



# Earth Rocks! Online Educational Oceanography and Geology Videos

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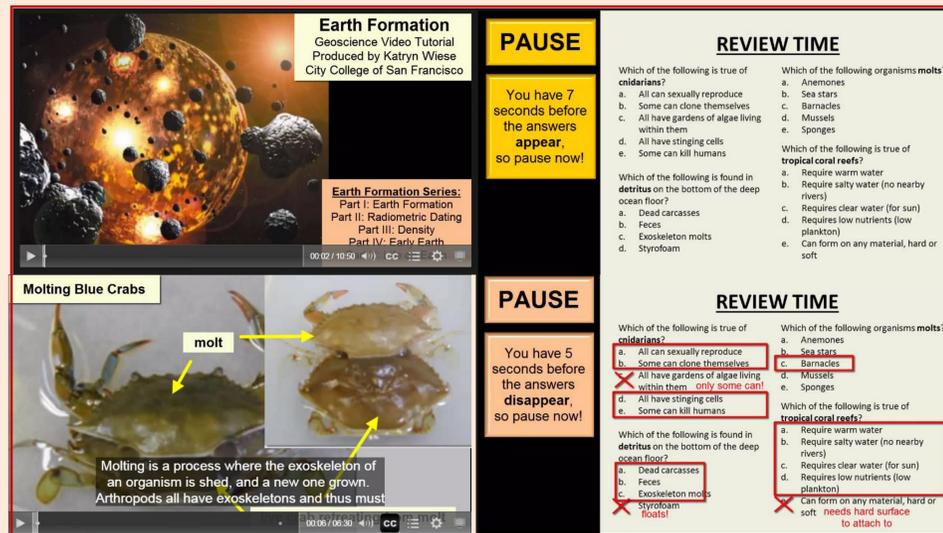
EARTH EDUCATOR'S RENDEZVOUS  
MADISON, WI  
JULY 18-22, 2016



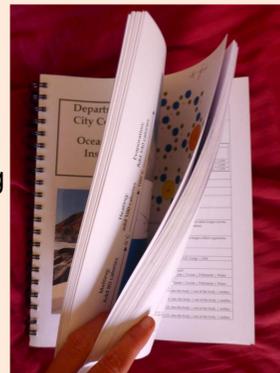
<http://www.ccsf.edu/earthrocks>

## EARTH ROCKS! VIDEO COLLECTION

Creative-commons-licensed geoscience education video tutorials geared toward introductory-level **oceanography** and **physical geology** lectures and labs



- **65 videos**, with more added annually
- Each video focuses on a particular **topic or related set of topics**
- Each video ranges from **2 to 20 minutes** in length
- Videos incorporate a **range of educational video design principles**, including
  - **Student pacing control**
  - **Embedded assessment**
- Available through:
  - Earth Sciences Department website at CCSF
  - **Earth Rocks! YouTube Channel:** 2075 subscribers, 212,000 views
- **Closed Captioning** versions
- **Downloadable .mp4** (for viewing offline)
- Accompanied by **266-page bound workbooks/lab manuals** with worksheets and activities to practice and expand understanding
  - Incorporating global and local data sets, satellite imagery, and maps
  - Relating material to larger concepts that build through course such as biological productivity and climate change

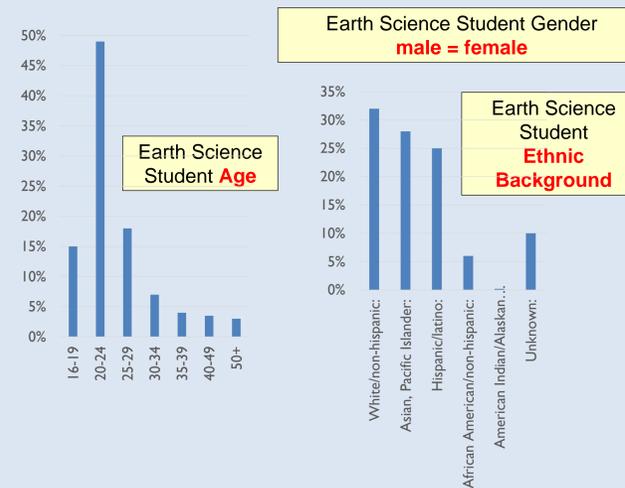


## AUDIENCE

- CCSF students in flipped introductory oceanography lecture (replacing lecture) *[Most self-declare that they watch the videos multiple times prior to class.]*
- CCSF students as resource for field, lecture, and lab courses
- Students in other CCSF courses or other colleges who are assigned them or discover them through YouTube (HS, College...)
- Instructors who teach these concepts at HS or College
- Professionals (paid or volunteer)
- Interested public

**CCSF (City College of San Francisco) is a two-year college.** Most of our students are general-education students looking to fulfill a natural science requirement for transfer to a 4-year college.

Earth Science Student Average Success Rate (passing class with C or higher): **57%**



### Lecture Class details:

- 3-unit lecture (optional lab)
- Two 75-minute class meetings/week
- **Class size:** 25 to 36 students

### Lab Class details:

- 2-unit lab (lecture = pre/corequisite)
- 1 4-hr class meeting/week (first hour is "lecture", remaining 3 are lab)
- **Class size:** 20 to 30 students

## IMPACTS OF VIDEO USE

Paired with pre-class assignments and quizzes in a flipped-class model, we were immediately able to see these impacts:

### Qualitative impacts:

- Students come to class **better prepared**
- **Higher energy** and **more insightful discussions** in class
- **More student engagement**
- **More critical thinking in class**
- **Improved catch-up and review opportunities** especially for ESL students and students with weak basic skills.
- **Greater student satisfaction**
- **More relaxed and enthused instructor** in the classroom

### Quantitative impacts:

- **Increased classroom interaction** among instructor and students: Pre-flip: **~20% class time** | Post-flip: **~90% class time.**
- **Increased average exam scores** (based on standardized student learning outcomes exam): Pre-flip: **56%** | Post-flip: **71%**
- **Fewer discipline problems** (*Students who don't want to put in the time drop quickly*): Pre-flip: **2-4 incidents/class** | Post-flip: **0-1**
- **Increased class attendance:**  
Pre-flip: later semester drops off to **~40-60%**  
Post-flip: stays solid all semester at **~90-95%**
- **Reduction in the gap between A/Bs and Fs students:**  
Pre-Flip: As+Bs **~46%**; Fs: **~10%** | Post-Flip: As+Bs **~55%**; Fs: **~7%**

## PEER & STUDENT REVIEW

Feedback is gathered weekly from students and "as submitted" from colleagues. Videos are regularly updated to fix errors or misunderstandings and improve overall educational value and content coverage.

### WHAT STUDENTS LIKE/WANT:

- Ability to control pace
- Ability to rewatch
- Ability to watch on all devices
- Ability to download for use offline
- Embedded assessments
- Relevance to daily lives
- Footage of demos or natural phenomena
- Explanation of local phenomena
- Personal stories
- Quality production (HD)
- Images of instructor and students
- Music
- Audio quality (tone and timbre of narrator's voice)
- Shorter videos
- Longer videos with fuller explanations
- Accompanying worksheets/activities
- iPad / iPhone accessibility