Changes in Attitude Towards Science Among College Students in a General Education Life Science Course

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Introduction/Need for Research

- General Science Fulfillment
- Students negative attitudes toward science = resistance to further science knowledge (Goglin & Swarts, 1992)
- Students attitudes & beliefs influenced by class experience (Adams, et al., 2005)
- Must discover ways to improve student experiences
- Increased population – complex societal challenges (Adenoro, Baker, Stedman & Weeks, 2016)
- Citizens must understand complex challenges
Literature Review

✘ Use of contextualized curriculum - comparable to science-based curriculum and shows promise in teaching students to think contextually (Curry et al., 2012)

✘ Agriscience students – better prepared for standardized science assessments (Chiasson & Burnett, 2001)

✘ Little is known about college students’ attitudes when agriculture, food, natural resources and medicine are used as a context for science instruction
Theoretical Framework

Cognitive Dissonance Theory (Festinger, 1957)
Conceptual Framework

Cognitive Dissonance Theory (Festinger, 1957)
Research Objectives

Describe attitudes towards science among non-science majors enrolled in a life science course before and after the course.

Describe specific characteristics of the life science course influencing a change in attitude towards science among non-science majors.
Methods

✘ Sampling Procedure – Census of university science class for non-science majors
  ✘ Students’ Attitude Toward Science (SATS) Survey - (pre/post)
  ✘ Used in other studies – valid & reliable

✘ White – 88.5%
✘ Male – 55.6%
✘ Freshman – 68.9%
Methods

✗ Six Constructs
✗ Attitude, Motivation, Utility, Self-Efficacy, Beliefs, & Intentions
✗ Cronbach’s alpha - > .70
✗ Face Validity – panel of experts

✗ Seven Open-Ended Questions
✗ Specific topics & components that influenced their attitude change
Methods: Data Collection

- Pre-test SATS survey (n=182)
- Post-test SATS survey (n=148)
- Open Ended Questions (n=126)
- SPSS for Analysis of descriptive statistics and pre & post tests
**Results – Objective #1**

Describe attitudes towards science among non-science majors enrolled in a life science course before and after the course.

<table>
<thead>
<tr>
<th>Variable</th>
<th>On a 1-6 scale</th>
<th>On a 1-6 scale</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>M=3.24, SD=.93</td>
<td>M=3.43, SD=1.06</td>
<td>Δ= +0.19</td>
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<tr>
<td>Motivation</td>
<td>M=1.75, SD=.59</td>
<td>M=2.09, SD=.69</td>
<td>Δ= +0.34</td>
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<tr>
<td>Utility</td>
<td>M=2.55, SD=.75</td>
<td>M=2.57, SD=.91</td>
<td>Δ= +0.02</td>
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<tr>
<td>Self-Efficacy</td>
<td>M=4.61, SD=1.00</td>
<td>M=4.52, SD=1.20</td>
<td>Δ= -0.09</td>
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<tr>
<td>Beliefs</td>
<td>M=3.53, SD=.97</td>
<td>M=3.38, SD=1.13</td>
<td>Δ= -0.15</td>
</tr>
<tr>
<td>Intent</td>
<td>M=4.14, SD=1.21</td>
<td>M=4.23, SD=1.35</td>
<td>Δ= +0.09</td>
</tr>
</tbody>
</table>
Results – Objective #2

Describe specific characteristics of the life science course influencing a change in attitude towards science among non-science majors

- 83.6% - incorporating agriculture, food, natural resources and medicine into the course contributed to their change in perception of science

- Specific topics
  - GMO’s – 45.7%
  - World Hunger – 32.8%
  - Cancer – 25.9%
  - Climate Change – 19.8%

- 78.9% - use of societal issues influenced how they thought about other science topics
Implications/Recommendations

✘ Findings suggest that incorporating societal issues into science curriculum, specifically agriculture, food, natural resources and medicine can create some cognitive dissonance.

✘ How students’ attitudes towards science and society’s complex scientific problems can be positively changed (secondary and post-secondary).

✘ Impacts of AFNR complex issues on students’ career interests.
THANK YOU

Any questions?