

RESEARCH STUDY NOTE

Goal Setting and Reflection Surveys

Macmillan Learning

Goal Setting and Reflection Surveys

Key Findings:

Students experienced greater benefits when instructors implemented the surveys as intended and actively encouraged ongoing participation, highlighting an opportunity to expand impact by increasing instructor adoption of Goal Setting and Reflection Surveys.

Students found the Goal Setting and Reflection Surveys valuable for their learning.

Students who completed the surveys also reported having higher self-efficacy and engagement in their courses.

BACKGROUND

Success in higher education is highly dependent on skills that go beyond cognition and prior knowledge, including strategy and motivational skills. Students must set goals, engage in instruction, enact effective strategies, monitor progress, and seek help and resources when needed (Zimmerman & Schunk, 2001, 2018; Schunk & Ertmer, 2000). The ability to regulate one's learning in new learning environments has been referred to as self-regulated learning. Students commonly struggle with the self-awareness required to think about their own thinking (i.e., metacognition) that self-regulated learning requires. This is particularly true in online learning environments (Winters et al., 2008).

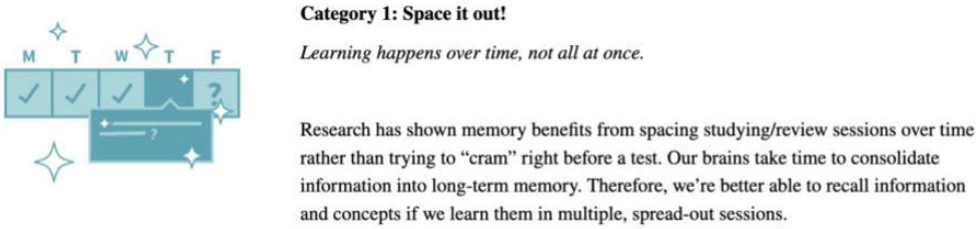
With the goal of supporting students' self-regulated learning and metacognitive skills, Macmillan Learning developed a self-regulated learning tool called Goal Setting and Reflection Surveys. This tool was incorporated into the digital full course solution Achieve. The Goal Setting and Reflection Surveys include both support and instruction for three identified phases of metacognition: planning (includes goal setting and planning of strategies), monitoring (includes attention focusing and progress tracking), and evaluating (includes self-evaluation and help-seeking).

Macmillan Learning funded a series of research studies (Baughman et al, 2023), across five semesters (2019-2021) and 115 institutions, to examine the impact of the surveys. Participating instructors were given implementation recommendations but use of the Goal Setting and Reflection Surveys was not required to participate in the study and implementation choices varied by instructor.

PRODUCT OVERVIEW

The Goal Setting and Reflection Surveys include a total of five surveys available within the full course solution Achieve. The Introductory Survey is intended to be given at the beginning of a semester and asks students to consider their goals for the course, how they plan to manage their time, and to identify learning strategies they intend to use to accomplish their goals. Before selecting their strategies, students are shown a short description of what they are, and why they're beneficial before students select the strategies they plan to use.

Figure 1. Example Learning Strategy Description



Survey questions include a mix of multiple choice and short written responses that enable instructors insight into students' majors, goals for the course, background information, and what they're looking to gain from the class.

There are four available Checkpoint Surveys which were created as progress checks throughout a semester and intended to be given right after a major exam or project. This helps students reflect on their strategies and performance. Checkpoint Surveys encourage students to reflect on the use and effectiveness of particular strategies in order to enact needed changes in order to accomplish their overall goals.

Figure 2. Example Checkpoint Survey Question



In recent weeks...

How often did you **study by explaining or summarizing concepts to someone else using your own words**?

- ◯ 4 - Often
- ◯ 3 - Sometimes
- ◯ 5 - Always
- ◯ 1 - Never
- ◯ 2 - Rarely

Reports of students' survey responses are available within Achieve in order to provide instructors insight into their students' progress that goes beyond their grade performance. The reports illuminate specific areas where students may be struggling, enabling interventions or instructional changes however the instructor chooses.

STUDY DESIGN

Ethics and Data Privacy

Prior to data collection, this study and the associated consent forms and instruments were reviewed and approved (found exempt) by the Human Resources Research Organization (HumRRO). HumRRO is an accredited, third-party Institutional Review Board organization with no affiliation with Macmillan Learning. Macmillan Learning seeks third-party review to eliminate any bias in the decision of the exemption. The data in this study, which are provided by the instructor and consenting students, are initially identifiable. However, once a random identifier is generated identifiable data are destroyed. Data are provided in secure storage locations, and access is permitted only to the primary investigator in the study.

Sample

The full study sample included participants spanning across five semesters from fall 2019 through fall 2021. This robust sample included 136 unique instructors teaching 292 courses. Eight different subject areas (chemistry, biochemistry, biology, calculus, precalculus, psychology, economics, and English) are represented in the study. Instructors came from 115 institutions across 32 states and Canada. The sample included a range in institution and course sizes as well as course formats (i.e., face-to-face, virtual synchronous, virtual asynchronous).

The variation in participating institutions and instructors enabled a diverse student sample. The full student sample included 47% non-White or Asian, 22% who were first in their families to go to college, 65% who were eligible for financial aid, and 31% who had a high school GPA lower than 3.5 across a total of 7,308 participating students.

Methods

After consenting to be part of the larger research study, participating instructors were given brief training on the Goal Setting and Reflection Surveys to be used as part of their Achieve implementation, potential benefits of its use, as well as, practical information on where to locate and assign the surveys to students within the Achieve program. The Goal Setting and Reflection Survey training was included as part of a broader training on Achieve given by a curriculum specialist and lasting approximately 45 minutes. If instructors requested follow-up training on any feature within Achieve, additional training was given. Participating instructors were not required to assign the surveys to their students, enabling a more naturalistic implementation. Use of the surveys was, however, observed and documented by the research team.

Students who consented to participate in the study granted researchers access to their course performance data as well as their Goal Setting and Reflection Survey usage data. Furthermore, as part of participating in the study, students were asked to complete two additional surveys (beginning and end of semester) to share sociodemographic information, perceptions of the surveys, as well as self-report on particular motivational constructs related to self-regulated learning.

DATA ANALYSIS

Statistical modeling (i.e., general linear model) was used to isolate the unique impact of completing the Goal Setting and Reflection Surveys on student course performance and motivation. In order to partial out the unique impact, several factors were included in the model to control for other variables researchers thought would likely impact academic performance and student motivation. The variables were:

- course mean grade,
- student college readiness (i.e., high school GPA, SAT/ACT scores),
- student financial aid eligibility,
- student gender,
- student race/ethnicity,
- course enrollment total,
- number of course Achieve assignments assigned within a course,
- and student number of course Achieve assignments completed.

Including these variables in the model was an attempt to equate students on background variables and prior academic performance in order to bolster the argument that the impact of the surveys is not simply a reflection of "better" students completing more surveys.

RESULTS

Course Performance.

A pilot study was conducted during the fall 2020 semester to gather preliminary evidence of the impact of the Goal Setting and Reflection Surveys. This was the first semester the surveys were out of the beta phase and introduced as a regular resource in the Achieve platform.

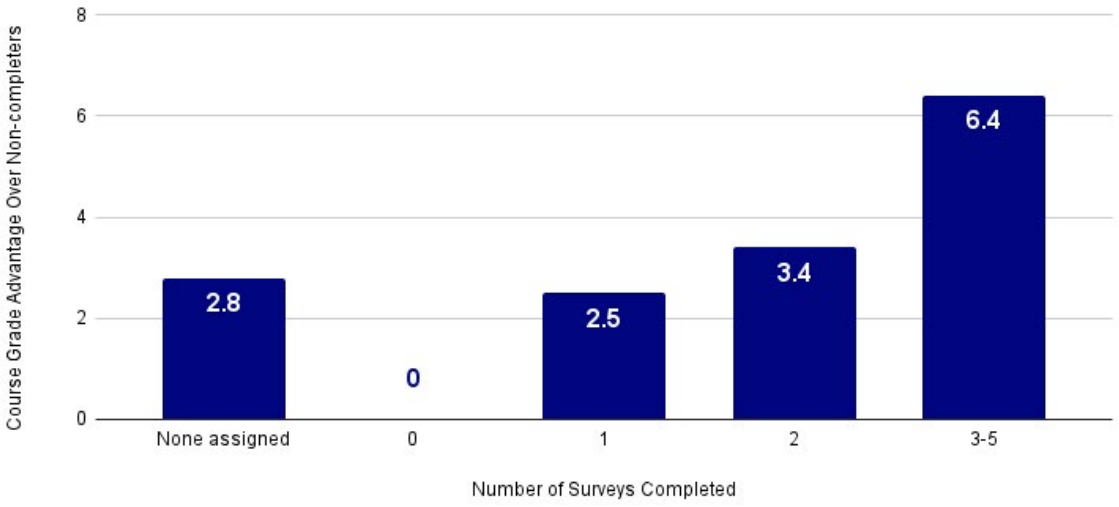
During this semester, students tended to complete either one or two Goal Setting and Reflection Surveys. The results suggested that students completing two or more of the assigned Goal Setting and Reflection Surveys performed higher on their final grades by 8 percentage points compared to students who did not complete surveys. The results also suggested that students who completed only one survey performed similarly to students who did not complete any surveys.

In further semesters, such as spring 2021 through the current semester, instructor usage of the Goal Setting and Reflection Surveys increased and students also began completing more of those assigned surveys.

Given the positive preliminary results from the pilot study and the increase in usage of the surveys, a longitudinal research study was conducted. The longitudinal data also provided the opportunity to increase the diversity of the study sample as more institutions, instructors, and students participated in the data collection. The following results represent data collected from fall 2019 through fall 2021.

Figure three displays student course performance by the number of Goal Setting and Reflection Surveys completed. A total of 2,529 students were in a class that had at least one survey assigned by their instructor during the semester. As demonstrated by the graph and further supported by model results, students who completed one or more Goal Setting and Reflection Surveys performed statistically significantly better in their courses than students who didn't complete any surveys ($p < .05$). Students in courses with no assigned surveys showed an advantage of 2.8 percentage points over non-completers, but were at a large disadvantage to students completing three to five surveys (3.6%, $p < 0.05$).

Figure 3. Course Performance by Number of Goal Setting and Reflection Surveys



The research team who developed the Goal Setting and Reflection Surveys emphasized the importance of setting goals (planning) and then monitoring and evaluating progress toward the goals to maximize potential impact. Students are recommended to complete the Introductory Goal Setting and Reflection survey to set goals, and then monitor and evaluate by completing at least one Checkpoint Survey. The theoretical basis of the surveys' development appears to be mirrored in the present results. In order for the surveys to be impactful on students' course performance, it's important they complete at least two surveys.

Motivation

Students' motivation, including academic self-efficacy and academic engagement, was reported in the two additional surveys given at the beginning and end of the semester. While the Goal Setting and Reflection Surveys were not designed to impact these motivational constructs directly, the researchers hypothesized that promoting self-regulated learning and metacognition could also lead to students feeling more confident and engaged in their courses. Moving the needle on student motivation indirectly through the surveys was seen as a particularly impactful result.

Self-efficacy was reported on a 7-point likert scale and included 11 survey items such as *"How confident are you that you can finish homework assignments by the deadline?"* Engagement was reported on a 5-point Likert scale measuring cognitive, behavioral, and emotional components of academic engagement and included nine survey items such as *"During this course, I enjoyed learning new things"*. Measures of internal consistency found the scales to be reliable measurements, with Cronbach's alpha coefficients of r = 0.89 and r = 0.76.

Analyses for motivation were limited to fall 2021 when items were introduced via the two additional surveys. Analyses examined the impact of completing the Introductory Survey and at least one Checkpoint Survey on end of semester self-reported academic self-efficacy and engagement. This was done while still controlling for the student background and college readiness variables previously mentioned. In addition, these analyses controlled for the beginning of semester self-reported motivation, further isolating the unique impact of the Goal Setting and Reflection Surveys on student motivation. Baseline motivation is controlled in a similar way to prior academic performance in the previous sections course performance analyses. The purpose of controlling for baseline motivation is to mitigate the confounding argument that more motivated students tended to complete the Goal Setting and Reflection Surveys.

Results revealed that students completing the Introductory Survey and at least one Checkpoint Survey had significantly higher self-reported self-efficacy and academic engagement, particularly emotional engagement ($p < .001$). Students who completed a checkpoint survey moved closer to feeling "very confident" in their ability to complete their coursework than those who didn't, who were closer to "pretty confident". Furthermore, students who completed a checkpoint survey moved closer to "often" feeling emotionally engaged in the course than those who didn't.

The result suggests that not only do the surveys help students perform better in their course, but they also feel more confident that they can accomplish the necessary course tasks and feel more engaged while doing so. Empowering students to plan, monitor, and evaluate their course performance may help facilitate these motivational beliefs.

Figure 4. Self-efficacy by Completion of at Least One Checkpoint Survey

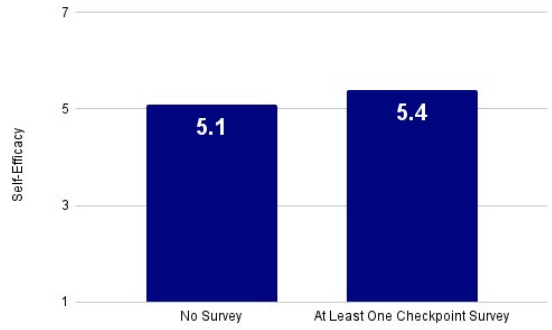
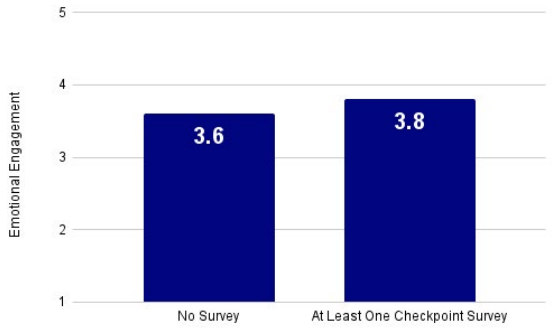


Figure 5. Emotional Engagement by Completion of at Least One Checkpoint Survey



Perceptions of Goal-Setting and Reflection Surveys

The fall 2021 student surveys also included questions about students' perceptions of the value and usefulness of the Goal Setting and Reflection Surveys. Of the 780 students from that semester who reported completing at least one Goal Setting and Reflection Survey, results revealed that students generally perceived the Goal Setting and Reflection Surveys as helpful for their learning. Table one summarizes the survey results:

Table 1. Fall 2021 Student Survey Results

Survey Item	Agree/ Strongly Agree	Neutral
The surveys helped me improve as a student this semester.	75%	19%
The surveys were a valuable use of my time.	62%	25%
The surveys helped me think about my goals/learning habits in and outside of class.	80%	15%
The surveys helped me learn something new about how I can manage my time, studying, or learning.	79%	15%

IMPLICATIONS FOR INSTRUCTORS

Overall, the research findings suggest a robust benefit for the Goal Setting and Reflection Surveys. Not only did students benefit academically from completing at least an Introductory and Checkpoint survey, they also reported higher academic motivation including self-efficacy and engagement. Furthermore, students seemed to be aware of the benefits as evidenced by their perceptions of the surveys as valuable to their strategies and learning.

It is also important to note that students in courses where instructors consistently implemented surveys, and where students actively engaged with them, outperformed those in courses where surveys were not assigned. These results suggest that a greater number of students could benefit from the surveys if instructors implement them as intended.

Given these findings, it seems advantageous for instructors to incorporate the Goal Setting and Reflection Surveys into their instruction. Instructors are recommended to assign the Introductory Survey in the first few weeks of a semester, followed by at least one Checkpoint Survey in order to maximize the impact of the surveys. Ideally, the Checkpoint Survey(s) should be assigned right after an exam or project. This allows students to set goals, employ strategies based on those goals, then evaluate how well those strategies helped in achieving their goals, and adapt or seek help when necessary.

Finally, use of the Goal Setting and Reflection Surveys within Achieve enable instructors to view insights and reports of student survey responses. The results give instructors insight into their students beyond their grade performance. While not tested directly as part of the current research study, instructors who use the reports in order to identify gaps in students' current strategies, as well as a signal to adapt instruction, provide particular resources, or enact interventions, would likely see an even greater benefit of the surveys.

DISCUSSION

The current work evaluated the impact of the Goal Setting and Reflection Surveys within Achieve across a diverse sample of institutions, instructors, and students. While implementation of the Surveys was at the discretion of the instructors, many of them chose to assign surveys to their students. Results indicated that students who were given opportunities to reflect on their goals and strategies through completing multiple surveys received the greatest benefit. The opportunity to self-reflect through taking multiple surveys may prompt students to plan, monitor, and evaluate their progress toward achieving their goals. The opportunity for self-reflection was related positively to course performance, as well as motivation related to the course.

The development of the surveys and the current results builds upon prior work on self-regulated learning interventions. The surveys provide opportunities for reflection, as well as short instruction on self-regulated learning strategies, all within the same resource. The current work also builds on prior research by examining students' perceptions of the intervention, its impact on motivation, as well as academic performance.

LIMITATIONS AND FUTURE RESEARCH

While the current work represented a large and diverse sample, a convenience sample was used. This was not a true experiment with random assignment. A multitude of variables were used to serve as statistical controls, but the lack of random assignment, or a matched comparison group, is a limitation. Individual differences of students not captured by the variables used as controls cannot be ruled out as potential confounding variables.

Furthermore, instructors' implementation of the surveys was not controlled. They were not required to assign the surveys at all, let alone in a particular format. Lastly, different instructors' knowledge and endorsement of self-regulated learning and/or metacognition may vary. Some instructors may incorporate the survey constructs more directly into their instruction than others, which may affect the impact of the Surveys.

Future experimental studies could test the impact of the surveys by randomly assigning students within the same course or instructor to either receive the surveys or not. This design would help strengthen arguments of causality by ruling out both individual differences and instructional differences as potential explanations for group differences. To further examine how instructional differences may affect the impact of the surveys, future research could also benefit from incorporating qualitative methods. Qualitative observations, as well as in-depth interviews with instructors and students, would help identify self-regulated learning themes that may be present within instructors' pedagogy. Better understanding how the Goal Setting and Reflection Surveys can complement instruction would be beneficial.

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