

# Collaborative Concept Mapping in Google Draw

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## Extended Abstract

Concept maps are wonderful tools for revealing connections among topics. In a progressive concept map, students build a portion of a concept map early in the semester and then add to it as the semester progresses (see Gayler and Hoefnagels mini-workshop, 2016 ABLE conference). The objective is to help students understand that all topics in biology, from atoms to ecosystems, are related. In previous semesters, our students have used a classroom set of iPads equipped with the Inspiration app to complete these assignments. Pairs of students would build a map on one iPad, save the completed map as a PDF, and email it to the TA. This strategy did not often result in a true collaboration because there was no mechanism to allow students to work simultaneously on the map. In addition, students who wished to use the concept map to study would not be able to manipulate it outside of class unless they also owned the Inspiration app. However, Course Management Systems (CMS) are now integrated with Google Drive. This integration makes it possible for students to construct the concept maps collaboratively in Google Drawings (or Google Slides), and turn them in directly to Canvas or another CMS (e.g., Blackboard, Moodle, and D2L). Because each map is stored on the student's own Google Drive, students can continue to work with them outside of class as desired. Google Drive also comes with options like Google Chat and shared folders, for additional collaborative opportunities inside and outside the classroom.

In the hands-on workshop, participants worked in teams to download a Google Drawings template, used it to build a concept map, and learned how to submit it as an assignment in Canvas or another CMS. We have found through the workshop and additional class experience that Google Slides works better on the iPads, and we have therefore included expanded student instructions within the workshop slides. We also covered strategies and best practices to maximize student participation and collaboration. The link to the workshop slides can be found in the supplemental materials. These slides include: 1) a summary of the intent and pedagogy behind progressive concept maps, 2) expanded instructions on how to create a concept map within Google Drawings and Google Slides, 3) instructions on how to share these maps with students, 4) sample instructions for students on how to get started with Google Drive and complete concept maps in groups, 5) instructions on how to integrate Google Drive with Canvas, 6) grading strategies, 7) student results, and 8) links to integration instructions for Blackboard, D2L, and Moodle.

**Keywords:** Google Draw, Google Slides, concept mapping, classroom technology, iPad, introductory biology

**Link to Supplemental Materials:** [http://www.ableweb.org/volumes/vol-40/33\\_Hartnett](http://www.ableweb.org/volumes/vol-40/33_Hartnett)

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### Citing This Article

Hartnett R, and Hoefnagels M. 2019. Collaborative concept mapping in Google Draw. Article 33 In: McMahon K, editor. *Tested studies for laboratory teaching*. Volume 40. Proceedings of the 40th Conference of the Association for Biology Laboratory Education (ABLE). <http://www.ableweb.org/volumes/vol-40/?art=33>

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