



**PROFESSIONAL
LEARNING MODEL:**
TEACHING STUDENTS THE CRITICAL
THINKING SKILLS SOUGHT BY
EMPLOYERS IN THE WORKPLACE



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How prepared are students to “connect the dots” between issues they’ll encounter on the job and the variety of options for solving them?

It’s a concern Colorado Technical University (CTU) has addressed for years. While equipping students to succeed and distinguish themselves upon graduation is the mission of every school, CTU takes a unique path to make sure it delivers.

Since 2004, CTU has utilized and is constantly refining what it calls the Professional Learning Model (PLM). PLM is an educational orientation and philosophy designed to fill the gap between the “how” and the “what” people learn at the university level, and knowing what’s expected of them to succeed in the workplace.

Why is this so important? Dr. Gail Whitaker, CTU Director of Graduate Programs and seasoned management professional with more than 25 years of experience, says, “When hiring, I always focus on candidates who demonstrate the professional knowledge needed for the job, and I also look at their ability to apply that knowledge to real business scenarios.”

PREPARING THE NEXT GENERATION OF LEADERS

Investment in human capital – attracting, developing and retaining the right talent – is a major concern among employers. What makes it increasingly pressing is a post-recession skills gap, compounded by ever-tighter budgets where discretionary funds for training and development are stretched. As a result, more is expected of the educational community. Companies need graduates who are ready to hit the ground running from day one.

When executives talk about the skills gap, they typically point to the disparity between academic competencies and the in-demand competencies in the workplace. Of most concern is the ability for graduates to be critical thinkers and flexible problem solvers. “Central to CTU’s learning model is critical thinking, problem-solving and communication, which are all essential in the workplace, regardless of your position,” explains Dr. Connie Johnson, Chief Academic Officer at CTU. “Students are well served by not only developing theoretical knowledge but also by developing the ability to use that knowledge in actual situations. This is a unique feature of our PLM approach because it positions our students as thought leaders in their places of employment.”

Dr. Myles Vogel, University Dean of IT, Engineering and Computer Science at CTU, understands firsthand the implications of the gap he seeks to bridge with PLM. He experienced them as an executive in the private sector. Formerly a chief information officer in a variety of industries, Dr. Myles Vogel said his first filter in assessing resumes was which school the applicants graduated from. His second: what they had accomplished and how they had made a difference.

“I always looked for people who could solve problems for me,” he recalls. “If I was at Point A in a project, I wanted people who could get me to Z, and get me there without a lot of intervention. Fewer than half those I met coming right out of school, understood how to get to the source of a problem.”

Problem-solving is a critical part of the equation. But employers expect to see a broader range of capabilities and traits among the best-qualified candidates – all of which are addressed by PLM.

For example, nearly 90 percent of Fortune 500 employers in a Graduate Management Admission Council (GMAC) survey put communications skills at the top of their list of the most critical capabilities of recent MBA graduates. Among the highest ranked second tier qualities: strategic skills, core business knowledge and the proven ability to perform. On the “softer” side, three-fourths of the survey group gave highest rankings to initiative, professionalism, motivation, integrity, goal orientation and the ability to deal effectively with unexpected obstacles.

“No matter the organization or the industry, the requirements for candidates are the same: They must be able to effectively solve problems,” says Dr. Whitaker, who served as chief technology officer of a large national nonprofit organization and as the managing director for a grade 6 – 12 school. “I am pleased to see CTU addressing this gap and building the competency to solve problems through its PLM model.”

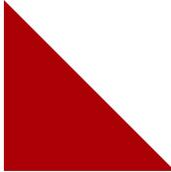
“FEWER THAN HALF THOSE I MET COMING OUT OF SCHOOL UNDERSTOOD HOW TO GET TO THE SOURCE OF A PROBLEM.”

*Dr. Myles Vogel,
Former CIO and CTU
University Dean of
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WHAT IS THE PROFESSIONAL LEARNING MODEL?

Play the video to learn about curriculum driven by job market demands.

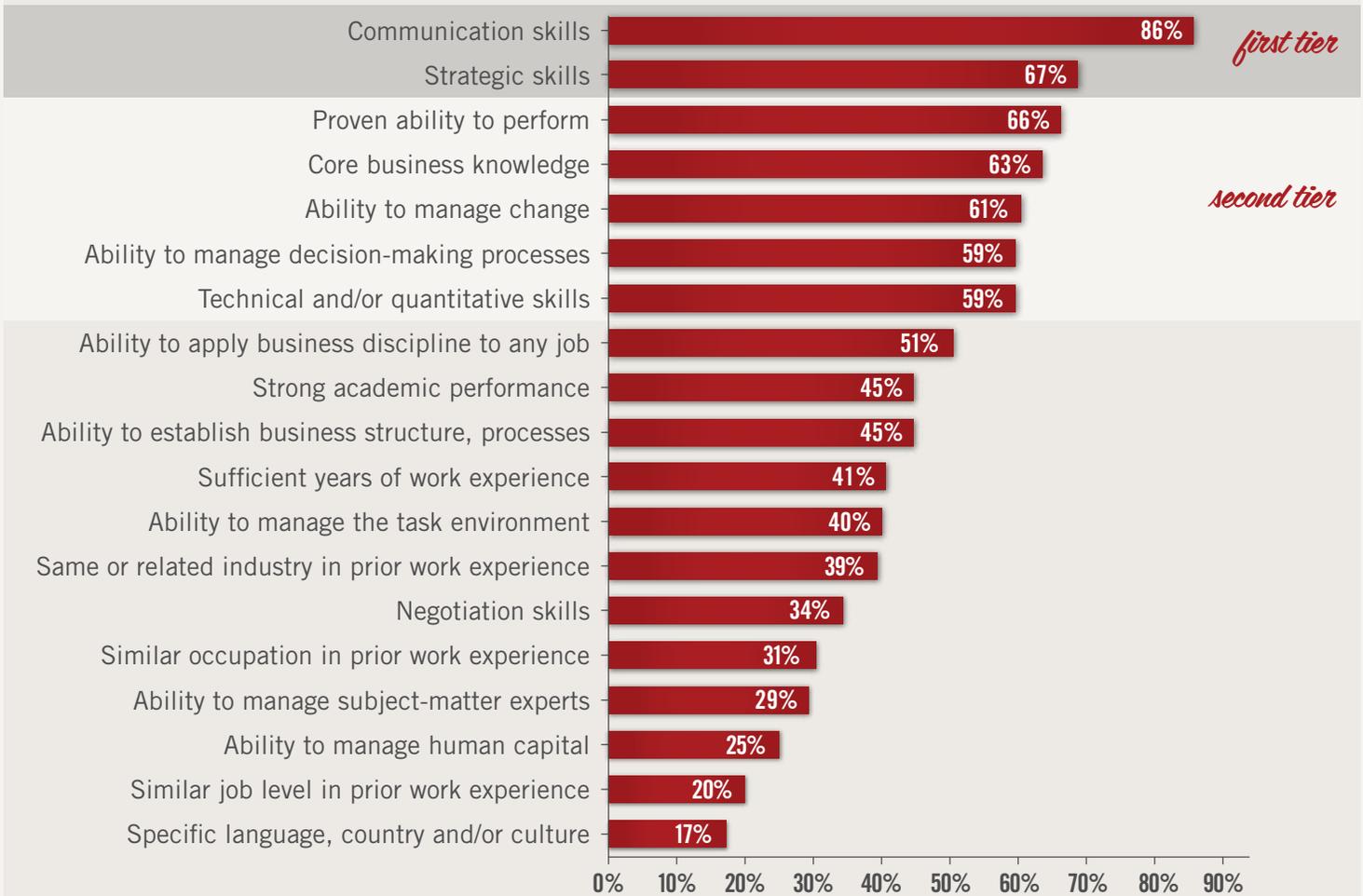


“These are expectations that are common across all our programs,” says Chris Dwyer, Vice President at the Educational Alliances Center with Career Education Corporation (CEC). He works with companies to develop employee educational programs delivered by CTU.

“The IT manager, for example, isn’t just looking for a programmer, but a programmer who’s also a communicator,” he explains. “New graduates who can demonstrate interpersonal savvy and skills are in demand. Graduate-level students may already have the skills required for a particular career path, but need to develop the other management and leadership attributes that can help them advance their careers.”

Through its PLM model, CTU is responding to employer demands for better-prepared, job-ready talent.

PRIMARY KNOWLEDGE, SKILLS AND ABILITIES SOUGHT BY EMPLOYERS IN RECENT MBA GRADUATES



SOURCE: Corporate Recruiters Survey 2011 Survey Report, Rachel Edginton, Graduate Management Admission Council® (GMAC)
Global Management Education Graduate Survey 2011 Survey Report, Gregg Schoenfeld, GMAC

A DEPARTURE FROM TRADITIONAL LEARNING MODELS

PLM is a multifaceted approach to learning. It joins technology and tools with the knowledge base of academics and a host of CTU experts in the field. It provides a learning environment that engages students more effectively than traditional educational approaches. PLM nurtures problem-solving and decision-making skills, both vital functions needed to successfully navigate challenges in the business environment.

There are distinct and important differences between a PLM-based academic program and the programs offered at traditional higher education settings.

In general terms, the traditional setting presents students with theories. Students take exams. They write essays. The instructor writes the course based around his or her knowledge and expertise, and then teaches it.

Under PLM, courses are designed around real-life scenarios based on typical challenges and issues that students will likely face in the workplace. Each course contains assignments related to the scenarios that illustrate different facets of the topic being covered, ratcheting up to a key assignment that reflects everything covered in the course. What's more, assignments take the form of actual work product, rather than tests or papers.

“One of the things I am most proud of with regard to the CTU curriculum is the portfolio of concrete deliverables, like an actual corporate policy or business models, that students walk away with. These are powerful tools they've personally

created and can share with prospective employers,” says Dr. Whitaker.

In a marketing class, for example, students won't merely learn about the Four Ps of Marketing. They'll develop marketing plans that incorporate the Four Ps in practical ways. They'll learn about and produce every element of a marketing plan, from budgets and timelines to risk assessments. They'll use templates with the necessary elements, but then build in their own unique ideas that apply to specific scenarios that illustrate the strategies and tactics being considered within the plan.

“An educational approach that stops at the theoretical and historical level does not adequately equip students for coping with challenges and making decisions as practitioners. Students need to be put into situations where they understand the various options that they can realistically take so they make decisions anchored in real-world policy limitations,” explains Dr. Nadav Morag, University Dean of Security Studies at CTU.

As an example, students taking a course in homeland security learn from scenarios depicting the kinds of situations that pose threats to different types of assets. The students are required to assess vulnerabilities, risks and consequences. From here, students develop a crisis action plan, which advances their knowledge and practical use of security theories. This exercise requires students to identify homeland security risks, as well as profile recommended actions to address, mitigate, prevent and manage anticipated consequences.

UNDER PLM, COURSES ARE DESIGNED AROUND REAL-LIFE SCENARIOS BASED ON TYPICAL CHALLENGES AND ISSUES THAT STUDENTS WILL LIKELY FACE IN THE WORKPLACE.



SECURITY STUDIES AND PROBLEM-BASED LEARNING

Our College of Security Studies prepares students at differing degree levels for positions in homeland security and criminal justice. With the exception of the newly created homeland security program, all academic disciplines include a body of theoretical knowledge designed to help students understand the field and the phenomena that the discipline focuses on. For example, in criminal justice, the workings and motivation of the criminal mind, the history of the development of crime, and the relationship between crime and economic conditions, social mores or other factors, can provide a rich area for the development of theories and theoretical concepts. This theoretical knowledge provides a useful baseline for students who aspire toward careers in the field or to advance to higher levels within existing jobs in the criminal justice field.

At the same time, an education that focuses exclusively on acquiring theoretical and historical knowledge does not prepare students to be practitioners or leaders in their chosen career. While a strong theoretical background is absolutely critical for producing informed decision-makers, it must be coupled with an education focused on the practicalities of policymaking, policy constraints, the need for team-building and the ability to identify the relevant stakeholders and their respective interests.

PLM is an outstanding method to help students obtain the more hands-on and practitioner-based aspects of education that prepare them to function in their chosen careers. Consequently, learning methodologies, such as exercises, scenario building and planning, are an important part of the educational process in CTU's criminal justice and homeland security programs, as well as other academic programs throughout the university.

SETTING AND MEETING REAL-WORLD STANDARDS

CTU has developed competency standards for each level of education a student completes to ensure graduates are prepared with the competencies needed to succeed in their chosen fields.

Each level supports the one above it, culminating in the industry-specific competency standards, such as the IT programs that cover basic principles, networks and mobility, and data security and integrity.

CTU EMPLOYER-DRIVEN GENERAL EDUCATION COMPETENCY STANDARDS

What all students need to know to be effective employees in a degree area – taught through M.U.S.E. courses	INDUSTRY-WIDE TECHNOLOGY COMPETENCIES ▲							
	Principles of Information Technology	Information Management	Networks & Mobility	Software Development	User & Customer Support	Digital Media	Compliance	Security & Data Integrity
What all students need to know to be effective employees overall – taught through CTU's expanded general education courses	WORKPLACE COMPETENCIES ▲							
	Collaboration	Planning & Organization	Innovative Thinking	Working with Tools & Technology	Adaptability & Flexibility			
What all students need to know to be effective learners – standard general education courses at CTU and all schools	ACADEMIC COMPETENCIES ▲							
	Reading	Writing	Mathematics	Science	Communication	Critical & Analytical Thinking	Basic Computer Skills	
What students need to know to be effective learners and workers	PERSONAL EFFECTIVENESS COMPETENCIES ▲							
	Interpersonal Skills & Teamwork	Integrity	Professionalism	Ethics	Adaptability & Flexibility	Dependability & Reliability	Lifelong Learning	

“Our standards – or outcomes and objectives – are among the proof points that our students are measuring up and learning what’s needed to meet academic and professional expectations,” says Dr. Myles Vogel.

Each CTU program shares these foundational levels of the competency standards:

- PERSONAL EFFECTIVENESS** (e.g., ethics, professionalism, interpersonal skills)
- ACADEMIC** (e.g., math, science, communication, critical/analytical thinking)
- WORKPLACE** (e.g., business fundamentals, problem-solving, innovative thinking)

CTU has devised professional standards for each program, deliberately aligning the standards with the needs of relevant industries. The standards are incorporated into course work and reflected in the scenarios students solve in class.

CTU’s experts, who receive input from employers and an advisory board of business leaders, develop the scenarios to closely represent the professional environment.

“We approach curriculum in a unique way to ensure it is industry relevant. For instance, we integrate expectations defined by organizations like the IEEE Standards Association, the ACM Technical Standards and the ABET accrediting organization, into our course competencies and curriculum,” notes Dr. Myles Vogel. “Typically that is something schools only pay lip service to.”

COURSE DESIGN: BEST THINKING BY EXPERTS

Course design is another differentiator of PLM. Typically, courses depend on one source, which is the instructor who sets the direction and teaches based on his or her personal experience. With PLM, CTU collects the best thinking available from a variety of experts. This includes academicians – many of whom have private industry experience; experts in the field who may also serve as adjunct instructors; instructional designers; and multimedia production and programming specialists.

“Our MBA in Entrepreneurship program was developed based on the Small Business Administration’s (SBA) set of core competencies for entrepreneurs. A team of successful entrepreneurs, graduate business educators and seasoned instructional designers designed the courses in the program. This collaborative effort ensures our students receive comprehensive and relevant skills and knowledge they can immediately use in business,” says Dr. Whitaker.

The accumulation of expert knowledge and experience is gathered from the various experts, and then placed into a learning framework that is relevant to and understood by students. “Over the course of a year we will develop hundreds of courses for both the online and hybrid settings,” says Judy Komar, Vice President of Educational Technology for CEC.

Her team helps bring CTU’s course work to life through technologies designed to enhance and improve the student experience. To that end, another important part of PLM is the content delivery system called My Unique Student Experience (MUSE). “The content in MUSE, in conjunction with the knowledge and expertise of CTU faculty, is an unbeatable combination that provides students with rich content and interaction from field practitioners. Students report that our courses are engaging and meaningful which, academically speaking, is critical,” says Dr. Connie Johnson.

MUSE is a web-based, multimedia access panel designed to support a student’s preferred learning style. It customizes a student’s learning experience with various options for discovering and interacting with course content. Students can access content by watching video or Flash presentations, by listening to audio files, or by viewing graphical models like flowcharts, CAD drawings or financial forms. Students engage with content by exploring, practicing and solving problems. MUSE is both a learning resource and a repository where students develop and store their portfolio of real-world work.



**MUSE IS A WEB-BASED,
MULTIMEDIA ACCESS
PANEL DESIGNED
TO SUPPORT A
STUDENT’S PREFERRED
LEARNING STYLE.**

Click to watch a demo.



TECHNOLOGY: POWERING THE PROGRAM

Technology enables PLM on every front, powering collaborative learning through the online component. “It has made resources more accessible, allowing us to collaborate over distance, and develop stronger learning tools like MUSE,” says Dr. Myles Vogel, a 25-year technology veteran.

“Moreover, learning in a tech-based environment allows students to perform in the same kind of environment they’ll encounter in the workplace – where professionals collaborate in solving problems over time and space and often work from a distance,” he adds.

Technology also facilitates access to the host of experts whose knowledge is at the heart of PLM, capturing their perspectives with videos, text and, ultimately, multimedia.

Dr. Vogel believes that PLM would be difficult to deliver in a strictly traditional, face-to-face learning environment. In fact, as the program evolves and capabilities expand, he sees the day when the face-to-face environment will augment the online experience – not the other way around.

FROM SCENARIOS TO REAL-LIFE BUSINESS PROBLEMS

The next iteration of PLM, being trialed this fall with graduate-level students in the College of Information Systems and Technology, will shift from scenarios to real-life business problems.

This phase puts into action the thinking of noted academic David Jonassen of the University of Missouri, who has written numerous books and conducted considerable research on Problem-Based Learning (PBL). PBL is designed to reflect the ill-structured, complex problems dealt with every day in the workplace.

Jonassen consulted with CTU and assisted with mapping PLM's evolution to problem-based learning. He is part of the team of academic and industry experts gathering real examples from the IT field to use in the classroom – for example, Apple's development of the iPad.

“What we're doing is capturing stories that represent the full complexity of problem-solving in a real-world setting,” explains Dr. Myles Vogel. “This is an improvement because important problems never seem to have clean answers. There are always mitigating circumstances that require professionals to solve in context.”

With 15 to 20 problems planned per course, this approach is expected to help students learn better within the context of the situations presented. These will become part of a comprehensive solutions library that indexes both problems and their resolutions and serves as a searchable resource to students and alumni.

“Many students have limited experience in the workplace,” says Dr. Myles Vogel. “We provide the exposure they need to real-world situations through the language we use during instruction and also in our supporting materials. Our goal is to make the in-class assignments students complete look and feel like real work product.”

“Our students are creating their own portfolios of real-world work samples that look just like what they'll use and produce on the job,” he adds. “There are still differences between the learning and work environments, but the closer we bring them together, the more career-ready our students are going to be.”

“WHAT WE'RE DOING IS CAPTURING STORIES THAT REPRESENT THE FULL COMPLEXITY OF PROBLEM-SOLVING IN A REAL-WORLD SETTING.”

*Dr. Myles Vogel,
CTU University Dean
of IT, Engineering and
Computer Science*



DAVID JONASSEN AND PROBLEM-BASED LEARNING

The problem-based learning (PBL) that underlies the next phase of our professional learning model springs from the research, theories and practices of noted educator David H. Jonassen who is consulting with CTU in the development and adoption of the approach. A distinguished professor of education and professor of instructional systems at the University of Missouri, Columbia, he is among the top scholars in the field of instructional design and technology.

Most university students learn to solve “well-structured” problems – for example, multiple-choice exams or a story exercise where students must find a single solution. Real-world problems are infinitely more complex and ill-structured. There’s rarely a single “right” answer. There is no well-defined method for finding a solution. Nor are there necessarily criteria for what makes a successful solution.

Jonassen developed support systems and methods for engaging students in solving complex challenges by embedding them in the classroom itself. Instead of just telling students about a particular field, he believes educational systems need to prepare students on how to actually do the work in those fields. The more real-world context they have, the better able they are to understand and deal with the constraints that make problems ill-structured and complex.

Most schools are not ready to deal with the extent of change that a shift to problem-based learning requires. Those that have moved forward have experienced superior results.

Dr. Whitaker adds, “We have already seen significant increases in student learning in our PBL courses. CTU is committed to increasing the number of PBL courses each year to enhance our professional learning model.”

One of the biggest success stories Jonassen cites in interviews is the medical program at the University of Missouri. Students there went from slightly sub-mean performance on the recall and diagnostic portions of the national medical licensing exams to scores that consistently exceeded a standard deviation above the mean. Moreover, he says, these students are sought out for residencies because they know how to diagnose.



HOW EMPLOYERS SAY GRADUATES MEASURE UP

CTU regularly surveys employers to ensure it's doing the job of turning out graduates who successfully bridge the skills gap. Its surveys show consistent year-over-year gains in graduates demonstrating the skills that get them hired and make them valuable employees.

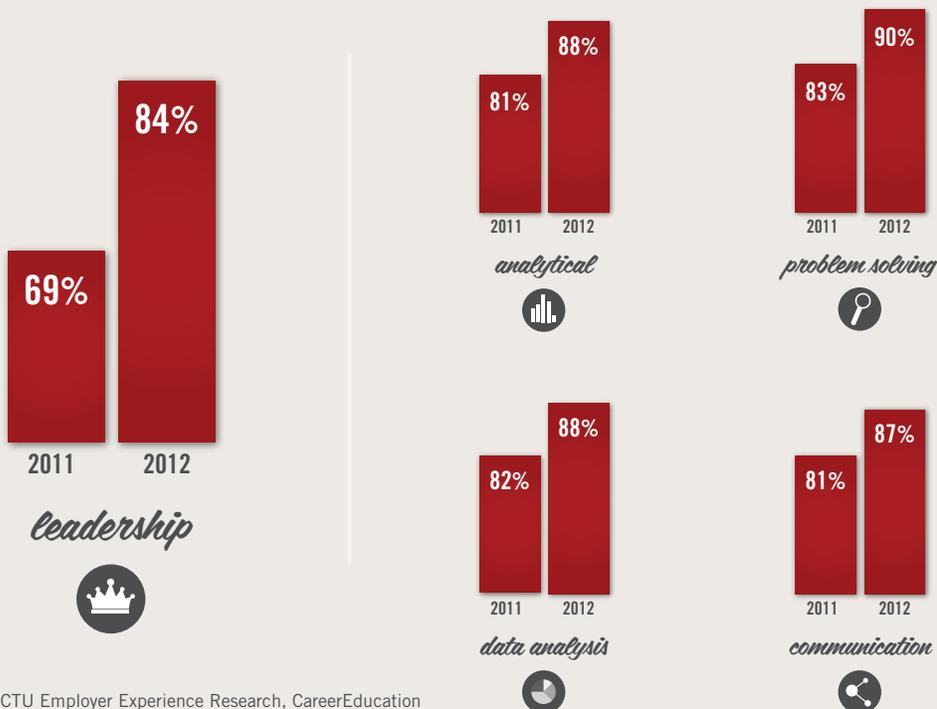
In 2012, for example, 88 percent of employers gave CTU graduates the highest rating of "good" or "very good" on analytical skills, up from 81 percent in 2011. Particular improvement was found in problem-solving skills (90 percent versus 83 percent), and on data analysis (88 percent versus 82 percent). Communication skills rankings are also on the rise, with 87 percent considering grads "very good" versus 81 percent in 2011. A high percentage of employers agree that CTU graduates can be trusted to communicate with senior leadership and write reports without editorial input.

But the biggest improvement in the 2012 ratings was in the leadership skills category; 84 percent of the survey group gave CTU the highest rankings on this front, up from 69 percent in 2011. Employers specifically cited graduates' capabilities in conflict management, coordinating team projects and providing input on business planning.

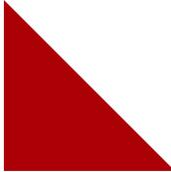
"I was not surprised to see this improvement," states Dr. Whitaker. "CTU's model incorporates group work and leadership skills in the learning environment. Students respond to real-world scenarios as department leaders, directors or managers. They work in groups to deliver their key assignment. The model itself requires students to engage as a team in the business planning process." Dr. Whitaker adds, "Students learn in the classroom how to manage team conflicts and work through group dynamics, exactly where learning should happen. Students then take these lessons into the workplace."

IN 2012, 88 PERCENT OF EMPLOYERS GAVE CTU GRADUATES THE HIGHEST RATING OF "GOOD" OR "VERY GOOD" ON ANALYTICAL SKILLS, UP FROM 81 PERCENT IN 2011.

HOW EMPLOYERS SAY CTU GRADUATES MEASURE UP % OF GRADS RECEIVING "GOOD" OR "VERY GOOD" RATINGS FROM EMPLOYERS



SOURCE: 2012 CTU Employer Experience Research, CareerEducation Corporation (data collected by The Analytical Group Inc., 2012)



REAL-WORLD RELEVANCE

Ultimately, CTU aims for its professional learning model to evolve in a way that shifts learning from a topic focus to a problem-solving focus.

“PLM is an outstanding method to help students gain the hands-on, practitioner-based aspects of education that will prepare them to function in their chosen careers,” says Dr. Nadav Morag, a defense and security expert and University Dean of Security Studies at CTU.

Now, more than ever, CTU students are poised and comfortable with the challenge of connecting those dots.

As Dr. Myles Vogel says: “We’re helping students understand the depth and complexity of what it takes to solve real-life problems that are going to be encountered in the work they will do. It’s a real-world curriculum. You can’t get more relevant than that.”



ABOUT OUR EXPERTS



Connie Johnson Ed.D., Chief Academic Officer and Provost

Dr. Johnson has worked in academics for more than 20 years, serving as a faculty member, program chair, vice president of academic affairs and vice president of student affairs. Prior to higher education, she worked as a licensed stockbroker for ten years. **Read more.**

 **Follow @DrConnieJohnson**



Nadav Morag, Ph.D., University Dean, Security Studies

Dr. Nadav Morag is Deputy Director for Policy Research and a faculty member at the Center for Homeland Defense and Security at Naval Postgraduate School. He also serves as a Senior Fellow at the Homeland Security Policy Institute at The George Washington University, and serves as a Consultant to the Department of Homeland Security and Department of Defense. **Read more.**

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Gail Whitaker, D.M., Director, Graduate Business Programs

Dr. Whitaker has more than 25 years of experience in business management and is the president of her own management consulting firm. She has held numerous academic leadership roles, including previously serving as dean for the School of Business at Virginia International University. **Read more.**

 **Follow @DrGailWhitaker**



Dr. Myles Vogel, University Dean, IT, Computer Science and Engineering

Dr. Vogel served more than 25 years as chief information officer for a variety of domestic and international firms. He has taught IT courses for more than 17 years and was named the “Outstanding IT professor of the Year” at the Carey Business School in 2007. **Read more.**

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ABOUT COLORADO TECHNICAL UNIVERSITY

Founded in 1965, Colorado Technical University (CTU) provides higher education accredited by the Higher Learning Commission for today’s career-focused students. A member of the North Central Association of Colleges and Schools, CTU’s industry-focused curriculum has courses taught by instructors – many with experience in the fields that they teach. At CTU, students can collaborate with peers all over the country in an award-winning Virtual Campus, which was recognized as the “Best of the Best” in the Education and Academia category of the 2009 Computerworld Honors program. Students can choose from more than 100 undergraduate and graduate programs online and at campuses in multiple cities. For more information, visit www.coloradotech.edu.

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