Reading Between the Lines: Student Experiences of Resubmission in an Introductory CS Course

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ABSTRACT

Motivated by the need to develop equitable and just computer science education, we implemented a resubmission policy. We ran a large-scale, end-of-term survey of all students across two large introductory CS courses asking about their reasons for resubmission. Though some students were motivated primarily by grades, many responses suggested intrinsic motivation. We interviewed 9 students and found that in our competitive program, resubmissions take the pressure off the need to submit work that earns a perfect grade the first time. However, our findings suggest that resubmissions alone can't create space for equity and belonging.

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1 MOTIVATION

Student engagement, motivation, and experiences can be shaped by assessment ecology [4]: the social power, relationships, environments, actions, and effects of human activity in the assessment environment. Traditional, single-attempt, points-based grading can increase anxiety and avoidance of challenging courses [2, 3]. Traditional grading often involves normative value judgments incompatible with frameworks for moving "beyond equity as inclusion" [1] toward rightful presence: Justice-oriented education predicated on making present the political struggles that students embody and experience. To enable more justice-oriented teaching and learning, we need to transform our grading practices.

2 OVERVIEW

We introduced a resubmission system inspired by specifications grading [5] in 4 programming courses enrolling over 1,400 students across two terms. We awarded final grades according to the number of satisfactory assignments done by the end of the quarter. Grading was additive and monotonically increasing: resubmitting work never reduces the grade. We used simplified 2- and 4-level scales designed to reduce anxiety over "losing" points and instead focus students toward mastery of learning objectives. After the initial submission, we encouraged students to revise and resubmit unsatisfactory work throughout the quarter. To understand the impact of our new practices, these questions emerged:

- What reasons do students choose for resubmitting?
- What is the resubmission experience like for students?
- In what ways do resubmissions make space for students to belong?

We surveyed students in 2 of the courses about reasons for resubmitting. Of 573 responses, many suggested intrinsic motivation: over half mentioned improving or completing work among their reasons, but about a third cited higher grades as the only reason. Interviewees described how resubmission opportunities reduce pressure by enabling them to achieve high grades incrementally and demonstrate a staff focus on student learning, bucking the expectation that CS1 would be a weed-out course. In interviews, we looked for a connection between resubmission and CS identity formation. Students reported other factors—collaboration, relationships, open-ended projects, learning about CS applications—as making them feel more like a computer scientist.

3 CONCLUSION

This work records student perspectives on a resubmission system. We hope that other educators may use this information to help decide whether to use resubmissions in their classrooms. We see resubmission as a step forward, because it shows a sense of care and focus on learning rather than hypercompetitiveness. To continue toward an equitable and just classroom, future work involves re-evaluating all the norms and values of the class structures—not only around grading, but also around creativity, collaboration, community, student identity, and political vision for computing.

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