

How Assessment Choice Affects Student Perception and Performance

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Abstract. This action research project sought to understand how giving students a choice in how to demonstrate mastery of a reading would affect both grades and evaluations of the instructor, given that assessment choice might increase student engagement. We examined the effect of student assessment choice on grades and course evaluations, the two assessment options being a reading quiz or a two-minute video recording of themselves *recalling* what they could about the text (a “recall”). In Year 1, students were required to complete a multiple-choice reading quiz, with the option to complete a recall video for the opportunity to revise essays (revision tokens). In Year 2, students were allowed to choose whether they submitted a recall video or a quiz, with the option to submit the other to earn revision tokens. The data included student submissions, grades, and course evaluations. Students completed more recall assignments when the recall *replaced* the quiz requirement than during Year 1 when recalls only earned the students revision tokens. In addition, the instances of students completing both the quiz and recall increased in Year 2. Average course grades did not change from year to year, but students with higher course grades were significantly more likely to have completed recalls in both years. Student evaluations of the instructor were significantly higher for “responses to diverse learning styles” in Year 2 compared to Year 1. The study shows that letting students choose the assessment type they prefer can lead to increased student engagement and improve their perception of the instructor’s responsiveness to learning styles, without causing grade inflation.

Keywords: assessment choice, action research, course evaluation, test anxiety, logistic regression.

Although the theory of learning styles has been debunked (Nancekivell et al., 2020), it perseveres, leading many students to believe they learn better in some ways than others. In fact, some studies show that 90% of people subscribe to the idea of learning styles (Nancekivell, 2019). For example, they may consider themselves a visual or kinesthetic learner. Two thirds of higher education faculty members in one study also answered “yes” to whether “teaching to a student’s learning style enhance[s] learning” (Dandy & Bendersky, 2014, p. 362). In fact, the university where this study takes place perpetuates the myth by asking students to evaluate instructors based on their “responses to diverse learning styles,” which implies that learning styles exist and require instructor action.

In contrast to learning styles, test anxiety is real and affects many students, causing not just discomfort but distorting assessment scores. Estimates of the prevalence of test anxiety vary. The American Test Anxiety Association places the percentage of the school-going population affected by it at approximately 20% (Strauss, 2013). However, it may be much more common than that. One 2005 study estimated that as many as 40% of students might be affected (as cited in Lothes et al., 2019). More recently, a study aimed specifically at finding its prevalence found that 48% of students taking a university entrance exam suffered from test anxiety (Kavakci et al., 2014). In other words, in a college classroom of twenty students, one can expect between four and ten students to have an emotional, physiological, and behavioral response to regular quizzes.

Test anxiety can cause students to underperform. Rana and Mahmood (2010) studied test anxiety and its effects on academic achievement among a sample of 414 graduate students. They found a strong negative relationship between test anxiety and achievement scores, with 53% of the variance in achievement scores being explained by test anxiety. Similarly, Salehi and Marefat (2014) found a negative correlation between test anxiety and exam grades in a language course.

Students with learning disabilities (LD, also sometimes referred to as learning differences; see, for instance, Understood (n.d.)) are even more likely to suffer adverse effects from test anxiety than students without LD. Whitaker Sena et al. (2007) found that, compared to students without LD, LD students had higher cognitive obstruction/inattention scores, which interferes with test-taking. They also state that LD students had higher worry scores, with worry being “the most powerful cognitive facet of test anxiety” (Whitaker Sena et al., 2007, p. 370). These factors cause an instructor’s heavy reliance on quizzes to be particularly challenging for this group.

Learning disabilities can form barriers for students to succeed at all levels of education, including college. According to Madaus and Shaw, “first time freshmen with LD in American colleges and universities increased from .05% of all freshmen in 1983 to 3.3% of all freshmen in 2008” (2010, para. 1). Students with dyslexia,

for example, can experience trouble with written materials such as tests and exams. Kirby et al. (2008) showed that college students with dyslexia scored lower on a reading comprehension test, had more trouble selecting main ideas from a text, and had lower reading rates than those without dyslexia.

Whether students are inhibited by a learning disability, test anxiety, or a perceived learning style, it can help to let them choose their preferred assessment, thus alleviating the negative effects of a single type of assessment. Patall et al. (2008) write that even unpleasant activities are experienced as less unpleasant when participants feel they have chosen to engage in them. They provide examples of eating grasshoppers or giving oneself electric shocks (citing Zimbardo et al., 1965). Because many students also find quizzes unpleasant (and might, in fact, prefer eating grasshoppers), feeling like they have chosen the quiz over an alternative task could reduce those students' negative feelings.

There are many ways in which assessment choice can be integrated into courses that increase student engagement, autonomy, and higher-order thinking skills while decreasing anxiety (Dabrowski & Reed Marshall, 2018; Pretorius et al., 2017). One framework of assessment choice categorizes the decision into three options: content (students pick what content they will study), product (students decide how they will be assessed), and process (students decide how to proceed in their assessment such as in groups or individually) (Dabrowski & Reed Marshall, 2018). In the current study, students are allowed to pick between two methods of assessment, which falls under the product category of assessment choice. Previous studies on the effectiveness of assessment product choice have found positive impacts on the students.

A study conducted in the United Kingdom provided nursing students with a choice of assessment methods for a particular module: an essay, an oral presentation, or an oral exam. The majority of students decided to write an essay, but all forms of assessment were chosen by at least a few students. Most students expressed an appreciation for being able to pick an assessment product that played to their strengths and avoided their weaknesses, such as avoiding test anxiety or a fear of public speaking (Garside et al., 2009). In a similar approach, Jopp and Cohen (2022) offered four assessment options for an online business course in Australia. They found that, while grades did not increase when students were offered their choice of assessment, student subject satisfaction and positive feedback of the course increased in the course sections that offered assessment choice. Similarly, in a study of students in an online master's program, choice of assessment did not significantly increase course grades (MacNaul et al., 2021), which further supports that assessment choice may lead to greater engagement without grade inflation.

In a more radical example, an online technology management course at Utah Valley University afforded students the choice of not just which assessments they could

complete but also how many, with the understanding that the more assessments they completed, the higher their final grade would generally be (Hanewicz et al., 2017). This study found this form of assessment choice so engaging that 36% of students completed more assessments than they needed to earn an A, the highest grade possible.

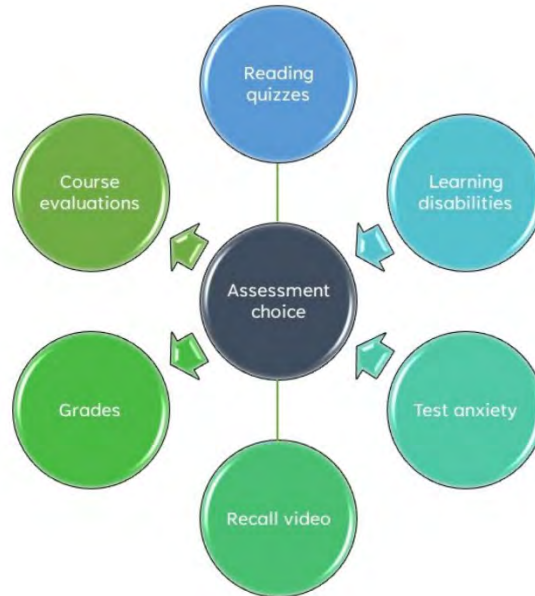
Why students choose one form of assessment over another has also been the topic of previous study. Parkhurst et al. (2011) found that students who place a higher value on hard work are significantly more likely to choose what they perceive as a challenging form of assessment, whereas students who value leisure more are significantly more likely to opt for an assessment they view as easier. Returning to the nursing study, one student picked the exam, which most students perceived as the more difficult form of assessment, because they perform well under pressure (Garside et al., 2009). Similarly, students generally prefer simple-to-execute multiple-choice exams over exams with higher-effort essay questions (Struyven et al., 2005). Additionally, student perceptions of an assignment are strongly linked to their view of how appropriate an assignment is, with a negative view of a form of assessment deemed inappropriate (Struyven et al., 2005). Therefore, even if an assignment is a wholly appropriate form of assessment, students may have a negative opinion of it if they cannot connect the dots on how effectively it assesses the content. Offering students a choice of assessment thus also lets them pick what they view as the more appropriate format, hopefully making their opinion of the assignment (and thus the course) more positive.

The course under scrutiny in the present study included required readings, comprehension of which was assessed to incentivize students to read (see, for example, Tropman (2014) on this topic). One way to assess how well students have processed course content is a quiz, but another is to let students recall the information without the help of notes. Retrieval practice has been shown to cause medium to large positive effects on student learning (Agarwal et al., 2021). According to Karpicke (2012), active retrieval helps move information from short-term to long-term memory more effectively than reviewing notes or rereading. Karpicke's research inspired us to create an assignment in which students video-recorded themselves recalling whatever they could remember from the text they had just read.

With that in mind, this study aimed to determine how grades and course evaluations are affected by allowing students to choose between a reading quiz and an alternative form of assessment, a recall.

Figure 1

Visual Theoretical Framework



Objectives

The goals of this study were to evaluate whether students, when given a choice between a recall video assignment and a quiz, were more likely to complete a recall assignment than when the recall was offered for only earning revision tokens, and how offering this choice affected the students' grades and their evaluation of the instructor on "responses to diverse learning styles" (based on the student course evaluation). We hypothesized the following:

1. Given a choice to do a recall instead of a quiz, more students will complete the recall assignment than when it is only for extra revision tokens.
2. Given a choice to do a recall instead of a quiz, more students will complete *both* to earn the extra revision token than when the quiz was required, and the recall was optional.
3. Given a choice to do a recall instead of a quiz, students will have improved course success, defined as a higher final grade.
4. Given a choice to complete either recall or a quiz, students will evaluate the instructor's "responses to diverse learning styles" higher on the course evaluation than when quizzes were required.

Study Design and Methods

Identification of the Problem

This is an action research project to evaluate how offering students a choice in assessment affects their behavior, course success, and course evaluation on the category of the instructor's "responses to diverse learning styles" (a question on the student course evaluation). In AY 2020-2021, students taught by the researcher were required to complete a short quiz about each reading assignment. They were also encouraged to submit a recall: a video of themselves recalling whatever they could remember about the assigned text. After submitting the recall video, students reviewed two of their peers' recalls, completing a rubric and leaving a comment. The rubric assessed whether students were in the video, recalled information from the assigned text without notes, and reviewed their peers. The purpose was to increase student engagement with course materials and each other (through the peer-review component) and offer consistent opportunities to earn revision tokens: For each recall the student passed, they earned a quarter revision token. Each full revision token, in turn, lets them revise and resubmit a failed assignment or quiz. (The concept of revision tokens is based on Nilson's (2015) book on specifications grading.)

Very few students completed recalls under those conditions, and at the same time, several indicated feeling stressed and anxious about the course's many quizzes. Additionally, the researcher's course evaluation scores on "responses to diverse learning styles" were consistently lower (3.6 on average) than scores on other factors (4.1 on average), a disparity that warranted deliberate intervention.

Planning

The course targeted for this study was a second-year (intermediate) core curriculum course called Dialogues of Belief and Reason 200: World Belief Systems. Four sections of the courses were taught each year by the same instructor, with each section treated as a replicate. In AY 2021-2022, to encourage more students to complete the recall task and relieve test anxiety, students in the same core course were offered a choice between completing either the quiz or the recall for each text. In effect, students could skip the quiz if they completed the recall for the assigned text. If they passed both the quiz and the recall for the same text, they earned a quarter revision token.

Implementation

The data was collected from the researcher's courses' gradebook in the learning management system after completion of each term, as well as from anonymous student course evaluations. Students who withdrew from the course or did not complete any assignments were excluded from analysis. The university's IRB committee approved this study (project number 21.01). The study was exempt from informed consent.

Control Group

In addition to the 200-level courses from which we compared two years of student activity, we also collected control data from 400-level (advanced) core curriculum courses taught by the same researcher in the same two years. As this was a two-year experiment with changing university policies and approaches due to the COVID-19 pandemic, the control group was utilized to assess whether these rapidly changing policies impacted either the average course grade or the instructor evaluation scores. Changes from year to year included the number of students on Zoom vs. in person, the university's policies on attendance, and the encouragement/discouragement of faculty to accept late work without penalty. No changes were made in reading assessments in these control courses, and students were required to complete a quiz for each text, both during AY 2020-2021 and 2021-2022. They were not given a choice in assessment. This data was collected in case other factors affected students' perception of the instructor's responsiveness to learning styles, as well as students' final grades.

Statistical Analyses

Three statistical analyses were used to evaluate the data. For comparison of two sets of averages (e.g., grades or student evaluations), a t-test of means assuming unequal variances was utilized. For comparison of three or more sets of averages a single factor ANOVA with a Bonferroni adjusted t-test as the post hoc test were performed. Lastly, a logistic regression was used to evaluate the significance of the relationship between final course grade and having completed a recall. In the logistic regression model, the independent variable was the final course grade for an individual student, and the dependent variable was whether the student completed a recall during the course.

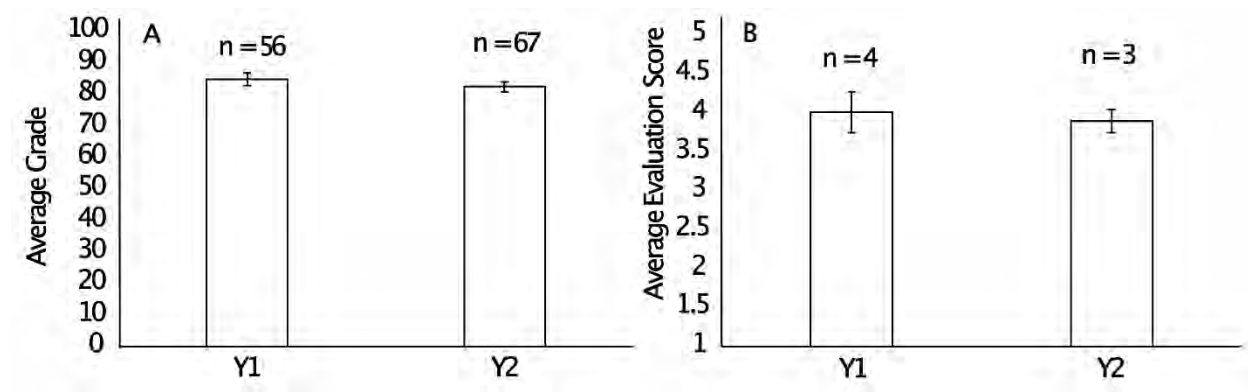
Results

Control Group

For the control group (400-level course), neither average course grades (Figure 2A) nor instructor evaluations (Figure 2B) changed significantly for the control group from one year to the next (t-test, $p > 0.1$). This is despite changes in university policy regarding acceptance of late work and methods of delivery required due to the COVID-19 pandemic.

Figure 2

Average Grade and Evaluation Score of the Instructor



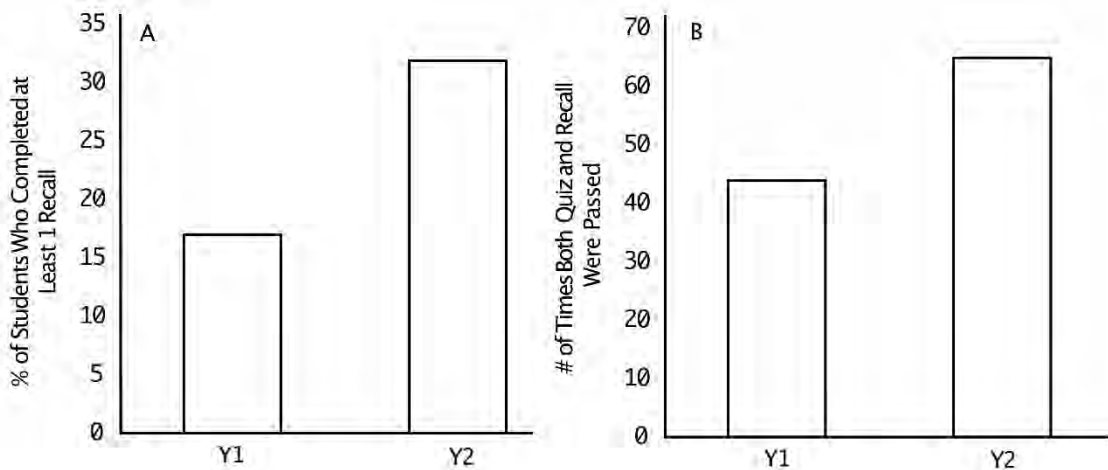
Note. There was no significant difference (t-test, $p > 0.1$) in either average course grades for each student (A, left) or average evaluation score for the class (B, right) from year to year, indicating changing university policies were not a factor in either of these metrics. Error bars represent standard error. In A n represents the number of individual grades whereas in B n represents the number of classes. For evaluation scores instructors are only provided the average score for the whole class, not individual scores, and the response rate was $>83\%$.

Recall Completion

Generally, for each of Year 2 sections, there were instances of students either completing a recall and a quiz, just completing a quiz, and completing a recall instead of a quiz. It was rather common for students to only complete quizzes, skipping all recalls (often $>20\%$ of the course enrollment), while very few students completed only recalls ($n = 3$). In Year 2, students were allowed to submit a recall video *instead of* completing a reading quiz, compared to Year 1, when students had to complete the reading quiz but could submit a recall for only earning revision tokens. When they were allowed to replace a quiz with a recall, students were 87% more likely to submit a recall at some point during the course than when it was for only earning revision tokens. As shown in Figure 3A, almost twice the percentage of students completed a recall when it was an option to replace a quiz rather than just for revision tokens.

Figure 3

Comparison of the Portion of Students' Recall



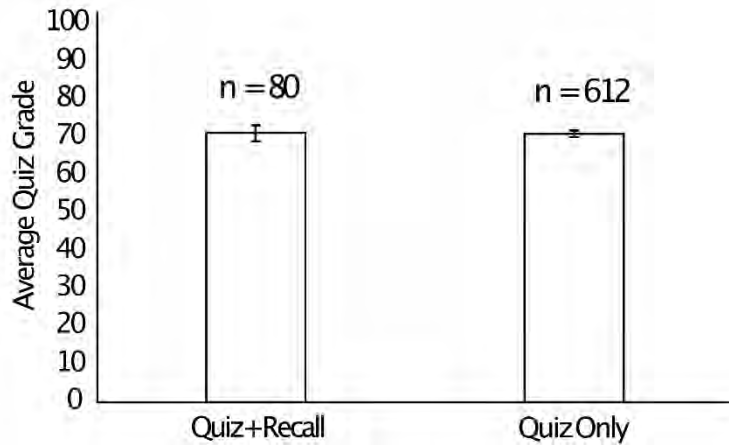
Interestingly, in Year 2, students more often completed both the quiz and the recall. From Year 1 to Year 2, the number of times both the quiz and recall was passed increased by 47% (Figure 3B). It appears that giving students the option of assessment choice led to increased engagement with the course content.

Grade Effects

We looked at various ways completing a recall might affect grades. First, we determined if completing a recall and a quiz for the same reading increased the quiz grade for that particular reading. Using a t-test of means assuming unequal variances, we found that average student quiz scores were statistically the same, whether students had also submitted a recall about the same reading assignment or not (Figure 4, $p=0.94$). In other words, there does not appear to be an overall learning effect from completing the recall. Even though more students completed a recall and quiz for the same reading in Year 2 compared to Year 1, the percent of students earning revision tokens through this method in Year 2 was lower (20%) than in Year 1 (25%), because of higher failure rates on quizzes and recalls. Additionally, earning a revision token not all students actually took advantage of the opportunity to revise an assignment, nor did revisions always result in a higher grade. Lastly, there were other methods by which students could earn revision tokens (e.g., visiting office hours) that were the same year to year. Therefore, it seems unlikely that there was an effect on the overall grade due to the different ways in which revision tokens were earned.

Figure 4

Average Quiz Scores

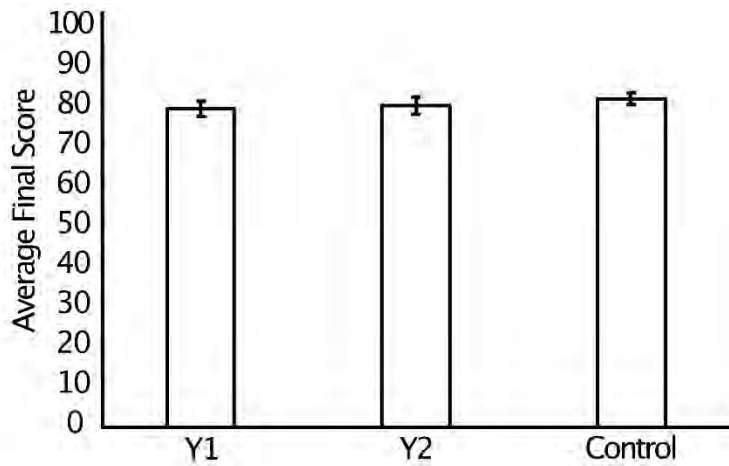


Note. Average quiz scores were not significantly different (t-test, $p > 0.1$), whether a student completed a recall and a quiz or just took the quiz. Error bars represent standard error.

An effect on the average course grade did not materialize either. Average course grades hovered around 80 in Year 1, Year 2, and the control groups, as shown in Figure 5. The ANOVA shows no significant differences in final score across the class types ($p = 0.50$), including the control group. In other words, overall average final grades did not receive a boost from the option to replace a quiz with a recall, nor was there any sign of grade inflation. This shows that, at the class level, the intervention of allowing students to replace a recall with a quiz does not improve course grades as a whole.

Figure 5

Average Final Scores of Each Class Type



Note. There was no significant difference in average course grades across the three class groups (ANOVA, $p = 0.50$). Error bars represent standard error.

On the other hand, the data did show a grade effect on the individual level. Table 1 shows the results of the logistic regression. The modeled data displays the probability of students completing a recall if they achieved a specific course grade. Higher grades were associated with a significantly higher probability that the student completed at least one recall ($p < 0.001$). This either means that, while the intervention did not improve the overall course grade, it did seem to have a positive grade effect on the students who engaged in the intervention or that students who are inherently more engaged are more likely to try completing a recall and achieve a better grade anyways because of their high engagement.

Table 1

Results of the Logistic Regression Analysis

Final grade	Probability of having completed a recall
100	22.5%
90	18.1%
80	14.4%
70	11.3%
60	8.9%

Note. Higher grades were associated with a significantly higher probability that the student completed at least one recall ($p < 0.001$).

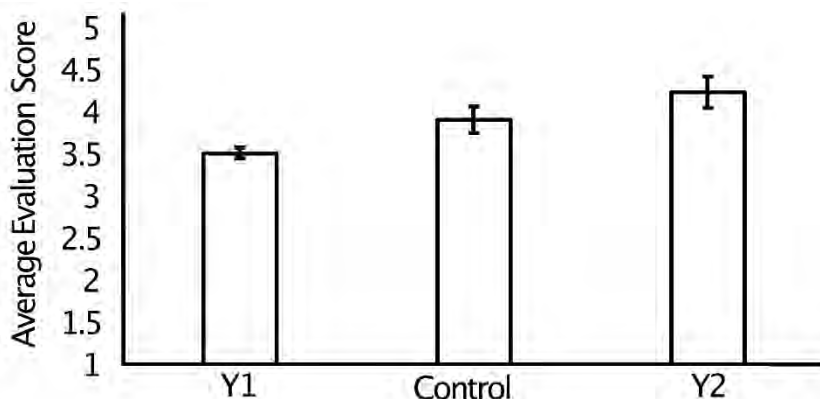
Evaluation Scores

Year 1 evaluation scores were the lowest, control group results were moderately higher ~ 0.5 , and the Year 2 (experimental) evaluation scores were the highest, ~ 0.5 higher than the control group (Figure 6). However, an ANOVA and Bonferroni post-hoc test showed the only significant difference in average evaluation scores was between Year 1 and Year 2 ($p < 0.05$). The score scale was from 1 to 5. There was not a significant difference between the control and experimental groups, which may be a function of the different course levels, as the control group was an advanced class (which presumably has more experience with reasonable

expectations for a class), whereas the experimental groups were at the sophomore level.

Figure 6

Average Instructor Ratings for "Responses to Diverse Learning Styles"



Note. As per an ANOVA and post-hoc test, the only significant difference ($p < 0.05$) was between Years 1 and 2 of the experimental groups. Error bars represent standard error. For evaluation scores instructors are only provided the average score for the whole class, not individual scores, and the response rate was $>82\%$.

Discussion

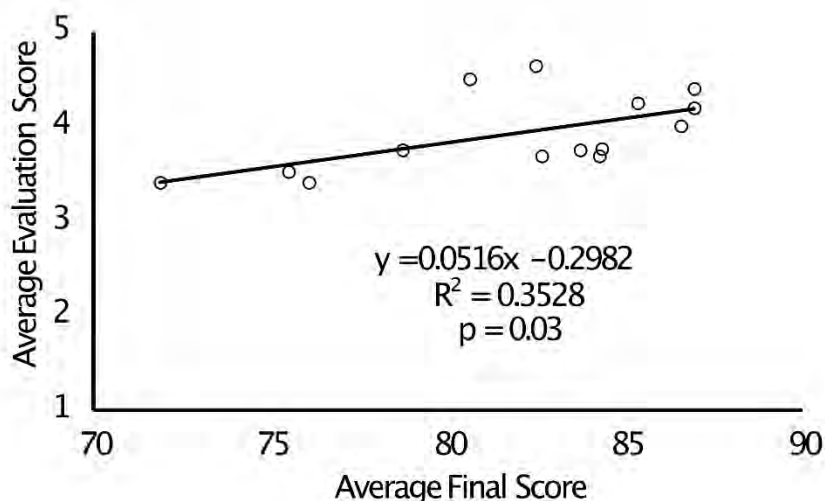
This action research focused on the effects of giving college students in a second-year core-curriculum course a choice of assessment. Students were allowed to replace a multiple-choice quiz about assigned readings with a video recording of them recalling the text's content. The purpose was to improve the students' course experience by accommodating varying learning disabilities, preferences, and test anxiety. One way to measure whether students feel accommodated is through the university's course evaluation question about the instructor's "responses to diverse learning styles." Evaluation scores improved significantly from Year 1, when the average score was 3.6 on a scale from 1 to 5, to Year 2, when the average score was 4.3. The effect of assessment options likely spread even to the 68% of students who did not submit any recalls because they instead chose to complete the quizzes and having a choice may have made those less unpleasant (as shown in Patall et al., 2008). In other words, by letting students choose, they may have felt that the instructor recognized that some students have different learning preferences and limitations, even if they were comfortable with conventional assessments. This finding is consistent with several previous studies that found student's opinion of courses allowing for assessment choice was positive (e.g., Garside et al., 2009, Jopp & Cohen, 2022), without causing grade inflation (MacNaul et al., 2021). However, those previous studies did not specifically explore this type of alternative assessment (video recall) offered instead of quizzes/tests.

Therefore, this study builds on that previous research by showing those previous findings are consistent with video recalls as well.

However, there is one caveat: a portion of the increase in course evaluation scores in the Year 2 experimental setting can be explained by higher course grades. Instructor ratings correlated significantly with course grades: For each point the final grade went up, the evaluation score went up 0.05 (see Figure 7 and also Flaherty (2022)). Nevertheless, the grade effect does not explain the entire increase in evaluation scores, as there was no significant increase in average final score from Year 1 to Year 2, and there *was* a significant difference between groups for the evaluation score. Mathematically, for the significantly higher instructor ratings (a ~ 0.5 increase) from Year 1 to Year 2 (observed in Figure 6) to be achieved only by higher grades, there should be a ten-point higher average final grade in the Year 2 group compared to the Year 1 group, which was not observed in Figure 5. This supports that higher grades did not solely account for the improved instructor evaluation scores in Year 2 as Figure 7 might suggest.

Figure 7

Regression of Final Average Class Score and Average Evaluation Score



Note. The regression is significant, even though the fit of the data is poor ($R^2 = 0.3528$). Course grade may influence the evaluation scores somewhat but does not account for the entirety of the evaluation scores.

Aside from increasing course evaluation scores, the experiment also aimed to increase the percentage of students who completed recalls, the number of recalls completed, and the number of times students completed both a recall and a quiz. Studies show that retrieving information without the support of notes moves it from short-term to long-term memory more effectively than taking a quiz with notes (Karpicke, 2012). The increased willingness to try a recall may lead to greater

student success. Compared to Year 1, students were nearly twice as likely to complete a recall and 47% more often passed both assessments for the same reading. This points to increased engagement and effort, though it may also be a way for students to hedge their bets: by completing both assessments, they had a better chance of passing at least one. The reasons behind and results of this increased engagement with course content (as shown in Figure 3) are worth further study.

The impact of assessment choice on grades is not as straightforward. At the class level, allowing students to replace reading quizzes with recalls did not improve average final grades, nor were quiz grades affected when students completed both assessments. This may indicate that students were more likely to try a recall if they found the reading particularly challenging and were doubting their ability to do well on a quiz in the hope they might pass at least one of the assignments. Students who completed recalls were significantly more likely to have a higher final grade. All in all, adding recalls as a quiz alternative might not influence the class as an aggregate, but it does seem to matter for individual students and may be more inclusive. In fact, in Year 2, three students completed only the recalls and did not take any of the multiple-choice reading quizzes. Two earned an A in the course and the other a B+.

There are several possible reasons why many students did not take advantage of the option to replace a quiz with a recall video, even though they might have benefitted. First, the recall video assignment was unfamiliar, especially compared with multiple-choice quizzes. One way to mitigate this issue is to require students to complete the quiz and recall for the first reading, then allow them the choice of which assessment to complete for all remaining readings. This would familiarize students with both forms of assessment, which would create a more informed decision on their part. Second, the recall videos were due a few hours before class to allow for peer review, whereas the quizzes were due at the start of class. For example, when class started at 3 pm, the recalls were due at noon and the quiz at 3 pm. Students who were less able to manage their time missed the recall opportunities. Third, some students may not have been comfortable recording themselves. And finally, students were not allowed to use notes for the recall, but they were encouraged to do so for the quizzes. Access to notes may have given students a higher comfort level with the quizzes than with the unfamiliar recall assignments.

Students did fail recalls, and some failed the course even though they completed recalls, showing that assessment choice is not a magic bullet. In Year 2, 37% of recalls submitted did not receive a passing grade based on the rubric. Reasons for failing a recall included skipping the peer-review portion, not recalling information from the text, and reading from notes.

The limitations of this study stem from conducting it during the COVID-19 pandemic, the limited sample sizes, and not collecting data about our students' test anxiety. To start with the pandemic: Teaching from 2020 to 2022 was affected by fixed student seating, reduced classroom occupancy, the use of Zoom by students and faculty, and face masks. These policies changed throughout the study and may have affected grades and course evaluations. However, by collecting data from a different course during the same time, we attempted to control for these factors and isolate the effects of the intervention. The sample sizes represent two full years of teaching by a single instructor. Continued review of the data and expansion of the experiment to other courses will allow us to confirm or revise our findings. Finally, we used only existing data (submissions, grades, course evaluations) and did not ask students about their perceptions of stress or test anxiety. Future studies can expand on our findings by measuring if anxiety levels change when assignment choice is offered.

Conclusion

In summary, when they can replace a quiz with a recall assignment, more students complete at least one recall than when they were optional and for earning revision tokens only. In addition, students were more likely to complete both the recall and the quiz in Year 2, perhaps either aiming for earning revision tokens or hedging themselves to at least pass one of the two. However, submitting a recall did not affect the quiz grade for the same text. Allowing students to complete a recall instead of a quiz did not raise the overall course grade, though students with higher grades were significantly more likely to have completed a recall than students with lower final grades. Finally, students evaluated the instructor significantly higher on "responses to learning styles" when they were allowed their choice of assessment. We have shown that assessment choice can increase student engagement and improve their perception of the instructor's responsiveness to learning styles, without causing grade inflation.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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