Using Biointeractive Spreadsheet Data Analysis Tutorials to Teach Inquiry Lab Skills

Angela Hodgson

North Dakota State University, Biological Sciences, P.O. Box 6050, Fargo ND 58102 USA
(angela.hodgson@ndsu.edu)

Since transforming our introductory biology course to inquiry labs, one of the biggest challenges that we've faced is teaching students to use technology for analysis and interpretation of experimental data. This challenge has been two-fold. First, most of our students lack any experience working with spreadsheet or statistical analysis programs, and second, students in our courses must bring their own computers to class, necessitating use of free programs that will run identically on all computer platforms. Our solution to these challenges has been to incorporate the Bioionteractive Spreadsheet Data Analysis Tutorials, Google Sheets, and a free Google Sheets add-on for statistical analysis. The tutorials are designed to teach students to use Google Sheets or Excel for essential data analysis skills such as organizing data, using formulae and functions to calculate statistical values including mean, standard deviation, standard error of the mean, 95% confidence intervals, plotting graphs with error bars, and performing t-tests. During this workshop, participants will explore the tutorials in a 'learner lens' to analyze data using Google Sheets or Excel. Afterwards, you will view the tools in an 'educator lens' and discuss methods for assessing student mastery of spreadsheet skills and where this might fit into your course.

**Keywords:** Data Analysis, Google Sheets, Biointeractive Spreadsheet Data Analysis Tutorials

**Mission, Review Process & Disclaimer**

The Association for Biology Laboratory Education (ABLE) was founded in 1979 to promote information exchange among university and college educators actively concerned with teaching biology in a laboratory setting. The focus of ABLE is to improve the undergraduate biology laboratory experience by promoting the development and dissemination of interesting, innovative, and reliable laboratory exercises. For more information about ABLE, please visit [http://www.ableweb.org/](http://www.ableweb.org/).

*Advances in Biology Laboratory Education* is the peer-reviewed publication of the conference of the Association for Biology Laboratory Education. Published articles and extended abstracts are evaluated and selected by a committee prior to presentation at the conference, peer-reviewed by participants at the conference, and edited by members of the ABLE Editorial Board. Published abstracts are evaluated and selected by a committee prior to presentation at the conference.

**Citing This Article**


Compilation © 2020 by the Association for Biology Laboratory Education, ISBN 1-890444-17-0. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the copyright owner.

ABLE strongly encourages individuals to use the exercises in this volume in their teaching program. If this exercise is used solely at one’s own institution with no intent for profit, it is excluded from the preceding copyright restriction, unless otherwise noted on the copyright notice of the individual chapter in this volume. Proper credit to this publication must be included in your laboratory outline for each use; a sample citation is given above.