To help educators explore how climate and energy topics can be organized into a logical scope and sequence, we present the CLEAN collection in a tool that visually connects CLEAN resources with the AAAS Project 2061 Benchmarks for Science Literacy. These concept maps can also be used to plan lessons around climate and science awareness. Accessing the concept maps in the CLEAN collection is easy.

The CLEAN Review Process
http://cleanet.org/clean/about/review.html

We have designed a rigorous and transparent peer-review process for the CLEAN collection. A peer-review process is developed for each new developer as well as a collection builder to ensure the quality of the collection, and the implementation is non-trivial. Our experiences provide general guidelines that can be used to judge the quality of digital teaching materials across disciplines.

1. Identification of teaching materials

Our team of CLEAN resource collectors searches educational websites to find existing digital teaching resources that are a) relevant to CLEAN and b) of appropriate granularity, and c) appropriate for the appropriate grade-level. We are evolving this process to include direct interactions with resource developers who will submit their resources to CLEAN for a peer review. This will involve an iterative process with authors much like a peer-reviewed journal.

2. Formal Tracing/Setting

Any teaching resource must be relevant to the collection, with a promising pedagogic design and seemingly solid science, is entered into our online review system for further consideration by the review team. The questions in our initial setting form address the relevance of the resource to the collection topic, type of educational material, grade level) and conclude with a qualitative recommendation of the overall quality of the resource.

3. Reviews

General Review: Review criteria have been developed for activities, videos, demonstrations, and hands-on investigations. These criteria are used to assess the scientific accuracy of the activities, teaching effectiveness, and if the materials are easy to use. Two general reviewers conduct a review for each resource, with the reviewers providing an overall assessment of high, medium, or low priority. Those with a combined score of low or medium priority move to the next stage.

Panel Review: Resources that pass the two rounds of general review are presented to a panel of four reviewers (educators and scientists) and are examined. A group of four specialists discuss each resource, based on the prior review, and make the final decision on inclusion in the CLEAN collection.

Expert Science Review: Climate and science education encompasses a wide range of disciplines, exceeding the scientific expertise of the CLEAN team. Therefore, an expert science review is conducted for resources that pass the panel review. Comments from all reviewers, along with teaching tips, are compiled in annotations [notes to be reviewed] that are included when cataloging the resource in the collection. Resources that include cutting-edge science are flagged.

4. Cataloging and alignment with benchmarks/standards/guidelines

The CLEAN team developed a set of terms (vocabulary) that define the topics of climate science, climate change, and energy awareness. CLEAN resources are aligned with the Climate Literacy Elementary Principles of Climate Science at the concept level as well as with Energy Awareness benchmarks. The CLEAN collection is also aligned with the Benchmarks for Science Literacy (AAAS Project 2005). CLEAN selected resources are cataloged in the Supplemental Science Standards by topic (e.g., Subclimates, climate and energy principles, and benchmarks), and including comments from all of our reviewers. Resources will also be aligned with the National Science Education Standards and the NAISS Excellence in Environmental Education Guidelines.

CLEAN offers online interactive 2-hour webinars for middle and high school educators. Each webinar focuses on one of the Climate Literacy Elementary Principles (CLEP). Webinar presenters explore misconceptions that exist around the content, present the scientific background, and suggest ways to teach the content of the respective topic from an educator’s perspective. Participants discuss, in interactive session breakout groups, how the CLEAN collection can support them in their teaching. Presenters are scientific educators with an expertise in the respective topics covered.

Examples of Topics Covered in Webinars

• Overview of Climate Literacy Elementary Principles for Energy Awareness
• Reducing energy consumption
• Applying energy awareness
• Identification of selected teaching resources from CLEAN collection that address the topic

CLEAN offers online interactive workshops for College Faculty

Interactive Online Workshops for College Faculty
http://cleanet.org/college/workshops

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