
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 student 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?

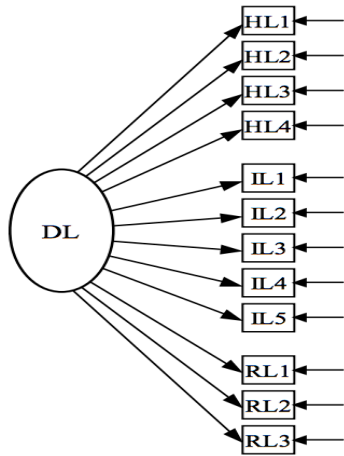
Thank you for listening.

Implementation of DAL

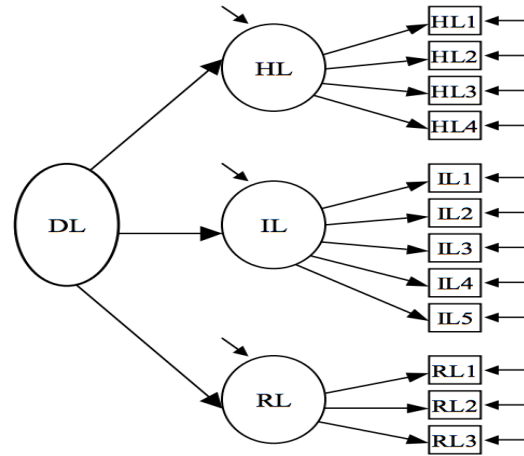
Student adopting a deep approach

- Integrating ideas with diverse perspectives;
- Collaborates and discusses ideas
- Understands real-world applications, Integrating ideas with diverse perspectives;

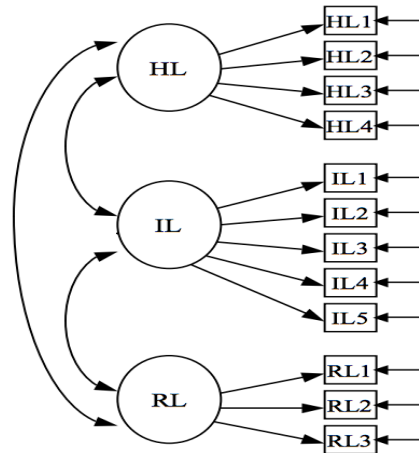
Single Factor



Second-Order Factor



Correlated Three Factor



Note: Circles represent factors, squares represent observed variables. DL = Deep Learning; HL = Higher Order Learning; IL = Integrative Learning; RL = Reflective Learning.