Infuse Soft Skills into a Technical Course using Project Based Learning

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Got Your Attention!

Turning off monitors could be dangerous...
Yes – I have a Southern accent

Family Vacation
Questions to be answered and more

• What are Soft Skills?  Skills that could cause chaos in the classroom

• What are Hard Skills?  Technical skills taught in your classroom = short life

• What is Project Based Learning?  A team project that is infused with Soft and Hard skills

There will be examples – I promise
Incorporated PBL

I provided 2 courses a **PBL infusion**

Infuse Soft Skills into technical courses via Project Based Learning (PBL):

- CIS 118  Introduction to PC Application
- CNG131 Network Security Fundamentals
Enhanced my Knowledge

I really needed to enhance my PBL knowledge

CATEP Grant
Aims CO-PI of the Colorado Advanced Technological Education Partnership (CATEP) Grant, this experience has further enhanced my Soft Skill Knowledge.

Roots and Wings
Faculty Interdisciplinary Scenario-Based Tasks Development Workshop. Hosted by the SC ATE Center (Florence-Darlington Technical College, SC).

Sabbatical
An opportunity to reflect on the knowledge gained from the grant and workshop, as well as write a PBL for CIS118.
My Sabbatical

Learning PBL through osmosis
Project Overview

A Realistic Project can be Exciting

• Create a realistic project/challenge
• Project encourages motivation
• Project generates excitement, engagement, enthusiasm, etc.

*Shifts from the teacher centered model to the student centered model*
Teacher Centered Model

Teacher in control

- Professor lecturing
- Students watching and listening
- Students work individually on assignments
- Cooperation is discouraged

Studies have shown that in 90 days students forget 90% of everything they have been told (Smilovitz, 1996). Motivation in such traditional classroom environments is also usually low.
Teacher Centered

Students trying to Stay Focused & Awake
Student Centered Model

Ingredients for PBL with No Neat Solutions

• Active learning
• Cooperative learning
• Inductive teaching and learning

Instructor does not guide students to neat solutions to contrived problems
PBL - Classroom

Let the Learning Begin

Classroom in Chaos

TRANSFORMING LEARNING. TRANSFORMING LIVES.
PBL – What is it?

Time for some team work

A class project where students utilize the Hard Skills (technical skills) they have gained in the course and then infuse the Soft Skills from working as part of a team.

PBL Video
"... COMPANIES WOULD MUCH RATHER SPEND THEIR PRECIOUS TRAINING DOLLARS ON IMPROVING ‘HARD’ SKILLS AND KEEPING THEIR WORK FORCE AHEAD OF THE TECHNICAL GAME."

ANDREW SANSOM

"AND ... WITH TECHNICAL SKILLS HAVING A "HALF-LIFE" OF JUST 18 MONTHS OR SO, THIS IS HARDLY SURPRISING."

ANDREW SANSOM
Technical Skills – Need Glue

Quit grunting, get some glue

If technical skills are the key component, then Soft Skills are the glue that holds it all together.

Grunts are not clear communication
Soft Skills - CIO’s are looking

CIO’s are looking for Soft Skills
Soft Skills – Can you Define

What in the world...are Soft Skills?
Soft Skills - What are Soft Skills?

Do you have Soft Skills?

Soft Skills are personal attributes that enhance an individual’s interactions, job performance and career prospects. Unlike Hard Skills, which tend to be specific to a certain type of task or activity, Soft Skills are broadly applicable.

- Personal Attributes:
  - Optimism
  - Responsibility
  - Sense of Humor
  - Integrity
  - Time-management
  - Motivation

- Interpersonal Abilities:
  - Empathy
  - Leadership
  - Communications
  - Good Manners
  - Sociability
  - The ability to teach
In a survey (2011) by technology recruiter, Robert Half, they asked 1,400 CIO’s “In which of the following areas do you think your IT staff could most use improvement?”

The answer...41% chose Soft Skills!!
Charm School at MIT

CBS News Bill Geist reports (March 4, 2012):

**Charm school at MIT** - Students at MIT have the reputation for being nerds with no social skills. The faculty wants to change that by having the students attend MIT's charm school.
PBL - Cookie Cutter Approach

Want some cookies?

Instructor guides students to neat solutions
Does anyone need a room?

Hotel project that has six departments:

1. Accounting
2. Engineering
3. Food and Beverage
4. Human Resources
5. Operations
6. Sales and Marketing

All files given with a well defined solution
You are now FREE to Open your Mind

Establishing an Open Climate for PBL

Every student should feel free to say whatever comes to mind, any ideas or comments, no matter how unsophisticated or inappropriate they might seem, without being put down or criticized.

No one is expected to have all the answers
How will PBL transition affect the students?

Students

• may find it initially unsettling
• take responsibility for their own learning
• work on ill-structured problems
• willing to accept risk and uncertainty
• become a self-directed learner
Do you want a job?

It is often said that Hard Skills will get you an interview, but you need the Soft Skills to get (and keep) the job!!!
Soft Skills Research

Research shows Soft Skills are Essential

• According to Indiana Business Research Center (IBRC), the skills in highest demand through 2014 in contrast to technical skills include persuasion, negotiation, complex problem solving, time management, and decision-making.

• Computerworld’s 2007 hiring and skills survey reported that IT executives want workers who demonstrate a broad range of Soft Skills in addition to technical abilities.
CIS-118 - Travel Project

Who doesn’t like to travel?

Don’t forget your security blanket!

TRANSFORMING LEARNING. TRANSFORMING LIVES.
The Travel Project was developed for the CATEP grant and my sabbatical.

The student’s primary task is to put together an International travel package affordable for most people using MS Office applications.

It is currently being used at Aims Community College, Arapahoe Community College, and distributed to hundreds of other colleges via NSF.
The World is a book, and those who do not travel read only a page. ~St. Augustine
International Travel Company

Students:
  – Work in teams
  – Develop team contract & submit minutes
  – Design and develop a realistic international travel package
  – Each team must choose a different country Texas not included
  – Use the requested MS application tools
  – Place emphasis on creativity
  – Plan a minimum seven-day travel adventure
CIS-118 – Travel Project

• Benefits
  – Creativity
  – Exciting
  – Evaluation
  – Works for any size class
  – Share design ideas
  – Easily modified

Most important, it is fun and entertaining to the students which equates to enhanced learning.
CIS-118 – Travel Project

Four Conferences  Antidote for procrastination

Teams will have the opportunity to participate and share ideas.

*The result should be a final team project that reflects changes based on good design and development achieved from the interaction of the teams.*
This Travel project is based on the students using each MS Office application and learning how to export and import data between applications.

Students come up with creative design ideas:
- Using Word Publisher in the design of their brochure
- Using animation in their PowerPoint Presentation

**Student becomes creative**
MS WORD

Teams create a brochure and a poster, as well as a tourist table that will be imported from Access.

Brochure
The design will contain a cover page, border, pictures, table, multi-level list, highlight, indent, WordArt, Drop Cap, header and footer, and page numbering.

Poster
The design will contain pictures, WordArt, and SmartArt.

Tourist table
This table will contain demographic and personal information that the travelers – in this case, all of the students in the class - are willing to share.

Getting ready to import and export
CIS-118 – Travel Project

**MS EXCEL**

Each team develops 4 worksheets: Cost Breakdown, Money Conversion System, Calendar of Excursions, and Summary.

*Cost Breakdown worksheet*
It includes 8% for administrative fees, and 10% for the “Refer-A-Friend” incentive. It shows the daily cost for each day of the travel package.

*Money Conversion System worksheet*
The country’s currency rate is compared to a minimum of three other country currency rates from the other teams’ tour selections. The worksheet should have the ability to refresh those numbers anytime and reflect them in a chart.

*Calendar of Excursions worksheet*
This is a chart that reflects the different excursions.

*Summary worksheet*
This worksheet contains all the charts linked to their brochure.
Teams will develop 3 tables: Tourist table, Daily Tour table, and Major Cities table.

**Tourist table**
The Tourist table was developed and imported from the Word section.

**Daily Tour table**
The Tourist table was developed and imported from the Word section.

**Major Cities table**
This table contains information about the major cities of interest (minimum of 3) in the chosen country. Features of the cities may include major industry, recreation, language, etc.
Appearance... “Don’t dress for the job you have, dress for the job you want to have!”
Presentation

- Before the formal presentation, teams submit their slides to the instructor.
- All students have a role in the presentation.
- The presentation should last between 10 and 15 minutes.
- Professional appearance enhances the appeal of the travel package.

The students' presentation must be designed, developed, and presented with the aim of convincing the audience that each team has the best travel package. Presentation skills are included as a part of the project grade.

Time to sell
We do Rubric evaluations

Team Evaluation — by student teammates (Due date is at the end of the course)

Conference Evaluation — by instructor (Based on what is completed and attendance)

Project Evaluation — by instructor (Completed project at the end of the course)

Presentation Evaluation — by instructor (Delivered at the end of the semester and attendance is mandatory)
CIS118 - Travel Project Example

Brochures created by real students!

France
Costa Rica
CIS118 – Trend

% Increase in Enrollment: Trends

CATEP Grant from 9/1/08 – 12/31/11
International Project introduced Fall 2009
CNG-131 - Network Security Fundamentals

Need Security?

Network Security Hound Patrol
The students will create a corporation, Aims Intelligence Agency (AIA). Their sole job is to write a proposal accompanied with a video on how they will transform Aims campus into a government training agency.
CNG-131 – AIA Project

Participating Departments:
- Communication Media
- Information Technology
- Allied Health
- Aviation

Participating Vendors:
- Blackbox
- Good Samaritan
- Motorola
- Juniper Network
CNG-131 – AIA Project

Grading

– Based on participation and attendance
– Evaluation of student presentation by faculty, staff and others
CNG-131 – Current Project

Veterinarian Network Proposal
Emphasis on security that will fit most small clinics

Vet On Wheels

TRANSFORMING LEARNING. TRANSFORMING LIVES.
Have fun!

Relax and have fun with PBL
Do you want to make learning fun?
Start Infusing Soft Skills into your technical course using PBL.

Or would you prefer the traditional method of teaching?

YOUR CHOICE?
Share with Others

Don’t be greedy - share this Presentation

Need a Copy of the International Project – http://www.catepgrant.org/
“according to teachers, parents, students and Fortune 1000 executives, the critical components of being college- and career-ready focus more on higher-order thinking and performance skills than knowledge of challenging content.”
Comparative Results

*Questions 5, 17, 22 and 30 directly reflect awareness of employability skills from PBL.
Fall 2011 – Pre/Post Test*

Comparative Results

*Questions 5, 17, 22 and 30 directly reflect awareness of employability skills from PBL.

TRANSFORMING LEARNING. TRANSFORMING LIVES.
How to Apply those CIS118 Skills?
Actual Project versus being tested.

We chose Project.
Opportunity to put the skills into practice, not just talk about what the skills are...
CIS-118 – Travel Project

International Travel Company

Ongoing or Capstone Soft Skill Project Overview*

As an ongoing project:
This can be an ongoing integrated project where students are placed in teams to work on an assigned project using MS Office applications.

As a Capstone Project:
This can also be a project assigned near the end of the class, incorporating all of the skills and techniques learned up to that point.
CIS118 – Age Group

Who is taking CIS-118 classes?

In 2009, 29% traditional and 71% non-traditional
### Technical Skills - Acquired

**Where can you get a set of Hard Skills?**

<table>
<thead>
<tr>
<th>Hard Skill Sets</th>
<th>Acquired through</th>
</tr>
</thead>
<tbody>
<tr>
<td>- PC knowledge</td>
<td>- ITS Studies and OJT</td>
</tr>
<tr>
<td>- Networking</td>
<td>- ITS Studies and OJT</td>
</tr>
<tr>
<td>- Programming</td>
<td>- ITS Studies and OJT</td>
</tr>
<tr>
<td>- Cabling &amp; Wireless</td>
<td>- ITS Studies and OJT</td>
</tr>
<tr>
<td>- Printer knowledge</td>
<td>- ITS Studies and OJT</td>
</tr>
<tr>
<td>- IP addressing</td>
<td>- ITS Studies and OJT</td>
</tr>
<tr>
<td>- Troubleshooting</td>
<td>- ITS Studies and OJT</td>
</tr>
<tr>
<td>- Data Base Management</td>
<td>- ITS Studies and OJT</td>
</tr>
<tr>
<td>- Telecommunications</td>
<td>- ITS Studies and OJT</td>
</tr>
<tr>
<td>- Applications</td>
<td>- ITS Studies and OJT</td>
</tr>
<tr>
<td>- MORE...</td>
<td>- ITS Studies and OJT</td>
</tr>
</tbody>
</table>
Now it is time for an official confirmation?

Hrabowski (2011) stated “We need hands on experiences. We need to be encouraging that curiosity. And people cannot-- should not be allowed simply to sit back and be bored.”

Hrabowski is the president of the University of Maryland Baltimore County. UMBC has earned a reputation as one of the most innovative schools in the country.

Nearly 90% math and science UMBC students have gone on to graduate school.
PBL - Questions

Time for You to Get Involved

• What kind of specific projects have you developed for your students?
• What critical skills did they learn?
• How would you place your students into teams?
• What are the potential problems with teams?
What Role do you want to play?

• Students role becomes more active
  – problem-solver
  – decision-maker
  – meaning-maker

• Students are not merely passive listeners and note-takers