



St. Louis, March 16, 2020

Science Professors
Washington University
St. Louis, Missouri

Dear Professor:

Teaching and learning in online versus face-to-face settings has implications for a wide range of student outcomes, from content knowledge to a sense of belonging. For example, self-efficacy for self-regulated learning corresponded directly with GPA in face-to-face classes but did not have the same impact on student performance (GPA) in online classes (Alghamdi et al 2020). A sense of belonging is often more difficult to foster in online courses, but remains central to student success in these settings (Peacock et al 2019). With the spread of COVID-19, universities across the United States have announced a move from face-to-face to online teaching. This situation creates a hybrid environment where students spend half the semester in face-to-face classrooms and half the semester in online classrooms. We propose studying how this change in learning environment impacts students in terms of: self-efficacy/student motivation, student attitudes towards science and their classroom, and student's sense of belonging. We will use validated quantitative Likert-style surveys on these topics. Surveys will be given to students prior to engaging in the new online setting and at either the end of the semester, or before the class transitions back to a face-to-face setting. Additionally, we are developing a short set of qualitative questions about student's experiences and their thoughts around COVID-19. While we will not be able to truly uncouple the student's anxiety around the disease with their transition to a new learning environment, we hope these qualitative questions will give us insight on the student's thoughts and emotional state during and after the transition so we can better understand what quantitative results are due to learning environment versus pandemic concerns.

We are looking for educators who would be willing and interested in running these surveys with their students (once before going online and again at the end of teaching online). The surveys will limit the amount of identifiable information collected on the students, and we are obtaining IRB approval for student consent to participate. If you are interested in learning more about this, or have any questions or concerns, please feel free to reach me, Kristine L. Callis-Duehl, Ph.D., Director of Education Research and Outreach at the Donald Danforth Plant Science Center at kcallis-duehl@danforthcenter.org or at 919-621-5725.

If you would like to participate, please email me (above) the following information: The name of your university/college, the class you are teaching (e.g. introductory biology), the major status of students (science majors or non-majors), the number of students enrolled in the class, and the active-learning level/student interactive level of the class (e.g. do students use clickers, work in



groups, etc.). I would also like to know from you if you have ever taught in an online setting before and/or have received formal training in teaching in online environments.

While we regret the health situation that has forced many of us to move to online teaching, we also feel it is important to better understand how this change is impacting our students so that we can make more informed choices in the future. We appreciate your willingness to consider participating in this study.

Kind Regards,

A handwritten signature in black ink, appearing to read "K. Callis-Duehl". The signature is enclosed within a hand-drawn oval shape.

Kristine L. Callis-Duehl, Ph.D.
Sally and Derick Driemeyer Director of Education Research and Outreach
Donald Danforth Plant Science Center