

## Paper 2: Implementation Challenges and Results

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### **Purpose / Objective / Research Question / Focus of Study<sup>2</sup>:**

This paper describes the implementation of the online and f2f summer algebra courses that were delivered in summers 2011 and 2012. These data will be used to frame the impact results presented in Paper 1. In particular, the paper will provide a detailed picture of how the online course was structured and the types of supports provided to students; compare the algebra content and course rigor between the online and f2f classes; and examine students' perceptions of the online course between summers 2011 and 2012, which were starkly different in terms of the software glitches that interfered with the delivery of the course in 2012.

The paper will be guided by the following research questions:

- 1) How were the key components of the online algebra credit recovery course implemented during the summers of 2011 and 2012, including specific technology challenges?
- 2) How did the online and f2f Algebra IB courses compare in terms of content rigor and grading expectations?
- 3) How did the instructional experience compare for students taking online and f2f summer credit recovery courses, and between students who took the online course in 2011 and 2012?

### **Data Collection and Analysis:**

We will draw from several different sources of implementation data that were collected in both conditions in both summer 2011 and 2012 to answer the paper's research questions. These include in-person observations of the online and f2f classrooms, archival data generated from the online course, student and teacher surveys, online mentor logs, and course materials (syllabi, annotated tables of contents). Each of these is described more fully below:

- 1) **Observations of f2f and online classrooms.** Each f2f and online class was observed once during each summer session. The observation instruments measured student engagement; teacher-student and mentor-student interactions; and the instructional and management behaviors of the mentors and f2f teachers.
- 2) **Aventa online course archival data.** The Aventa archival course data include amount of time students' logged in and participated in various components of the course; algebra topics covered and mastered; and interactions between online teachers and students between online teachers and mentors. Data that capture the frequency and duration of students' logging into the course will be one of the sources used to portray the nature of online course technology problems that occurred in summer 2012.
- 3) **Data collector field notes.** In addition to the archival data, we will use field notes to describe the nature and degree of the interruptions to the online course that occurred in summer 2012.
- 4) **Surveys.** All teachers and students completed surveys at the end of each session. Surveys of students in the online and f2f courses measured students' experiences and satisfaction with

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<sup>2</sup> Any parts of the abstract template that do not appear in this paper appear in Paper 1, which describes the overall study design.

each type of course and their overall perceptions of interactions, support, and expectations from their teachers and mentors. The surveys also included validated measures of academic demand, engagement, teacher academic attention, and support. The teacher surveys included questions about their experience and satisfaction with each type of course and the criteria they used to calculate grades in the credit recovery courses.

- 5) **Mentor logs.** The mentors completed daily logs that measured how they spent their time, such as the extent to which they assisted students with mathematics content, managed student behavior, and the amount and type of communication and collaboration between online teachers.
- 6) **Course materials.** The f2f teachers provided syllabi, annotated tables of contents and/or other materials at the end of each session. These materials included the algebra topics covered and amount of time spent on each topic, which will be used to compare the algebra topics in the Aventa online course.

We will generate descriptive statistics from all of these sources to answer the study's first two research questions; we will use the first four data sources to describe how the online course was implemented (RQ 1), and we will use the second (archival data), third (data collection field notes) and sixth (course materials) data sources to compare the rigor of the f2f and online courses (RQ 2). To compare the perceptions of students in the online course with (a) students in f2f summer algebra and (b) students taking the online course in Cohort 1, we will construct scales measuring students' instructional experiences during the Algebra I credit recovery class using procedures established by the Consortium on Chicago School Research. To test whether students' self-reported instructional experiences are significantly different by condition or cohort, we will employ the basic HLM model used in Study 1 for continuous outcomes.

### **Findings / Results:**

The preliminary findings from year 1 (summer 2011) indicated that students were engaged, cooperative and attentive in both the online and f2f algebra classes, with no statistically significant differences between conditions. The online mentors reported spending the majority of their time (62%) on administrative tasks, 28% of their time teaching mathematics; and 9% of their time communicating with the online teacher or Aventa technical support. As mentioned in Paper 1, the grades in the online course were lower than the f2f course, and analyses of the teachers' grading criteria revealed that the online mentors placed a stronger emphasis on tests and quizzes than the f2f teachers.

These findings will be expanded to include ongoing analyses of the summer 2012 implementation data, which will be completed by January 2013, in time for the March 2013 SREE conference.

### **Conclusions:**

As mentioned in Paper 1, the Year 1 impact findings showed no significant differences in credit recovery rates or end-of-course assessment scores between students in the online and f2f classes, but students in the f2f courses had higher grades than students in the online classes. This paper will build upon this finding by describing what the grading policies were in the online and f2f classes in both summer cohorts. The paper will also include Aventa archival records and field notes to describe the magnitude of the problems encountered with the online course software. These data, along with the student survey data from 2012, will be used to compare the results

from 2011, which showed high student engagement overall and no differences between the online and f2f classrooms. All of the conclusions drawn from these implementation analyses will frame the interpretation of impact results.