Lifelong Learning
Definition and Measurement

Presented by: Judene Pretti and David Drewery
Centre for the Advancement of Co-operative Education
Outline for Today

- Context for Discussion
- Exploration: What is it? How to measure?
- WatCACE research study
- What’s next? Where are the connections?
“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.”

Mark Carney, Globe and Mail June 2016
Graduates’ career paths are uncertain, potentially unrelated to their training (Kirby et al., 2010; Voogt & Roblin, 2010)

Challenge for PSE to equip students with ability to learn across many situations – to develop into *lifelong learners* (Billett & Choy, 2011; Deakin Crick et al., 2004; Kirby et al., 2010; Su et al., 2012)
EXPLORATION: LIFELONG LEARNING

What is it?

How do you measure it?

Photo courtesy of telegraph.co.uk
Our Lifelong Learning Research – The Context

- Research on various areas of co-operative education
  - Students’ Perspective on Quality of Work Term Experience
  - Unpacking the Co-op Work Term from the Supervisors’ Perspective
  - Universities as a Talent Pipeline for Organizations

- Provide program evaluation support to WatPD
Co-operative Education Outcomes
by National Commission for Co-operative Education, 1995

**ACADEMIC**
- Ability to integrate classroom theory with workplace practice
- Clarity about academic goals
- Academic motivation
- Technical knowledge through the use of state-of-the-art equipment

**PROFESSIONAL**
- Clarity about career goals
- Understanding of workplace culture
- Workplace competencies
- New or advanced skills
- Career management
- Professional network
- Post graduation employment opportunities

**PERSONAL**
- Maturity
- Determination of strengths and weaknesses
- Development/enhancement of interpersonal skills
- Earnings to cover university expenses or to support personal financial responsibilities
- Productive and responsible citizenship skills
- Lifelong learning skills

Lifelong Learning: Definition and Measurement
Issues

What is lifelong learning?

- Attitudes?
- Tendencies?
- Motivations?
- "Energies"?
- Behaviours?
- Relationships?
- Beliefs?
Issues – Ctd.

- Measurement
  - Scales too long, expensive, or not applicable

- Focus on person, context, or both?
  - Something inside or outside the person?
  - Interaction between the two?

- Role of education
Purpose and Questions

Purpose

To improve our ability to conceptualize and measure co-op students’ lifelong learning characteristics and to explore potential differences in these characteristics between co-op and non co-op students.

Research Questions

1) How has the literature characterized lifelong learners?

2) Might students’ degree type, faculty, or sex influence their self-perceptions of lifelong learning characteristics?
Our Approach

• Literature Review

• Scale Development and Testing

• Group comparisons

Lifelong Learning: An emergent perspective

- “Set of self-initiated activities and information seeking skills that are activated in individuals with a sustained motivation to learn and the ability to recognize their own learning needs”

- Mix of attitudes, behaviours, and motivations

- Some link to education (education as a catalyst)
Scale Development

- 10 previous measures between 2004 and 2014
- Expert consultation
- Item sorting tasks
- Focus group testing
- Factor analytic techniques (item reduction)
Exploratory Factor Analysis

<table>
<thead>
<tr>
<th>Items</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I love to learn</td>
<td>0.94</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I enjoy learning very much</td>
<td>0.79</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3. I am intrinsically motivated to learn</td>
<td>0.79</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. I’m looking forward to learning as long as I’m living</td>
<td>0.78</td>
<td></td>
<td></td>
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<tr>
<td>5. I can apply my knowledge across a variety of situations and problems</td>
<td></td>
<td>0.76</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. I adapt my thinking to the problems at hand</td>
<td></td>
<td>0.77</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. I can deal with the unexpected and solve problems as they arise</td>
<td></td>
<td>0.72</td>
<td></td>
<td></td>
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<tr>
<td>8. I am very good at seeking and retrieving information</td>
<td></td>
<td></td>
<td>0.91</td>
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<tr>
<td>9. If I discover a need for information that I don’t have, I know where to go to get it</td>
<td></td>
<td></td>
<td>0.71</td>
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<tr>
<td>10. I often know where to look for solutions to complex problems</td>
<td></td>
<td></td>
<td>0.63</td>
<td></td>
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<tr>
<td>11. I frequently take time to reflect on my own thoughts</td>
<td></td>
<td></td>
<td></td>
<td>0.80</td>
</tr>
<tr>
<td>12. I am usually aware of my own thoughts</td>
<td></td>
<td></td>
<td></td>
<td>0.69</td>
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Confirmatory Factor Analysis

<table>
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<tr>
<th>Model</th>
<th>$\chi^2$/df</th>
<th>CFI</th>
<th>RMSEA (p)</th>
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<tbody>
<tr>
<td>(1) Canadian co-op ($n = 1731$)</td>
<td>2.72</td>
<td>0.96</td>
<td>0.06 (n.s.)</td>
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<tr>
<td>(2) Canadian non-co-op ($n = 1606$)</td>
<td>3.63</td>
<td>0.96</td>
<td>0.06 (n.s.)</td>
</tr>
<tr>
<td>(3) French co-op ($n = 172$)</td>
<td>0.97</td>
<td>0.99</td>
<td>0.01 (n.s.)</td>
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<tr>
<td>(4) Multi-group model - unconstrained</td>
<td>1.96</td>
<td>0.98</td>
<td>0.03 (n.s.)</td>
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<tr>
<td>(5) Multi-group model - weights constrained</td>
<td>1.90</td>
<td>0.98</td>
<td>0.03 (n.s.)</td>
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</table>

Correlations

<table>
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<tr>
<th>Factor</th>
<th>$a$</th>
<th>AVE</th>
<th>ASV</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
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</thead>
<tbody>
<tr>
<td>(1) Resilience</td>
<td>0.81</td>
<td>0.59</td>
<td>0.31</td>
<td>--</td>
<td></td>
<td></td>
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<tr>
<td>(2) Self-direction</td>
<td>0.80</td>
<td>0.57</td>
<td>0.24</td>
<td>0.61</td>
<td>--</td>
<td></td>
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<tr>
<td>(3) Self-reflection</td>
<td>0.72</td>
<td>0.57</td>
<td>0.20</td>
<td>0.52</td>
<td>0.47</td>
<td>--</td>
</tr>
<tr>
<td>(4) Love of learning</td>
<td>0.89</td>
<td>0.68</td>
<td>0.19</td>
<td>0.49</td>
<td>0.41</td>
<td>0.40</td>
</tr>
</tbody>
</table>
Group Comparisons: Significant Effects

Analysis: MANOVA (factors: GPA, sex, faculty, year, degree)

1. Females report lower resilience and info seeking
2. AHS and science report higher resilience, math and ENG lowest
3. Cohort effect within faculties (dips in third year for ENG and ENV)
4. Co-op report higher resilience and reflection
5. Higher GPA, higher lifelong learning
6. Non-co-op and low GPA = low reflection
Some Thoughts

- Measures better than before, but room to improve
- Clear links between GPA, co-op, and reflection, but why/how?
- Differences between male and female learners’ self-concept
- Faculty differences, particularly in third year (3A & 3B terms), why?
Potential Contribution

- Identifying dimensions of lifelong learning
  - Love to learn for its own sake
  - So actively seek information
  - Don’t give up when things go awry
  - Instead, take a step back to think and re-assess

- Can help tracking effect of programming on lifelong learning

- Measuring graduate attributes – demonstrating value
Discussion/Questions

- What questions do you have? About our approach? About our findings?

- What thoughts do you have about how work like this might contribute to program level outcomes assessment?

- What more can we do, from a qualitative or quantitative perspective to get a better understanding of the concept of lifelong learning and its existence, or development in our students as an outcome for our programs?
Some Questions We Have

- Practical significance of lifelong learning?
  - Literature suggests linked with academic and work performance
  - Is lifelong learning (the mindset) linked with continuing and lifelong education or other behaviours past graduation?

- Effect of co-op on lifelong learning?
  - Role of reflection (e.g. via WatPD?)

- Better measures
  - Peer or TA/instructor evaluations consistent with self-reports?

- External validity
  - Links with curiosity? Use of reflective online portfolios? Learning orientation? Self-direction?
THANK YOU

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