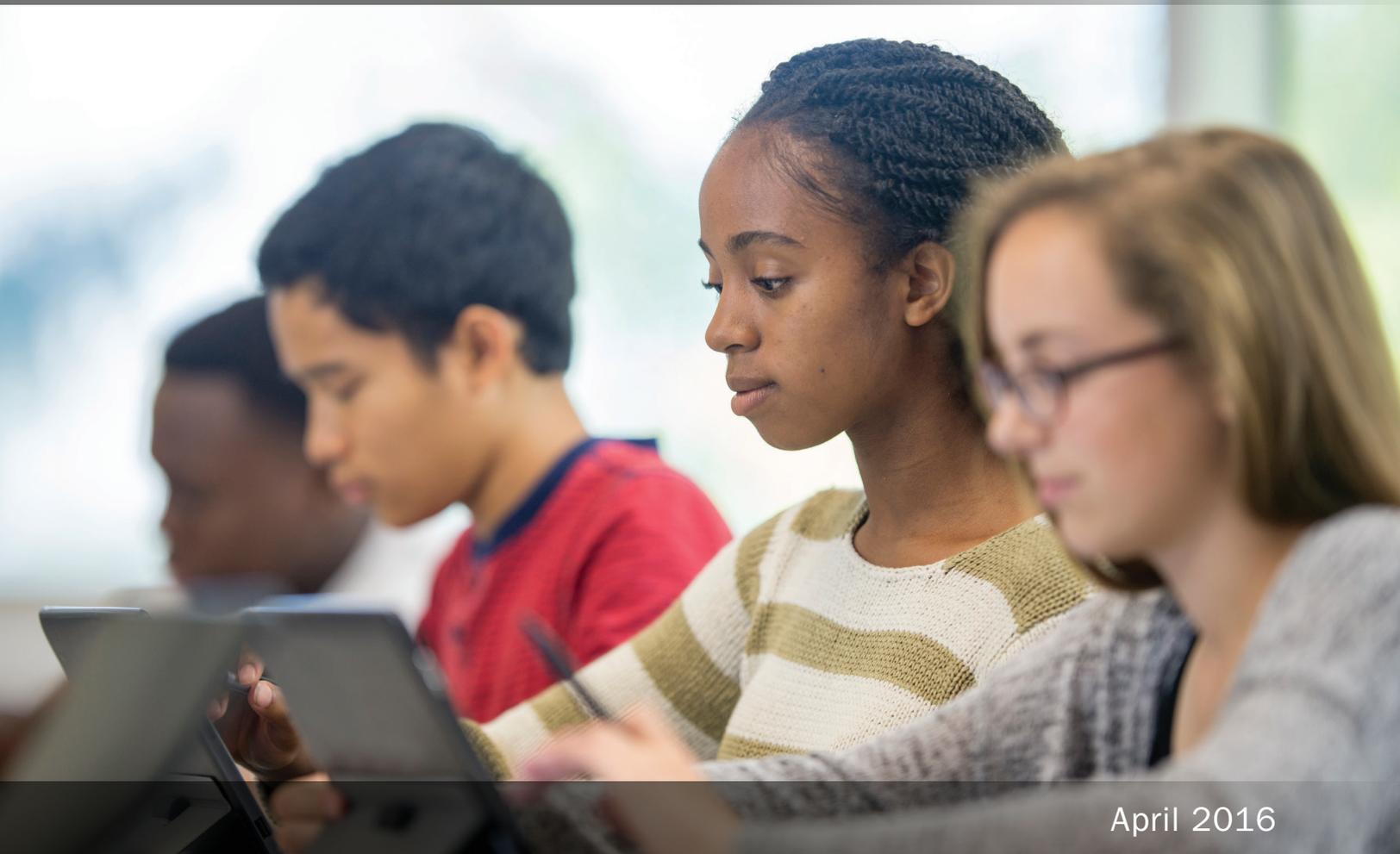


Getting Back on Track

The Role of In-Person Instructional Support for Students Taking Online Credit Recovery

RESEARCH BRIEF 2



April 2016

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THE BACK ON TRACK STUDY is an investigation about credit recovery in Algebra I for students who fail the course in ninth grade. Students who fail Algebra I are required to recover the credit during high school to earn a diploma, and online credit recovery courses have become a popular strategy in schools in districts around the country. The *Back on Track Study* examines the impact of an online credit recovery Algebra I course compared with a standard face-to-face version of the course; both courses were offered the summer after ninth graders failed Algebra I. The study was funded by the U.S. Department of Education's Institute of Education Sciences, and it was conducted by American Institutes for Research and the University of Chicago Consortium on School Research, in partnership with Chicago Public Schools (CPS). This study is a randomized controlled trial that was designed to address two types of questions:

- 1. What is the impact of online versus face-to-face Algebra I courses for credit recovery?**
- 2. What is the long-term effect of offering expanded credit recovery options early in high school?**

The study took place in 17 CPS high schools that offered both online and face-to-face Algebra I credit recovery courses in summer 2011 and summer 2012. A total of 1,224 ninth graders participated in the study by enrolling in a second-semester Algebra I course for credit recovery during the summer after failing the class. Students were randomly assigned to take the online or face-to-face course.

This research brief is one in a series for the *Back on Track Study* that presents the findings regarding the relative impact of online versus face-to-face Algebra I credit recovery on students' academic outcomes, aspects of implementation of the credit recovery courses, and the effects over time of expanding credit recovery options for at-risk students.

RESEARCH BRIEFS IN THIS SERIES

Getting Back on Track: Comparing the Effects of Online and Face-to-Face Credit Recovery in Algebra I

This brief compares educational outcomes through the second year of high school for students who took online credit recovery versus face-to-face credit recovery in 17 CPS high schools.

Getting Back on Track: The Role of In-Person Instructional Support for Students Taking Online Credit Recovery

This brief describes the role of in-class mentors who supervised students taking the online course and examines whether students benefited from additional instructional support from their in-class mentors.

Getting Back on Track: Who Needs to Recover Algebra Credit After Ninth Grade?

This brief describes the characteristics of students who failed Algebra I in ninth grade across CPS high schools to better understand the population of students who are served by credit recovery courses.

Please visit www.air.org/CreditRecovery to access all of the research briefs and for more information about the *Back on Track Study*.

High schools are increasingly using online courses as a way to expand the credit recovery options available for at-risk students to help them get back on track toward graduation.ⁱ Although “anytime, anyplace” models do exist, many online high school courses are taken at school and include an in-class mentor in addition to an online teacher. Mentors are school staff members who provide support and assistance in the classroom. The staff member filling this role could be an aide, a guidance counselor, or a certified teacher who may or may not be certified in the same content as the online course. The specific responsibilities of mentors vary across schools and online learning programs and may include monitoring students’ progress, helping solve technology-related problems, serving as a liaison between the online teacher and the school, or encouraging students to stay on pace in the online course. Although not required, one way that mentors can support students in the online course is to provide additional instruction by answering students’ questions about the course content. However, little is known about whether and how mentors provide instructional support or whether students benefit from mentor support. As schools expand online credit recovery options, it is increasingly important to better understand the role of in-class mentors in supporting students’ success in online courses.

The *Back on Track Study*, conducted by American Institutes for Research and the University of Chicago Consortium on School Research, is an ongoing study of an online versus face-to-face credit recovery summer algebra course for at-risk ninth graders. This research brief is one in a series investigating the implementation and impacts of the credit recovery courses in the study. Specifically, this brief addresses the following questions:

1. To what extent did in-class mentors provide students with instructional support?
2. What were the characteristics of mentors who provided instructional support compared with those who provided little or no instructional support? Which types of students were most likely to have instructionally supportive mentors?
3. Did online course performance and academic outcomes differ for students with instructionally supportive mentors compared with students who had little to no instructional support from their mentors?

***Do In-Class Mentors Provide Additional Instruction?* KEY FINDINGS**

- About 40% of the 36 online classes offered as part of this study had in-class mentors who provided additional instructional support, defined as spending 12 or more hours of the 60-hour summer course answering students’ questions about math.
- Instructionally supportive mentors were more likely to be certified mathematics teachers than mentors who provided little or no instructional support. The types of students who had instructionally supportive mentors were similar to the students with mentors who provided little to no instructional support.
- Students with instructionally supportive mentors took fewer tests in the online course but were slightly more successful on the tests they took. They also had higher credit recovery rates than students who had less instructional support from their mentors and similar credit recovery rates compared with their face-to-face counterparts.

About the Study

The *Back on Track Study* provided resources to high schools in the Chicago Public School district to offer credit recovery courses during the summers of 2011 and 2012 to first-time ninth graders who failed Algebra IB, which is the second semester of Algebra I.

Back on Track Study INTERIM FINDINGS

- Most students successfully recovered credit in both types of courses but students in the online course were less likely to pass than students in the face-to-face course (66% vs. 76%).
- At the end of the course, students in the online course reported that their class was more difficult and less clear regarding grading expectations than students in the face-to-face classes. Students in the online course also liked mathematics less and had lower confidence in mathematics than students in the face-to-face classes.
- Online students also had lower algebra test scores at the end of the course than face-to-face students.
- There were no significant differences between online and face-to-face students by the end of the second year of high school. Overall, students in both types of courses had generally low-performing trajectories.

(See companion brief, “Getting Back on Track: Comparing the Effects of Online and Face-to-Face Credit Recovery in Algebra I,” for more details.)

In the study, 1,224 first-year high school students who failed Algebra IB were randomly assigned¹ to either an online summer algebra course or a traditional face-to-face summer algebra course. The summer courses were offered during four summer sessions at 17 participating schools in Chicago (two sessions in 2011 and two sessions in 2012). Most participating schools held summer school daily for about four hours each day for three to four weeks to meet the 60-hour requirement for a one-semester credit recovery course. The study tested the effects of online versus face-to-face algebra credit recovery on student academic outcomes and examined the implementation conditions associated with student success in online credit recovery. A companion brief in this series presents the study findings through participating students’ second year of high school; these findings are summarized in the sidebar. The study will also examine longer-term outcomes, including on-time graduation rates, once data are available.

This brief describes the role of the in-class mentors who supervised students taking the online course as part of the study. The online course was provided by a popular online provider, Aventa/K12 (Aventa), and it was taught by an online teacher whom the students did not meet in person, but who communicated with students individually and through class message boards. All of the online classes were provided at school, in a computer lab or a classroom. For this study, participating schools selected school staff to serve as the in-class mentors and the in-class mentors were not required to be certified in mathematics, which is typical for how online credit recovery courses are implemented. Their responsibilities included conducting administrative classroom tasks, proctoring online exams, addressing technical issues, and communicating with the online teachers. As is typical for online course mentors, they were not required to provide instructional support but were not asked to avoid doing so.

¹ A lottery was used to determine students’ course assignments—all students had a 50/50 chance of taking the course online or face-to-face. This ensures that the groups of students are statistically comparable.

A total of 76 algebra credit recovery classes took place as part of the study: 38 online classes and 38 face-to-face classes; the average number of students in both types of classes was 16. The results presented in this brief draw primarily on daily logs completed by the in-class mentors for the online classes, archived Aventa course data, district administrative student records, and an end-of-course student survey and algebra assessment.² We used the mentors' reported activities in their logs to determine the amount of instructional support mentors provided in the online classes. The daily mentor log asked mentors to report the amount of time they spent answering students' questions about mathematics content and the amount of class time spent on administrative tasks, such as addressing behavioral issues or proctoring tests. Archived Aventa course data recorded students' time spent in the course and points earned on quizzes and exams; we used these data to determine student activity and performance in the online course. We used student survey responses to measure student experiences in the credit recovery courses, and the study-administered algebra assessment and district course-taking records were used to measure student academic outcomes.

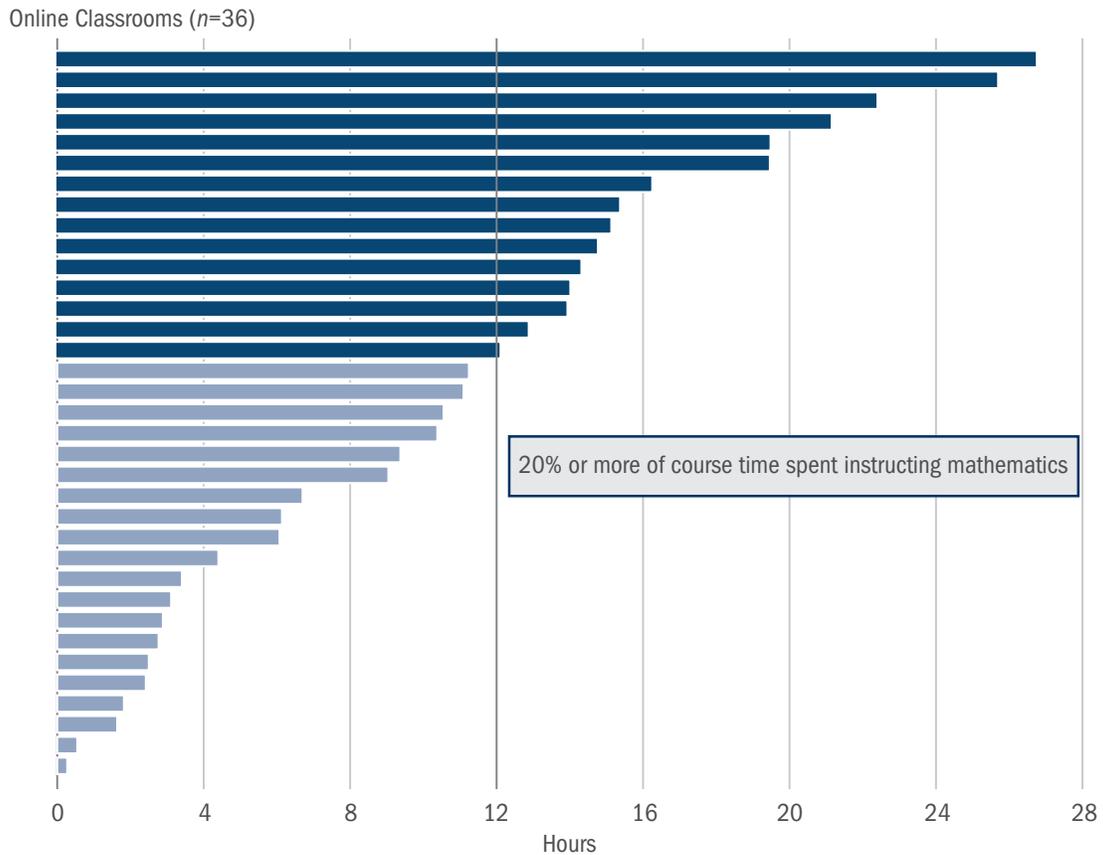
Defining In-Class Instructional Support

As described above, mentors were not required to provide instruction to students taking the online course. However, previous research on online learning suggests that some mentors may choose to provide instructional support to students.ⁱⁱ Mentors reported on the amount of course time they spent answering students' questions about mathematics—either the content presented in the online course or mathematics topics that are needed to understand Algebra I. The total amount of time mentors reported providing mathematics instruction in each of the online classes is shown in Figure 1. A total of 21 online classes had mentors who spent less than 12 hours of the 60-hour summer course instructing mathematics (shown in light blue) and 15 classes had mentors who spent 12 or more hours of the course instructing mathematics (shown in dark blue). For the purpose of the analyses reported in this brief, we classified online classes with mentors who spent at least 12 hours, or 20%, of the course time providing mathematics instruction as classrooms with “instructionally supportive” mentors (shown in dark blue) and classified the other online classes as classrooms with “less-instructionally supportive” mentors (shown in light blue).³

² The posttest was composed of 28 items drawn from a bank of released items used by the National Assessment of Educational Progress with known psychometric properties. The items tested content that would generally be considered prealgebra, first-semester algebra, and second-semester algebra. The posttest was used only as part of the study; students' scores did not factor into their course grades.

³ We examined the sensitivity of categorizing mentors as instructionally supportive if they spent 12 or more hours instructing mathematics by using different cutoff points (e.g., 8 hours, 10 hours, and 14 hours) to define instructional support. We found that the patterns observed in the descriptive analyses using 12 or more hours to define instructional support were similar to the other close cutoff points.

Figure 1. Total Number of Hours Mentors Spent Providing Instructional Support in Online Classrooms



Note. The sample size is 36 online classes. Two online classes are not included: One was combined with the face-to-face class and the other had multiple substitute mentors.

Source: Online mentor logs from study records.

Findings

Instructionally supportive mentors were more likely to be certified mathematics teachers than mentors who provided little to no instructional support

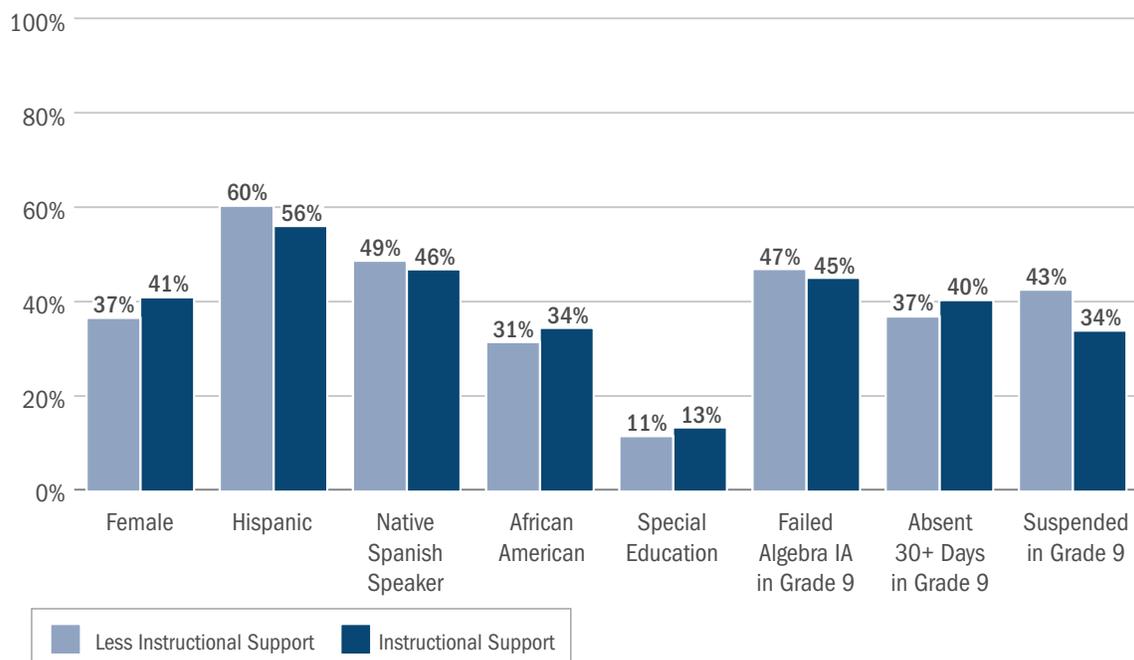
We examined whether instructionally supportive mentors and mentors who provided little to no instructional support were different on two main characteristics: certification to teach mathematics and years of teaching experience. Across all of the online classrooms in the study, about half (53%) had mentors who were certified mathematics teachers. Not surprisingly, instructionally supportive mentors were more likely to be certified mathematics teachers than less-instructionally supportive mentors—67% of the instructionally supportive mentors were certified mathematics teachers compared

with 48% of less-instructionally supportive mentors. The average years of teaching experience were similar—instructionally supportive mentors had an average of 12 years of teaching experience and less-instructionally supportive mentors had an average of 11 years of teaching experience.

Students with instructionally supportive mentors were similar to students with less-instructionally supportive mentors

To determine whether in-class mentors were more likely to be instructionally supportive in classrooms with certain types of students, we compared the student characteristics of classrooms that had instructionally supportive mentors and those with less-instructionally supportive mentors. For the most part, whether a mentor provided more or less instructional support was not associated with the demographic characteristics of students in their classrooms (see Figure 2). The one exception was that students in classrooms with instructionally supportive mentors had lower suspension rates during the previous school year than students with less-instructionally mentors (34% vs. 43%).

Figure 2. Characteristics of Students in Online Classes, by Mentor Instructional Support



Note. The sample size is 36 online classes and 579 online students (344 students in less-instructionally supportive classrooms and 235 in instructionally supportive classrooms).

Sources: Online mentor logs from study records and district administrative student records.

Students with instructionally supportive mentors took fewer tests in the online course, but were slightly more successful on the tests they took

AVENTA'S ALGEBRA IB ONLINE COURSE UNITS

Unit	Lessons
Solving Systems	1-5
Polynomials	6-11
Quadratics and Radicals	12-16
Rational Expressions	17-21
Exponents	22-24

On average, students with instructionally supportive mentors logged a similar amount of time in the course as students with less-instructionally supportive mentors (26 hours vs. 27 hours).⁴ However, there were differences in how far students progressed through the online course and how they performed on quizzes and tests.

Figure 3 presents the comparison of course progression, course completion, and course performance of students with instructionally supportive mentors to those of students with less-instructionally supportive mentors. Students with less-instructionally supportive mentors progressed further through the course, attempting 77% of the quizzes and tests, than students with instructionally supportive

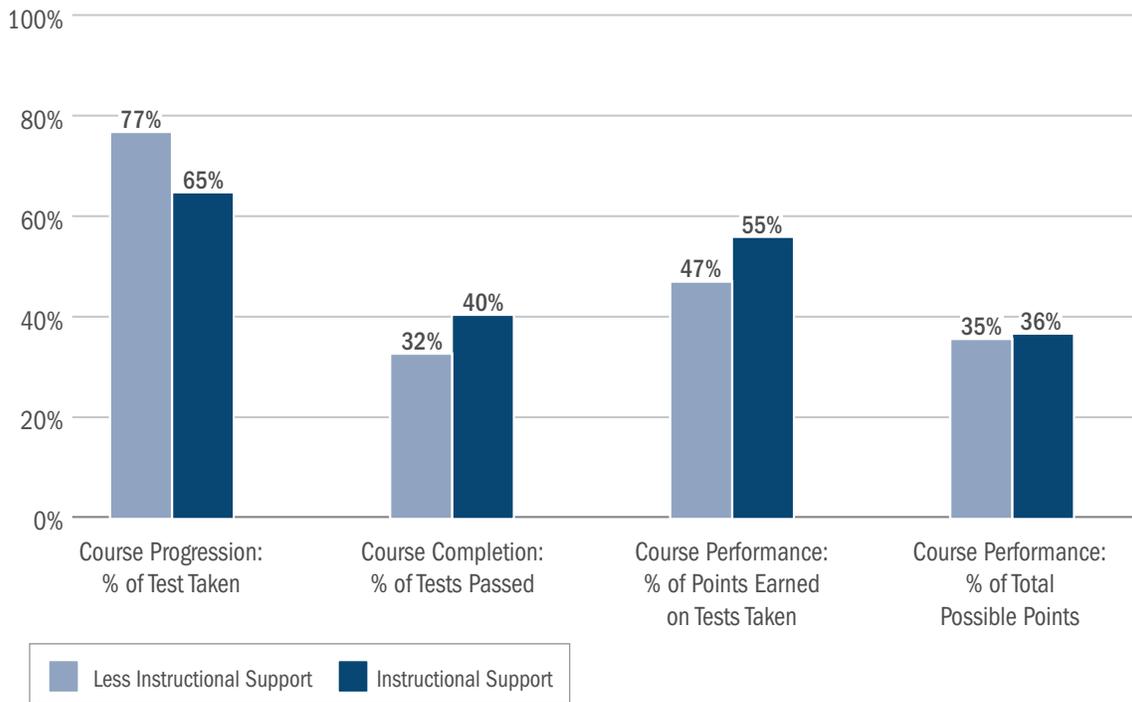
mentors, who attempted 65% of the quizzes and tests.⁵ However, students with instructionally supportive mentors passed 40% of the tests, compared with 32% for students with less-instructionally supportive mentors. Students with instructionally supportive mentors had higher scores on the tests they attempted than students in classes with less-instructionally supportive mentors (55% vs. 47%). That students with instructionally supportive mentors did not progress as far through the course, but performed better on the tests they took, suggests that instructionally supportive mentors may have encouraged students to spend additional time on lessons in order to increase their understanding of the material before moving on to the next lesson instead of allowing students to simply retake the tests until they passed and moving on without learning the material.

Despite these differences, students in the two groups did not differ in terms of the percentage of points they earned out of all possible points in the course; both groups earned only about a third of all possible points in the course (36% for students with instructionally supportive mentors and 35% for students with less-instructionally supportive mentors). Although it may be preferable for students to spend additional time on topics to improve their understanding, in the context of a summer credit recovery course with a fixed length, the result was that the average performance score in the course for students with instructionally supportive mentors was similar to that of students with less-instructionally supportive mentors—and overall course performance scores were low for both groups.

⁴ These averages include hours for students who did not complete the course. In addition, while all credit recovery classes met for approximately 60 hours total, students may not have been logged in continuously while in the classroom.

⁵ Aventa's Algebra IB course (the focus of the study) included a total of 24 quizzes and five unit exams, for a total of 29 tests. Students could retake quizzes or unit exams they failed a limited number of times.

Figure 3. Student Progression, Completion, and Performance in the Online Course, by Mentor Instructional Support



Note. The sample size is 36 online classes and 542 online students (323 students in less-instructionally supportive classrooms and 219 in instructionally supportive classrooms). *Course progression* is the percentage of tests (quizzes and unit exams) attempted out of 29 total tests. *Course completion* is the percentage of tests (quizzes and unit exams) passed with a score of 60% or higher out of 29 total tests. *Course performance* includes two measures: the percentage of points earned out of the tests taken and the percentage of points earned out of all possible points in the course.

Sources: Online mentor logs from study records and archived Aventa course data.

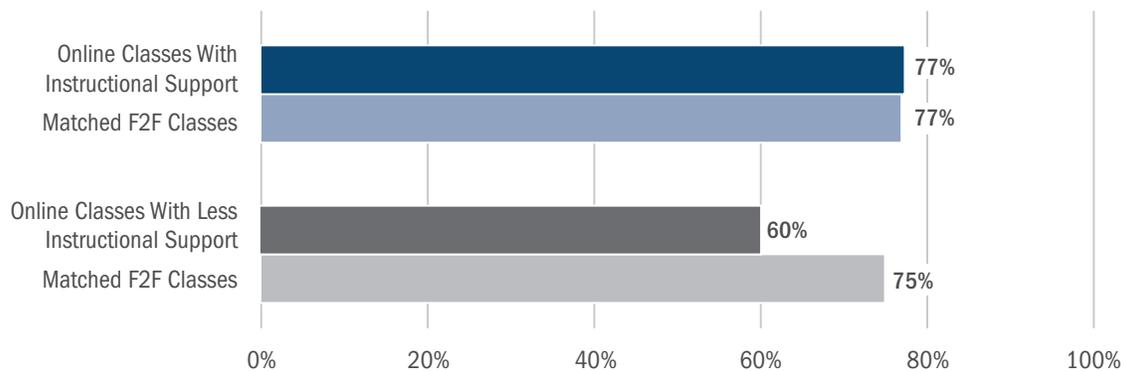
Students with instructionally supportive mentors had higher credit recovery rates than students with less-instructionally supportive mentors, and credit recovery rates were similar to their face-to-face counterparts

At the end of the summer course, in-class mentors, rather than online teachers, assigned final course grades to the students who took the online course based on their Aventa grades and, to varying degrees, other factors such as classroom behavior. In the face-to-face course, classroom teachers assigned final course grades to students, as would be expected. Students who received a passing grade (D or higher) recovered the credit for the Algebra IB course they failed during the ninth grade.

As described in the “Back on Track Study Interim Findings” sidebar, the study’s main analyses found that the online students were less likely to successfully recover credit for Algebra IB than students in the face-to-face classes (66% online vs. 76% face-to-face). However, taking into consideration whether students in the online course had an instructionally supportive mentor provides a more nuanced picture. The credit recovery rate for online students with instructionally supportive mentors was higher than that for online students whose mentors provided less instructional support (77% compared with 60%).

In fact, as shown in Figure 4, the average credit recovery rate for online students in instructionally supportive classrooms was similar to that of the students in their schools who took the face-to-face class (77% for both). On the other hand, the average credit recovery rate for students with less-instructionally supportive mentors was significantly lower than that of the students in their schools who took the face-to-face class (60% compared with 75%).

Figure 4. Credit Recovery Rates, by Mentor Instructional Support and Type of Credit Recovery Course (Online or F2F)

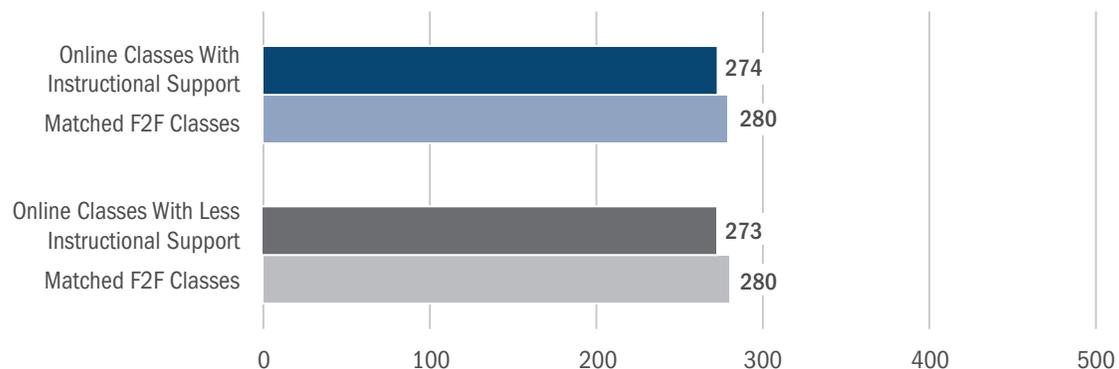


Note. F2F = Face-to-face. The sample size is 72 classes, 579 online students and 584 F2F students (15 online classes with instructionally supportive mentors and 235 students; 15 matched F2F classes with 238 students; 21 online classes with less-instructionally supportive mentors and 344 students; and 21 matched F2F classes with 346 students). Students were randomly assigned to online or F2F classes within schools. For the purpose of this comparison, online classrooms were compared with their “matched” F2F classroom counterparts in the same cohort, school, and summer school session.

Sources: Online mentor logs from study records and district course-taking records.

However, instructional support from mentors did not seem to benefit students on other short-term academic outcomes including the end-of-course posttest scores (see Figure 5), mathematics attitudes (such as mathematics liking or confidence), or their perceptions of course difficulty—all of which the study’s main analyses found to be higher or more positive for students in the face-to-face classes than for students in the online course.

Figure 5. Posttest Scores, by Mentor Instructional Support and Type of Credit Recovery Course (Online or F2F)



Note. The sample size is 72 classes, 419 online students, and 383 F2F students (15 online classes with instructionally supportive mentors and 178 students; 15 matched F2F classes with 169 students; 21 online classes with less-instructionally supportive mentors and 241 students; and 21 matched F2F classes with 214 students).

Sources: Online mentor logs from study records and the study-administered algebra posttest.

Summary and Conclusions

Although mentors were not required to provide additional instructional support to students in the online course, we found that 15 of 36 online classrooms had mentors who spent 20% or more of the course time providing students with mathematics instructional support; the other 21 online classrooms had mentors who spent less time answering mathematics questions. Instructionally supportive mentors were more likely to be certified mathematics teachers than less-instructionally supportive mentors. Students' progress through the online course and their performance in the online course suggest that students with instructionally supportive mentors may have navigated the course at greater depth and less breadth than students in classrooms with less-instructionally supportive mentors. Furthermore, credit recovery rates for students in online classes with instructionally supportive mentors were higher than for students in classes with less-instructionally supportive mentors (77% vs. 60%) and resembled the higher credit recovery rates we observed in the face-to-face classes (also 77%). However, we did not observe any differences on other short-term outcomes, including the end-of-course algebra assessment, for students with instructionally supportive mentors compared with students with less-instructionally supportive mentors. In general, it is important to note that multiple measures of algebra learning were low for students in *both* the face-to-face and online classes, suggesting little evidence of content recovery in the context of their credit recovery courses.

This brief described some aspects of in-class mentor instructional support for at-risk ninth graders attempting to recover their algebra credit over the summer in the online classrooms that were part of the *Back on Track Study*. We found that students with instructionally supportive mentors recovered their credit at similar rates as their face-to-face student counterparts, suggesting that students who are at-risk may need additional instructional support from an in-person teacher—perhaps at a proportion of 20% of course time or more. For at-risk students, online credit recovery courses with little to no face-to-face support may not meet their needs, at least in the short term. With online courses being increasingly offered for high school credit recovery, this brief raises important questions about the role of in-class mentors in supporting students as well as the need for face-to-face instructional support for students to recover credit in key courses required for graduation.

End Notes

- i. Powell, A., Roberts, V., & Patrick, S. (2015). *Using online learning for credit recovery: Getting Back on track to graduation*. Vienna, VA: iNACOL, The International Association for K–12 Online Learning. Retrieved from http://www.inacol.org/wp-content/uploads/2015/09/iNACOL_UsingOnlineLearningForCreditRecovery.pdf.
- ii. Heppen, J. B., Walters, K., Clements, M., Faria, A., Tobey, C., Sorensen, N., & Culp, K. (2012). *Access to Algebra I: The effects of online mathematics for grade 8 students*. (NCEE 2012–4021). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education.



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