Mississippi State University Case Study

Starkville, MS

Study Specifics

Course Name
College Algebra (MA 1313)

Program
ALEKS® Math

Educator
Professor Abigail Good

Enrollment
ALEKS Pilot Section: 142 Students, Non-ALEKS Section: 131 Students

Timeframe
Spring Semester 2025

Setting

Mississippi State University (MSU) is a public, land-grant research university in Starkville, Mississippi. Founded in 1878 and classified among "R1: Doctoral Universities – Very High Research Activity," MSU enrolls over 23,000 students and offers more than 180 degree programs. The Department of Mathematics and Statistics supports students across all disciplines, preparing them with foundational math skills critical for academic and professional success.

Educator

Abigail Good, MS, is an Instructor of Mathematics at MSU and the College Algebra Coordinator for the Department of Mathematics and Statistics. She earned her BS (2014) and MS (2018) in Mathematics (the latter from MSU) and has taught courses from Intermediate Algebra through Calculus II since 2018. Her research interests include personalized learning, adaptive instruction, and educational technology in STEM classrooms.



Abigail Good
Instructor of Mathematics, Mississippi State University

> **The ALEKS section outperformed the baseline section...The personalized adaptive modules impacted my decision to pilot ALEKS and compare the data to our current platform."**
>
> —Abigail Good

The Study

The pilot study took place in Spring 2025, when Professor Good taught two in-person College Algebra sections with over 100 students each. Both sections met twice a week in the morning and covered the same learning objectives, lessons, and assessments. The key difference was that one section used the ALEKS online learning platform while the other used a different learning platform. The instructor introduced personalized adaptive modules for the ALEKS section, expecting that ALEKS's research-backed approach would improve outcomes. **Notably, Professor Good reports that the ALEKS section outperformed the non-ALEKS section on final grades and pass rates—a result she attributes to ALEKS's personalized remediation and mastery focus.**

Goals of the ALEKS pilot: Professor Good outlined three primary objectives for using ALEKS, all aimed at improving student success in her large, diverse classes:



Personalized Learning: Provide differentiated instruction so that each student works on the right material for their current skill level.



Better Reporting and Insight: Gain detailed data on student readiness and progress, enabling targeted support.



Higher Mastery of Objectives: Increase the percentage of students mastering core learning objectives and performing better on assessments.

By meeting students "where they are" and closing individual knowledge gaps, ALEKS was designed to help achieve these goals.

Implementation

Professor Good implemented ALEKS in one of her two College Algebra sections, integrating the platform as follows:

- Adaptive Modules (33% of assignments): 10% of final grade
- Non-Adaptive Homework (21% of assignments) & Quizzes/Tests (46% of assignments): 90% of final grade

Professor Good praised ALEKS for immediately meeting her implementation goals. One distinguishing feature was ALEKS's personalized learning path. As she explains,

> **"One of the key features I loved about ALEKS from the beginning was how it created a personalized learning path and allowed me to differentiate instruction for the students based on their individual knowledge states."**

ALEKS begins with an Initial Knowledge Check for each student and then continuously adapts to their progress. Professor Good noted that this adaptive path prevented students from wasting time on material they already knew and instead **shifted the focus to true mastery:** "Students developed deeper learning, and ALEKS helped close the knowledge gaps more effectively than the traditional homework assignment."

Another major benefit was ALEKS's robust reporting system. Professor Good noted that the instructor insights and staff support were exceptional:

> **"The staff support and ALEKS's reporting system is out of this world. The ability to speak to an Implementation Manager who has experience using ALEKS in the classroom is a support that cannot be outdone. The reporting systems allowed me to reach out to my individual students rather than treating them as a collective group only. With over 100 students in each section, it gave a personalized learning experience to both myself as their instructor and my students."**

These reports gave her a "quick window" into which topics each student was ready for and which they struggled with. This allowed her to tailor lectures and office hours to address specific needs. In sum, ALEKS helped Professor Good implement **differentiated instruction at scale**, using data-driven insights to support each student's learning path.

Results Achieved

High Approval Ratings from Students

After half the semester, Professor Good surveyed her students about the ALEKS experience. She found **strong student approval** of the platform. **Over 72% of students preferred ALEKS to the other platform. Student comments from the survey highlight why:**

"*I feel like ALEKS is more supportive of my learning than the other platform.*"

"*I think ALEKS is more personal to each person's learning ability and what sections they have mastered.*"

"*ALEKS does more of a customization of your previous and present learning... there are different modules so you can section out what material you are doing.*"

"*This might not make sense, but it seems that ALEKS just wants me to succeed.*"

"*My favorite feature is the explanation at the beginning of each module. It prepares me for what I'm about to do... and gives me something to look over to make sure I understand.*"

"*I have always loved the pie chart for topics. It adds a small sense of accomplishment and clearly shows what areas I need to work on.*"

"*The feedback/explanations on questions do a great job of walking you through them and make you understand the question.*"

"*My favorite feature on ALEKS is the personalized learning path. It tailors practice problems based on my progress, helping me focus on areas that need improvement while skipping over concepts I've already mastered.*"

"*My favorite feature on ALEKS is the encouraging messages. I like how it keeps track of what it feels you should work more on.*"

These comments emphasize that students felt **supported and engaged** by ALEKS's adaptive approach. Many liked the goal charts (the "pie chart") and just-in-time explanations, and they perceived ALEKS as personalizing their learning path.



One noteworthy success story illustrates ALEKS's impact. Early in the semester, one student's ALEKS Initial Knowledge Check showed he had mastered only **2 out of 144 course topics**—a very low starting point. At first, he was quiet and lacked confidence. After reviewing the ALEKS report, Professor Good reached out to him individually to discuss his learning path. This one-on-one intervention "marked a turning point." The student began taking ownership of his learning and made steady progress in ALEKS. He would often stay after class to show off the topics he had mastered the night before and to talk about the encouraging feedback he received from ALEKS. Professor Good observed that "those messages, combined with his visible progress, clearly boosted his confidence." By the end of the semester, that student had **mastered all 144 topics** and earned a high A in the course. More importantly, he frequently told the instructor that "the ALEKS system helped him believe he could truly understand and succeed in mathematics for the first time." (In fact, many students reported that ALEKS's step-by-step explanations and encouragement helped them gain confidence and engage more in class.)

Higher Achievement on Cumulative Assessments

ALEKS also had measurable effects on assessments. Professor Good notes that early-semester test scores were similar between sections, but "by the end of the semester, the ALEKS students seemed to outperform the other classes on the quizzes and tests." She attributes this to better retention: the frequent knowledge checks and targeted review in ALEKS meant students were more prepared for cumulative assessments.

Final Grade Data Highlights ALEKS Impact

The final grade distribution further highlights the difference. In the ALEKS section (142 students) vs. the non-ALEKS section (131 students), a **larger percentage** of students earned top grades and a **smaller percentage** received failing grades or withdrew (Figure 1).

Figure 1

The ALEKS pilot class demonstrated significantly higher performance than the section without ALEKS.

Grade	ALEKS Pilot (142 Students)	Without ALEKS (131 Students)
A	25.35%	16.03%
B	26.76%	23.66%
C	22.54%	19.85%
D	9.86%	11.45%
F	9.15%	18.32%
W	6.34%	10.69%

In other words, the ALEKS class had notably more As and Bs and far fewer Fs and Ws. Correspondingly, the pass rate was higher in the ALEKS class. The ALEKS pilot had a **DFW rate of 25.35%** (students who got Ds, Fs, or withdrew) **versus 40.46%** in the non-ALEKS class. Thus the **pass rate** was about **74.65%** for the ALEKS section compared to **59.54%** for the other section (Figure 2). This data underscores that a significantly greater share of students succeeded (received A–C) when ALEKS was used.

Figure 2

Passing rates improved with ALEKS.

Outcome	ALEKS Pilot	Without ALEKS
DFW Rate	25.35%	40.46%
Pass Rate	74.65%	59.54%



Conclusion

Professor Good found that implementing ALEKS transformed her College Algebra teaching and students' learning. As she summarizes:

> **ALEKS has significantly improved both student learning and my teaching approach in College Algebra. It meets the students where they are and helps them build real understanding through mastery. I have seen students grow in confidence, taking ownership of their progress, and becoming more engaged in class. As an instructor, I have been able to use ALEKS's reports to identify struggling students early and offer targeted feedback and support. Instead of a one-size-fits-all model, I now guide students through individualized learning paths."**

In short, ALEKS's adaptive learning system allowed Professor Good to address each student's needs in a large class. Her students became more confident and successful, and she was able to leverage data-driven insights to teach more effectively. The case of Professor Good at Mississippi State suggests that ALEKS can lead to higher mastery rates, better grades, and a more supportive, personalized classroom environment.

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