Knowledge gain and student perception of experiential learning activities.

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Introduction

- Background & Setting
  - Hands-on and real life experience is essential to the industry
  - Concept of Experiential Learning (EL) is not new
  - Time and budget consuming

- “The focus of experiential learning is placed on the process of learning and not the product of learning” (UC Davis, 2011).
Introduction

David Kolb’s (1984) experiential learning theory

- Concrete experience (exploring/doing)
- Abstract conceptualization (processing/analyzing)
- Transforming experiences through reflective observation (sharing/reflecting)
- Active experimentation (generalizing/applying)
Objective

To determine the effect of Experiential Learning (EL) on students’ knowledge gain and perception of an EL activity.
Materials & Methods

Research was conducted on four animal science classes in the fall of 2015 (n=233, 61 males and 172 females)

- ANSC 103 Introductory Horse Science
  - Identification, vital signs, bcs, leg wrapping, biomechanics
- ANSC 100 Introduction to Animal Science Labs
  - Vaccination, vital signs
- ANSC 311 Companion Animal Behavior and Training
  - Vital signs
- ANSC 423 Animal Breeding
  - Dairy breeding simulations
## Experiential Learning

<table>
<thead>
<tr>
<th>EL at NMSU</th>
<th>Kolb, 1984</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructor discusses and demonstrates an activity</td>
<td>Abstract conceptualization</td>
</tr>
<tr>
<td>Students actively participate</td>
<td>Active experimentation</td>
</tr>
<tr>
<td></td>
<td><em>concrete experience</em></td>
</tr>
<tr>
<td>Student and instructor lead discussion about the activity</td>
<td>Transforming experiences through reflective observation</td>
</tr>
</tbody>
</table>
Materials & Methods

• Knowledge gain was assessed using pre- and post-tests given before and after an EL laboratory

• Pre/post tests contained 5-10 questions
  – Multiple choice
  – Fill in the blank
  – Short answer (1-2 sentences)
Materials & Methods

Perceptions were assessed using self-reflection

• Post-then-Pre surveys (Likert Scale: 1 (not at all)–5 (very much))
  • Familiarity
    – Student familiarity with technique
  • Satisfaction
    – Satisfaction with opportunity to learn the technique, including likelihood of learning in another setting
  • Importance of Learning
    – How important learning each technique is to the students future
  • Ability to Perform
    – Student ability to use or perform each technique
Please indicate how familiar you are with each of the following techniques related to activities in ANSC 425 laboratory. Please give an estimation of familiarity **BEFORE** and **AFTER** learning about the technique in lab.

<table>
<thead>
<tr>
<th>Familiarity</th>
<th><strong>BEFORE</strong> ANSC 425 Lab</th>
<th><strong>AFTER</strong> ANSC 425 Lab</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not At All → Very Much</td>
<td>Not At All → Very Much</td>
</tr>
<tr>
<td>Support Wrap</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Injury Wrap</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Heat Wrap (Sweat Wrap)</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Cold Wrap (Poultice)</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Hoof Wrap (for abscesses or injury)</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
</tr>
</tbody>
</table>
Materials & Methods

Each lab was categorized by the amount of hands-on activity

- Minimal hands-on (MIN)
  - n=3
- Moderately hands-on (MOD)
  - n=3
- Completely hands-on (COMP)
  - n=2
# Results – MIN, MOD, and COMP

<table>
<thead>
<tr>
<th>Lab</th>
<th>Pre</th>
<th>Post</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIN</td>
<td>50.92\textsuperscript{a,1} ± 26.41</td>
<td>73.45\textsuperscript{b,1} ± 19.59</td>
<td>19.98\textsuperscript{1} ± 26.28</td>
</tr>
<tr>
<td>MOD</td>
<td>23.37\textsuperscript{a,2} ± 22.32</td>
<td>75.32\textsuperscript{b,1} ± 20.38</td>
<td>45.15\textsuperscript{2} ± 31.25</td>
</tr>
<tr>
<td>COMP</td>
<td>31.55\textsuperscript{a,2} ± 25.51</td>
<td>74.27\textsuperscript{b,1} ± 20.51</td>
<td>37.87\textsuperscript{2} ± 28.62</td>
</tr>
</tbody>
</table>

\textsuperscript{a,b} within row: means with different superscripts differ significantly \((P < 0.01)\)

\textsuperscript{1,2} within row: means with different superscripts differ significantly \((P < 0.03)\)
Results – All topics combined

All pre and post test scores. Results show significant increase between pre and post test ($P < 0.0001$).

<table>
<thead>
<tr>
<th></th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>40.27 ± 27.57</td>
<td>72.40 ± 19.22</td>
</tr>
</tbody>
</table>
## Results - Perceptions

<table>
<thead>
<tr>
<th>Category</th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Familiarity</td>
<td>2.51 ± 1.45</td>
<td>4.41 ± 0.75</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>2.67 ± 1.44</td>
<td>4.58 ± 0.67</td>
</tr>
<tr>
<td>Ability to Perform</td>
<td>2.41 ± 1.48</td>
<td>4.35 ± 0.86</td>
</tr>
<tr>
<td>Importance of Learning</td>
<td>3.27 ± 1.44</td>
<td>4.71 ± 0.59</td>
</tr>
</tbody>
</table>

All categories significantly increased \( (P < 0.0001) \)
Discussion

- Findings indicate that students gain knowledge effectively through EL.
- Students perceive EL to be beneficial to their future.
- EL is an important component to higher education, even amid budget cuts and reductions.
Limitations
Questions?