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### Adapted Value of Mistakes By Sheela Vemu

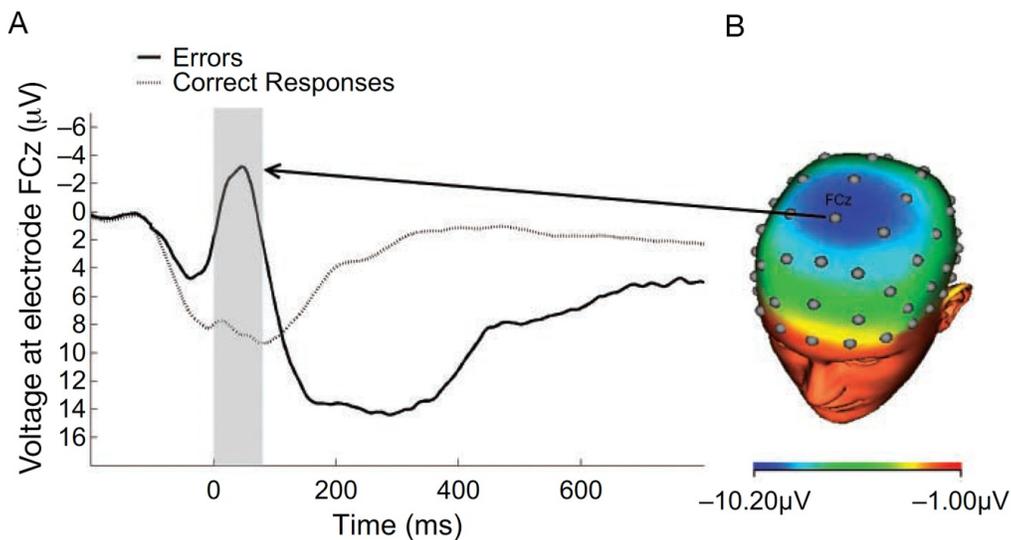


Image source:

Hajcak G. 2012. What we've learned from mistakes: insights from error-related brain activity. *Current Directions in Psychological Science* 21:101-106.

### Module Description:

This module is adapted from [BIOMAAP](#) materials on the value of mistakes and application of growth mindset in a microbiology lab. Serial dilutions and understanding graphs are two fears that students at our community college struggle with in an introductory microbiology lab. Modifications of the BIOMAAP materials on value of mistakes and growth mindset were used to examine the changes in student mindsets as they progressed to work through serial dilutions and creating a figure legend for a graph. During the activity the students were allowed to work on simple to complex serial dilution problems with reflective opportunities and exposure to brain research describing our physiological response to

mistakes. These in class formative assessments were designed to allow students to understand that making mistakes is a useful part of learning. BIOMAAP materials on growth mindset was also adapted as part of the Lab activity to expose students to the brain research that showed that growth mindset individuals pay more attention to mistakes, leading to better error correction and deeper learning.

The student activity is an interrupted short journaling assignment that students complete in class individually and in groups as they proceeded through the serial dilution calculations. This assignment goes well with the [“Introduction to Growth Mindset” module](#) of BIOMAAP.

## Teaching Setting:

This resource was designed for use in a freshmen microbiology lab in a community college setting, where the class size is small and student demographics range from traditional to non-traditional students, various ethnicities and first generation college going cohort.

## Citation:

Vemu, S. (2019). [Adapted Value of Mistakes. Biology Students Math Attitudes and Anxiety Program \(BIOMAAP\): a QUBES Faculty Mentoring Network](#), QUBES Educational Resources. [doi:10.25334/Q4DT8C](https://doi.org/10.25334/Q4DT8C)

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## Related Materials and Opportunities:

This resource is an adaptation of:

Fleming-Davies, A., Wojdak, J. M. (2018). [Value of Mistakes. BIOMAAP: Biology Student Math Attitudes and Anxiety Program](#), QUBES Educational Resources. [doi:10.25334/Q4TH9C](https://doi.org/10.25334/Q4TH9C)

and contains some content adapted from:

\*Fleming-Davies, A., Wojdak, J. M. (2018). [Introduction to Growth Mindset. BIOMAAP: Biology Student Math Attitudes and Anxiety Program](#), QUBES Educational Resources. [doi:10.25334/Q46T5C](https://doi.org/10.25334/Q46T5C)

\*Resource previously featured as a [Resource of the Week](#).

The author created this resource while participating in the Spring 2019 [Biology Students Math Attitudes and Anxiety Program \(BIOMAAP\) Faculty Mentoring Network \(FMN\)](#). In this FMN, participants learned how math attitudes can impact Biology students and explored a range of tools to address math attitudes and anxiety in their Biology courses. In addition to the resource featured in this ROW, FMN participants created adaptations of several BIOMAAP resources, including:

- [“Intro to BIOMAAP - Student Math Anxiety Overview”](#)
- [“Introduction to Growth Mindset”](#)
- [“Figure of the Day”](#)
- [“Answer Checking”](#)
- [“Reflective Writing”](#)

Additional FMN products will be archived on the [BIOMAAP FMN page](#), so check back! You can learn more about BIOMAAP and browse all BIOMAAP resources on the [BIOMAAP group](#) on QUBES. If you are interested in learning about upcoming BIOMAAP activities and opportunities, please [join the BIOMAAP group](#). If you are interested in participating in an FMN, apply today for one of the [Fall 2019 FMNs](#).

You can learn more about [BIOMAAP resources](#) during their [conference session](#) at the [2019 QUBES/BioQUEST Summer Workshop, “Evolution of Data in the Classroom: From Data to Data Science”](#) (July 14-19, 2019 at the College of William and Mary in Williamsburg, VA). Participants in the 2019 QUBES/BioQUEST Summer Workshop will explore how to build on the ways data is currently used in classrooms to introduce students to appropriate data science practices. If you are not able to attend this workshop, you can follow QUBES and BioQUEST on Twitter and Facebook, where conference-

related content will include **#QBioEd19**.



Also be sure to check back later on the [workshop website](#) where you will find [posters](#) and [session materials](#) presented at the workshop along with recordings of [presentations](#). You can also [subscribe to receive upcoming QUBES Newsletters](#) where we will be sharing highlights from the summer workshop.

*If you adopt and adapt this module, you are highly encouraged to share your adaptation back with the QUBES community using the QUBES Resources System for sharing Open Education Resources.*

QUBES on Social Media



QUBES is a community of math and biology educators who share resources and methods for preparing students to use quantitative approaches to tackle real, complex, biological problems.

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