

Empowering STEM Faculty for Learner-Centered Environments

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Webinar Agenda

- Introductions
- State University of New York (SUNY) Empire State College
- Principles of Process Education
- Faculty Self-Efficacy and Learning Styles
- HP Catalyst Initiative Faculty Development Project
- Course Examples
- HP Project Blog
- Implications
- Questions

SUNY Empire State College

- Founded as a cutting-edge, comprehensive college in 1971
- 60,000 alumni
- 11 academic centers of learning, > 30 locations throughout the state
- > 19,000 students enrolled per year
 - including every county in New York state
 - including every state in the United States
 - 50 countries around the world
- 2,000 faculty and staff serving primarily adult learners
- Mission
 - To be innovative and creative, and to offer people throughout the state of New York and beyond the opportunity to study, to learn, and to earn a degree while still being able to work, raise a family and be engaged in their communities.

Process Education

- A performance-based philosophy of education which integrates many different educational theories, processes, and tools in emphasizing the continuous development of learning skills through the use of assessment principles in order to produce learner self-development
- Thrives within an assessment culture as opposed to a culture of evaluation
- Source: www.pcrest.com

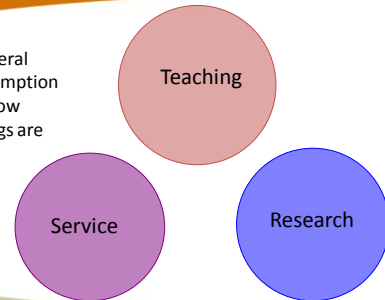
Process Education

- The Transformation of Education

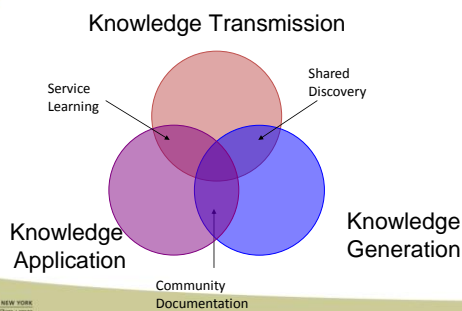
Faculty-centered	→	Student-centered
Presentation	→	Activity
Directed	→	Self-directed
Content	→	Process
Individual	→	Collaborative

Process Education

General
assumption
of how
things are



Process Education: Integrating Responsibilities



Learning Styles

- Knowledge of learning styles may help
 - Educators learn more about their students
 - Educators in developing effective curricular approaches
 - Benefit the student directly in learning more about themselves
- VARC Instrument
 - Categorizes learning preferences as visual, auditory, reading-writing and kinesthetic
 - 29 languages
 - <http://www.vark-learn.com/english/index.asp>

Math for the Inquiring Mind

- Course Objectives
 - Have self-assessment skills so that s/he is able to execute an SII (Strengths/Improvement/Insight) to any learning situation in order to improve.
 - Be able to communicate effectively about quantitative information and learning experiences.
 - Possess algebraic skills as well as critical thinking and spreadsheet analysis skills necessary to complete quantitative analysis.
 - Be able to move from a problem statement through a problem-solving process to a solution that is clear and appropriate.
 - Be aware of the limitations of any solution and reflective about how those limitations could be addressed.

Students' Reflections of Journaling - Math for the Inquiring Mind

- "Throughout this course my problem solving skills have improved immensely. I never applied any type of process and in many cases, any type of order to the way I solve problems... I have come to realize that problem solving does not just apply to equations; critical thinking is a major component in all processes and using tried and tested processes to help solve any problem adds a high level of success and personal satisfaction to problem solving.
- "I find using a cumulative journal has enhanced my learning in this course. In this assignment alone I have looked back at past entries and can see the improvements in my learning skills. The levels of learning for me have changed, not drastically but noticeably. This course has also polished areas I already had strengths in but was unaware of. I can honestly say that I have added imperative knowledge and skills to those I already possessed and gained so much more insight."
- "In my reasonably long life, I have only now been presented with coursework that provides tested how-to information regarding educational and personal development in learning activities. I continue to think about what I'm learning in this course along with what I've learned formally and in this life's school, to date. I realize that cumulative learning provides one with vast sources from which to draw in order to put together an individualized plan of personal development. The key is to be able, on a cognitive level, to put information together for the effective use these "tools" in a way that will work."

The Science of Cooking

- Course Objectives
 - Gain an understanding of the structures of biological molecules, such as proteins, carbohydrates, and fats and oils
 - Learn relevant principles of chemistry and physics, including changes associated with food preparation and cooking
 - Apply the scientific method through experimentation and inquiry-based activities
 - Develop their scientific literacy skills through examination of topics in food science

The Science of Cooking

Learners choice of final assignment:

- Recipe Analysis
 - Recipe analysis including aspects such as the impact of heat on the ingredients and a discussion of the underlying science
- Cooking Project
 - Preparation of a food product utilizing 2 different recipes then focusing on the science of food
 - Photo or video documentation of the cooking project
- Final Paper
 - Topic related to the science of cooking or food science

HP Catalyst Initiative Blog

- Website used to track and document the work being done by the STEM faculty teams involved in the grant project.
- Blog format chosen to foster multi-way communication, and gather ideas from other interested parties.
- <http://commons.esc.edu/stemfaculty/>



Implications

- Education as a transformative experience
 - Focus on Process vs. Content
 - Integration of teaching, research and service
- Identification of learning styles as an effective tool
- Self-Efficacy
 - Faculty Self-assessment
- STEM strategies for Learner Centered Environments
 - Reflective Journaling
 - Student-centered Activity

Questions

References

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