10-7-2016

Design Implications of Changing Student Demographics

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Andy Igonor and Natalya Koehler, Franklin University, 2016

FRANKLIN UNIVERSITY LEARNING SHOWCASE A DAY OF DISCOVERY

Abstract

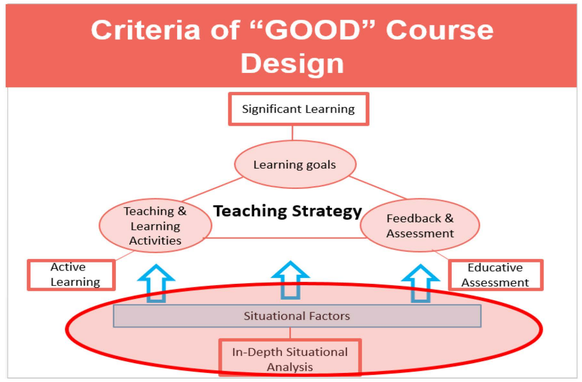
Many non-traditional higher education institutions have built their cyber security and computer science programs (CSCS) to cater to the needs of adult, working learners. Focusing on this demographic has implications for course and program design. Design approaches have therefore focused on strategies aimed at translating knowledge into learning nuggets specific to the adult learner, enabling day one job-readiness upon graduation. Recently, there has been increased focus on CSCS education at the high school level. The computer science for all initiative was announced recently by US President Obama, and there have been increased creativity on the part of higher education institutions to expand CSCS programming to high school learners. Some of these have, and continue to take place through the college credit plus initiative. With the shift to meet the needs of this changing demographic, two of the key questions for success are: **(i) what efficient and effective design strategies should be employed by higher education institutions to ensure success for high school learners, without losing existing approaches that prepare adult learners for job readiness? (ii) And to what extent do these strategies influence success for both adult and high school learners?**

Approach

In this research, we review design approaches and attempt to answer these fundamental questions through a proposed creative design model.

- Understand what constitutes "good design"
- Identify and Review Characteristics of adult and young learners through synthesis of literature
- Conduct research through course design, and compare experiences of adult and young learners
- Use a fundamental Cyber Security course as a case study

"Good Design"

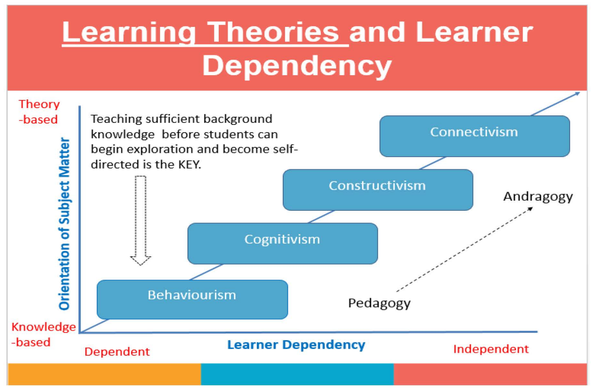


What constitutes a good course design, irrespective of the learner type?

- At the heart of this is the teaching strategy. The teaching strategy complements design taking into account learning goals.
- Situational factors also influence teaching strategy
- Current research focuses on defined learning goals and situational factors, complemented by teaching strategies

Strategies & Theories

1. Creativity
2. Rusty classroom skills
3. Efficient lessons & activities
4. Motivation
5. Teaching speed
6. Respect
7. Connect theory to practice



Learners

WORKING ADULTS:

- Self-directed learners
- **Experience** (including mistakes) provides the basis for the learning activities.
- Motivated to learn by a variety of factors, internally motivated
- Want to do authentic work that has immediate relevance
- A comfortable supportive environment is a key to successful learning
- Working memory capacity is gradually declining

YOUNG ADULTS: High Schoolers

- Want adults to assume a chiefly support role in their education
- Internally & externally motivated
- Need opportunities for self-expression
- Want to assume individual responsibility for their learning
- Need to understand the purpose and relevance of instructional activities
- May have "shut down" in certain cognitive areas and will need to learn how to learn and overcome these barriers to learning
- On average, creative, open to new ideas, high working memory capacity

Potential Findings

We posit in our research that:

- **Students' prior knowledge of the course material may be a key distinguishing factor between both learner types.**
- **Academic self-beliefs and prior knowledge is a predictor of student achievement**
- **Subject-matter is a key distinguishing factor.**

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