Lifelong Learning Mindsets and the Connection to Workplace Success

Presented by:
Mr. Robert Sproule, School of Accounting and Financial Management
Mr. David Drewery & Dr. Judene Pretti, WatCACE

This research was supported by the University of Waterloo’s Learning Innovation and Teaching Enhancement Grant
Outline

- Introduction to Lifelong Learning and the research project
- Assessing Lifelong Learning Mindset (LLM)
  - Scale
  - Rubric
- Associations between LLM and Workplace Outcomes
  - Students
  - Alumni
- Implications and Next Steps
The Need for “Lifelong Learners”

The pace of change in the economy, technology and culture is accelerating, meaning the future of some industries is grim, Mr. Carney said. “It is entirely unrealistic to map out the decades ahead,” he said. “Many of the jobs and even the industries of today will be gone tomorrow.”

(M. Carney as cited by Quinn, 2016)
Defining Lifelong Learning

What words or phrases come to mind when you think of lifelong learning?
The Literature Suggests...

**Lifelong Learning “Mindset”**
- Attitudes
- Motivations
- Competencies
- Tendencies

- Curiosity and Initiative
- Application and Transfer
- Resilience
- Reflection

Work-integrated Learning (WIL) may contribute to a lifelong learning mindset (Billett & Choy, 2011)
Phases of This Project

**Phase 1**  
(2017)  
Identifying Gap  
Defining Project Goals  
Sourcing Support  
Developing a Self-report Tool

**Phase 2**  
(2018)  
Literature Review  
Expert Opinion  
Initial Rubric Development  
Pilot Testing  
Initial Reporting

**Phase 3**  
(2018-2019)  
*Testing Inter-rater Reliability*  
Testing Predictive & Concurrent Validity
LIFELONG LEARNING MINDSET

SCALE
Developing a LLM Measure*

- Initial 27-item inventory
- Participants:
  - UW Co-op ($n = 2,833$)
  - UW Non-co-op ($n = 1,761$)
  - CNAM co-op ($n = 172$)
- Examined scale properties
- Identified 10 items from 5 dimensions: Curiosity, Initiative, Transfer, Reflection and Resilience

*research sponsored by WACE IRC Grant
LIFELONG LEARNING MINDSET

Rubric
An Opportunity

Self-reflection

Rubrics

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Excellent</th>
<th>Proficient</th>
<th>Adequate</th>
<th>Limited*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Insufficient/Blank*

No score is awarded because there is insufficient evidence of student performance based on the requirements of the assessment task.

Work-integrated Learning Programs
## The Rubric

<table>
<thead>
<tr>
<th>Disposition/Skill</th>
<th>Level 4</th>
<th>Level 3</th>
<th>Level 2</th>
<th>Level 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Curiosity</strong></td>
<td>Continually looks beyond established processes/procedures (people, technology, organization) to make sense of, and complete assigned tasks, with intense interest in all aspects of their job and workplace.</td>
<td>Frequently looks beyond established processes/procedures (people, technology, organization) to make sense of, and complete assigned tasks, with regular interest in all aspects of their job and workplace.</td>
<td>Occasionally looks beyond established processes/procedures (people, technology, organization) to make sense of, and complete assigned tasks, with mild interest in some aspects of their job and workplace.</td>
<td>Satisfied with using established processes/procedures (people, technology, organization) to complete assigned tasks, with little interest in aspects of their job and workplace.</td>
</tr>
<tr>
<td><strong>Taking Initiative</strong></td>
<td>Identifies an opportunity to improve performance or a process: related to their job or in another area of the organization; and implements a plan of action.</td>
<td>Identifies an opportunity to improve performance or a process: related to their job or in another area of the organization; and looks to their supervisor or peer for direction.</td>
<td>Identifies an opportunity to improve performance or a process: related to their job or in another area of the organization.</td>
<td>Completes assigned work.</td>
</tr>
<tr>
<td><strong>Transfer</strong></td>
<td>References existing knowledge, skills and/or values from previous academic, work or life experiences, and applies them in an innovative way to a task in the current work term.</td>
<td>References existing knowledge, skills and/or values from previous academic, work or life experiences, and shows evidence of directly applying them to a task in the current work term.</td>
<td>References existing knowledge, skills and/or values from previous academic, work or life experiences, and attempts to directly apply them to a task in the current work term.</td>
<td>No reference to existing knowledge, skills and/or values from previous academic, work or life experiences.</td>
</tr>
<tr>
<td><strong>Resilience</strong></td>
<td>Bounces back from stressful, adverse or unexpected situations in the workplace having learnedfrom the experience, building confidence for handling similar situations in the future.</td>
<td>Eventually bounces back from stressful, adverse or unexpected situations in the workplace, making an effort to persist or push through in resolving it.</td>
<td>Somewhat bounces back from stressful, adverse or unexpected situations in the workplace, makes minimal effort in dealing with it.</td>
<td>Might acknowledge stressful, adverse or unexpected situations in the workplace but doesn’t know how to deal with the situations.</td>
</tr>
<tr>
<td><strong>Reflection</strong></td>
<td>Reviews their learning on this work term including: referring back to an earlier reflection/benchmarking how they have progressed on the goals set previously; assessing/benchmarking their current knowledge, skills and/or values; developing specific goals looking ahead; and putting in place a specific plan for achieving these goals.</td>
<td>Reviews their learning on this work term including: referring back to an earlier reflection/benchmarking; assessing/benchmarking their current knowledge, skills and/or values; and developing specific goals looking ahead.</td>
<td>Reviews their learning on this work term including: assessing/benchmarking their current knowledge, skills and/or values.</td>
<td>Somewhat reviews their current learning on this work term with no context in terms of past or future goals for development, or assessment/benchmarking of their current knowledge, skills and/or values.</td>
</tr>
</tbody>
</table>
# Results

Table 1. Intraclass correlation based on four raters’ assessments of students’ \((n = 10)\) written reflections using the Lifelong Learning Rubric

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Raters</th>
<th>ICC</th>
<th>95% CI</th>
<th>Reliability</th>
<th>Note: (^{a}) three raters; (^{b}) based on Koo and Li (2016)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>95% CI</td>
</tr>
<tr>
<td>Curiosity</td>
<td>2.5</td>
<td>3.0</td>
<td>1.9</td>
<td>3.1</td>
<td>.65</td>
</tr>
<tr>
<td>Initiative</td>
<td>2.2</td>
<td>2.4</td>
<td>3.6</td>
<td>2.7</td>
<td>.72</td>
</tr>
<tr>
<td>Transfer</td>
<td>2.1</td>
<td>2.5</td>
<td>2.4</td>
<td>2.9</td>
<td>.69</td>
</tr>
<tr>
<td>Resilience</td>
<td>2.7</td>
<td>2.8</td>
<td>2.9</td>
<td>3.2</td>
<td>.85</td>
</tr>
<tr>
<td>Reflection (^{a})</td>
<td>2.7</td>
<td>3.1</td>
<td>2.8</td>
<td>2.0</td>
<td>.72</td>
</tr>
<tr>
<td>Overall</td>
<td>2.4</td>
<td>2.8</td>
<td>2.7</td>
<td>2.8</td>
<td>.87</td>
</tr>
</tbody>
</table>
ASSOCIATIONS BETWEEN LLM AND SELECT VARIABLES
Research Questions

- RQ 1: Are LLM scores associated with LLM rubric scores?

- RQ 2: Are LLM and LLM rubric scores associated with supervisor-rated performance?

- RQ 3: Are LLM scores associated with work/career success amongst alumni?

- RQ 4: Are LLM scores and work/career success associated with alumni giving?
RQ1 Methodology

1. Students ($n = 32$) completed a 10-item LLM scale ($\alpha = .81$)

2. Trained rater to use LL rubric

3. Applied LLM rubric to two sets of reflections

4. Examined correlations
LLM Example Items

- In my job, one of the main attractions for me is to learn new things. (Curiosity)

- If conditions aren’t right for me at work, I generally manage to do something to change them. (Initiative)

- In trying to understand new ideas, I try to relate them to real life situations to which they might apply. (Transfer)

- I think I’m good at dealing with the pressures of learning new things at work. (Resilience)

- When setting work-related goals, I consider how things are going and how I can improve. (Reflection)
### RQ1 Results

<table>
<thead>
<tr>
<th>Rubric Dimension</th>
<th>Assignment 1</th>
<th>LLM</th>
<th>Assignment 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curiosity</td>
<td>.24</td>
<td></td>
<td>Curiosity</td>
</tr>
<tr>
<td>Initiative</td>
<td>.43*</td>
<td></td>
<td>Initiative</td>
</tr>
<tr>
<td>Transfer</td>
<td>.15</td>
<td></td>
<td>Transfer</td>
</tr>
<tr>
<td>Resilience</td>
<td>.14</td>
<td></td>
<td>Resilience</td>
</tr>
<tr>
<td>Reflection</td>
<td>.43*</td>
<td></td>
<td>Reflection</td>
</tr>
</tbody>
</table>

Notes. $n = 32, * p < .05, ** p < .01$
RQ2 Methodology

- Created a 4-item supervisor-rated performance scale ($\alpha = .90$)
- Supervisors assessed ($1 = $ developing, $7 = $ superior):
  - Quantity of work
  - Quality of work
  - Problem solving
  - Entrepreneurial orientation
- Examined correlations
### RQ2 Results

<table>
<thead>
<tr>
<th>Rubric</th>
<th>Supervisor-Rated Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curiosity</td>
<td>-.08</td>
</tr>
<tr>
<td>Initiative</td>
<td>.19</td>
</tr>
<tr>
<td>Transfer</td>
<td>-.04</td>
</tr>
<tr>
<td>Resilience</td>
<td>-.14</td>
</tr>
<tr>
<td>Reflection</td>
<td>.01</td>
</tr>
</tbody>
</table>

**Self-report**

| LLM            | .30*                         |

Notes. *n = 55 to 62, *p < .05
RQ3 and RQ4 Methodology

- Surveyed alumni ($n = 148$) about:
  - Lifelong learning mindset
  - Career success
    - Work self-efficacy
    - Promotions
    - Job satisfaction
    - Work engagement
  - Alumni engagement
    - e.g., previous financial giving behaviour, intention to give
### RQ3 Results

<table>
<thead>
<tr>
<th>Aspects of Success</th>
<th>LLM self-report</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Work self-efficacy</td>
<td>.47***</td>
</tr>
<tr>
<td>2. Number of promotions</td>
<td>.27***</td>
</tr>
<tr>
<td>3. Job satisfaction</td>
<td>.22**</td>
</tr>
<tr>
<td>4. Work engagement</td>
<td>.36***</td>
</tr>
</tbody>
</table>

Note. $n = 148$, ** $p < .01$, *** $p < .001$
RQ4 Results

Figure 1. Direct and indirect effects of lifelong learning mindset on alumni giving. Path “1” denotes effect on previous giving behaviour, and “2” denotes effect on intention to give in the next two years.

Lifelong Learning Mindset → Career Success → Alumni Giving

Path a: $b = 0.44$ [0.244, 0.638]
Path b1: $b = 0.506$ [0.079, 0.934]
Path b2: $b = 0.203$ [0.022, 0.385]

$c_{1}= -0.191$ [-0.683, 0.302]
$c_{2}= -0.021$ [-0.253, 0.211]

$ab_{1}= 0.223$ [0.030, 0.666]
$ab_{2}= 0.090$ [0.006, 0.212]
Implications and Lessons Learned

- Definition and measurement of LLM
- Connection of LLM to important outcomes -> educational institutions should be explicit about LLM as an expected outcome for students
- Use of existing data and artifacts for examination in research
- Ability to draw conclusions from small sample sizes and one time observations
- Alignment between assignment expectations/prompts and rubric dimensions
Next Steps

- Further testing of inter-rater reliability
- Moving beyond AFM to test these findings with other populations
- Gathering longitudinal data to examine how a lifelong learning mindset develops through academic and workplace experiences and into careers
Questions
Associated Publications


Selected References (1/2)


Selected References (2/2)


Contact Information

Bob Sproule, bsproule@uwaterloo.ca

Judene Pretti, tjpretti@uwaterloo.ca

Dave Drewery, dwdrewery@uwaterloo.ca

Lifelong Learning & Workplace Success