EXPLORING THE INTRINSIC MOTIVATION OF STUDENTS IN A SUSTAINABLE AGRICULTURE TOUR CLASS

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LEARNING CHARACTERISTICS

• External environment will influence internal conditions of the learner

Dewey, 1938

• Motivation – desire to learn
  • Extrinsic or intrinsic
    • Extrinsic – reward and punishment
    • Intrinsic – within and if affected by factors such as self-determination, curiosity, challenge and effort
      • Results in high-quality learning

Deci and Ryan 1985, 2000; Santrock, 2011
FACETS OF LEARNING

• Learning style of participants
  • “the characteristic cognitive, affective, and psychological behaviors that serve as relatively stable indicators of how learners perceive, interact with, and respond to their learning environment”
  DeBello, 1990

• Students have a desire for “real-life” settings
  Mankin et al., 2004

• Experiential learning – allows students to connect formal education with “real world” experiences
  Russell et al., Chapman 1992
TEACHING CHARACTERISTICS

• Teach information in a variety of methods
• Recognize 2 factors that influence learning
  • Stimuli
    • environment
    • emotional
    • sociological
    • physical
    • psychological
• Preference for learning new material

Hoover and Marshall, 1998
ASSESSMENT OF LEARNING

• Assessment – systematic collection of information about student learning
  • Normal behavior of teachers
  • 3 steps of assessment
    1. Goals – what do we want the students to be able to do?
    2. Information – what did they learn and what factors influence learning?
    3. Action – can we use the information to improve student learning?

Walvoord. 2010
ASSESSMENT OF LEARNING

• **Intrinsic Motivation Inventory (IMI)**
  - Comprises questions to determine a person’s desire to learn
  - Ascertain information regarding the intrinsic motivation of learners
  - Utilizes the personal and emotional issues of the learner
    - Interest and enjoyment
    - Perceived confidence
    - Effort-importance
    - Pressure and tension
    - Value and usefulness

Markland and Hardy, 1997; Guay et al., 2000
COURSE DESCRIPTION AND PURPOSE

• Between 10-13 locations are toured per year

• Have conducted the class 5 times
  • Over 140 students

• Students roomed with no more than one other person from their respective university
  • Facilitate inter-peer connections

• Students assigned to groups responsible for introducing each location

• Mandatory informational meetings via Interactive Television
OVERALL COURSE OBJECTIVES

1. Expose students to the process of experiential and problem based learning
2. Allow students to define sustainable agriculture
3. Introduce students to a broad spectrum of agricultural enterprises and business owners/researchers
SPECIFIC COURSE OBJECTIVES

1. Explore attitudes, philosophies, and relationships of production agriculturalists
2. Understand how multiple philosophies of agriculture combine and are used by scientists, marketers, and producers
3. Observe employer characteristics which make their business successful
4. Understand how decision-making at various levels enhances the success of an agricultural enterprise
5. Enhance communication and sharpen leadership skills
6. Prepare students with technical expertise
7. Increase student’s understandings of issues in agriculture
METHODS

• Modified Intrinsic Motivation Inventory Survey Instrument
  • Administered day 1 and day 5
  • Part 1 – Intrinsic Motivation
    • 5 sections – Interest & Enjoyment, Perceived Competence, Effort & Importance, Pressure & Tension, Value & Usefulness
    • 39 questions
    • Likert scale – 1 = not true; 7 = very true
  • Part 2 – Technical & Interpersonal Skills
    • 17 questions; sorted into soft vs hard skills
    • Likert scale 1 = highly skilled; 5 = not skilled
  • Part 3 – Demographic Information
    • 7 questions
METHODS

• Statistics
  • Mixed-model ANOVA used to determine interaction of school and participation
    • Year fixed effect
  • Independent t-tests used to determine differences
  • Correlations among responses evaluated
PERSONAL CHARACTERISTICS OF PARTICIPANTS

**School**

- **MSU**: 2013: 20, 2016: 18
- **NWMSU**: 2013: 16, 2016: 7
- **UCM**: 2013: 4, 2016: 7

**Education Hours**

- **0-29**
  - 2013: 1, 2016: 5
- **30-59**
  - 2013: 6, 2016: 17
- **60-89**
  - 2013: 16, 2016: 19
- **90+**
  - 2013: 7, 2016: 7
PERSONAL CHARACTERISTICS OF PARTICIPANTS

**Gender**

- **Male**
  - 2013: 18
  - 2016: 20

- **Female**
  - 2013: 7
  - 2016: 16

**Age**

- **< 18**: 1 (2013), 1 (2016)
- **> 32**: 0 (2013), 0 (2016)
PERSONAL CHARACTERISTICS OF PARTICIPANTS

Livestock Production

- Yes: 2013 - 18, 2016 - 29
- No: 2013 - 14, 2016 - 11

Grain Production

- Yes: 2013 - 8, 2016 - 20
- No: 2013 - 19, 2016 - 24
STUDENT RESPONSES¹: IMI CONSTRUCTS 2013 & 2016

1Based upon Likert-type scale with 1 = not true at all, 4 = somewhat true, 7 = very true. Data are pooled across year. Similar letters indicate similar means within each constraint (p ≤ 0.05).
STUDENT RESPONSES¹: IMI CONSTRUCTS

Based upon Likert-type scale with 1 = not true at all, 4 = somewhat true, 7 = very true. Data are pooled across year. Similar letters indicate similar means within each variable (p < 0.05).
## STUDENT RESPONSES1: IMI CONSTRUCTS

<table>
<thead>
<tr>
<th>School</th>
<th>Interest &amp; Enjoyment PRE</th>
<th>Interest &amp; Enjoyment POST</th>
<th>Perceived Competence PRE</th>
<th>Perceived Competence POST</th>
<th>Effort &amp; Importance PRE</th>
<th>Effort &amp; Importance POST</th>
<th>Pressure &amp; Tension PRE</th>
<th>Pressure &amp; Tension POST</th>
<th>Value &amp; Usefulness PRE</th>
<th>Value &amp; Usefulness POST</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSU</td>
<td>6.1 b</td>
<td>6.5 a</td>
<td>5.2</td>
<td>5.5</td>
<td>6.1</td>
<td>6.1</td>
<td>2.8</td>
<td>2.1</td>
<td>6.5</td>
<td>6.6</td>
</tr>
<tr>
<td>NWMSU</td>
<td>6.3 a</td>
<td><strong>5.8 b</strong></td>
<td>5.7</td>
<td>5.6</td>
<td>6.0</td>
<td>5.8</td>
<td>2.3</td>
<td>1.8</td>
<td>6.4</td>
<td>6.4</td>
</tr>
<tr>
<td>UCM</td>
<td>6.8 a</td>
<td>6.9 a</td>
<td>6.1</td>
<td>6.4</td>
<td>6.4</td>
<td>6.5</td>
<td>1.8</td>
<td>2.9</td>
<td>6.5</td>
<td>6.9</td>
</tr>
</tbody>
</table>

1Based upon Likert-type scale with 1 = not true at all, 4 = somewhat true, 7 = very true. Data are pooled across year. Similar letters indicate similar means within each column (p ≤ 0.05). **Bold** values indicate differences in PRE and POST scores (p ≤ 0.05).
STUDENT RESPONSES\textsuperscript{1}: PERCEIVED SKILLS

\begin{itemize}
\item Technical:
  - MSU: 3.2
  - NWMSU: 3
  - UCM: 2.9

\item Interpersonal:
  - MSU: 2.0
  - NWMSU: 1.7
  - UCM: 1.7
\end{itemize}

\textsuperscript{1}Based upon Likert type scale 1 = highly skilled, 3 = somewhat skilled and 5 = not skilled. Data are pooled across year and survey time. Similar letters indicate similar means within each skill set (p \leq 0.10).
STUDENT RESPONSES¹: PERCEIVED SKILLS

¹Based upon Likert type scale 1 = highly skilled, 3 = somewhat skilled and 5 = not skilled. Data are pooled across year and survey time. Similar letters indicate similar means within each skill set (p ≤ 0.10).
## IMI Relationship with Personal Characteristics

<table>
<thead>
<tr>
<th>Construct</th>
<th>Gender</th>
<th>Age</th>
<th>Education Level</th>
<th>Livestock Production</th>
<th>Grain Production</th>
<th>Technical Skills</th>
<th>Social Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest &amp; Enjoyment</td>
<td>0.15*</td>
<td>-0.09</td>
<td>0.01</td>
<td>0.00</td>
<td><strong>0.17</strong></td>
<td>-0.11</td>
<td><strong>-0.18</strong></td>
</tr>
<tr>
<td>Perceived Competence</td>
<td>0.08</td>
<td><strong>-0.18</strong></td>
<td>0.00</td>
<td>0.05</td>
<td>0.02</td>
<td><strong>-0.22</strong></td>
<td><strong>-0.35</strong>*</td>
</tr>
<tr>
<td>Effort &amp; Importance</td>
<td>0.04</td>
<td>-0.07</td>
<td>0.09</td>
<td>0.01</td>
<td>0.04</td>
<td>-0.08</td>
<td><strong>-0.31</strong>*</td>
</tr>
<tr>
<td>Pressure &amp; Tension</td>
<td>0.10</td>
<td>0.03</td>
<td>-0.01</td>
<td>0.01</td>
<td>0.03</td>
<td>0.10</td>
<td><strong>0.18</strong></td>
</tr>
<tr>
<td>Value &amp; Usefulness</td>
<td>0.02</td>
<td>-0.02</td>
<td>0.12</td>
<td>0.08</td>
<td>0.03</td>
<td>-0.13</td>
<td><strong>-0.22</strong></td>
</tr>
</tbody>
</table>

*Indicates p ≤ 0.10  
**Indicates p ≤ 0.05  
***Indicates p ≤ 0.01
DISCUSSION

• Teachers need to embrace assessment of courses
• Indication of Intrinsic Motivation by students
  • Enjoyed this class
  • Felt that learning about agriculture was important
  • Put effort into learning
  • Did not feel pressured or tense
  • Thought the class was useful
• Students tended to feel their intrapersonal skills improved
• Intrinsic motivation is linked to learning
• Conclude that students had a high quality learning experience
DEEP THOUGHTS – WHAT I HAVE LEARNED

• Agriculture cannot be your passion, it has to be your obsession
• Successful businesses treat employees with respect
• Sustainable Agriculture cannot be defined – it has too many meanings that differ with stakeholders
• Seeing the joy in students as they learn is a gift