

**Stony Brook University
The Graduate School**

Doctoral Defense Announcement

Abstract

Vertically Aligned Professional Learning in the New Biology

By

Caren Gough

The present study examined teacher participation in a vertically aligned New Biology workshop, and how participation was related to teacher confidence, the identification of potential tensions and solutions in implementing new teaching methods, and whether impacts were differentiated based upon educator level. The Cold Spring Harbor DNA Learning Center developed and conducted 22 *Genomic Approaches in BioSciences Workshops* from 2011 to 2015 ($N=324$). The intensive five-day professional development was implemented nationally at community colleges that were geographically dispersed and represented both urban and non-urban settings. The program representation was approximately 25% high school, 50% community college or two-year, and 25% four-year or university faculty. The workshops introduced the most current concepts in genomics and bioinformatics to these three levels of educators. The goal of this study was to explore the effect of vertically aligned professional learning on a New Biology workshop. Historically, science education researchers included “collective participation” as a best practice when describing professional development of biology educators. Collective participation was previously defined as teachers from the same school, same grade, and/or same subject working together during professional development activities. This study argues that vertically aligning groups of teachers could be considered a desirable practice when studying New Biology concepts in bioinformatics and genomics education.

The methodology chosen for this study followed a convergent parallel mixed methods research design. In this type of design, both quantitative and qualitative data were collected simultaneously and then the information was analyzed from both perspectives in order to better interpret the findings. The results of this study showed an increase in pre-/post- self-reported knowledge gains of genomics concepts and an increase in confidence in completing laboratory techniques and computer bioinformatics exercises. With few exceptions, when comparing the three groups of educators, results showed that there were no differences among groups, indicating the workshop was equally effective for all participants. Quantitative results were corroborated by the results of the qualitative, or open-ended, questions also found in the survey. These findings pave the way for other vertically aligned workshops by showing that grouping participants in this way was an effective form of professional learning.

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Time: 11:00am

Location: Virtual Conferencing – Please contact Judy Nimmo, Graduate Program

Coordinator, for Zoom access: judith.nimmo@stonybrook.edu.

Program: Science Education

Dissertation Advisor: Dr. Keith Sheppard