

## Grant Final Report Form

Principal Investigators (PIs) are required to submit final reports within **60 days** of their EIA grant end date. A delinquent report may jeopardize or delay future Network funding. The information you provide helps us improve and justify the continuation of this grant program. The Network may also contact PIs for longer-term impact reporting and may request permission to use elements of these reports in Network activities (Conference sessions, Academy sessions, etc.) and communication both within the CSU system and to external stake-holders.

Summary Grant Information	
Grant Title:	Does the Use of an Interactive General Chemistry Textbook Improve Student Perceptions of and Use of the Textbook and Increase Equitable Outcomes?
PI Name:	Kimberly N. White
PI Campus:	Cal Poly Humboldt
Grant Start Date (month/YYYY):	June 2022
Grant End Date (month/YYYY):	December 2023
Final Report Submission Date:	April 2024

## Major Outcomes

1. Summarize your project's outcomes against the original goals proposed for advancing equitable student learning, engagement, progression, and completion.

Our original goals were to determine if the use of an interactive general chemistry textbook enhances student success, retention, outcomes, perceptions of the textbook utility and effectiveness, and time spent reading the text. Systemwide data across semesters indicated decreases in equity gaps during the intervention semester (Fall 2022) for gender, first-generation students, and URM students (Pell Grant data was not yet available). The URM equity gap was narrowed; URM students received higher grades in Fall 2022 than in the previous or next semesters (non-URM student grades remained about the same). Our results also indicate there were little to no differences in student outcomes between those who used the interactive general chemistry textbook and those who used the traditional chemistry textbook. However, both groups of students appeared to have benefitted from receiving a free textbook from the grant (see question 3).

2. Comment on additional outcomes not directly associated with the project (partnerships formed, additional funding support gained)

We were able to have 2 graduate students work on this project. They gained valuable experience completing analyses and even presented the results at a professional conference.

3. Specify any unanticipated project developments (i.e. unanticipated barriers or unexpected wins)

Although our hypotheses about the interactive textbook were not supported, there were interesting findings when we considered the section of General Chemistry that was not included in the grant (our control group). Both sections that received the free textbook through the grant (whether it was the interactive or non-interactive textbooks) had smaller equity gaps as the section that paid for their textbook. These gaps were noticeably smaller for racially marginalized students. This made us reflect on the unexpected benefits to students affiliated with the grant.

4. If applicable comment on any longer-term outcomes, you anticipate from your Equity in Action Grant funded project. Also, please estimate anticipated achievement dates (month and year.)

The Chemistry department may use the results of this project in future decisions about textbooks. In addition, it would be interesting to follow the students over time to see if the interactive or free textbooks had any effects on the likelihood of staying in STEM or graduating.

## Assessment and Communication

5. Describe efforts to communicate and disseminate project outcomes with your campus.

We will be sharing the results of the project with General Chemistry faculty and the Chemistry department. Beyond our campus, we presented this project at the 2024 CSU Symposium on Teaching and Learning. We also submitted a manuscript to a higher education journal, which is currently being revised after being tentatively accepted.

6. Provide a summary of your assessment activities and results, where available.

We received final grades and equity outcome data from the institutions' research office and the systemwide Student Success Dashboard. Additionally, students who received a free textbook as part of the grant completed a survey assessing textbook perceptions, and current and expected grade in the course. Results demonstrate that there were no significant differences in perceptions of textbooks or student grades between the interactive and non-interactive textbook sections, suggesting that the interactive textbook is as effective for learning as the traditional textbook. The pattern of course equity gaps over time suggests there was a positive impact of implementing a free textbook for students, with the largest impact on racially minoritized students.

## Lesson Learned

7. As you reflect on the strategies and activities implemented during this grant, which were successful?

We were successful in assessing equity gaps in a number of ways: between sections, within sections, and across all sections of General Chemistry in Fall 2022. We were also able to compare equity gaps for General Chemistry across time using the CSU Student Success Dashboard.

8. By comparison, what strategies did you find were unsuccessful?

Although we were able to collect data from our institutional research office on disaggregated student final grades, we were unable to collect as many participants for our student survey. Because the survey was voluntary and students were not compensated, few students participated despite instructor and researcher encouragement.

9. Given your experience with the Equity in Action Grant Program, what changes would you recommend to better support you toward your goals?

The support provided helped us achieve our goals. It would be even more helpful to allow the recipients, especially students working on projects, to use funds to travel to conferences. Here, they gain valuable experience and are able to network with professionals in the field. It would have also been helpful to compensate participants (financially or with a small gift) for completing a survey. This would have ensured a greater sample size.

10. What can the CSU Student Success Network do to help our campus in its efforts to identify, understand and disrupt inequities in our system?

Grants like this one are extremely helpful in helping faculty enact projects they would not otherwise be able to due to a lack of funding.