



Interactive learning modules for climate change education

Laurie Houston (laurie.houston@oregonstate.edu) OSU and Jianhong Mu OSU

REACCH researchers on the economics and social research objective team are working with Oregon State University (OSU) Ecampus to deliver climate change information through flexible online learning modules. The goal is to help individuals understand the physical facts of climate change, the potential impacts, and possible adaptation and mitigation strategies from an economic and policy perspective. One learning module has already been developed with software called Pachyderm. Pachyderm is a multimedia-authoring software tool that allows for the incorporation of audio, video, text, and images into presentations. The module we created,

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The climate change learning module described here, as well as the additional modules currently being developed, provide educators, the general public, and farmers with an easily accessible opportunity to learn about climate change and what it means for the PNW. The modules are being designed to highlight impacts for the PNW, draw attention to mitigation practices that farmers and others can partake in, and explain public carbon policies such as carbon taxes and cap-and-trade programs.

itled “Economics of Climate Change,” provides an overview of climate science and the role economics can play in climate change. It consists of 10 templates with dozens of videos that contain summary information about global and regional impacts of climate change on natural resources such as water, oceans, forests, and agriculture, as well as potential economic impacts. It also includes information on the physical science of climate change, mitigation and adaptation strategies and practices, and key vulnerabilities for the Pacific Northwest (PNW).

One advantage of using Pachyderm is that it allows the user to obtain information in a nonlinear format, based on his or her interests, and the videos and pictures create an interactive learning environment. Take the opening screen of this module as an example (Figure 1). It presents the course objectives on the left and has 10

nodes on the dial to the right. Users can mouse over each node to get a description of the topics covered and choose which they are most interested in learning about. Then, through videos and short text summaries, they can learn about greenhouse gas accumulation in the atmosphere, or the impacts of a warming globe, or the role economics can play in helping society mitigate and adapt to climate change. The order in which order they choose to review the material doesn't particularly matter.

Another advantage of Pachyderm is the variety of templates and formats it offers for presenting information. For example, in Figure 2, the user sees a video in the center of the screen with a few lines of text above it. Only a portion of the text can be seen, and additional text can be viewed by scrolling. There are also links within the text to reports that can be viewed for more detailed information on a particular topic. Six icons—three on either side of the video—indicate more topics. When the user clicks one of these icons, the video in the center changes to one related to the topic listed, and the text above the video changes accordingly. In each template, users can choose topics they want to learn about in any order they prefer, and information is presented in visual, audio, and text format, to accommodate a variety of learning styles.



Figure 1. The opening screen of the “Economics of Climate Change” learning module outlines the course objectives and contains a dial with links to 10 learning module templates.

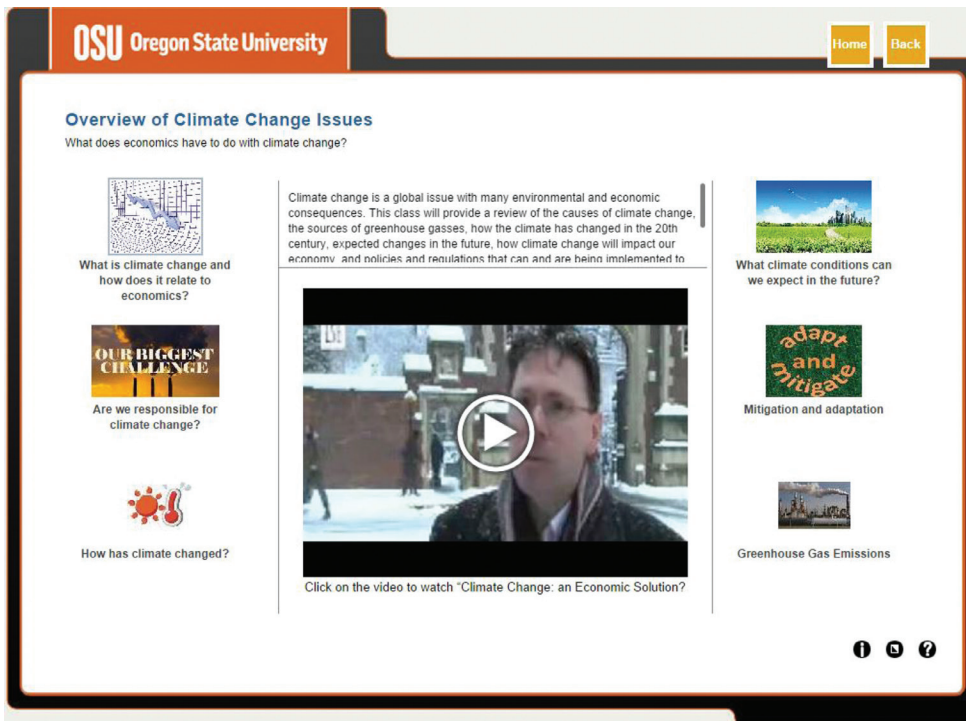


Figure 2. Example of a Pachyderm learning module template. Clicking one of the six images to the left or right presents the user with a new video and text in the center of the screen.

The module is available online at <http://osupachyderm.org/pachyassets/presos/ClimateChangeCourse299/index.html#screen/00-128-638510300555-12810016112710563579347-17-13> and can also be downloaded to mobile devices to be viewed with or without Internet access. It was developed to be used with an introductory-level climate change economics course currently being created by U.S. Department of Agriculture National Needs Graduate Fellows at OSU. The REACCH extension team can also use the module as a learning tool as they present climate change materials to the general public. They can choose particular portions of the module to highlight the subjects they are presenting. Incorporating the recently developed Farmer-to-Farmer Case Study videos produced by REACCH into the adaptation and mitigation portion of the module would also be a great way to share the innovative practices of some of our PNW growers, such as precision nitrogen applications, cover cropping, flex cropping, and enhancing crop diversity.

Pachyderm does present some limitations. For example, it is primarily visual, so there is not much room for explanatory text. Also, some templates, such as the one in Figure 3, have plenty of room for text and pictures but are not

designed to accommodate an embedded video. In those instances, one is forced to provide a link to an online version of the video rather than embedding the video within the learning module, thus limiting the usefulness of the module when the Internet is not available. Some users may also get confused as to how to return to the leaning module or may be distracted by other videos offered on the external video website.

We are currently working with Open Oregon State to develop a similar online learning module that will have much of the same content without the limitations imposed by the Pachyderm software. This format will allow more interactive activities, such as incorporating thought-provoking questions and summarizing key video content after it has been viewed. These creative learning modules, whether they are developed using

Pachyderm or with other software, provide a new way for people to learn about and understand climate change within a flexible, interactive, and interest-oriented learning experience. Most importantly, they are easily accessible online and are germane to a broad audience, be it high school students, the general public, or for use in college courses

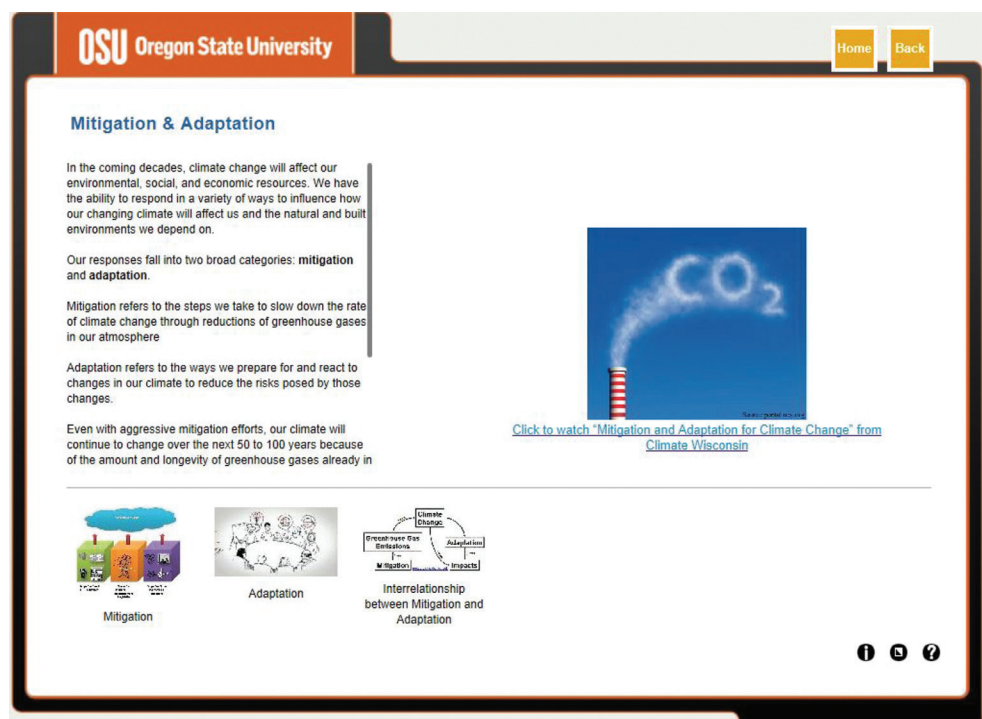


Figure 3. This template has links to an online video, an online report, and other subtemplates accessible by clicking the images at the bottom of the screen.