Incorporating Media in Science Courses Enhances Learning

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Incorporating Media in Science Courses Enhances Learning

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Saint Leo University, 30 miles north of Tampa, Florida

- Founded in 1889
- A Catholic, Benedictine Tradition
- Liberal Arts Emphasis
- 2000 Student Campus
- 12000 students via Distance Learning
- 35 Year History of Instruction on Military Bases
- Honors Program (NCHC member)
- Writing Intensive Curriculum/ Learning Centered
HON-251 “Scientific Revolutions”

- Students read and discuss important works that have altered the course of scientific thinking.
- Books, Essays, Journals, and Reports by scientific pathfinders serve as the primary course material, although some laboratory work may be required.
- Contemporary writings and classic works from the history of science are examined.
- Of central concern is an investigation of the purposes, procedures and accomplishments of the scientific enterprise.
- Class size 24 max. (honors students)
Benedictine Values:

- Responsible Stewardship
- Respect
- Integrity
- Excellence
- Community
- Personal Development
Campus Initiatives

- Writing Across the Curriculum:
  All courses to incorporate sustentative writing and reading assignments with regular constructive feedback

- Catholic Social Justice:
  Examination of “ownership”, “forces of change”, “haves and have not's”
  And other sub themes related to Science/Humanity nexus
Course Text:

- The Sciences, an Integrated Approach
- Trefil and Hazen (2007) Wiley

- Intended for Non-Science Majors
- Linked to a web site with numerous resources
- Readings and case studies incorporated
Outside Reading

- Silent Spring by Rachel Carson
- The Dragons of Eden by Carl Sagan
- A Brief History of Time by Stephen Hawking
In Groups of 3-5: Suggest Alternate Readings

- What field(s) of science would you expand?
- Which author(s)/scientists would you read from?
- Contemporary or Historic?
- How would you incorporate Cultural Diversity?
Learning and Assessment

- Student led chapter discussions of readings
- Outline the theme/key points
- Discussion of Discipline(s) applied in media
- Research the author/chronology
- Writing: Compare/Contrast to other media
Additional Media

- An Inconvenient Truth produced by Al Core
- GATTACA
- Various Web Sites, short video clips
  - Short readings
  - Presentations
  - Case studies
  - Alternate readings (varies by instructor)
Group “A”

% score on common final exam

P$<0.05$

- Media

+ Media
I have become confident because of this course

Student Response

Percent of Responses

W/ Media
No Media

Student Response

SA
A
N
D
SD

Percent of Responses

SA
A
N
D
SD

Student Response
I gained an excellent understanding of the concepts in this field.
I gained significant knowledge of the subject matter

Student Responses

<table>
<thead>
<tr>
<th>Percent of Responses</th>
<th>W/Media</th>
<th>No Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>SA</td>
<td></td>
<td></td>
</tr>
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<td>D</td>
<td></td>
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<tr>
<td>SD</td>
<td></td>
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</tbody>
</table>

Legend:
- **W/ Media**
- **No Media**
I learned something valuable from this course

Student Response

Percent of Responses

W/Media
No Media

Student Response

SA
A
N
D
SD
I learned to analyze and critically evaluate ideas, arguments, and points of view.
I learned to apply the concepts of this course to solve problems and make decisions.
The course challenged me to perform to the best of my abilities

Student Response

<table>
<thead>
<tr>
<th>Student Response</th>
<th>W/ Media</th>
<th>No Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>SA</td>
<td>35</td>
<td>20</td>
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<tr>
<td>A</td>
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</tr>
<tr>
<td>N</td>
<td>15</td>
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<td>D</td>
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<td>5</td>
</tr>
<tr>
<td>SD</td>
<td>10</td>
<td>15</td>
</tr>
</tbody>
</table>
Group “O”

Final Exam Score

W/ Media

No Media

p = .045
I have become confident because of this course

Percent of Responses

Student Response

SA
A
N
D
SD

W/Media
No Media
I gained an excellent understanding of the concepts in this field.
I gained significant knowledge of the subject matter

Percent of Responses

W/ Media
No Media

Student Responses
I learned something valuable from this course

Percent of Responses

Student Response

W/Media
No Media
I learned to analyze and critically evaluate ideas, arguments, and points of view
I learned to apply the concepts of this course to solve problems and make decisions.
The course challenged me to perform to the best of my abilities.
Observations:

- In the two sections which utilized external media, students who responded (SA, A) that their: confidence, understanding, comprehension, ability to analyze, think critically and solve problems increased

- Increased knowledge of science (SA, A) appears less directly influenced yet final exam scores are increased significantly
Conclusions

- Learning as measure subjectively and objectively increases in science courses when media related to content is incorporated.

- Most Students perceive an increase in knowledge and ability (applications and critical thinking).

- Most Students feel challenged either way and most but not all see a value in media.
What to do next:

- Reflective Journaling

- Embedded Assessment
  - 600 word essay: Pick 5 scientists to form a panel to study global climate trends. Explain what field each needs to represent and name 2 alternate choices (past or present)

- Suggestions?