Media Production as a Tool for Climate Change Education

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An example...
Overview

• Why video literacy
• Why climate change education
• Challenges: affective, social, and mental models
• Video production to meet challenges
• Video to reach beyond the classroom
Video as a key 21st century literacy

• Literacy:
  • ‘comprehensive set of skills needed by individuals to learn, work, socially interact and cope with the needs of everyday life’

Mioduser et al. 2008
Video as a key 21st century literacy

• Low cost and little technological expertise
• Increasingly dominant form of communication
• >27% of American teens have filmed and uploaded video (Lenhart 2012)
Video as a key 21st century literacy

- “Reading” vs. “writing” video
- Process? Skills? Knowledge?
Media piece

Post-production

Production

Pre-production
- Scientific Research
- Create media assets
- Pair assets with script
- Review/synthesis
- Write script
- Plan production
Throughout the process:

- Learning through:
  - Teaching others
  - Engagement
  - Collaboration
  - Metaphors and storytelling
Did you say ‘metaphors’ and ‘storytelling’?

- Metaphor for the physical basis of the greenhouse effect?
Why media production and climate change education?

- Let’s start with a simple experiment: two headlines describing science in the news
1. Human microbiome studies should include wider diversity of populations, experts warn.

2. The West Antarctic Ice Sheet has passed the point of no return and is undergoing collapse.

How does each statement make you feel?

Affective response?
<table>
<thead>
<tr>
<th>Rational/Analytic</th>
<th>Emotional/Affective</th>
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<tbody>
<tr>
<td>Logical</td>
<td>Intuitive</td>
</tr>
<tr>
<td>Abstract</td>
<td>Vivid</td>
</tr>
<tr>
<td>– encodes reality in abstract symbols, words, numbers</td>
<td>– encodes reality in concrete images and narratives</td>
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<tr>
<td>– rules and algorithms need to be learned</td>
<td>– operates automatically and without any training</td>
</tr>
<tr>
<td>– system needs to be cued; does not operate automatically</td>
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Marx, 2012
Affective responses can even drive analytic processing

- When affective and analytic are in conflict, affective almost always trumps

- **motivated reasoning**: decision-making and beliefs that are driven by affective response (need to reduce cognitive dissonance)

- Delivering more information doesn’t solve the problem
People who believe cc is not happening estimate that 43% of the public agrees with them.

People who believe human-induced cc is occurring estimate that only 40% of the public agrees with them.
Both groups underestimate climate change belief

You walk into a classroom full of your peers.

Would you want to start talking about something that you think most of them disagree with?
Lessons from cognitive sciences

- Climate change education challenges include
  - Affective responses that may help or hinder student learning
  - Information delivery/science comprehension is not enough
  - Social dissonance/learning matters
Media production to the rescue?

• Affective processing: narrative, visual images, elicit visceral response

• Collaboration, reflection, active engagement with material - social learning

• Learning through educating others

• Empowering students to contribute to ‘closing the gap’

• >> Potential for deeper learning and robust mental models??
A bridge between formal and informal education

- In-class students (formal)
- Student peers (informal)
- Direct interactions with broader community (family, friends) (informal)
- Online forums (formal/informal)
- Face-to-face events (formal/informal)

Societal discourse and informal education (95% of science learning)
“The video project was even more well-received than the World Climate experience.

“Many said they really loved the project and that it had been really eye-opening in terms of helping them learn how to communicate science ideas, and climate change in particular, to other people, especially those not inclined to believe in climate change to begin with.

“For the majority, the act of making the video had also increased their desire to get involved in climate change action.”
Audience responses/learning outcomes

- Videos screened live and online
- 114 participants (~90% students; 10% aged 30 - >60 years)

Impact compared to professionally-produced pieces?

- More Impact
- Same Impact

91%
Are you more concerned about climate change now than before watching these videos?

Did these videos interest you more about climate change?

How much more likely are you to seek out information about climate change after watching these videos?
• “I feel that they are unbiased and the students are not trying to persuade us for monetary gain or popularity they are just interested in getting the information out there.”

• “The hard work and research these kids did in order to learn about the subject they were interested in and bring attention to the public with it was very inspirational.”
Audience learning outcomes

• Belief that climate change is happening (83% >> 93%) and caused mostly by human activities (5% >> 52%)

• Identification of CO$_2$ as a greenhouse gas (67% >> 90%)

• Understanding that CO$_2$ emissions accumulate in the atmosphere and in terrestrial and marine sinks (27% >> 43%)

• Identification of key climate change impacts, such as rising sea levels, extreme weather, species extinctions (51% >> 81%)
Climate Education in an Age of Media

With support from NASA's Innovations in Climate Education (NICE) program, we are developing approaches to bring student media production into climate change education in ways that are engaging, empowering, and can be readily adopted in a wide range of instructional environments.

We have found that student media-making can be used to overcome many of the challenges that climate change education presents and is an excellent way to bring active, social, and affective learning to one of the most important and most complex problems facing human society today.

Learn more about:

- CAM's approach to engaging learners with climate change science through media production
- Examples of CAM in action with high school, undergraduate, and graduate students
- How to bring CAM into your classroom
- About us
Examples of CAM Resources

• PSA projects
• Video mash-up projects (little class time)
• Person-on-the-street (POS) interviews
• Animation projects
• Mock trailers, film essays, and music videos
PSA Projects

- Deliver a message and compel behavior change
- Communicate science to non-scientists
- Use storytelling, metaphor, emotion
- Effective for reaching beyond the classroom, service learning projects, culminating projects
Video mash-ups

• Research, write narration, find/create visual assets, edit into a coherent piece

• Minimize production time (no filming needed)

• Can be completed as a homework assignment

• Information-rich

http://vimeo.com/81563888
Person-on-the-street

- Great way to expose and address misconceptions
- E.g., debunk false consensus effect and pluralistic ignorance

http://youtu.be/gCWezXJ22dU
Percentage of climate change scientists who believe human-induced climate change is occurring (Cook et al. 2013) 97%

Perceived percentage of climate change scientists who believe human-induced climate change is occurring (Cook et al. 2013) 55%

Percentage of public who believe human-induced climate change is occurring (Leviston et al. 2012) 50%

Perceived percentage of public who believe human-induced climate change is occurring (Australia) (Leviston et al. 2012) 34%
Animation

- Abstract concepts
- Dynamic systems
- Information-rich
- Range of technologies (paper-mation to computer animation)

http://youtu.be/qhaPrUS97Ws
https://vimeo.com/57078899
An invitation

• Media production:
  • a tool to engage your students in cc content
  • empower them to engage others
  • a key literacy

• Leverage CAM tools (and help us make them better!)
Thanks
Questions?