

Lessons Learned in SEI Blended Learning

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Outrageous

“My conclusion was that society’s rate of progress was at least partly limited by software technology. If we did not master this technology, industrial growth would be stunted and human progress constrained. This seemed like a challenge worth devoting my life to. This is what I called an outrageous commitment. While I had no illusions that I could change the world of software, I decided it would be an exciting challenge and it would certainly be worth the effort.”,

- Watts Humphrey

Not Really

Watts was wrong. With the help of many of the people in this room Watts is changing the world. It is high time we start acting like it.

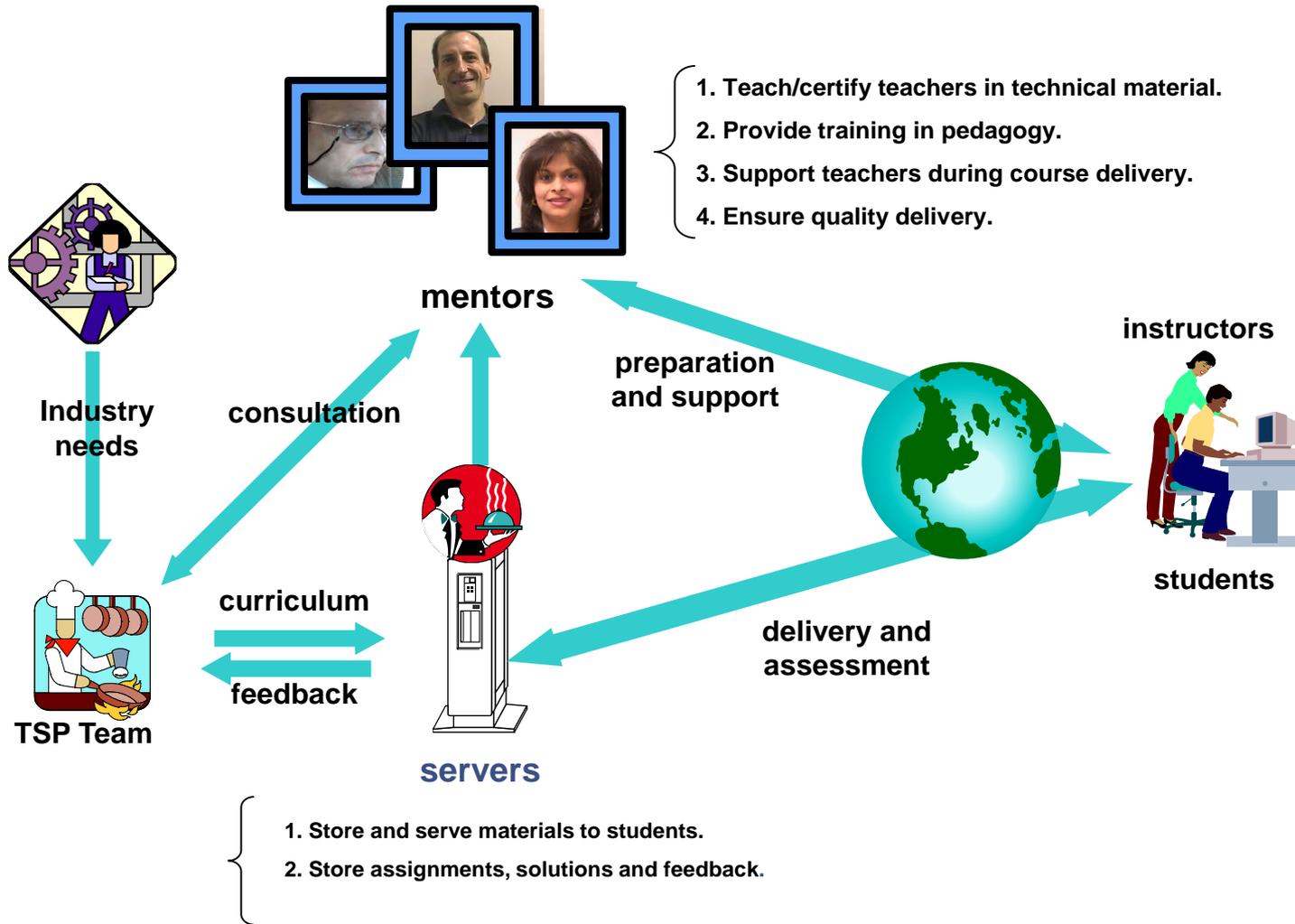


Questions that come to my mind.

- What are the PSP educational objectives?
 - PSP BOK.
- How do we teach it?
 - Levels of understanding.
 - Summative/formative evaluation.
- Can the student tell if they understand the material as they should?
 - Instructor feedback on exercises.
 - Ability to function in on a TSP team.
 - PSP Certification Exam.
- Will our educational efforts scale and retain quality?
- Is PSP/TSP education and training sustainable?
 - Is it affordable and a good value to the potential customers?
 - Does it provide adequate ROI to the SEI?



SEI Blended Learning – How It Works



A Few Facts

1. Sept 2005, first SEI BL course offering, PSP for Eng. I
2. Aug 2006, CMMI v1.2 Upgrade Training Introduced
3. Aug 2008, CMMI-ACQ Pilot

Student Assessment	Teaching & Learning Style		
	Distance	Mix	Presential
<i>Formative?</i> <i>Summative?</i> none	CMMI-UT		
informal	CMMI-ACQ	<input checked="" type="checkbox"/>	
formal	CMMI-ACQ	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> PSP <input checked="" type="checkbox"/>



Course Enrollments

All SEI BL Courses

<i>9/5/08</i>	<i>CMMI v1.2 UT</i>	<i>CMMI v1.2 UT for ILA's</i>	<i>CMMI ACQ</i>	<i>PSP Courses</i>	<i>PSP Instr BL</i>	<i>Total</i>
<i>Accounts Created</i>	7107	677	6	735	46	8571
<i>Completions</i>	6054	610	2	156	24	6846

Completion is required for continuation of SEI credentials in CMMI.

PSP SEI BL Courses Only

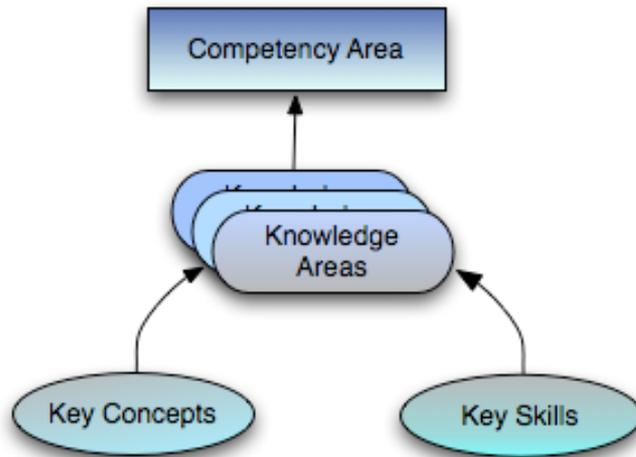
<i>9/5/08</i>	<i>PSP I</i>	<i>PSP II</i>	<i>Basic</i>	<i>Fund</i>	<i>Adv</i>	<i>Instr BL</i>	<i>Total</i>
<i>Accounts Created</i>	218	222	62	215	18	46	781
<i>Completions</i>	57	61		38		24	180

Completion is required to earn credentials as an SEI BL Instructor.



What are our learning objectives?

The Personal Software Process Body of Knowledge (PSP BOK)

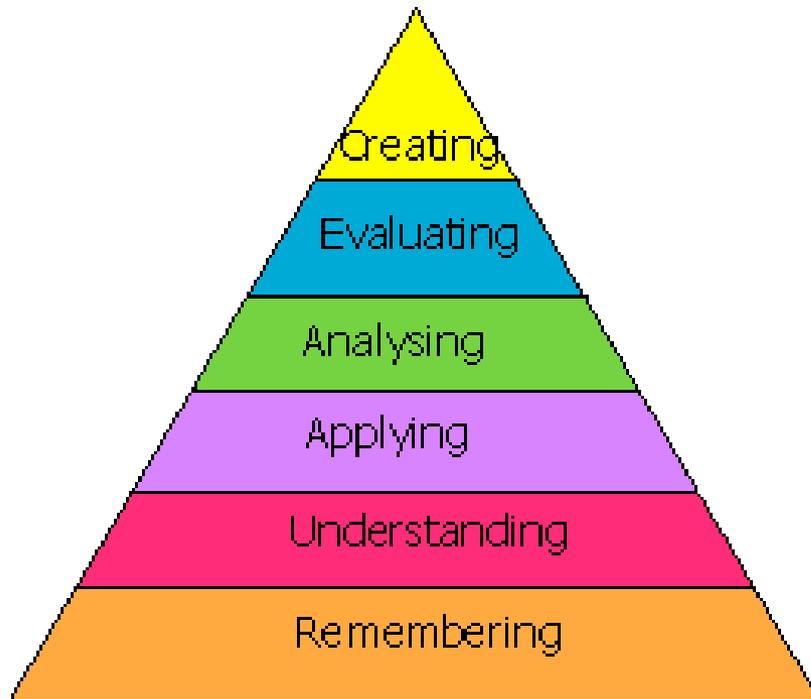


- key skill: proficiency, facility, or dexterity that is acquired or developed through training or experience within a particular knowledge area
- key concept: an explanatory principle applicable to a specific instance or occurrence within a particular knowledge area

<http://www.sei.cmu.edu/tsp/tools/bok.html>



What are our (PSP) learning objectives? Bloom's Taxonomy (new version)



Creating: can the student create new product or point of view? assemble, construct, create, design, develop, formulate, write.

Evaluating: can the student justify a stand or decision? appraise, argue, defend, judge, select, support, value, evaluate

Analyzing: can the student distinguish between the different parts? appraise, compare, contrast, criticize, differentiate, discriminate, distinguish, examine, experiment, question, test.

Applying: can the student use the information in a new way? choose, demonstrate, dramatize, employ, illustrate, interpret, operate, schedule, sketch, solve, use, write.

Understanding: can the student explain ideas or concepts? classify, describe, discuss, explain, identify, locate, recognize, report, select, translate, paraphrase.

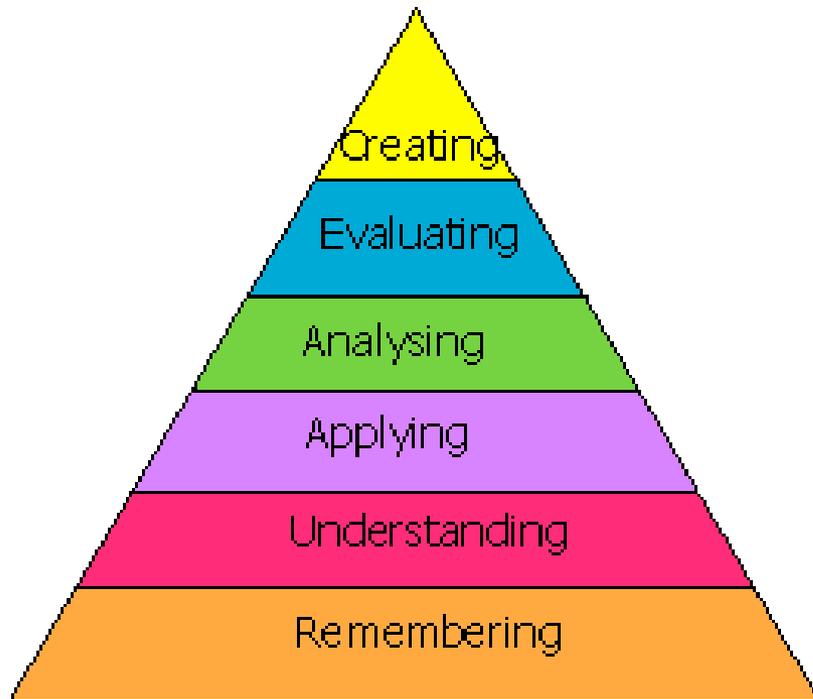
Remembering: can the student recall or remember the information? define, duplicate, list, memorize, recall, repeat,

http://www.odu.edu/educ/roverbau/Bloom/blooms_taxonomy.htm

“Application of Bloom’s Taxonomy Debunks the “MCAT Myth””, SCIENCE 25 Jan 2008, VOL 319



What are our (PSP) learning objectives? Bloom's Taxonomy (new version)



Create a PSP version or an alternative to PSP.

Creating: Write your own story.

Evaluate the effectiveness of current verification methods.

Evaluating: What was the point of the story?

Analyze a process to improve it. Analyze phase yields.

Analyzing: How did each bear react to what Goldilocks did?

Produce the product size estimate. Follow the script for a process.

Applying: Write a sign to be placed near the edge of the forest.

Why detailed plans are needed?

Understanding: What did Goldilocks look like?

What is the Process Quality Index? What is added code?

Remembering: Who was Goldilocks?



SEI BL and the PSP Cognitive Objectives

Bloom's Taxonomy	PSP BOK	Traditional and Present SEI BL	Possible SEI BL (Add to Present)
• Creating	PIPs, tailoring of the method	Programming Assignments	Formative Practical Assessments
• Evaluating	Limited to selection of components such as design or verification.	Reports	
• Analyzing	27 meaningful references generally calling for full fledged analysis of data improving personal processes.	Reports	Practical and MCQ Assessments
• Applying	Large number of applications of processes.	Programming Assignments	Formative MCQ Assessments
• Understanding	Little explicit emphasis on this cognitive level but necessary for higher level cognition.	PSP Certified Developer Exam (Summative Only)	Formative MCQ Assessments
• Remembering	Rich with detail to be recalled.	PSP Certified Developer Exam (Summative Only)	Formative MCQ Assessments

MCQ means Multiple Choice Question



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