Exploring Co-Generative Dialogues with Undergraduates to Improve Teacher Feedback Practices in a Probability and Statistics Class

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Providing students with explanation feedback on their homework has been shown to highly and effectively support their learning. However, there is limited research on how students might play an active role, in collaboration with teachers, to tailor feedback, to meet students' needs. This study, carried out as a form of practitioner-inquiry in a teacher's own classroom, explores how a teacher used their own and their students' shared experiences to refine and develop explanation feedback that supports students' mathematics learning in an undergraduate Probability and Statistics class. Data include records of co-generative dialogues between the teacher and her ten students, and the students' homework worksheets. Emergent findings show that co-generative dialogues provide an effective opportunity for teachers to learn from their students how to improve their pedagogical practices, especially in providing effective explanation feedback.

Keywords: Probability & Statistics, Homework, Explanation Feedback, Co-generative Dialogues

There are many potential positive consequences of providing students with feedback on their homework (Fyfe, 2016; Landers & Reinholz, 2015). Explanation feedback is conceptualized as information provided by a teacher regarding students' performance, with details on how to improve. Inviting student voice into the nature of explanation feedback makes it possible for students to agree with teachers on how their work was judged, then use those standards in producing new work (Landers & Reinholz, 2015). Consistent with this finding, this study was guided by a reality pedagogy framework, wherein teaching is guided by a teacher's developing understanding of students' experiences (Emdin, 2011). The aim of this study was to investigate how student voice can be leveraged to refine instructional practices of giving effective explanation feedback on students' homework. We hypothesized that when students have more agency in determining the nature of explanation feedback on their homework, teachers may improve feedback practices, and ultimately support students' learning.

We carried out a practitioner-inquiry study (Samaras & Freese, 2009) in the first author's freshmen Probability and statistics class at a university in the Northeast of the United States. We enacted co-generative dialogues, defined as a form of structured discourse, where teachers and students engage collaboratively to identify and implement positive changes in a classroom teaching and learning (Martin, 2006). Data were collected through 15 minutes of co-generative dialogues after class, with all students, once a week, for each of the six weeks of study. The dialogues were active and reflective, as Wambua and her students discussed the explanation feedback she had provided in the previous assignment, then agreed on ways of refining future feedback. The data were recorded via teacher fieldnotes and students' notes. Students' homework worksheets were also analyzed to note how students implemented the feedback.

Findings indicate that the type of explanation feedback preferred by students vary based on their self-identified needs. For example, while some requested for specific details on why they were wrong, others needed details for correct solutions. Working with students, the teacher learned how to give specific yet probing feedback. This implies that, working closely with their students better positions teachers to provide feedback that support individualized student needs.

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