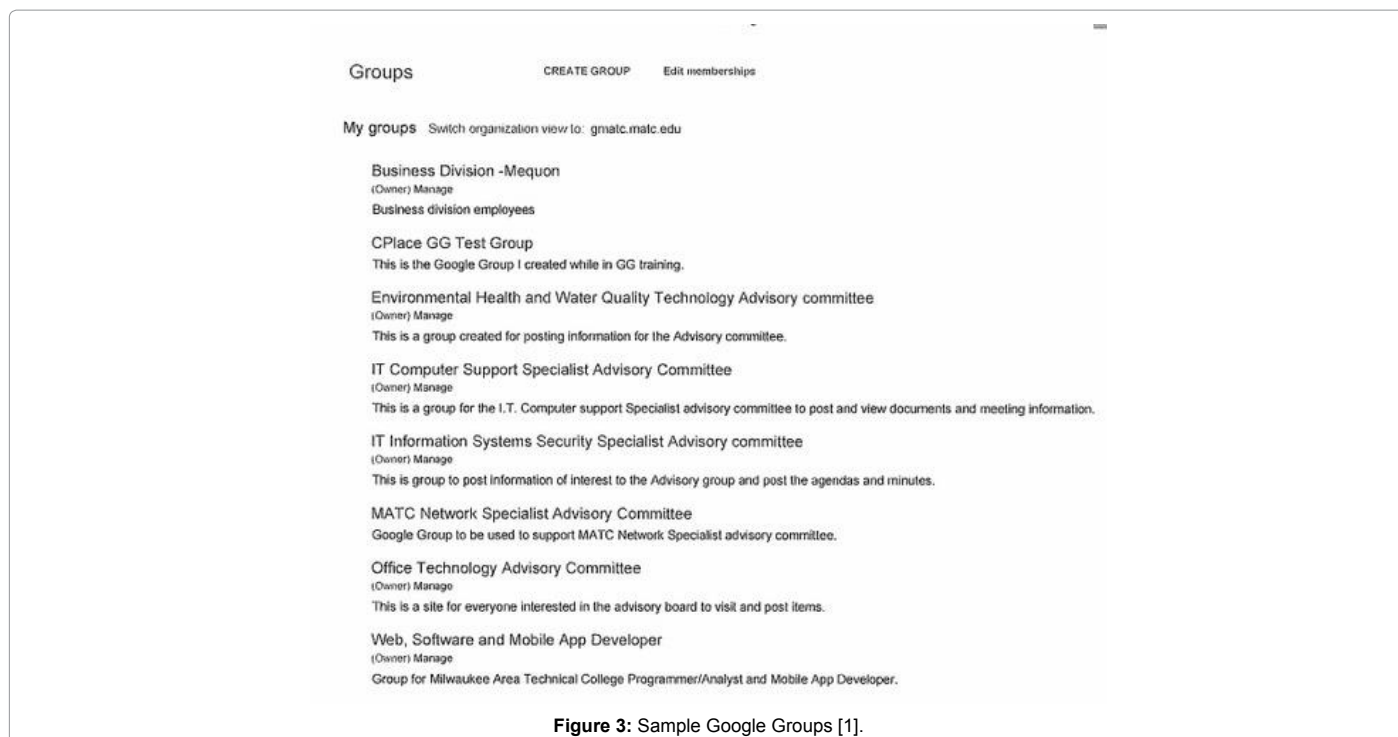


Figure 3: Sample Google Groups [1].

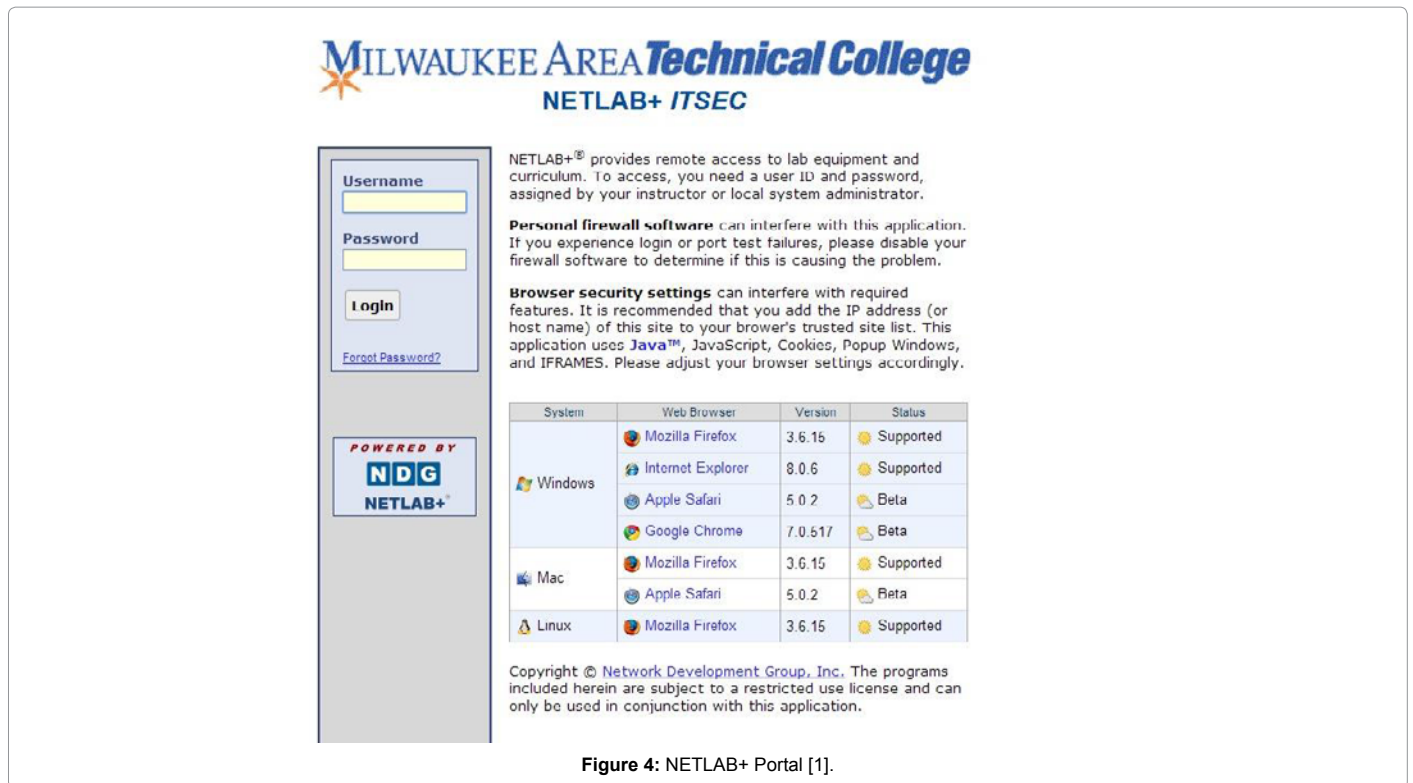


Figure 4: NETLAB+ Portal [1].

- How do I communicate enrollments, new student additions, etc.?
- Are the machines persistent, or do they get reset with each logon?
- Can we utilize 3 snapshots (or starting points) per class?
- As a student how do I access my machines?
- If machine needs to get reset how does a student do this?
- If possible, how does a student choose a starting point (or snapshot)
- How does an admin configure machines, students, etc.?

This creates a symbiotic process wherein the course design piques their interest in the subject while still allowing the learner the freedom/leeway to construct the knowledge necessary to meet their individual/immediate learning needs (Figure 4). This self-interest creates the motivation to actively participate in the learning process and collaborate within the learning community. Another key factor to weave into the course design that promotes self-regulation and motivation is to allow students opportunities to maintain their individual creativity and autonomy in the types of projects and assignments [4]. These types of projects are important because they allow students to work on activities and assignments and projects that they find intellectually stimulating and relevant thereby making them an active architect of their own learning process. To be clear, the course designer must have a rubric or project parameters in mind, but there should be enough leeway to allow students to feel as though they have choices in terms of relevance.

In addition, institutions of higher education with high retention rates are seen as successful within the academic community. The issue of student retention will continue to grow as more institutions

offer pathway, tool, job resources and online or blended learning opportunities. We have been looking at student supports and addressing transportation barriers with cloud access to source content etc.

**Providing advisory committee input to programs:** Milwaukee Area Technical College is committed to listening to business needs and to matching employer needs with relevant employee training. Keeping ahead of the skilled worker shortage depends upon strong partnerships between education, business and industry. These partnerships are strengthened by input from approximately 100 advisory committees. Our partnerships are strengthened through clearly defined roles. Advisory committee input helps assure the college's ability to meet employee training and retraining needs, and provides the Milwaukee area the means for economic growth and vitality. MATC's volunteer career program advisory committee members are recognized and respected professionals in their fields. As a committee member, your responsibilities will be challenging and rewarding and involve continual review and revision of MATC's educational and occupational training programs. These guidelines were developed to assist committees and individual members as an ongoing reference. Your contribution helps assure coursework relevancy, state-of-the-art equipment for the college, and a high degree of professionalism for our graduates. Your involvement is highly valued and appreciated. This interfacing with industry: Communicating project goals and processes with MATC helps us plan effectively. New businesses often want to join the committee once they find how beneficial meetings can be. The model at MATC in the IT advisory boards is a success story of employer engagement.

#### Peer-to-peer support

As students are involved in the process of collaboration, both face-to-face as well as through social technologies, they begin to form social

bonds that, as they deepen, motivate the learning to establish an identity within the group through active participation and contributions to the collective knowledge of the group. The collaborative aspects of the projects undertaken in the course allow students to interact with other members of the class, identify who has a particular skill or expertise they want to acquire, and then provides opportunities for them to model and scaffold this knowledge from their peers. Through this process learners become motivated on an individual level as well as foster a sense of accountability to the group. In this manner the social collaboration via information communication, social media and mobile technologies allow students to “learn how to learn” [4]. Unresolved technology problems and lack of IT support from the university or college can quickly drain student momentum and lead to higher dropout rates and lower student retention. Therefore, it’s vital that instructors provide avenues to assist students with technical issues so they can continue their learning process. While the learning institution may provide a technical help desk or IT specialist, many students will seek technical assistance from their peers. In addition to helping them resolve their technical issues, this will provide them with opportunities to share their knowledge with peers, deepen social bonds and trust, thereby strengthening their learning community. Most technology related problems encountered during the lifespan of a course will be resolved thorough peer-to-peer technical support. This collaborative problem solving is also an important skill that will serve them well as they move into the workforce. Moreover, as the student begins to make social connections with other members of the class and begin to cross newly constructed bridges of understanding the combination of the social collaboration and well-designed course curriculum create a cognitive process and roadmap which propels them deeper into the subject, fostering motivation to continue the process of learning. In addition, as students collaborate on projects and engage in online discussion they begin to formulate social codes which will both support and regulate the participation, behavior and depth of learning that occurs in the workplace. The observance of these self-determined social codes legitimizes participation in the learning community [5]. Conversely, students who choose not to abide by these group mores and social codes will be censured by the group. Throughout the duration of the course, the instructor needs to foster and encourage students to tap into their peer network for support. Peer support plays a key role in the success of the course and greatly increases student retention. In short, the information and the knowledge that is constructed by the learner is the intrinsic motivation that the student is looking for in order to become a successful learner.

### **Social technologies to support management and administration**

The use of social technologies, such as an LMS, blogging, Facebook pages hosts postings about open positions and employment opportunities now like LinkedIn Groups, Twitter, Google Hangouts or mobile tools like Remind101 (<https://remind.com/resources>), provide students with an opportunity to self-regulate their understanding (or lack of) current course topics with their peers.

Moreover, as students utilize these social technologies to share their thought processes with their peers and instructors, they are able to work through cognitive roadblocks, while also building a social support system.

We have seen the benefits and increased quality in course engagement since we have required students to post in online forums, such as a (private) Facebook Group. For example, posting dialogue in

the group discussion helps students feel known and simultaneously builds a sense of community and accountability with the other members of the class. Many times these postings are of a higher quality and are a little more coherent than speaking in class since students’ have time to reflect, research and ponder before they post [6].

We also find students post resources that are timely, relevant, primary, comprehensive, highly visual and educational in nature. The result is a conversational dialogue that are more interdisciplinary, authentic and situated learning experiences for the class. In other words, real people discussing current and relevant issues fuel their intrinsic needs, which in turn motivate them to continue in the course.

### **Program advisory committees and course design**

#### **Advisory committees**

MATC is committed to matching employer needs with relevant employee training. We use these meetings to learn directly from employers what they are doing and plan to do in the future. Keeping ahead of the skilled worker shortage depends upon strong partnerships between education, business and industry (Figure 5).

These partnerships are strengthened by input from approximately 100 advisory committees. Advisory committee input helps assure the college’s ability to meet employee training and retraining needs, and provides the Milwaukee area the means for economic growth and vitality. MATC’s volunteer career program advisory committee members are recognized and respected professionals in their fields. They have a shared vision and accountability. As a committee member, responsibilities involve continual review and revision of MATC’s educational and occupational training programs. Currently, some of the primary functions served include curriculum changes, equipment acquisition, and the purchase of computer hardware or software. All recommendations are put in the form of a motion to be voted on by the committee. At least 50% of the committee must be present to form a quorum, which is necessary for finalizing any decisions or recommendations. Unfortunately, advisory committee recommendations cannot always be implemented, but MATC is committed to responding to all advisory committee recommendations. It should also be noted that all meetings are subject to open meetings law. Notices are posted at the college to inform the general public [7].

In order to ensure consistency across individual committees, specific guidelines and a common meeting structure has been established. For example, all advisory committees have an equal representation of employers and employees. Each committee strives to include appropriate numbers of ethnic minorities, women and men, and representatives of both small and large businesses.

### **MATC Information Technology Pathways**

#### **Information technology pathways**

In the case of MATC’s District Board, it reviews the list of new appointees and members who have left the advisory committee each year. Also, MATC students and staff are resource people and are not considered members; however, each year, a student is appointed by the instructional division to attend committee meetings. This college representative assumes an active leadership role to see that MATC’s resources are available to help the committee meet its goals and objectives. These guidelines and structure have been developed to assist committees and individual members as an ongoing reference. The hope is that they foster collaboration that assures coursework relevancy, state-of-the-art equipment for the college, and a high degree

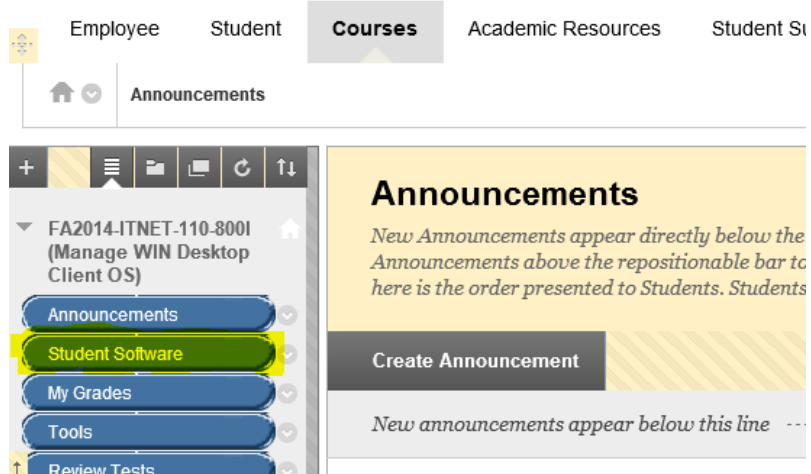


Figure 5: MATC Student Software Library [1].

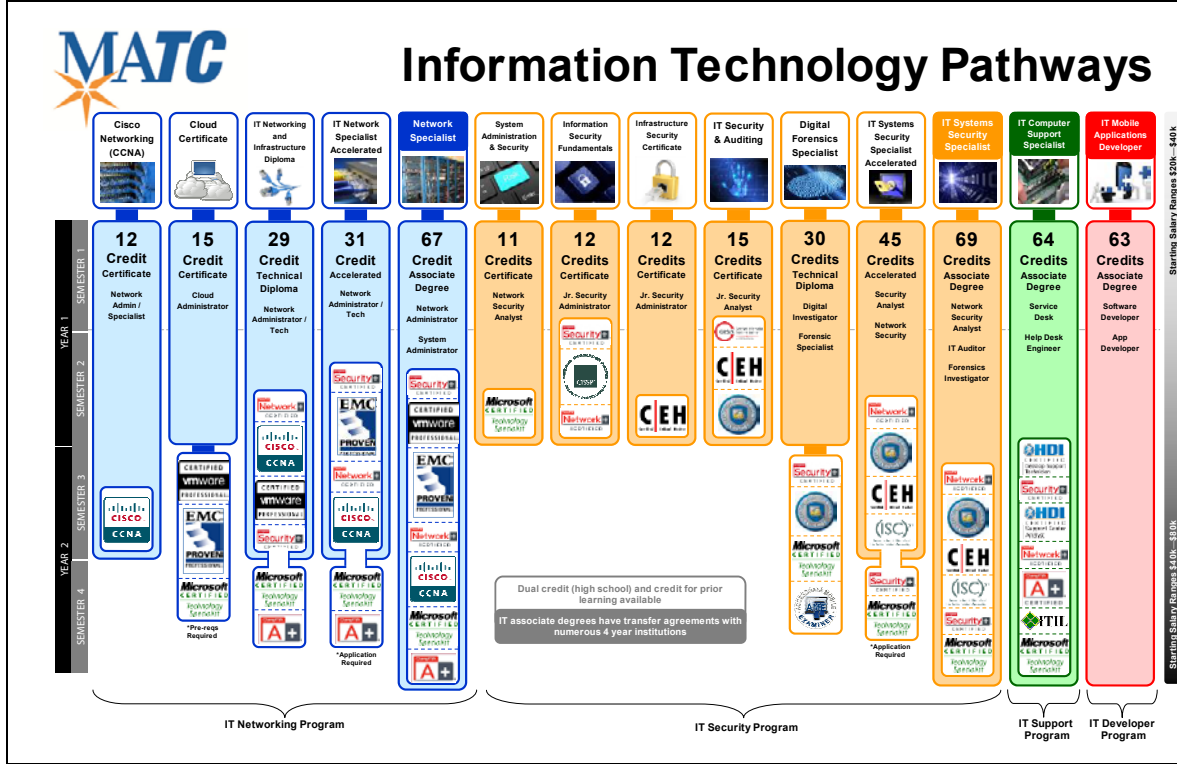


Figure 6: Information technology pathways.

of professionalism for our graduates, so they are well prepared to enter the workforce. As a result of the experiences we had with the advisory boards in IT we can call on employers as partners and ask them to support our initiatives (Figures 6-9) [8,9].

**Conclusion**

We opened this paper with a discussion of the need for a proactive effort, new model and tools for education and how the needs of faculty and students can be changed in the knowledge age. We share a shift that can be supported and implemented by college leadership and faculty that can focus on critical front line needs of employers to

helps students and incumbent workers. Our model has enabled our department to challenge old assumptions and methods of advising and teaching students, we view new realities clearly, build new and stronger partnerships with business, and have taken innovative steps that are producing breakthrough results. We have gone beyond the limitations of previous models and leadership which has in turn helped us to stabilize and grow in a very difficult economic environment to design and deliver program services.

In addition, the model helps colleges think through and determine program variables such as areas of program value, areas that should be expanded, organizational capacity, and resource planning etc. We now



**MATC Information Technology Pathways**

**IT Computer Support**

- ITSEC-124 Security+**: Students will focus on the fundamentals and implementation of network security including secure access methods and vulnerabilities in network protocols, operating systems and network applications.
- ITSUP-101 Computer Sys Fundamentals**: Students will learn the concepts and terms to better understand the role of information technology, careers for computer professionals, basics in computer hardware, software and networking as well as the Internet in business and society.
- ITSUP-102 CompTIA A+ Essentials**: This course prepares students for the CompTIA A+ Essentials and IT Technician exams.
- ITSUP-140 Support Center Analyst**: This course prepares students for HDI-SCA (Help Desk Institute Support Center Analyst), HDI-CEI (Customer Support Technician) and ITIL Foundation certificates.
- ITSUP-150 Mobile Device Repair**: This course provides students with expert mobile device repair knowledge and advanced repair skills.
- ITSUP-152 Apple OSX Certified Support Pro**: This hands-on course provides an in-depth exploration of troubleshooting of the Apple OS X operating systems.
- ITSUP-153 Mobility+ Device Administration**: This course will teach students about mobile device management for Android, iOS and Windows phone devices.
- IT Project Management (PM)**: IT Project Management (PM) provides students with added critical skills needed for success in the ever changing IT industry.
- ITNET-101, 110 (Networking+, Windows OS)**: The CompTIA Network+ certification is the sign of a qualified network working professional.
- ITSUP-108 Enterprise Desktop Support**: Students will learn the knowledge and skills needed to document and resolve problems on a Windows 7 computer in an Enterprise setting.

Figure 7: MATC Information Technology Pathways, IT Computer Support [1].

**MATC IT Support Specialist**

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Most of IT Support classes prepare students for Information Technology Industry Certifications. Getting certified helps our students to differentiate and stand out and makes it easier to get employed and promoted.

**Choosing IT Support Degree will help you get hired for your first Information Technology job in Milwaukee**

IT Support Specialist Pathway [1]

Figure 8: MATC IT Support Specialist Pathway [1].

view ourselves as managing best practices for pathways and tools in an innovative way. Our programs curriculum has also changed to better meet the needs of our students and employers. We have strengthened the program structure, and as result this will strengthen our graduates who take their skills immediately to employment, the community and the economy of this region for creating long term impact. In section 2 we discussed career pathways as a menu of programs, cloud tools, Facebook, NETLAB+, Meetup, LinkedIn, and Blackboard Learn & internships.com among others. In addition, we discussed the role of the Dean and advisory committees as a guide for instructor's peer support and formation of social codes and "legitimization" via active participation in the group dialogue. We also outlined how social media technologies support learning through social and textual exchange of ideas and problem solving activities. In section 3, our case study outlined how we integrated the model and tools in our design, so that colleges, such as MATC, can provide technical support for the student so they can avoid the "digital potholes" along their learning journey.

The success of Information Technology Pathways program in the is due largely to the ability of the Associate Dean to manage instructors to utilize a blended approach of opening up and integrating input from hands-on lab instruction, implement technologies, business and industry to capture key skills needed for the job market. It serves instructors by providing social and mobile technologies that improve advising, curriculum, and teaching. It supports students by fostering social support, providing technical support and course design that allows them to explore and develop their intrinsic learning goals. As learning continues to expand and new instructors deep their understanding of the pathways, smart tools and learning environment, they will be able to focus on students learning and supporting their needs in this environment [10-13].

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**MATC Certificates**

<p><b>VMware Certification Professional 5 (Certification VCP-DV)</b></p> <p>This is an industry leading certification in Virtualization of servers and data center components. This class is the same that is offered in industry for \$3,500. The course is required by VMware to become a VMware Certified Professional. MATC currently offers this course ITNET-157 Emerging Tech (VMware VCP) for \$400.00</p>
<p><b>EMC Information, Storage and Management (Certification EMC- ISM)</b></p> <p>In this course you will learn to make informed decisions about storing, managing, and protecting digital information in classic, virtualized, and cloud environments. This class is the same that is offered in industry for \$3,500. The course is designed to support a student in taking the EMC ISA certification. MATC currently offers this course (number tbd) for \$400.00</p>
<p><b>EMC Cloud Infrastructure Services (Certification EMC- CIS)</b></p> <p>Cloud Infrastructure and Services (CIS) is an 'open' course that covers the principles and concepts of virtualization and cloud Infrastructure technologies. This class is the same that is offered in industry for \$3,500. The course is designed to support a student in taking the EMC CIS certification. MATC currently offers this course (number tbd) for \$400.00</p>
<p><b>Microsoft Technology Specialist (Multiple Certifications)</b></p> <p>MATC offers multiple Windows Server and desktop classes that align with Microsoft certification. The course are Windows Server 2008 Active Directory Design (IT Net 112), Windows Server 2008 Network Infrastructure (IT Net 111) &amp; Windows 7 Configuration (IT Net 110). These courses are designed to support a student in taking any one of the three Microsoft certifications. MATC currently offers this courses for \$400.00 each</p>
<p><b>Cisco Certified Network Associate</b></p> <p>Cisco CCNA Certification prepares a student for working with Cisco technologies inside the corporate environment. MATC offers 4 Cisco classes (IT Net 131, 132, 133 &amp; 134) to better prepare individuals for the two CCNA exams. These classes build upon one another and include views inside how networks work - from the home style network to the internet.</p>
<p><b>ComTIA Network+</b></p> <p>CompTIA Network+ Certification (ITNet 101) prepares an student for Small/Medium Business style networks. It helps them get familiarized with technologies such as Hubs/Switches/Routers and the functions these devices do. Cabling and wiring best practices are explained and why you should adhere to them.</p>
<p><b>ComTIA Security+</b></p> <p>Students will focus on the fundamentals and implementation of network security including secure access methods and vulnerabilities in network protocols, operating systems and network applications. Students will use techniques and tools for developing secure infrastructure. This course (ITSec-124) will help prepare students for the Security+ exam.</p>
<p><b>ComTIA A+ Essentials</b></p> <p>This course (ITSUP-102) provides good background material for students interested in preparing for the CompTIA A+ Essentials and IT Technician exams. Hardware topics include: PC components, microprocessors, motherboards, buses, BIOS, memory, various storage devices, power supplies, ESD, viruses, preventative maintenance, video, I/O devices, printers, Internet, and local area networking connectivity. Software topics include: Machine Virtualization, OS fundamentals, command line prompt, Disk and memory management, installation, configuration and upgrading Windows, managing device drivers, virus prevention and sharing network resources.</p>
<p><b>IT Service Center Technician</b></p> <p>MATC's IT Service Center Technician certificate is a starting point for students interested in a career in IT computer support. This 10-credit certificate provides solid preparation for the CompTIA A+, HDI SCA, HDI DST and ITIL Foundation industry-standard certification, including the skills essential for a successful entry-level computer service center technician.</p>
<p><b>Microsoft Enterprise Desktop Support Specialist</b></p> <p>MATC's Microsoft Enterprise Desktop Support Technician Specialist certificate provides Windows client and enterprise user support training. This eight-credit certificate provides preparation for Microsoft's Configuring Windows 7 (70-680), Windows 7 Enterprise Desktop Support Technician (70-685) and HDI SCA, HDI DST and ITIL Foundation industry-standard certifications.</p>
<p><b>Level 2-Service Center Technician Certificate</b></p> <p>MATC's Level 2-Service Center Technician certificate provides training in networking, security, and soft skills. This 9-credit certificate provides preparation for CompTIA's Network+ and Security+ certifications, HDI's Support Center Analyst and Desktop Support Technician, as well as ITIL. Students acquire the skills necessary for Level 2-Service Center support.</p>
<p><b>Advanced Technical Support Certificate</b></p> <p>MATC's Advanced Technical Support Certificate provides Apple support training along with mobile device repair and administration. This 12-credit certificate provides preparation for Apple ACSP and CompTIA's Mobility+ and HDI SCA, HDI DST and ITIL Foundation industry-standard certifications.</p>

**Figure 9:** MATC Certificate Programs [1].

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