The Algae Foundation's K-12 STEM Initiative

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The Foundation

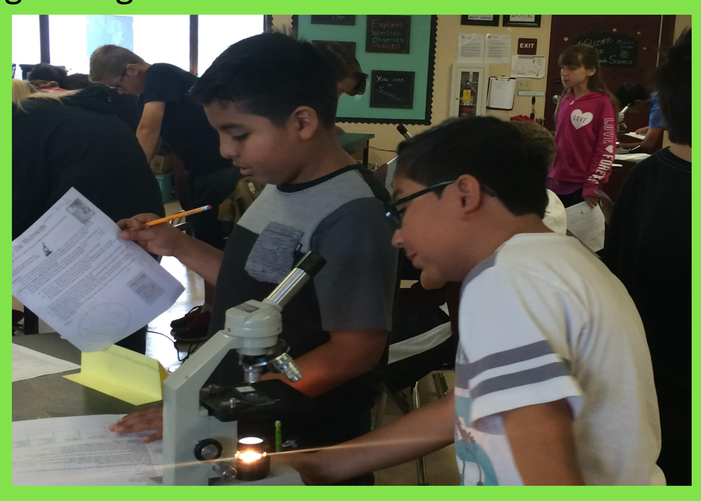
The Algae Foundation is a 501(c)(3) nonprofit organization dedicated to bettering the world through algae. In the 21st century, there are many problems relating to the earth and mankind's effect on it that algae have the potential or the ability to solve, including the need for renewable energy sources, more efficient food crops, and medicines. The Algae Foundation recognizes this immense importance that algae are likely to play in the future, and it funds and supports several activities in order to encourage progress in this field. These include, but are not limited to:

- **Education and outreach**
- **Research and development**
- **Industry communication and standards**

In mid-2015, the Algae Foundation began a new education initiative, its K-12 STEM project ,intended at teaching algal science to students in all levels of primary education.

Goals of K-12 Outreach

Over the past few decades, algal science and research have grown tremendously. Around the world, universities, corporations and new startups have advanced our knowledge of algae and shown their true potential. However, in the future, new talented, motivational individuals are needed to help continue the drive of discovery and innovation. In addition, as algae grow in importance in the future, a new industry will be created that could employ thousands of people. The Algae Foundation is committed to teaching phycology to students of all ages in order to keep this study thriving. Exciting and intriguing students about these amazing organisms will give them a key advantage and the ability to be leaders in this growing field.



Training the next generation of phycologists!

Day-to-Day Kit Activities

The STEM initiative curriculum is a five-day-long introductory course to basic algal biology and its present and future applications. During each day, a new topic or activity is covered, with a growth experiment conducted over the whole week.

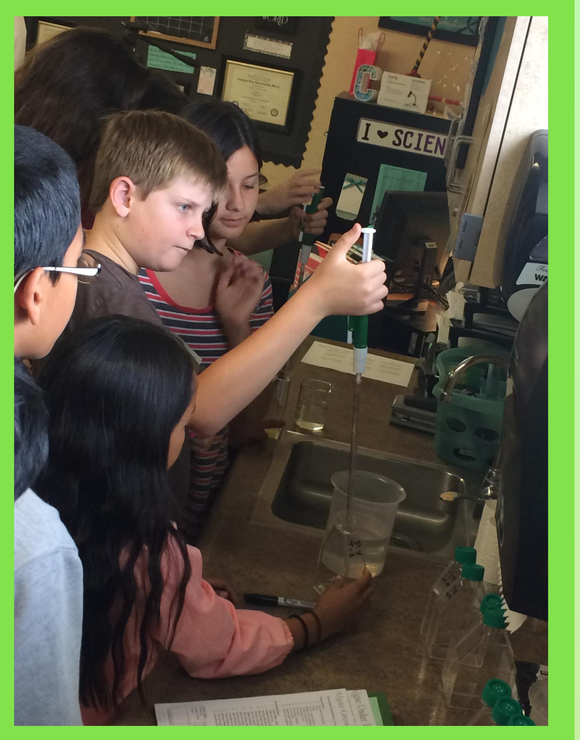
Day 1: Algae 101 – Basic Biology and Applications
- Introduction to algae
- The many uses of algae
- Taste testing algae
- Discovering algae in food labels

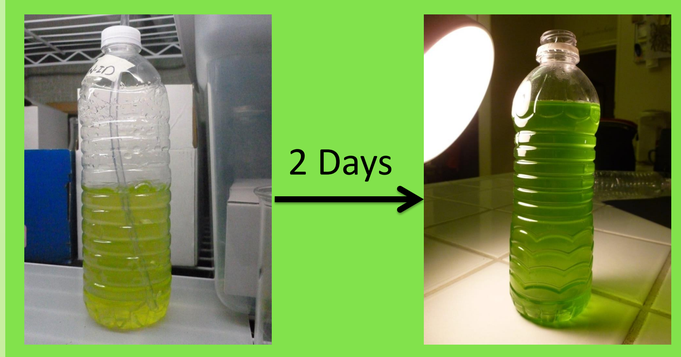
Day 2: Culture Experiment Setup
- Students prepare algal cultures with different levels of algal biomass to compare growth rates

Day 3: Algal Diversity Up Close
- Introduction to compound microscopy
- Slide show of the vast diversity of algae
- Identifying 4 algal species with a simple dichotomous key

Day 4: Culture Data Collection and Analysis
- Students' final sampling event
- In-class calculation of change in biomass and growth rate

Day 5: Critical Skills and Reflection
- Students graph and describe data from culture experiment
- Design-your-own-algae and farming activities





Future Plans/General Areas of Development

Prior to the public curriculum launch in spring of 2017, there are still a few areas of development for the STEM project that have yet to be finalized for the upcoming or future releases.

Kit cost: Goal is to price kits at between $100 and $250 each
- Economic cost that facilitates funding or donating of kits to schools
- Current estimates on kit price at just under $200
- Further lowering the price can increase the program size and number of students

Future curricula: Goal is to create curricula for elementary and high school levels
- Pilot program and next planned release both target middle school students
- High school and elementary school lesson plans can be developed from existing structure
- Other ideas include student-proposed independent or group projects, curricula longer than 1 week, or a repeated course with instruction in multiple years of education

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