Incorporating Media in Science Courses Enhances Learning

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Incorporating Media in Science Courses Enhances Learning

Thomas Arnold (Saint Leo University): thomas.arnold03@saintleo.edu
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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
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
I gained an excellent understanding of the concepts in this field.
I gained significant knowledge of the subject matter

Student Responses

Percent of Responses

W/ Media
No Media

SA
A
N
D
SD

Student Responses
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
Group “O”

The chart shows the final exam scores of two groups: Group "W/ Media" and Group "No Media". The scores range from 74 to 86 with a significance level of p = .045.
I have become confident because of this course
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>Student Responses</th>
<th>Percent of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>SA</td>
<td>W/Media (45%)</td>
</tr>
<tr>
<td>A</td>
<td>No Media (48%)</td>
</tr>
<tr>
<td>N</td>
<td>W/ Media (10%)</td>
</tr>
<tr>
<td>D</td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td></td>
</tr>
</tbody>
</table>

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

Percent of Responses

W/Media
No Media

SA
A
N
D
SD

Student Response

Percent of Responses

W/Media
No Media
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.
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?