

Design-Based Virtual Biology: Finally Something That Works

Ashley Gess

Virginia Western Community College, Department of Science, Mathematics and Health Professions,
3094 Colonial Ave., Roanoke VA 24105 USA
(ajgess04@vt.edu)

“Teach Biology online,” “Make Biology more accessible.” These kinds of requests are plaguing science educators. Oftentimes, as a result, rigor is compromised and the effective part of learning that is provided by a face to face laboratory experience goes by the wayside. Some people are choosing to use a separately purchased lab kit, requiring a lot of extra cost to the student. This session will walk attendees through the creation of a virtual design-based course (using an integrative STEM model) that uses wet labs to drive the content presentation. Students complete the lab at home with minimal cost and meet synchronously (but still at a distance) as lab groups to discuss conclusions and decide the method/design for the next lab experiment. The example BIO 101 course culminates with student lab groups designing and building a device used to harvest and recycle carbon dioxide. Student groups then present the device live online. Preliminary pretest/post-test data indicate that student success rate is higher for this virtual course and that learning is at a higher level than comparative face-to-face or hybrid courses.

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/>.

Papers published in *Tested Studies for Laboratory Teaching: Peer-Reviewed Proceedings of the Conference of the Association for Biology Laboratory Education* 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.

Citing This Article

Gess, A. 2014. Design-Based Virtual Biology: Finally Something That Works. Page 349 in *Tested Studies for Laboratory Teaching*, Volume 35 (K. McMahon, Editor). Proceedings of the 35th Conference of the Association for Biology Laboratory Education (ABLE), 477 pages. <http://www.ableweb.org/volumes/vol-35/?art=28>

Compilation © 2014 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 proceedings 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.