

Addressing the STEM Pipeline: The BATEC Way

Baltimore STEM Smart Workshop – 3/22/2013

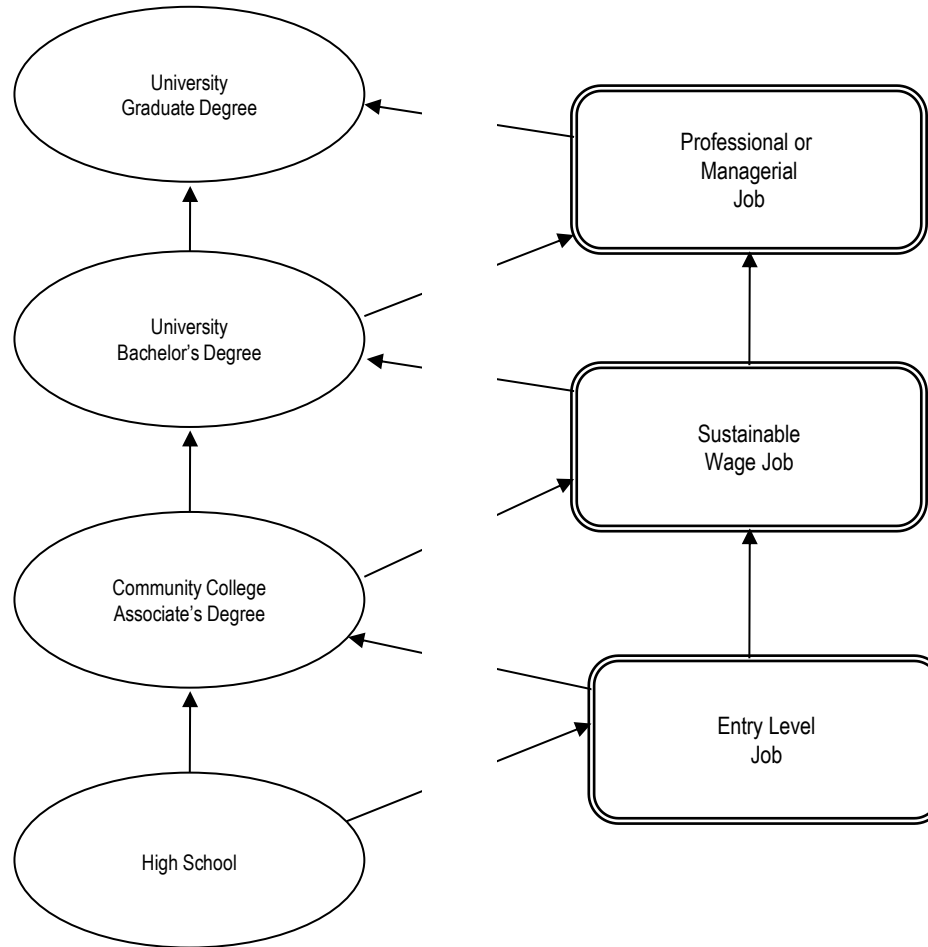
Deborah Boisvert

PI and Executive Director

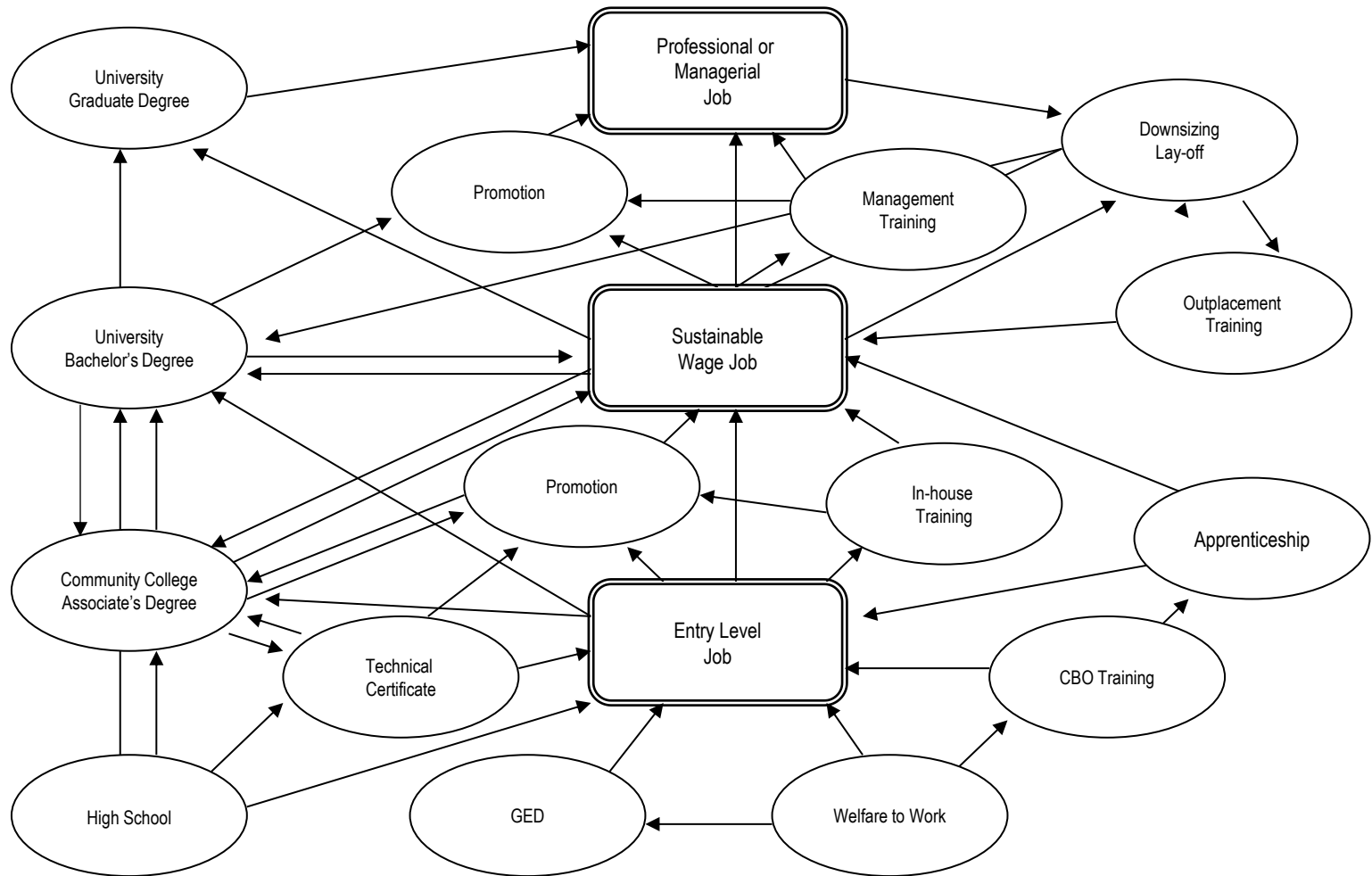


National Center of Excellence for Computing and Information Technologies

Our Common Education Model



What our Students are Experiencing



BATEC Mission

BATEC is developing and supporting a coordinated, self-sustaining, regional IT education and workforce system – one that will attract a diverse student population to IT careers, promote lifelong learning of technical skills and support the IT workforce needs in urban cities across our country – Boston, Chicago, Las Vegas and San Francisco.



Challenges We Have Been Addressing

- ☑ Employment Market-driven enrollments
Perception that “IT is dead” = Fluctuating enrollments
- ☑ IT Hybridization; IT Across Content Areas/Careers;
Computational Thinking
- ☑ Traditionally autonomous education systems; “Siloed”
departments delivering student service
- ☑ Lack of Workforce and Skills Analysis leading to
Programmatic Innovation
- ☑ Coordination, Collaboration, Communication...

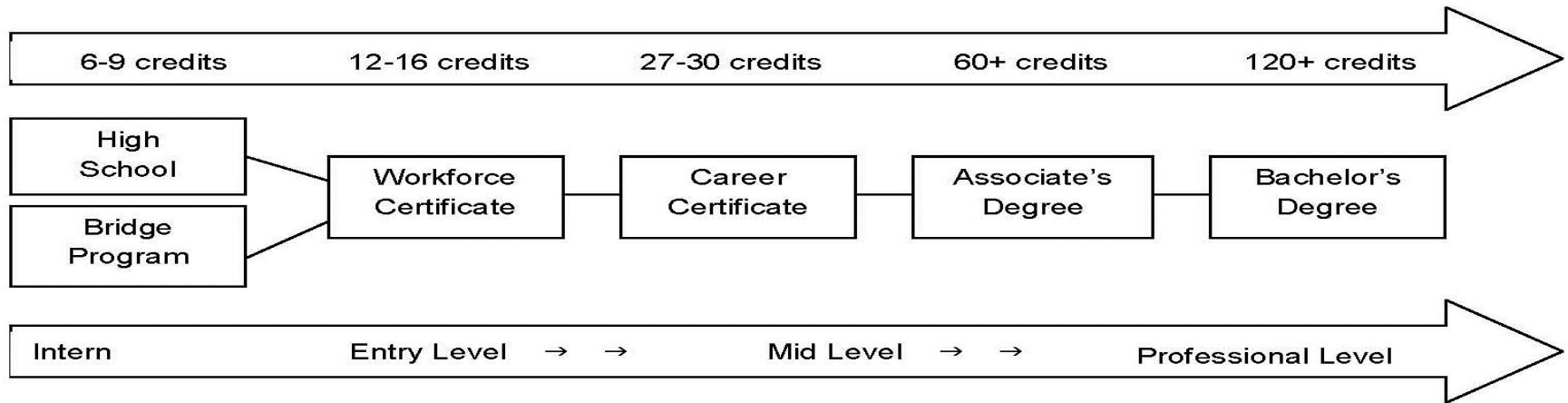


BATEC's overarching goals:

- ❑ Define, extend and strengthen computing pathways and career opportunities for the 21st century IT professional.
- ❑ Facilitate and leverage strategic partnerships to build awareness, generate interest, and support learning opportunities in ethnically diverse urban areas.
- ❑ Conduct actionable research to inform policy makers, IT educators and workforce development agencies.
- ❑ Participate in and lead the national discussion on the subject of integrated curriculum and applied IT.



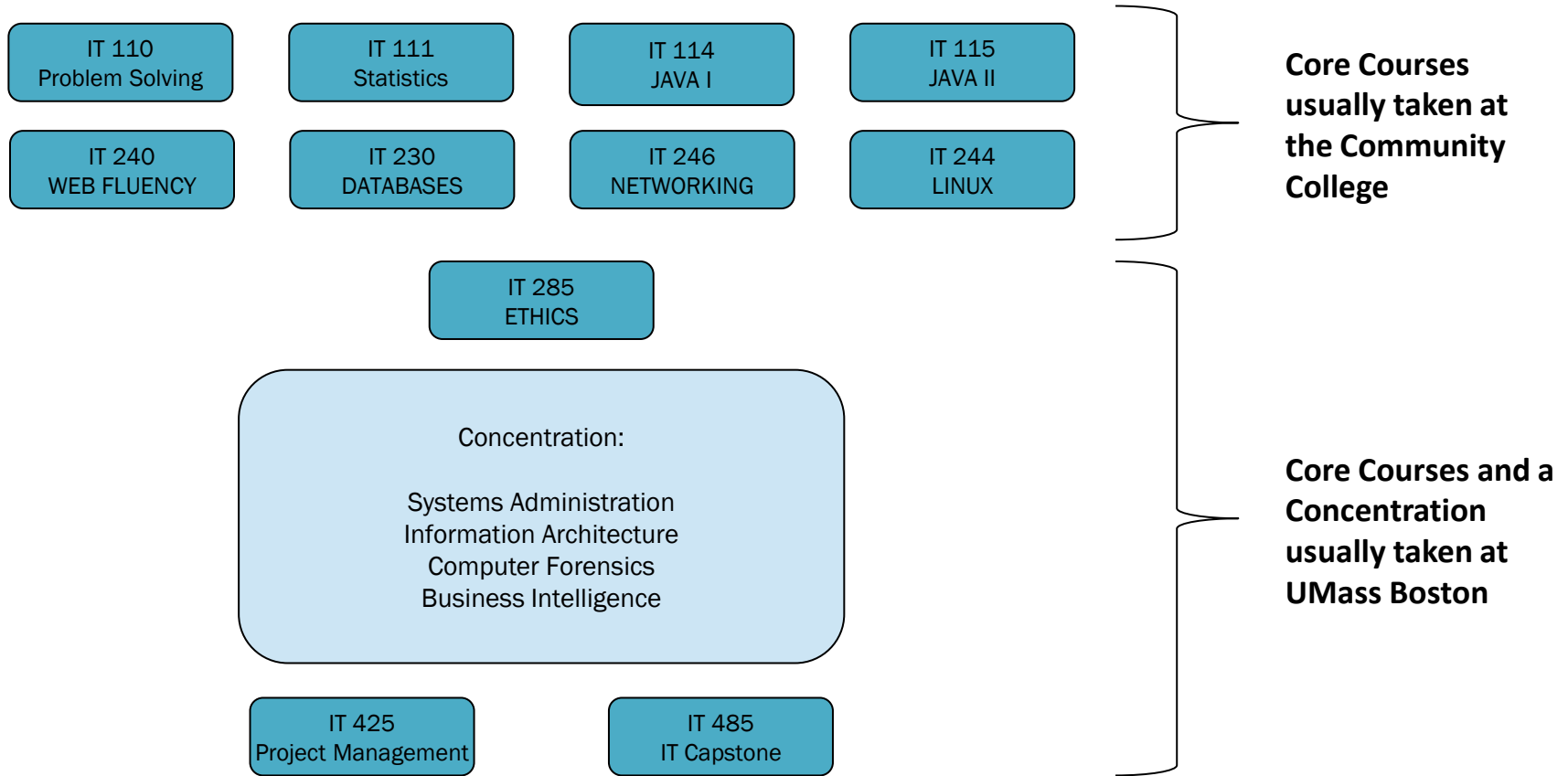
IT PATHWAYS – HS ⇨ CC ⇨ U



- | | | |
|---------------------------------|-------------------------------|--------------------------------|
| TechApprentice (Boston PIC) | Small Business Internships | High Tech Start-up Internships |
| Internship Boot Camp | Career Closet (MBCC) | High Tech Start-up Workshops |
| Accuplacer (RTTT/Perkins) | Peer Mentoring (CAITE) | MAP/Student Success (UMB) |
| Career Days (Industry Partners) | Assessment Project (Industry) | Entrepreneurship Club (StEP) |
| College/Mini-Tech Fairs | Transfer Days (UMB) | Career Fairs (Industry) |
| Computational Thinking | Bridge Programs – TBF/WFD | |



BSIT – UMass Boston



IT Problem Solving and Computational Thinking



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IT Problem Solving

- ❑ Freshman Level Course
- ❑ Implemented at Community College, University and High School (as dual enrollment)
- ❑ Adaptable for Populations being Served
- ❑ Addresses Critical Workforce-Readiness Skills
- ❑ Utilizes Industry Community Partners



Instructional Scenario



Hi, I'm Tina!

The new Health and Wellness
Director in the HR Department.

Introduction & Invitation

I'm responsible for health and wellness here at the college.

We employ thousands of staff and faculty, and they are the lifeblood of our institution. We care about them, and we'd like to do more for them.

The chancellor's asked me to develop a formal program of health and wellness for our staff and faculty. I've been working with the faculty council to develop a series of instructional lectures about diet and exercise.

We're interested in adding a technology component to our program. Can you help?



The University's Request

- ☑ We're soliciting single page, bullet-oriented proposals.
- ☑ Your proposal should support our wellness program, and focus on the subjects of diet and/or exercise.
- ☑ Your proposal should feature the development of an application using consumer computing devices (mobile phone and/or tablet) that will reward people for living a healthy lifestyle.
- ☑ Key elements of a winning proposal are...
 - ☑ A concise explanation of what you will be measuring and how you will quantify it.
 - ☑ Your reward structure (i.e., incentives).
 - ☑ A description of how you will deploy this on a mobile device in a way that is simple enough for everyone on campus to use.
 - ☑ And finally...



Please begin...



Oh yeah, I remember...

Proposals are due in
10 minutes.

Summary: Task 1

- ☑ We're soliciting single page, bullet-oriented proposals.
- ☑ Your proposal should support our wellness program, and focus on the subjects of diet and/or exercise.
- ☑ Your proposal should feature the development of an application using consumer computing devices (mobile phone and/or tablet) that will reward people for living a healthy lifestyle.
- ☑ Key elements of a winning proposal are...
 - ☑ A concise explanation of what you will be measuring and how you will quantify it.
 - ☑ Your reward structure (i.e. incentives).
 - ☑ A description of how you will deploy this on a mobile device in a way that is simple enough for everyone on campus to use.
 - ☑ Proposals are due in 10 minutes.



Preliminary Findings



Thank you, Thank you, Thank you.
We are so pleased to have received all
of these proposals.

Hi, I am Topher. Tina has asked me to
assist in choosing the best ones so that
we can develop a prototype to test.

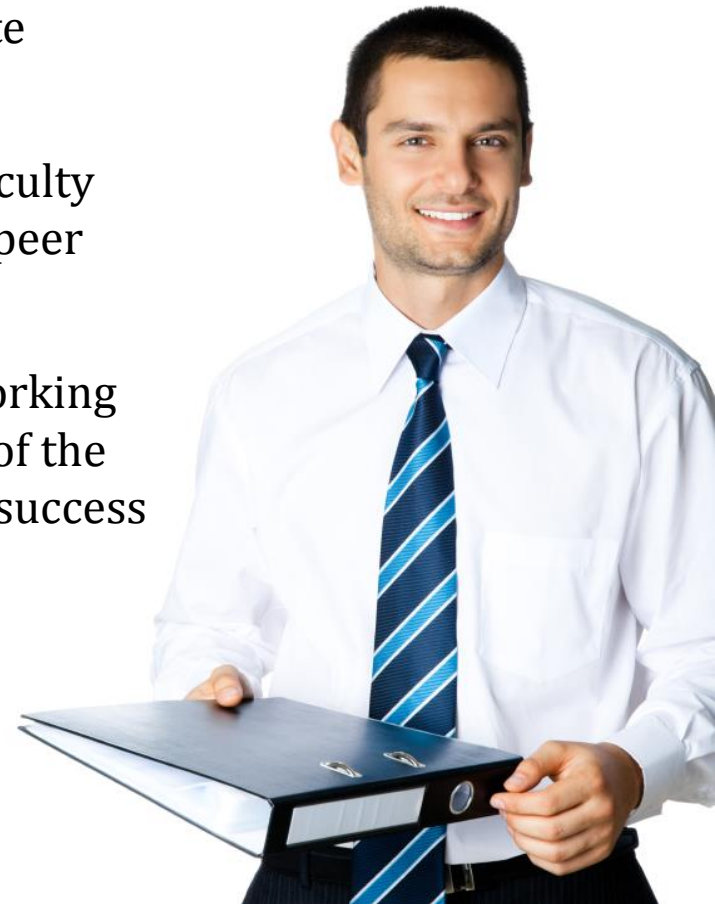
Evaluation and Short List Selection

We never expected to receive so many well-written, well-constructed proposals. Frankly, it took us by complete surprise.

I've met with the provost and the leadership of the faculty council, and we're elected to implement a process of peer review, evaluation and selection.

You'll be invited to join one of a handful of smaller working groups. Each group will be asked to review a subset of the proposals, make a short list selection, and define the success criteria for the selected proposal.

Would you be willing to help us with this?

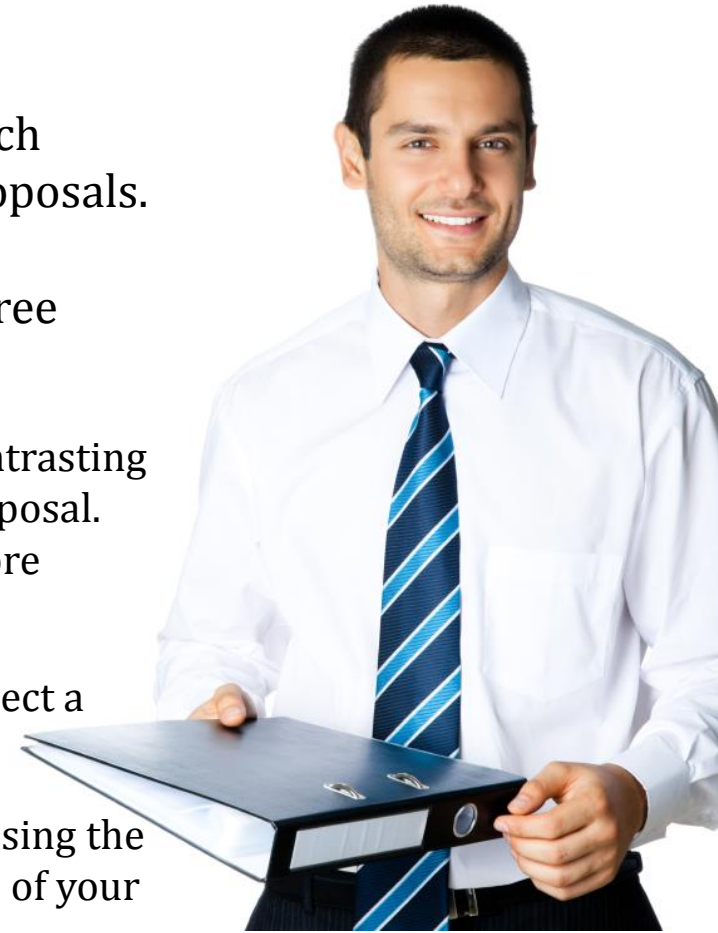


The University's Request

Please form a small number of working groups. Each working group will be asked to evaluate a set of proposals.

Please work together, collaboratively, to develop three specific deliverables...

- Please evaluate the proposals comparing and contrasting their adherence to the elements of a winning proposal. Please rate each proposal (using the supplied score sheet).
- Please make a short list of recommendations (select a winner).
- Please define a set of evaluation criteria for assessing the final deliverable (assuming proposal acceptance) of your short list recommendation.



Please begin...



Oh yeah, I remember...

Your deliverables
are due in
10 minutes.

Summary: Task 2

Please form a small number of working groups. Each working group will be asked to evaluate a set of proposals.

Please work together, collaboratively, to develop three specific deliverables...

- Please evaluate the proposals comparing and contrasting their adherence to the elements of a winning proposal. Please rate each proposal (using the supplied score sheet).
- Please make a short list of recommendations (select a winner).
- Please define a set of evaluation criteria for assessing the final deliverable (assuming proposal acceptance) of your short list recommendation.



Short List



You people are the best.

We knew that we had received a lot
of good proposals.

Your work has helped us identify the
strongest submissions.

Analysis and Evaluation

You may have guessed, by now, that this was more about the process than the deliverables.

By way of review,

- Task One was an individual exercise
- Task Two was a small group activity

Our final task will be a large group activity in which we share some highlights from your individual experiences.

- Let's take an inventory of "what happened."
- Who wants to share their group's work product?
- Let's talk about the successes and struggles of this activity in light of students that you are working with.



Inventory: Personal Qualities & People Skills

		Task One	Task Two (A/B)	Task Two (C)
1.1.1	Demonstrate a positive work ethic by coming to work every day on time, a willingness to take direction, and motivation to accomplish the task at hand	✓	✓	✓
1.1.2	Demonstrate integrity by abiding by workplace policies and laws and demonstrating honesty and reliability			
1.1.3	Demonstrate teamwork skills by contributing to the success of the team, assisting others, and requesting help when needed		✓	✓
1.1.4	Demonstrate positive self-representation skills by dressing appropriately and using language and manners suitable for the workplace	✓	✓	✓
1.1.5	Demonstrate diversity awareness by working well with all customers and coworkers			
1.1.6	Demonstrate conflict-resolution skills by negotiating diplomatic solutions to interpersonal and workplace issues		✓	✓
1.1.7	Demonstrate creativity and resourcefulness by contributing new ideas and working with initiative	✓	✓	✓



Inventory: Professional Knowledge & Skills

		Task One	Task Two (A/B)	Task Two (C)
1.2.1	Demonstrate effective speaking and listening skills by communicating effectively with customers and employees and following directions	✓	✓	✓
1.2.2	Demonstrate effective reading and writing skills by reading and interpreting workplace documents and writing clearly	✓		
1.2.3	Demonstrate critical-thinking and problem-solving skills by analyzing and resolving problems that arise in completing assigned tasks	✓		✓
1.2.4	Demonstrate healthy behaviors and safety skills by following safety guidelines and managing personal health			
1.2.5	Demonstrate understanding of workplace organizations, systems, and climates by identifying “big picture” issues and fulfilling the mission of the workplace	✓		
1.2.6	Demonstrate lifelong-learning skills by continually acquiring new industry-related information and improving professional skills			
1.2.7	Demonstrate job acquisition and advancement skills by preparing to apply for a job and seeking promotion			
1.2.8	Demonstrate time, task, and resource management skills by organizing and implementing a productive plan of work	✓	✓	✓
1.2.9	Demonstrate mathematics skills by using mathematical reasoning to accomplish tasks			
1.2.10	Demonstrate customer service skills by identifying and addressing the needs of all customers and providing helpful, courteous, and knowledgeable service			

Inventory: Technology Knowledge & Skills

		Task One	Task Two (A/B)	Task Two (C)
1.3.1	Demonstrate proficiency with job-specific technologies by selecting and safely using technological resources to accomplish work responsibilities in a productive manner	✓		
1.3.2	Demonstrate proficiency with information technology by using computers, file management techniques, and software/programs effectively	✓		
1.3.3	Demonstrate proper Internet use and security by using the Internet appropriately for work	✓	✓	✓
1.3.4	Demonstrate proficiency with telecommunications by selecting and using appropriate devices, services, and applications	✓		



Final Thoughts

- ☑ Education should be about learning by all
- ☑ There are many ways to approach a topic
- ☑ But...the final goal should be teaching every student how to solve problems and be a life-long learner



Thank You!!



National Center of Excellence for Computing and Information Technologies

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About BATEC

- ☑ **Broadening Advanced Technological Education Connections (BATEC)** a National Science Foundation-funded Center for IT Education, is dedicated to the complex mission of developing career-focused pathways to high technology education and practical work experience for motivated, typically underserved high school, community college and university students in four urban regions – Boston, Chicago, San Francisco and Las Vegas. These four regions feature a high demand for skilled labor coupled with great opportunities for building new connections in skills-training and workforce development. Learn more about BATEC at www.batec.org.

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