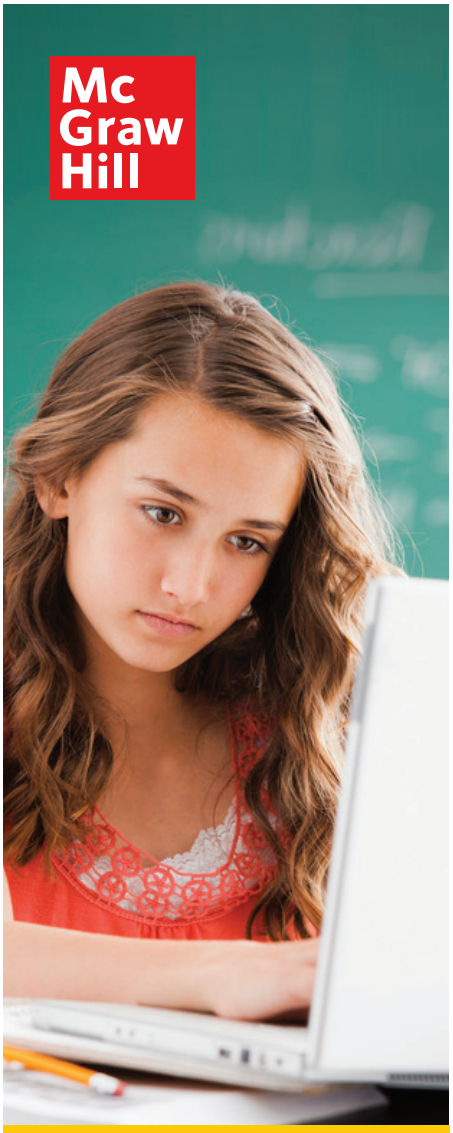


DISTRICT INFORMATION

Name:
Olentangy Middle Schools

Location:
Delaware County, Ohio

Grade:
6–8

CASE STUDY

Study Of Olentangy Middle Schools Shows *ALEKS*® Supports Standards-Based Math Learning

Overview

Olentangy Local School District is located in southern Delaware County, Ohio with a small, southern portion located in Franklin County and is part of the greater Columbus metro area. Since 1990, the district has experienced tremendous growth and now serves a total of twenty-five schools, including sixteen elementary schools, five middle schools, and four high schools.

In 2020, Kristin Bourdage joined the Olentangy Local School District as Supervisor of Curriculum and Instruction, bringing eighteen years of experience in higher education research and teacher preparation to her new role. Kristin's belief in the vital importance of

About *ALEKS*:

ALEKS is a robust, digital resource that adapts to each student's level by delivering periodic assessments that determine what each student is most ready to learn. *ALEKS* challenges students while keeping them fully engaged, guiding students on their personalized learning path, while eliminating frustration and boredom. For complete details, visit mheonline.com/aleks.

supporting teachers inspired her to design a study to better understand how math teachers in the district were using *ALEKS*®, an adaptive, online math learning program that delivers a personalized learning path for each student. Kristin designed the study around a High-Use Middle School to learn how that usage is driving achievement for the school's math students.

> *One of the things we found is that ALEKS usage at the High-Use Middle School showed greater effects on math achievement, and we wondered if the culture around the use of ALEKS contributed to this finding.*
>
> **- Kristin Bourdage**

"I love the possibilities of *ALEKS* for pedagogy, so I want to be able to describe the program's influence on math achievement as a way to attract attention to the pedagogy," Bourdage said. "One of the things we found is that *ALEKS* usage at the High-Use Middle School showed greater effects on math achievement, and we wondered if the culture around the use of *ALEKS* contributed to this finding."

The Study

During the winter quarter (January-March) of the 2021 school year, Bourdage implemented the mixed-method case study using existing data from 3,200 separate middle school math assessments. The study looked at two measures: *ALEKS* performance (Learning Gain scores) and scores on the winter aimsWebPlus Concept and Application (standards-based) assessment. These were used to examine the extent to which the use of *ALEKS* predicts performance on standards-based outcome measures of math achievement. Data analysis included correlational and regression modeling statistics.

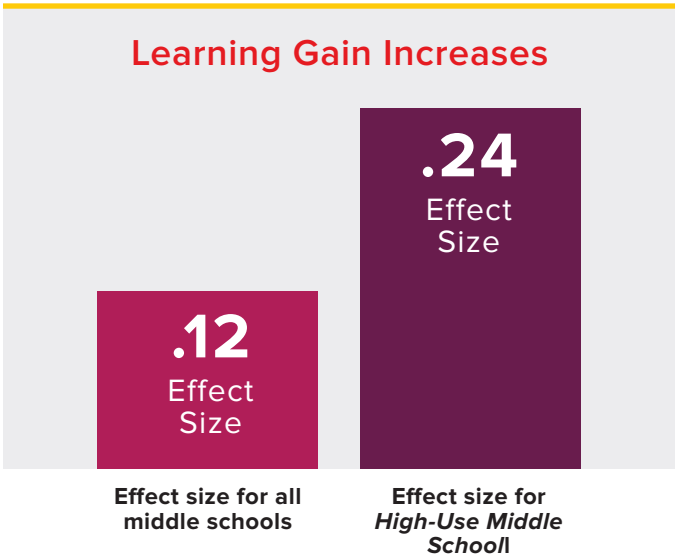
After analysis of the quantitative data set, Bourdage performed semi-structured interviews of 10 teachers from the middle school with the highest levels of *ALEKS* usage described in the study as the "High-Use Middle School." The resulting feedback was used to explore teacher perspectives on the use of *ALEKS* in the classroom.

Study Results

The main takeaway from this study is that time spent in *ALEKS* has a moderate effect on student performance on *ALEKS* Knowledge

Checks. Specifically, time spent in *ALEKS*® predicts a 19.4% of the variance in *ALEKS* post-mastery score with a .51 effect size.

Performance in *ALEKS*, as indexed with Learning Gain scores, also influences performance on a standards-based outcome measure, which in this case was aimsWebPlus Concept and Application sub-test of the math assessment. Learning Gain scores explained a roughly 6% of the variance in aimsWebplus winter scores for all students. The effect size for all middle schools was .12. Notably, the High-Use Middle School, where all math teachers use *ALEKS* consistently, showed a moderate effect size (.24) of *ALEKS* performance on the same aimsWebplus Concept and Application measure.



Teacher Feedback

The research questions that guided the study were:

- To what extent does *ALEKS* predict performance on standards-based outcome measures of math achievement at five district middle schools?
- What is the effect size of *ALEKS* Learning Gains on standards-based, aimsWebplus math measure (Concept and Application subtest)?
- How is *ALEKS* being used as an instructional tool in middle school classrooms?

The following themes emerged from a total three hours of conversations with participating teachers:

- Teachers reported they like the 'topics by week' feature in *ALEKS* and find many students are more motivated in class because they have had a preview of the math lessons while using *ALEKS*.
- Teachers locate a specific topic and assign the *ALEKS* topic that relates to their course content and fits within the pacing of the content.
- In the High-Use Middle School, the focus was on finishing a topic versus spending time in *ALEKS*, which helps ensure students are reaching mastery.

Conclusion

This study showed a positive correlation between time spent in *ALEKS* and post-mastery scores. Teacher usage within this study further suggests that *ALEKS* does not need to be assigned as homework for students to use it successfully.

Every topic a student completes in *ALEKS* is reflected in a visual pie chart that shows students what they know and what they still have to learn. If a student spends two hours in *ALEKS* but does not complete a topic, the

pie chart remains unchanged, so there is an incentive to master content and move on to new material.

"In *ALEKS®*, mastery is the goal," said Bourdage. "We learned that the High-Use Middle School may have had success because it normalized the use of *ALEKS* and motivated students to complete topics and not just log time. *ALEKS* won't allow a student to progress unless they have reached topic mastery measured through Knowledge Checks. Mastery of a topic may enable students to apply what they've learned outside of the tool, and this is an important quality for an instructional resource."

> *"In ALEKS, mastery is the goal. We learned that the High-Use Middle School had success because it normalized the use of ALEKS and motivated students to complete topics and not just log time."*
>
> **- Kristin Bourdage**

The Future

Bourdage said that while student achievement is paramount to her, her passion is supporting teachers by facilitating student achievement. She now wants to pair the findings with targeted Professional Development in *ALEKS* to improve utilization and outcomes for student achievement.

> *"I want to make sure all our teachers know they have a robust tool like ALEKS in their toolbox and know how to use it to maximize student learning and achievement."*
>
> **- Kristin Bourdage**

"Among other things, this study showed us that there are stronger ways to organize professional development to get the most out of *ALEKS*, so we are taking what we learned and building it into our Professional Development for fall," she said. "I want to make sure all our teachers know they have a robust tool like *ALEKS* in their toolbox and know how to use it to maximize student learning and achievement."

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To learn more about *ALEKS* or other McGraw Hill products, please visit: mheonline.com/aleks