Relationship of Deep Approaches to Learning (DAL) with Student Satisfaction and Perceived Employability Skills in STEM Field

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About DAL

• Responsibility of HEI
• Subject Matter, Life-Long learning skills such as Meaningful and Problem solving skills
• Engaging in activities to enhance learning and personal attributes – Kuh
• Activities consists of DAL concepts
DAL Cont’

• **DAL**: Strategy or an approach to learning that leads to DL; Rote and Memorization leads to SL

• **Higher-Order Learning**: Analyze and synthesize ideas; Applying theories; Understands real-world applications

• **Integrative Learning**: Share ideas with diverse perspectives; Collaborating and discussing ideas with faculty/peers outside of class

• **Reflective Learning**: Reflect on what worked or what not, willingness to improve further
Research & Previous Measures

- Marton and Sajio (1976)
  - Deep and Surface Learning
  - Comprehend the information
- Entwistle & Ramsden (1981), (ASI) (64-items)
  - Reproducing, Meaning & Achieving
- Bigg’s (1987,) (SPQ) (42 items)
  - Deep, Surface and Achieving Approaches
  - Used in 3P Model
Research & Previous Measures

- Pintrich 1993, MSLQ (81-items)
  - Constructs—"Expectancy, Value, and Affect."

- NSSE: 2000, Higher order and integrative

- Reflection (2004), Based on Biggs SPQ

- Many others inventories such as: ASSIST, ILS, LASSI, R-SPQ2F
Outcomes Of DAL

• Earn higher grades, and retain, integrate and transfer information at higher rates—Nelson (2008), Entwistle (1983), Biggs (achieving)

• Gain personal and social development—Reason (2010)

• Critical Thinking, Need for Cognition, and positive attitude towards literacy—Nelson (2014)

• Freshman retention, pursuit of graduate education, and employment outcomes—Gordon (2008)
Student Satisfaction

• Total undergraduate experience—Astin (1993)

• Satisfaction with “curriculum and instruction, Administration, Services, Facilities, Student life, Individual support”

• Measuring Satisfaction:

• Retention rate, Recruitment by students, donations, student surveys periodically
Student Satisfaction and DAL

Engaging in DAL activities:

• Helps students deeply understand of what they are learning which is satisfaction itself—Kuh (2009)

• Gains “intellectual” and “personal development”, leads to student satisfaction—Nelson (2008)

• Deep learning is an enjoyable experience which is more satisfying and has long-term benefits—Tagg (2003)
Employability Skills

A set of achievements —

• Skills, Knowledge, understandings of subject, and personal attributes — that make graduates more likely to gain employment - Yorke (2004)
Employability skills and DAL

• Participating in DAL activities such as Collaboration, Team-working, Peer-mentoring, Interaction with Faculty, are related to goals of employability - Gordon (2008)

• Help gain more meaningful and critical learning skills

• Prepare for life-long learning professional skills

• Enhances employability skills
STEM Education

• To Solve Complex Problems

• A relatively low enrollment—Appelbaum (2016)

• Retention Issue—Feder (2012)

• Fewer students in STEM while demands grows for skilled workers—Krigman (2014)

• Indicating a declining interest in these fields in U.S.
STEM and DAL

• Learning outcomes of STEM—By ABET (Accreditation board for Engineering and Technology)—Technical Knowledge

• Non-technical Skills align with engaging in DAL activities
  • Communicating effectively
  • Collaborating
  • Team-leadership
  • Peer-mentoring

• Help understanding the material better

• Retention will improve with DAL—Espinosa (2013)
Rationale for Research Topic

• DAL is useful in teaching and learning
• Benefits in academic achievements, such as
  • Higher grades, retention, meaningful learning,
  • Satisfaction, and intellectual & personal development
• Gap in Study in DAL especially in STEM field
• Personal interest to explore this study
Research Questions

• Is there a relationship of DAL with Students’ Satisfaction and Employability in STEM field?

• Does this relationship of DAL differ between STEM or non-STEM fields?
Summary

• Benefits in academics and personal characteristics

• Satisfaction and Employability are important for students, parents, employers and the institutions.
How I conducted My Research

• Started with the search for a topic
• Came upon DL topic and got interested, discussion
• Had a background about the subject/ Course Assessments
• Read (2005, Nelson), Then chained up the references
• Got help from Lisa Becksfield in searching the lit
• Searched in all EBSCOhost and Google Scholar
• Found one or two with DAL and Employment and one or may be two with Satisfaction
Questions-Suggestions?

Thank you for listening.
Implementation of DAL

Student adopting a deep approach

• Integrating ideas with diverse perspectives;
• Collaborates and discusses ideas
• Understands real-world applications, Integrating ideas with diverse perspectives;
Note: Circles represent factors, squares represent observed variables. DL = Deep Learning; HL = Higher Order Learning; IL = Integrative Learning; RL = Reflective Learning.