STUDENT CHALLENGES IN ABSTRACT ALGEBRA: HOW DO INSTRUCTORS REACT AND RESPOND?

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We investigate the challenges that college students reported having in abstract algebra courses across the United States and how their instructors reacted and responded to those challenges. Because learning about students' thinking can be difficult in upper-division mathematics courses, instructors are often left to rely on their own experience of teaching these courses to anticipate student challenges and make plans for addressing them. In response to this issue, we implemented a classroom assessment technique (Angelo & Cross, 1993) for five abstract algebra instructors and their 64 students during Fall 2021. The technique was a feedback process from students to instructors about the challenges that they faced in the course, distributed to students via bi-weekly open-ended surveys. Every two weeks, we asked the students about the mathematical content they found challenging in their abstract algebra courses; we then showed each instructor their students' anonymous responses every few weeks and inquired their reactions as well as changes they planned to implement in their teaching.

Relying on the notion of the didactical contract by Brousseau (1984), we expected that upon learning about students' challenges, instructors would feel obligated to help students with learning the content and react and respond in ways that would assist students in overcoming those challenges. In our oral communication, we (1) show challenges with learning abstract algebra reported by students, highlighting those not mentioned in the literature before; and (2) report instructors' reactions and responses to students' challenges. While the instructors were often not surprised by their students' challenges, we found a wide range of reactions and responses, with some unique to individual instructors. Slowing down and reviewing the content were mentioned by more than one instructor and were the most common. We propose additional research regarding a more frequent regime of feedback.

References

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