# DESIGNING AND USING VIDEOS IN UNDERGRADUATE GEOSCIENCE EDUCATION -AWORKSHOP AND RESOURCE WEBSITE REVIEW

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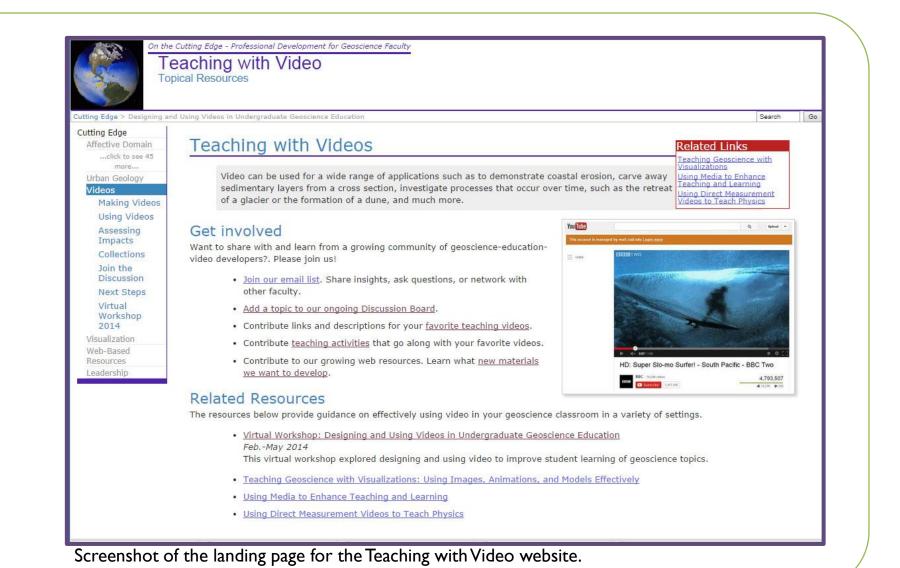
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## WEBSITE: Teaching with Video

More than 15 pages of useful tips and best practices in geoscience-education video design and use.



### Spring 2014 Virtual Workshop

24 participants collaboratively addressing challenges in making video, using video, and assessing impacts.

### **Workshop format:**

2-hr synchronous online sessions Feb. 7, Mar. 7, April 4, and May 2, 2014. (There was additional assigned work completed between sessions.)

### **Products of the workshop:**

- Collections of recommended videos and video-related teaching
- Website resources to guide professors using video as well as those developing video on how to handle common challenges and meet education goals.

Results 1 - 10 of 16 matches

and properties of tsunamis.

Screenshot of the Assessing Impacts web page.

Comparison of Two Hurricanes

David Kobilka, Central Lakes College-Brainerd

Air-sea Interactions: Activities in Oceanography

Steve LaDochy, California State University, Los Angeles

This online set of activities help students learn

properties of ocean waves, wind-wave relationship

Growing community of video developers.



### **Making Video**

- Storyboarding
- CopyrightsAccessibility
- Technology

lming your video Prepare your cameras Prepare your actors hoosing the right equipment ning can be done with a wide range of video cameras including: Google Glass, Cell nes, Unmanned Aerial Vehicles, Underwater Vehicles (manned or unmanned), Built-in Webcams or USB Video Cameras, point-and-shoot neras (such as GoPro Hero 1/2/3), Digital Single-Lens Reflex (DSLRs), and Video Recorders (camcorders). Remember — each of these apturing audio

cience Education It is not an exhaustive list, but rather a brief review/summary with some recommendations and tips for using various

t from the speaker. We are used to tuning out ambient noise, but if you nment. And it gets amplified in sound recordings that don't discriminate

Screenshot of the Technology web page.

Screenshot of the Storyboard web page.

I mics are also good for indoor recording

oose the best options for filming, editing and producing your videos

Principles for Good Educational Design What makes a good educational video?

Jump down to: Telling Your Story | Additional Resources

Before You Begin Don't jump headlong into a video project; take time at the beginning for a little

lanning and save yourself time overall. Things to think about: Set realistic expectations

liewers are more forgiving of live speakers than of video. To create a short lecture

hat will be out there in perpetuity requires more perfection than making a classroom

e sure you have sufficient time to prepare and produce your video. Based on eedback from our developer community, the smallest amount of time required is 30 ninutes of work for every 1 minute of final production video. Depending on the quality of video and the effort put into animations, multimedia, and interaction, there s no limit on the maximum time you can put in for a single minute of video. Decide shead of time how much time you have, and be prepared to produce a video whose quality matches that time. Remember: Editing is endless. You can always revisit and mprove your videos, especially as you use them and get student input.

How is your video going to be used? Answer these questions first to ensure you

- Who is your target audience? Is it stand alone or part of a series?
- · Will people view it multiple times or just once?
- Telling your story What story are you telling? What topic are you teaching? How will you tell it most

Connect to your learning objectives

 What is the takeaway? What are your learning objectives? . How will you relate this content to social and global issues? (Make it

Screenshot of the Designing Video web page.

### How to use "storyboarding" or equivalent script-writing processes to design effective videos

Jump down to: Benefits | How-to | Examples | Using Templates | Additional Resources oryboards are graphic organizers in the form of illustrations or images displayed sequence for the purpose of pre-visualizing a filmed video, animation, motion graph

Some things are better seen & not heard

story sequence with accompanying images, video sequences (described at this stage with still images), audio and narration (provided at this stage as text). For example, in the film "Argo", the characters use visual storyboards to fake evidence that they are in the process of producing a movie (while in reality they are attempting to free

storyboard is created prior to video production, and serves to visualize the main

elements of the video in sequence, thereby organizing the story and scenes and plifying overall editing and planning. In some ways, it is similar to an outline for written paper, in that it allows the narrative to be organized and thought through

ahead of time. Knowing ahead of time all the scenes you need to film allows for more efficient planning, resource gathering, and set/location A storyboard is often based on sketches that are intended to depict what will be shown on screen. In lieu of sketches, storyboards could contain

photographs, screen captures, or text descriptions. If only text is used, the storyboard becomes something more like an annotated script, where the narration text is placed next to notes about the various visual and audio clips that will be associated with it. Examples: Storyboard example from Ander Sundell: <u>Storyboard Sketch-Up</u> (Acrobat (PDF) 319kB Apr4 14) Annotated script example from Katryn Wiese: Annotated Script (Acrobat (PDF) 110kB Sep12 14)

Making Video Accessible to All Students What is ADA compliance for multimedia in teaching? What is Required? Jump down to: Best Practices | Resources | Examples | References Multimedia accessibility means ensuring that people with any disability type—including motor, auditory, cognitive, seizure/n risual impairments—are able to use your multimedia content. More specifically, your content should be <u>perceivable, operable, i</u> Inclusive Design for Learning As educators, we want to focus on *Inclusive Design for Learning* — providing the best teaching and learning experiences for all students. When developing video, the four

key areas of accessibility we need to remember include: · Video Player: Ensure that a person who requires keyboard navigation of an assistive device can navigate the window where the video plays (that · Captions: Ensure that the audio parts of your video appear as text at the appropriate time and give access to people who are hearing impaired or deaf. Note: captions, subtitles, and titles are different. Captions refer to a specific type of technology and format, not just any words on the . Audio Description: Ensure that you have a description of all a video's

visual elements, giving access to people who are blind or visually . Color Use: Ensure that information distinguished by color is also distinguishable without color. For example, by weight, symbols, etc. This is particularly an issue with graphs and data visualizations in science! ach institution may have different requirements and policies. We recommend speaking to your campus office of disability ser equivalent) to determine what your local requirements are and what services are available to support you. Also keep in mind that if you are posting your videos online, you should be thinking about the accessibility of the website or won't matter if the video meets accessibility quidelines if your students can't get to it in the first place!

Best practices · ADA Online Learning: Creating Accessible Videos for your website — Gives information on best practices, various of each type of compliance, and examples. How to make Multimedia Compliant — Information on making multimedia compliant with Section 508 federal reg

· Universal Design for Learning — introduces Universal Design for Learning, a flexible approach to teaching that "what, how and why" of learning, and can be customized for individual needs. Screenshot of the Accessibility web page.

#### opyright and Fair Use Some guidelines for navigating this daunting topic. Jump down to: Fair Use | Creative Commons | Public Domain | Google Earth/Maps | FAQs and tips | Additional Resources

sing copyrighted works

en if a work is copyrighted, you may still be able to use it:

A quick warning about the contents of this page: this page of quidelines is not a legal review. It is meant as advice only and you hould consult with an attorney if you have concerns about a copyrighted work. Most importantly, it's a court of law that decides i mething is fair use or copyright infringement and their interpretation, which means: you use something without permission that you believe is fair use, you can still be sued. However, assuming a judge agrees with you that 's Fair Use, and you win in copyright court, you can collect attorney fees from the loser. Alternatively, if someone takes something from our website that you've incorrectly or incompletely attributed or received permission for, they can point to you as the source, and you will here are risks to everything. Use all copyrighted work at your own risk.

ight in the classroom kt, and images in the classroom or behind password protection are usually fine (as long as you aren't infringing on textbook hts; this means you are not copying the textbook in your class). For example, you can use copyrighted images in your PowerPoints and andouts, and in your learning management system. You can show videos in class. images that are publicly available online require you to follow copyright and Fair Use rules.

Learn more about the TEACH Act » everything you find online is copyrighted and unavailable, unless it says otherwise.

1. Find out who owns the copyright and then ask permission 2. Make your own images (that don't infringe on original material) Data are not copyrightable, so you can always make your own graphs and figures! 3. Use without permission as long as your use meets the legalities of Fair Use

air Use is a defense against a claim of copyright infringement. If your use qualifies as a fair use, then it would not be considered an illegal infringement and can be done without permission from the copyright owner. ir Use means that your use doesn't replace the purpose, nature, or effect of the the original work. (The amount you use of the original work can impact all three of these, together, these are the 4 standards against which you should measure your use to ecide if it's fair use: purpose, nature, effect, and amount.)

. What is the purpose and character of the use? If your use achieves the same purpose or has the same character, it 2. What is the nature the original work? » If your use has the same nature, it may not be fair use. For example, if

you use someone else's recipe as a recipe, it's probably not fair use. If

Screenshot of the Copyrights web page.

## **Using Video**

- **Strategies**
- Collections

Jsing Videos in Geoscience Education

Jump down to: Using shared resources | Flipping a classroom | Resources addition to the following information on the variety of ways to use video in geoscience video-based teaching activities which shares examples, reviews design principles specifical video-based teaching strategies.

ere are a variety of ways in which instructors choose to use video in their classes includin

 Supplementing lecture (homework or in-class assignment) · Providing virtual field experiences (for online classes or absent/disabled face-to-face

· Documenting demonstrations (for online classes or absent face-to-face students ore repetition during lab/activities depending on Reviewing activity and instrument use instructions (such as for labs)

· Predicting natural behavior (for lab or classroom activities - e.g. watch one part of a demonstration, then predict what will Using videos does not require you to make your own. There are a number of shared video resources available across a multitude of websites see our Video Collection for a list of shared video resources recommended by our community members.

Some Benefits of Using Video Increases student control of learning

Helps students prepare for an upcoming class.

Helps build upon concepts in more depth or expand on topics than what were discussed in class to take ideas further. An after-class assignment can be used as a post-class assessment of additional content or graphics that were not covered in Helps students review concepts for exams. Students who missed class may have video resources to

understand content that they missed.



Video Suspect Must setting in a cylinder of visiter 
Video Irea (to Japanes com/kg Tu/Volf Victor)

. Allows students to come back to a topic after they have had time to think about what they learned in class.

 Course Management Systems (Blackboard, Moodle) can keep track of when and how long students spend watching Screenshot of the Using Video web page.

Strategies for developing new activities Water Planet - Worksheet The following checklist/summary is taken almost exclusively from e-Learning and the Science of Instruction: Proven Guidelines for the consumers and designers of multimedia learning, by Ruth Colvin Clark and Richard E. Mayer, 3rd edition (2011). Which is the biggest ocean? CIRCLE: Arctic | Atlantic | Indian | Most of the notes are direct quotes/excerpts. ▶ Show checklist/summary Getting started Creating a video-centered activity does not have to be difficult. Here are some suggestions for places to begin: · Individual assignments where students have to view a video and then: he shallowest ocean? CIRCLE: Arctic | Atlantic | Indian | Pacific he deepest ocean? CIRCLE: Arctic | Atlantic | Indian | Pacific Answer a series of directed questions (multiple choice, shortanswer, free form) Write a summary Write a list of questions Write a list of observations Discuss the above work in groups rivers | glaciers | sea ice | groundwater | ocean crust cracks | volcanoes is the water in the oceans come from? (DC/URCED) (Imosphere | subduction zones | rivers | glaciers | sea sce | groundwater | ocean crust cracks Example: <u>Pinatubo Volcano Video Worksheet</u> for use with the NOVA Video In the Path of a Killer Volcano

check understanding mid video · Written assessments for all animations (as used by Pearson - MasteringOceanography) . Group projects, where students have to discuss the implication of what they have seen and make predictions as to the outcome Activity templates Scott Brande developed this template (right) to connect increasingly higher order hinking skills with particular videos. This allows a single video to be used at multiple stages in a student's educational journey. An empty template with three video examples is available here as a downloadable Microsoft Excel spreadsheet:

Classroom response questions (iClickers or video-embedded quizzes) to

 Video Activity Thinking Skills Matrix (Excel 2007 (.xlsx) 24kB May2 14) References BOOK: e-Learning and the Science of Instruction - Proven Guidelines for the consumers and designers of multimedia learning -Ruth Colvin Clark and Richard E. Mayer - 3rd edition (2011) . TedEd - Developing and deploying activity sheets/questions around

particular video content A template for mapping teaching activities with a particular video and particular set of thinking skills. Developed by Scott Brande. View downloadab Bloom's Taxonomy Learning Objectives and References

Screenshot of the Developing Effective Video-Based Teaching Activities web page.

### Video Catalog

during an earthquake.

This video reference collection was begun as part of the 2014 virtual workshop on <u>Designing and</u> Ising Videos in Undergraduate Geoscience Education. The purpose of the catalog is to pull together inks to resources from all over the web; we are not hosting videos here. If you have a favorite educational video you made or use, and you'd be willing to share the link, please tell us about it!

Interested in learning how to make a video of your own? Check out our collection of how-to

Submit a Video to the Catalog » Results 1 - 10 of 14 matches Alaskan Way Viaduct - Earthquake Simulation Simulation what would happen in downtown Seattle

Subject: Environmental Science: Natural Hazards: Earthquakes Duration: 6-10 minutes Capturing time lapse images on cellphone The process of sedimentation of suspended mud in a graduated cylinder was captured as a series of time lapse images using the camera and software systems on an A experimental setup, and image capture software and memory

the follow up video, I provide instructions for assembling the t file, and discuss opportunities for active learning using the sed Duration: 2-5 minutes

and animation he uses

How do we know we are being effective

**Assessing Impacts** 

with our video use and design? Assessing the impacts video in Geoscience education

Screenshot of the Collections web pages

Submit a Teaching Activity »

Refine the Results?

Subject: Geoscience

3 matches General/Other

Oceanography 2 matches

Paleontology 1 match

Geology 9 matches

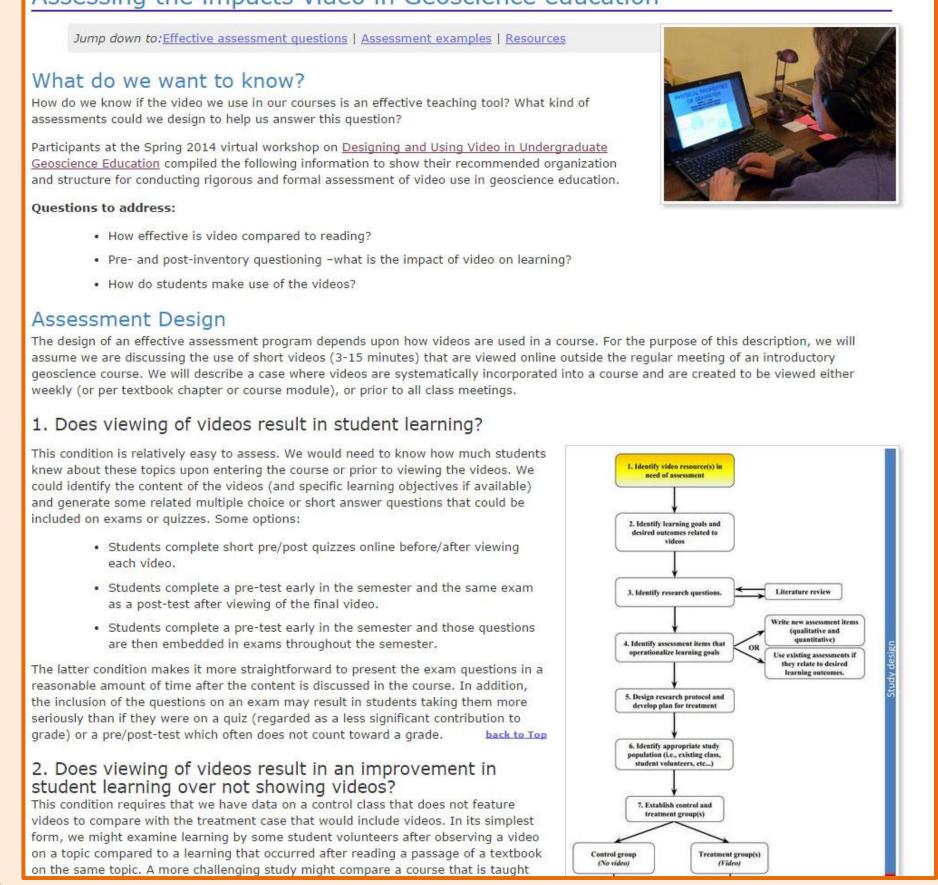
Atmospheric Science 4 matches

Lunar and Planetary Science 2 matches

This collection of video-based activities was begun as part of the 2014 virtual workshop on <u>Designing</u>

In this activity students synthesize ideas from lecture, reading, and viewing two PBS NOVA videos

and Using Videos in Undergraduate Geoscience Education. If you have a favorite activity that involves



# **Building Our Community**

### **JOIN US!**

- Join our email list
- Add to our discussion board
- Contribute activities and videos

#### NEXT STEPS for our growing community For community members interested in contributing to the expansion of our community

reach, resources, and efforts, this list reviews some wish list items that stemmed from

the Spring 2014 Virtual Workshop on Designing and Using Video in Geoscience Education. As all resources and efforts from this group are developed and maintained BY our community, we are hopeful that new and existing members will continue to actively contribute. We need you!

 Join our email list Add a topic to our ongoing Discussion Board.

· If you have content you'd like to contribute to our website, contact Katryn Wiese: katryn.wiese@mail.ccsf.edu

Expanding our Shared Resources

Contribute to our video and video-activity collections: Contribute links and descriptions for your <u>favorite teaching videos</u>

· Contribute teaching activities that go along with your favorite videos. Develop new open-source shared video re

 Fundamental physical phenom · Common misconceptions.

Help us expand and improve on our web p Show Learn more about what new resource ▶ Show Learn more about what new resour ▶ Show Learn more about what new resource

Join the Discussion



Phylum Cnidaria (Jellyfish, Corals, & Sea Anemones) in Action

Videos of 2 taxa of jellyfish, 2 taxa of coral, & 1 sea anemone (that moved only with the current), plus still shots of coral tanks in natural light & U

Screenshot of one of the videos uploaded by a participant to our shared collections

Looking for collaboration on a current project? Want some editors on one of your videos? Need advice on technology, design, or more from a community of developers? Reach out! Join our email list. Share insights, ask questions, or network with other faculty. (This link will also provide access for list members to the email list archives and allow you to unsubscribe.) . Contribute a new topic to our DISCUSSION BOARD below. Teaching with Video Notify me of new posts in this threadspools Example of predictive video used in an Oceanography Seems like there are a number of participants Al Trujillo Jan, 18th Katryn Wiese Jan, 30th

Using existing videos Laura Guertin Jan, 18th

Existing online video resources combined with Katryn Wiese Jan, 30th

Screenshot of the Discussion web page.



Access the website using this QR code or go to: http://serc.carleton.edu/NAGTWorkshops/video/