# CASE WESTERN RESERVE UNIVERSITY University Center for Innovation in Teaching and Education NORD GRANT

### Project Title: Active Learning in Remote Learning Environment

## I. Project Nature & Goals

#### Address the following questions as you describe the nature and goals of your project

How will your project produce better teaching and deeper student learning? What scholarship about teaching and learning does your project engage with? What service learning opportunities may be possible through your project? How might your project align with the THINK BIG strategic plan or departmental goals?

Amidst the recent COVID-19 pandemic, many learning institutions have faced an unprecedented transition to remote learning environments. This has created a communication barrier that has challenged collaboration, critical thinking, and demonstration of understanding. Through this project we aim to enrich the virtual learning class room by equipping students with active learning tools that encourage group discussions and collaborations. POGIL worksheets created for Introductory Biochemistry course through a Nord grant in 2020 spring will be implemented in a remote environment through the use of breakout rooms. These POGIL worksheets were implemented in traditional classrooms in spring 2020 and led to robust discussions on concepts introduced. POGIL in an online environment will lead to similar interactions and participation by the students. The proposed work will lead to creating online teaching environment that encourage student participation. This project aligns with the University's long term goals to increase online course offerings. If successful, this project implementation can be seamlessly adopted to other STEMM courses.

## **II. Professional Impact**

What is the relationship between your project and your teaching and/or research responsibilities at CWRU? Will your project have short-term or long-term impact on teaching and learning? How do you plan to maximize the number of students that may benefit from involvement in this project?

I teach large pre-med classes like Introductory Organic Chemistry and Introductory Biochemistry. I am actively involved in educational research and training of faculty in active learning methods. The proposed project will extend my expertise to remote teaching environments. As a Fulbright scholar and a specialist in education, I hope to share my experiences in active learning in remote environment with other faculty in this university and internationally. My goal in this project is to reach every student in my biochemistry classroom by creating breakout groups of three students to work on POGIL assignments. These groups will be monitored by me and two UG students funded by this grant. We hope to conduct all synchronous sessions in this format and prevent any student from 'hiding' behind their computer. The methods adopted here are suitable for all STEMM courses. These methods will be shared in the workshops I will conduct as a Fulbright specialist in summer 2021.

## III. Evidence of Project Goals & Student Learning

What evidence will you seek to collect and analyze to determine how well or to what extent project goals were achieved? How will you measure evidence of student learning and/or teacher change?

In this project, we will collect individual student data through voluntary attitude surveys administered twice throughout the semester. Based on the results, we can assess progress in learning biochemistry concepts by analyzing trends in the qualitative data. Additionally, we will evaluate how the implementation of these tools influence student performance. We analyze growth in student learning by observing their general participation in Zoom Breakout Rooms and Supplemental Instruction sessions ,and how well groups collaborate together. Using course evaluations from previous semesters, we can analyze the usage of remote active learning tools in comparison to similar assignments done in in-person teaching styles. In addition to quantitative data collected from their worksheet grades, we will be doing qualitative Likert surveys as well.

The potential list of questions we will be using for qualitative data analysis are shown below:

- 1. Did working in groups via Zoom breakout rooms help facilitate your understanding of introductory biochemical principles?
- 2. Did you feel like the grading of the POGIL sheets provided helpful feedback for quizzes and exams?
- 3. What did you like most about the POGIL worksheets? (background info, figures, questions, teamwork)
- 4. Did the use of interactive tools such as Zoom break out rooms and POGIL worksheets complement your remote learning experience?
- 5. Did the use of POGIL worksheets deepen your understanding of introductory biochemical principles?
- 6. How well did your group work together to complete worksheets?
- 7. What did you like the most about this format of remote learning?
- 8. What could have been improved upon regarding the tools provided during this remote learning experience?
- 9. To what degree was critical thinking achieved while watching recorded lectures?
- 10. To what degree was critical thinking achieved while engaging in group work?
- 11. To what degree was group collaboration via Zoom different than in-person?

## IVa. Budget Narrative & Timeline

How will Nord Grant funds be used to support the project – for materials/equipment, for student stipends, or for something else? What support, if any, will the project receive from other sources, including on-campus (e.g. department funds) or beyond-campus (e.g. discipline-specific awards) funds? What is the proposed timeline for the project? Is this a new project or is the work already underway?

The Nord funds will be used for student stipends. I have started implementing some aspects of this project in my summer course, but it is difficult to observe and collect data in a class of 37 students by myself. This grant, with UG student support, will be essential in fall if this project for impementation and data collection in Fall 2020. This work can be adopted to traditional in-class or remote or dual delivery teaching.

IVb. Budget Details	
<b>Expenses</b> (round to the nearest dollar amount).	
Student 1 stipend @ \$15/hour for 100 hours/semester	\$ 1500
Student 2 stipend @ \$15/hour for 100 hours/semester	\$ 1500
Etc.	
Etc.	
Etc.	
Total Nord Grant Expenses	\$ 3000
Cost Sharing	
Item and description 1: I had received a Nord grant in spring 2020 through which the worksheets were	\$ 7000
created	\$ (amount)
Etc.	
Total Cost Sharing	\$7000
TOTAL PROJECT COST	\$ 10000