

Introduction to Psychology (PSYC 1101) Course Redesign at Middle Georgia State University

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A course redesign of PSYC 1101 to decrease the DFW rate was implemented by two instructors. Traditional lecture format was deemphasized through in-class activities and using an active learning web-based program to provide students with individualized assistance on practice questions and immediate automatic feedback. Results suggested that, although the overall DFW rate was lower after the course redesign, the difference was not statistically significant. Further, students with low high school GPAs and/or lower SAT math scores had lower course grades in redesigned sections. Inspired by this redesign attempt and communication about it, alternative redesign approaches are being developed to deepen student learning.

STATEMENT OF THE PROBLEM

As part of the Gateways to Completion (G2C) initiative, the course redesign aimed to decrease the DFW rate in Psychology 1101 by attempting to deepen student learning and course material engagement, partly by adopting a lower cost textbook to increase accessibility for low-income students. Based on student performance data from control PSYC 1101 course sections at Middle Georgia State University (MGA), approximately 20% of students earned a grade of D, F, or withdrew (DFW rate) from the class. This base rate varies significantly across course instructors. Because decreased student success is often correlated with low socioeconomic status and ethnicity (e.g., Jury, Smelding, Stephen, et al., 2017), the course redesign also aimed to increase equitable education outcomes across various underperforming groups.

METHODS

The approach used for the redesign was inspired partly by guiding principles recommended by the National Center for Academic Transformation, including (1) increasing the use of active learning activities, (2) providing students with individualized assistance, and (3) including on-going assessment and prompt (automated) feedback.

Instructors implemented the course redesign using a 3-pronged approach. First, to increase active learning in the classroom, instructors included at least one new activity per unit. Activities came from department faculty input and included such things as student-involved demonstrations (e.g., classical and operant conditioning, memory reconstruction), videos followed by focused class discussion, group activities, and in-class worksheets (e.g., IVs/DVs, defense mechanisms). These activities reduced traditional lecture time by approximately 20%. Both instructors made every effort to keep course content, activities, assignments,

and grade structure as similar as possible while still allowing for academic freedom. Second, to comply with guiding principles 2 and 3 (above), instructors included an active, learner-centered, web-based program associated with the textbook (Learning Curve), which gives students immediate automated feedback and individualized assistance with an extensive number of practice questions. Completion of the Learning Curves, along with other outside assignments, comprised about 20% of the student's grade. Third, a department-wide textbook was adopted so students could get access to a premier textbook in the field along with its online adaptive learning system, for substantially reduced cost. One aim of this was to increase the number of financially insecure students who were able to purchase the textbook and actively engage with it and its associated adaptive learning system. Part of our implementation of this lower-cost text included pioneering first-day/inclusive access at our University.

OUTCOMES

Did the Course Redesign Improve the Overall combined DFW rate before vs. after invention? Combined over multiple semesters and across the two instructors, the overall DFW rate was nearly 5% lower after the redesign (24.7%, N=247) than before the redesign (29.6%, N=274), although the difference in the DFW rate was not statistically significant ($\chi^2(1)=1.551$, $p=.21$, N=521), suggesting no evidence that the course redesign was effective. It's important to note that, when compared to the overall DFW rate for students who take the course from other instructors (i.e., non-redesigned sections) in recent semesters (approximately 20%), the DFW rate for the redesigned PSYC 1101 sections is about 5% higher than the non-redesigned sections. Thus, if the intervention had an effect, it wasn't a strong enough effect to reduce the DFW rate for the two instructors to the baseline for the PSYC 1101 sections that did not adopt the course redesign intervention.

Did the Course Redesign Effort Slightly Harm the Grades of the Most At-Risk Students? Good intentions can sometimes have unanticipated negative effects. We investigated whether there were statistical interactions between (1) students' High School GPAs and the G2C intervention/redesign and (2) between SAT Math scores and the redesign/intervention. The results suggested that the student grades of the Redesign Effort trended in a positive direction for well-prepared students (e.g., high HS GPA), but in a negative direction for the least prepared quarter of students. In other words, among those students with high school GPAs from the lowest quartile (labeled HS GPA category "1" in Figure 1 below), the grades were actually lower if they took a redesigned PSYC 1101 section (compared to taking a section from the same instructor before the redesign effort), though the interaction was not statistically significant (See Figure 3). Similarly, students with below-median SAT math scores (in our sample) had lower PSYC 1101 grades in redesigned sections, whereas the PSYC grades of those with above-median SAT math scores appear to have been significantly increased by the redesign. This interaction was small, but statistically significant ($F(1,134)=4.055$, $p=.045$) (See Figure 2). Thus, since the G2C redesign effort was targeted toward helping students most likely to have been unsuccessful, it appears ineffective in that regard. If anything, the redesign effort might have increased the student achievement gap. It could be that the more "at risk" students were less likely to complete some of the extra assignments meant to help them actively practice thinking about the material, thus, helping the well-prepared students more than the less well-prepared students. Students higher in conscientiousness and/or general cognitive ability might benefit more from some interventions provided equally to all students (Pinker, 2002), thus resulting in an increase rather than a decrease in equitable education outcomes.

Figure 1
Interaction Between Student High School GPA (Quartiles) and the Course Redesign on Grades

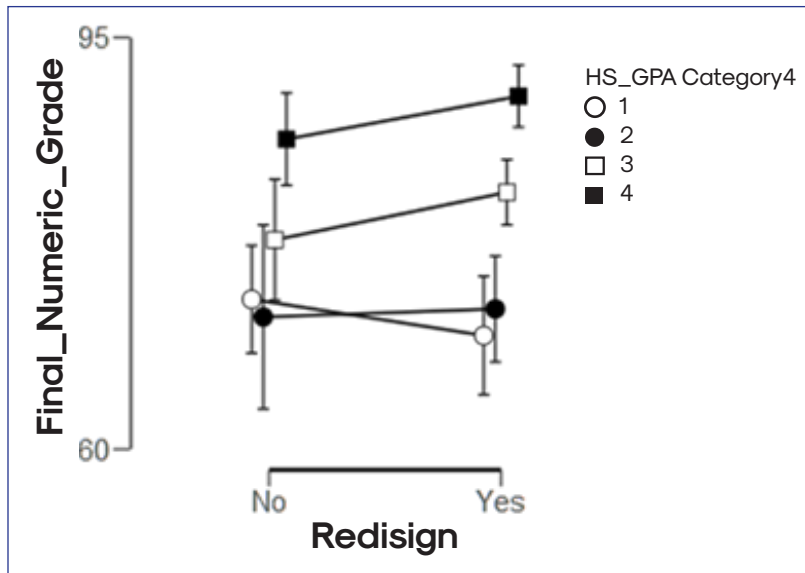
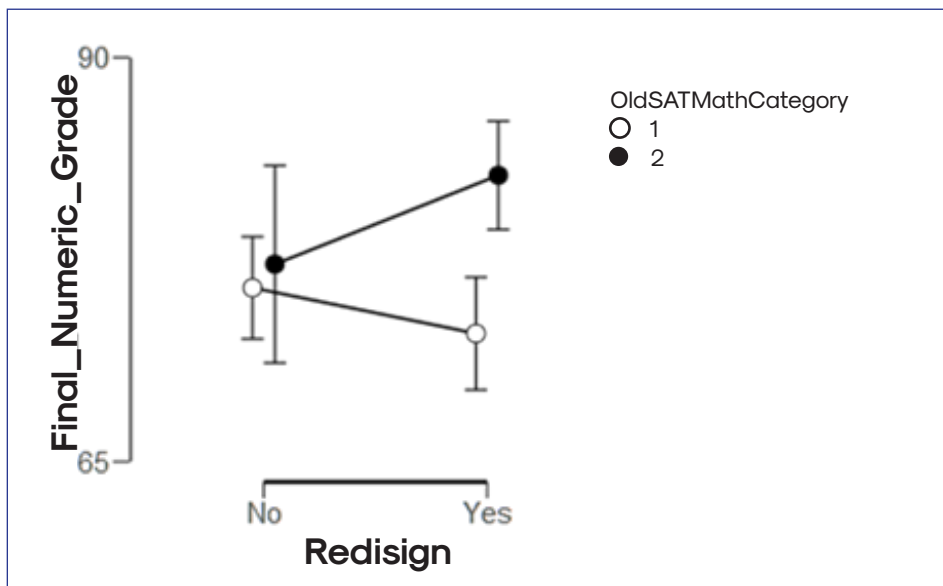


Figure 2
Interaction Between Student SAT Math Scores (Using Median Split) and Course Redesign



PLANS FOR CONTINUATION AND EXPANSION

Although the G2C (Cohort I) redesign has ended, all PSYC 1101 instructors at MGA have been asked to think carefully about a new teaching approach or change that each would like to make in PSYC 1101 beginning in Fall 2020. Their new approaches will involve different interventions/instruction changes (aimed at deepening learning) based on instructor choice, but outcome data on the DFW rate (and information about the changes made) will be reported at the end of the semester to the Department Chair with the eventual goal of expanding the most successful course redesign techniques to all course instructors. In developing their new approach, all instructors have been provided with some examples/suggestions of interventions that have some empirical support and/or theoretical promise.

Given that original G2C intervention for PSYC 1101 did not evidently have the desired effect of reducing achievement gaps or helping “at-risk” students in particular, the original redesign intervention itself will not be expanded to other instructors. The new modifications will be aimed at “deepening” student learning. The modified focus on getting students to think about the meaning of material allows for maintaining flexibility for instructor choices about specific idiosyncratic methods for deepening student learning. Further, several instructors teaching the course have begun investigating if the use of teaching assistants and tutors might particularly help at-risk students.

LESSONS LEARNED AND POTENTIAL IMPLICATIONS

Although our G2C course redesign did not result in a significant decrease in DFW rates, there were several lessons learned. The additional practice assignments/activities that were meant to deepen student learning might actually decrease course grades for some students because of the sheer number of assignments (which some students did not do). Alternatively, differences in student personality (e.g., conscientiousness), student college readiness, and general cognitive ability might moderate how beneficial these additional activities and practice opportunities are. We continue to investigate whether at-risk students take full advantage of the opportunities or if the supplemental activities might actually decrease their grades due to noncompletion. We are also considering deploying Undergraduate Teaching Assistants as a resource for at-risk students.

An additional lesson learned is that our current “lower-cost” textbook is slightly above the limit to be designated as “low cost” by the USG/Affordable Learning Georgia initiative. Recent negotiations for a lower cost option from the same publisher should improve access for financially struggling students.

Although we did not present the analysis, we also found out a high DFW rate (37.1%) in 8am class sections of PSYC 1101 (regardless of redesign). Consequently, we no longer offer 8am sections.

The G2C redesign experience and results have been discussed at a newly created Departmental-Behavioral Sciences Colloquium, created to increase communication about research/scholarship in our fields, particularly, scholarship of teaching and learning (SoTL). The increased communication about high impact teaching strategies among PSYC colleagues and mindfulness about student success and progression has been the biggest benefit to the department going forward. In this way, the G2C initiative has been successful at our institution.

REFERENCES

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