pd APM

PROFESSIONAL DEVELOPMENT
ALGEBRA PROGRESS MONITORING

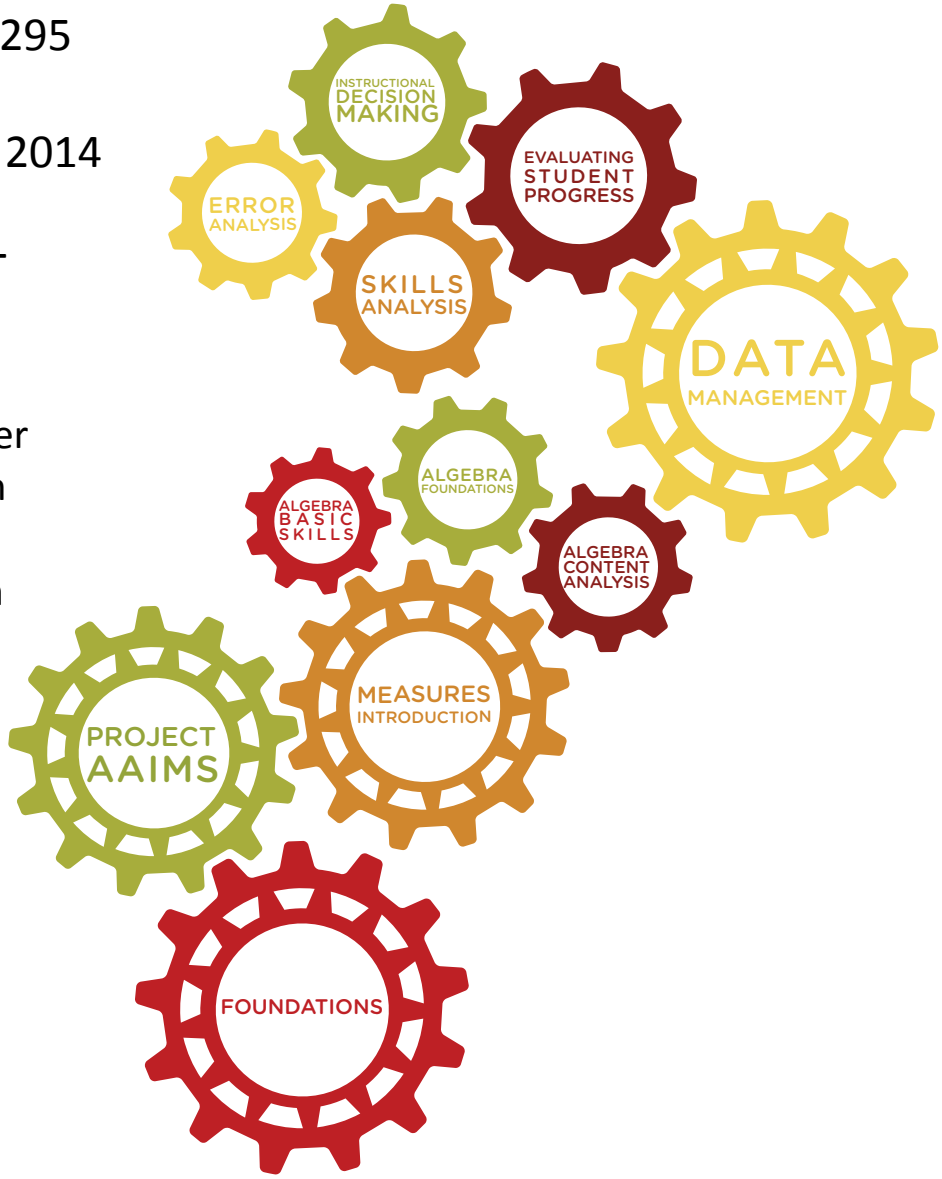
Professional Development for Algebra Progress Monitoring

Institute of Education Sciences
Award R324A090295

August 2009 – July 2014

FINAL REPORT

Anne Foegen
Pamela M. Stecker
Jeannette Olson
Vince Genareo
Amber Simpson
Renee Lyons



Algebra Screening and Progress Monitoring (R324A090295)
Final Report

Professional Development for Algebra Progress Monitoring (PD-APM; R324A090295) began as a three-year development and innovation (Goal 2) project in August 2009. The collaboration between Iowa State University (ISU) and Clemson University to develop an online professional development system for algebra progress monitoring (and associated web-based data management tools) began work with the Clemson-based technology team, as outlined in the proposal. After the first year, significant obstacles became apparent in the technology team's capacity to fulfill the project's objectives. Following a 9-month period of feedback, negotiation, and efforts to get the project back on schedule, Drs. Foegen and Stecker determined that a new direction was needed. After consultation with our project officer, Dr. Rob Ochsendorf, the decision was made to de-obligate funds linked to technology development at Clemson and shift those responsibilities to Iowa State University, with Dr. Pete Boysen as the Technical Team lead.

Dr. Boysen began his work on the project in the summer of 2011 using a platform developed by Dr. Boysen at Iowa State known of ThinkSpace. Although developed to support case-based learning, the platform was adaptable to the needs of the PD-APM project. The shift in direction to Dr. Boysen's leadership of development work in ThinkSpace necessitated two no-cost extensions to provide sufficient time to complete the project objectives on a new platform. We feel strongly that the final product is much stronger than the one originally proposed.

Performance Agreement Deliverables

The performance agreement for this project included two deliverables. The first was an online professional development system to provide training and support for teachers to monitor progress in algebra for students with disabilities. The resulting product will include online multimedia modules along with scoring and data management tools. The second deliverable required that we conduct a pilot study with a pretest-posttest design in the final year of the study.

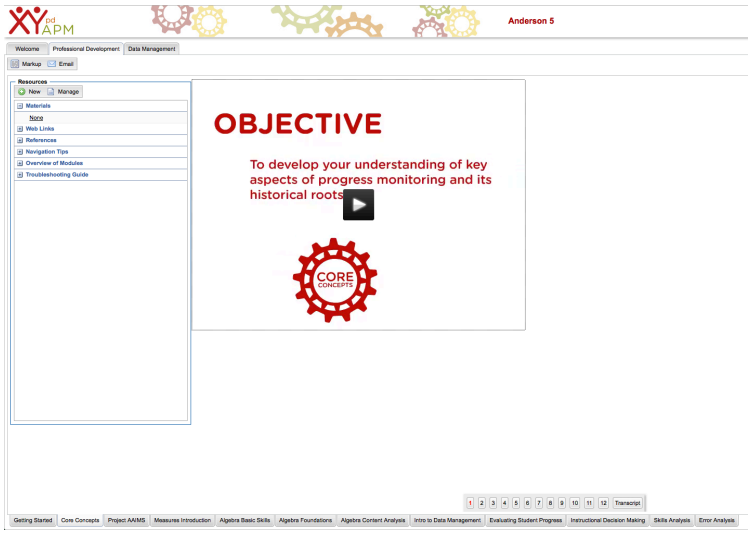
The first section of this report outlines the iterative process we used to develop the system, to implement it with multiple cohorts of teachers to make refinements, and to create fidelity measures to determine that the system is functioning as intended. The second section of this report provides a detailed description of the pilot study conducted in the final year of the project. The graphic in Figure 1 shows the user interface for the completed system.

In the top left of the image, just below the PD-APM logo, there are three tabs that are called "hubs." When users first accesses the system, they start with the Welcome hub, which provides a brief introduction to the system, tells users how to get started, and displays an animated chalk board that rotates between sample items for the three types of measures. The other two hubs are for Professional Development, where users access the modules to learn to use the system, and Data Management, which houses the tools users need to enter student data, view progress graphs, and make use of the diagnostic tools. The section that follows provides an overview of the professional development modules, followed by a description of the early cohort-based field tests. A description of the data management tools is provided later in the report.

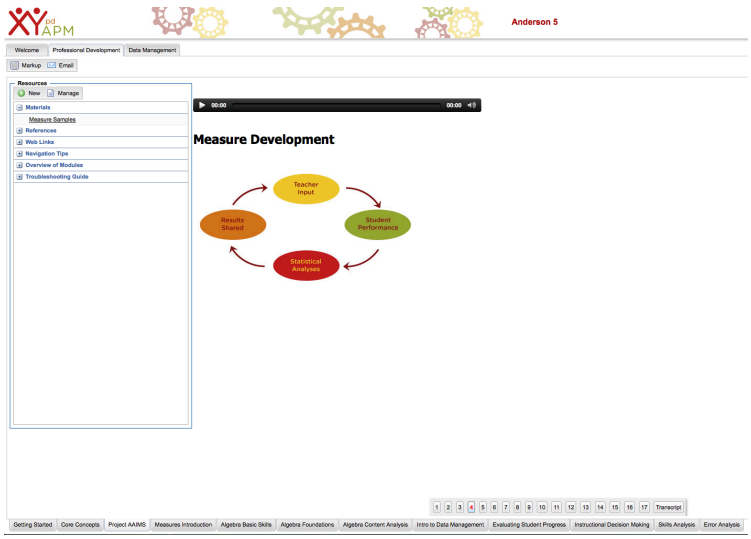
Format and Features of the PD-APM System in Thinkspace

This appendix includes a series of annotated screen shots that illustrate the format and features of the professional development modules in the PD-APM system. The intent is to provide a general sense of the nature of the modules, rather than an exhaustive compilation of all possible features.

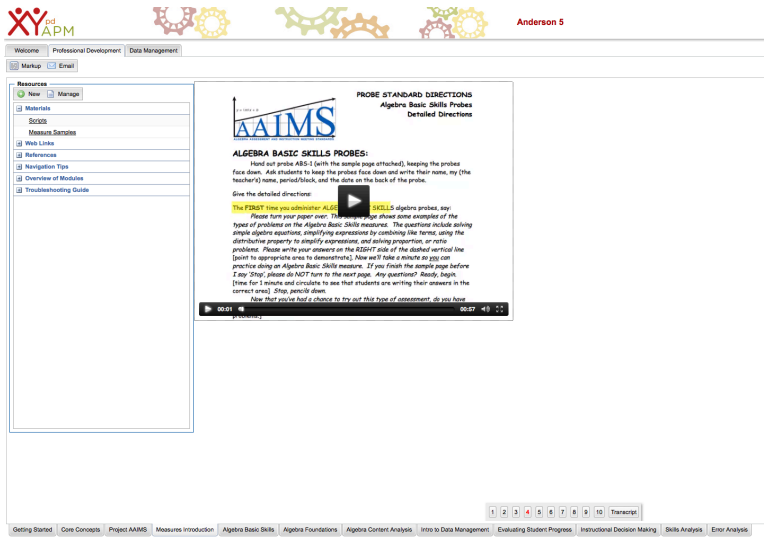
The professional development modules each shared a set of consistent features. First, each module opened with an animation of the gear theme and presentation of the objective(s) for the module. All videos were displayed in a player window with an arrow button that could be clicked to initiate the video.



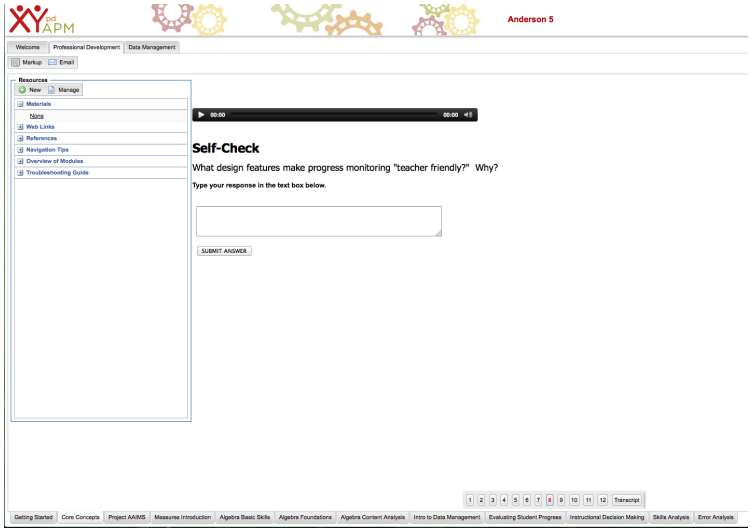
The content in the modules was presented in a variety of formats. Some pages included text or graphics, paired with an audio file of the narration.



On other pages, animations were used to draw teachers' attention to particular features of the material being presented. In the image below, yellow highlighting was used to draw teachers' attention to a specific aspect of the presentation.

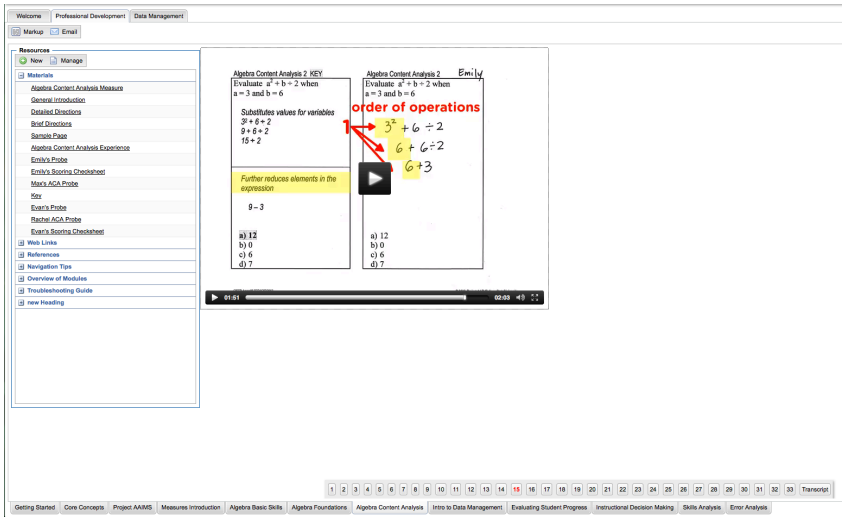


In modules that were focused primarily on sharing information, a series of self-check questions was included at the end of the module to allow teachers to self-evaluate their learning. After entering a response, the teacher could click "Submit" to view an expert response to the same question.

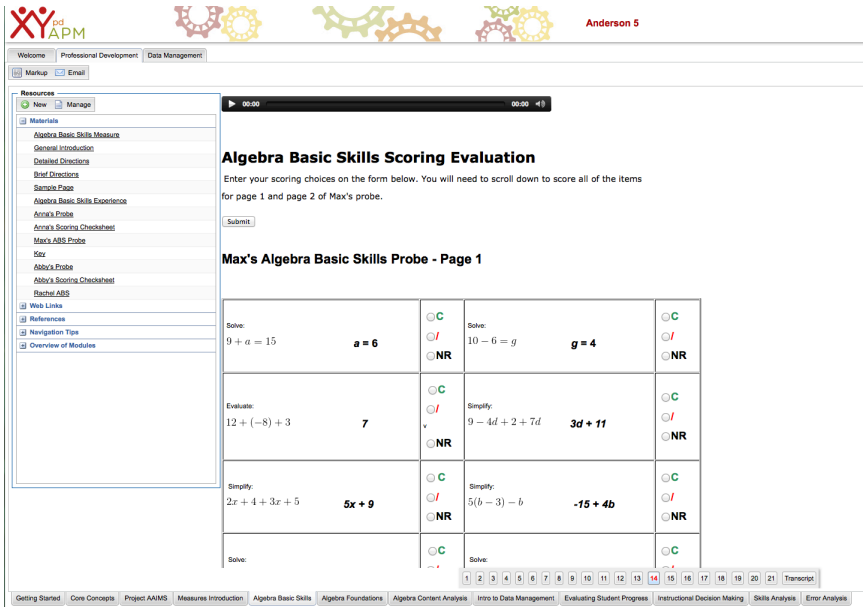


The three modules that taught teachers how to administer and score the three types of measures included several unique features. One was a simulation activity in which the teacher took on the role of a student and the video provided the directions and timing for completing the measure. Following the simulation, information about scoring was provided and users completed a guided scoring

activity. The image below shows a video animation of the scoring process for the Algebra Content Analysis measure.

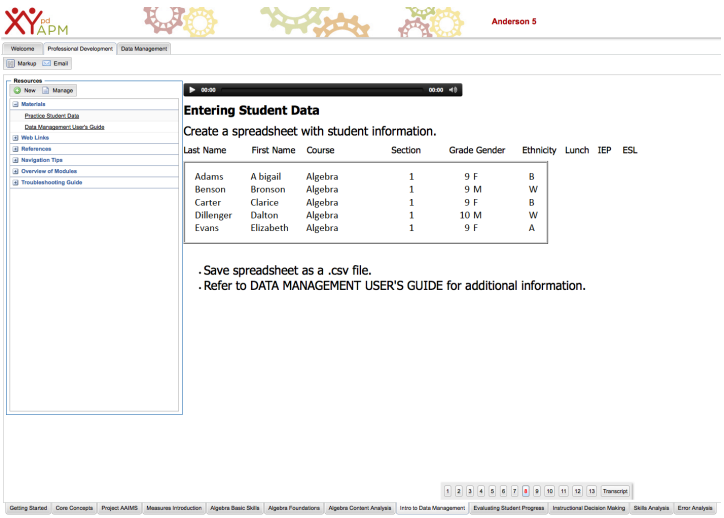


After completing the practice activity and having an opportunity to compare their scoring to an expert key, teachers completed an exercise to demonstrate their learning about accurate scoring procedures. The image below shows an interactive page where teachers entered the scores they assigned a fictitious student named Max by choosing the radio button (to the right of each problem) that corresponded to the score they gave. After all scores were entered, teachers clicked submit and were provided with immediate feedback on the percentage accuracy for their scoring.



The last five modules provided training on the use of the data management tools. As they learned how to work with these tools, teachers were provided with interactive

tasks in which they would complete an activity using the tool in order to practice using the tools. The image below shows in activity that users complete as they are learning how to import class data using a .csv file.



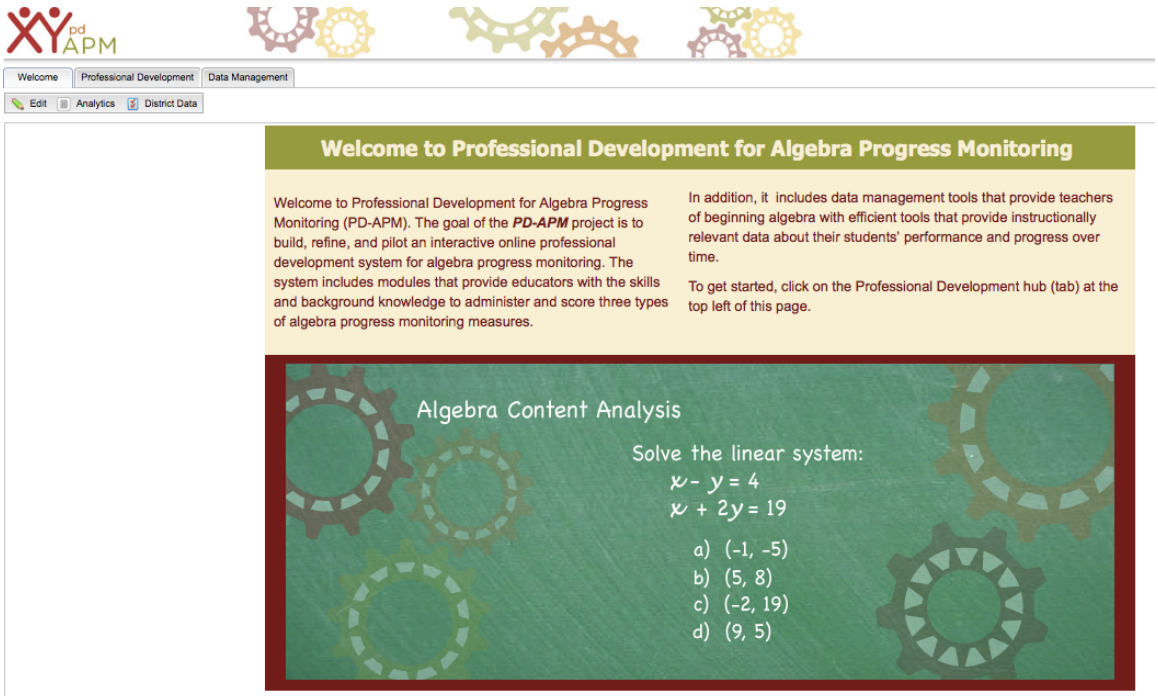


Figure 1. Welcome hub for the PD-APM system

Figure 2. Gear graphic showing professional development modules

Previewing the End Result: Professional Development Modules

In order to best place the development process in context, it is valuable to understand the configuration of the final professional development modules and our guiding principles for designing the modules. The graphic in Figure 2 represents the final version of the modules used in the Cohort 4 Pilot Study in the final year of the project. Following an introductory, "Welcome" module that provided instruction on navigating the system interface, we previewed the modules with an animation that allowed users to see the structure of the professional development. The gears theme was developed and used in the graphic design throughout the modules. Each module began with an animation that introduced the topic and identified the objectives for the module. Following the content of the module, a final "page" in

the system returned to the graphic, showing which modules had been completed and informing the user as to what module was next.

Our development of each module was informed by an existing full-day workshop on the algebra progress monitoring measures that we had been disseminating via face-to-face delivery beginning in 2008. In creating the PD-APM modules, we sought to incorporate what we'd learned from our experiences working with hundreds of teachers across the country and to incorporate new information and strategies made available through the technology. Our goal was to create interactive, accessible modules that provided the user with information in manageable "chunks."

Each module has common elements. First the previously described introduction and conclusion pages were used to build continuity across the modules and to help users track their progression through the system. We used multimodal presentation methods, with each slide having audio (or video) narration; users could also access a transcript of the audio portion if they preferred to read along with the content. We also designed interactive components to help users assess their understanding. In the early modules, self-check questions were presented at the end of each modules. Users typed their responses into a text box and after submitting their answers, were able to view our expert response for comparison purposes. In some of the modules, we incorporated application activities in which users completed tasks following instruction regarding how to use some aspect of the system. These were especially useful as we helped users learn to use the data management tools. The "measures modules" (Algebra Basic Skills, Algebra Foundations, Algebra Content Analysis), which provided training on the administration and scoring of the three procedural measures, were the most innovative of our efforts to build interactivity for users. In each of these modules, content about the nature, development, and technical adequacy of the measure was paired with an "experience" or simulation, in which a users printed out materials accessible in the module and then watched a video in which a "teacher" administered the measures (read the directions and allocated the appropriate amount of time); a buzzer signaled the end of the administration period. Each simulation allowed the user to experience the student side of completing the measure to develop a higher level of familiarity with the nature of the items on that measure. Following this simulation, the user printed materials for a scoring activity involving a fictitious student. The module pages provided instruction on scoring procedures and guided the user through a scoring activity for which a key (our version of the scored student paper) was then provided. Following this activity, the user was required to complete a "test" activity (scoring a paper for a fictitious student named Max) and enter the scores for each item. Users of the end produce system will be required to achieve 90% scoring accuracy in order to receive access to the measures for use in their classrooms. Appendix A provides a series of screen shots illustrating the format and content of the modules. The following sections summarize the iterative process we conducted prior to the Cohort 4 Pilot Study during the final year of the project.

"In-House" Student Pilot Process

Prior to beginning work with teachers, we developed content for the professional development modules and tested the accessibility of the content and the functionality of the online system by having undergraduate and graduate students in special education and mathematics education at each site complete subsets of the modules. In addition to testing the

online system, this also provided us with a means to explore fidelity measures, including a two-phase system for determining if the modules were working as intended.

Fall 2010

The first in-house pilots occurred with the Clemson-developed interface in the fall of 2010. We developed a process and associated fidelity measures to inform our iterative revisions of the modules. Four ISU students and four Clemson students completed the first three modules (Welcome, Foundations, Project AAIMS) in two stages. Stage 1was supervised by a graduate student from the project team who provided instructions and guidance to the students, noted the time required to complete the modules, and noted any challenges students encountered while using the system. Following each module, each student completed a Module Feedback Form that requested information about the start and stop times, computer platform and operating system, and open-ended questions regarding the module (general impression, particularly helpful segments, segments that hindered learning, and reasonableness of the time required). Following these questions, 10 Likert-scale items were presenting asking students to judge aspects of the modules, such as video, audio, graphics, and animations, as well as general organization, content difficulty, and ability to navigate and understand the content. A copy of the Module Feedback Form is included in Appendix B.

In Stage 2, students returned to the modules and went through them at their own pace (and on their own schedule), providing comments on every page of the modules (even if the comment was to note no concerns) using a "Submit Comment" feature imbedded in the system. We found that accessing the data for submitted comments was extremely difficult, as the system output required a great deal of manipulation and reformatting to get the comments into a usable form (see Appendix C).

The results of the in-house pilot with the first three modules provided us with valuable feedback regarding user perceptions. The student feedback for the first three modules is presented in Appendix D. These data are summarized in this final report to focus on the critical factors and enhance readability. Strengths identified in the modules included the organization and understandability of the content, the value of the Flash animations, and the use of graphics and visuals to illustrate key points. Concerns were voiced regarding challenges in navigation, audio recordings, delays with loading videos and content. Specific suggestions regarding reformatting specific content and adding features (a progress indicator to represent position within the pages of the module) were also provided.

The project team organized and summarized all of the participants' feedback and incorporated the recommendations into a second iteration of the modules. During the period from January 2011 through September 2011, the project team continued to develop module content as the technical team transition from Clemson to Iowa State occurred. In the fall of 2011, we conducted a second round of in-house pilot activities.

September – October 2011

Using the same procedures, but with the ThinkSpace platform, another group of students at Iowa State (N = 3) and Clemson (N = 5) completed the two stage pilot process with five modules. The new platform included a "MarkUp" tool that allowed users to place comment

boxes directly on the content of a module page. As with the previous Stage 2 process, in-house pilot students commented on each page of the modules. In addition to those tested in Fall 2010, the fourth module (Measures Introduction) was included. Student feedback was reviewed rapidly and incorporated into revisions to the modules prior to their use by Cohort 1 teachers. A sample of the comments received and the color-coding system we used to categorize feedback is presented in Appendix E. Examples of changes recommended included the labeling of "Hubs" within the system (to differentiate the professional development modules from the data management tools) to make this organizational structure more explicit for teachers, addressing issues with software differences between home and school computers, and correcting inconsistencies between page text and audio recordings.

Cohort 1: November 2011 – December 2011

The first teacher cohort included four Iowa teachers and four South Carolina teachers, all of whom used the same two stage process to complete five modules (Getting Started [formerly Welcome], Foundations, Project AAIMS, Measures Introduction, Algebra Basic Skills [ABS]). The modules that they worked through incorporated revisions from the student in-house pilot completed earlier that fall. Because we were developing content for later modules concurrently with this Cohort, these teachers were provided with the opportunity to access the remaining modules when they were completed in the summer of 2012. The work of this cohort illustrated the challenges of moving the modules outside of university-based environments. Teachers' school computers were often outdated, internet speeds were slow, and technology support staff sometimes had to be enlisted to allow teachers to download a free browser (Firefox) on which the system had been optimized. Despite these challenges, the teachers' initial perceptions of the modules were quite positive on the Phase 1, as shown in Table 1. Of the 50 mean ratings, 68% were at or above 4.5 and only one fell below 4.0.

Table 1. Mean Ratings for Cohort 1 Teachers (N = 4) on the Phase 1 Questionnaire (1=poor, 5=excellent)

	Getting Started	Foundations	Project AAIMS	Measures Intro	Algebra Basic Skills
Q1: Your overall level of satisfaction with this module.	4.1	4.4	4.3	4.5	4.6
Q2: The organization of the module.	4.5	4.3	4.3	4.5	4.6
Q3: The appropriateness of the module's level of difficulty.	4.9	4.8	4.4	5.0	4.8
Q4: The clarity of the content in the module.	4.6	4.6	4.5	4.6	4.5
Q5: The quality of the graphics used in the module (clarity, contributed to understanding).	4.4	4.1	4.6	4.5	4.8

Table 1. Mean Ratings for Cohort 1 Teachers (N = 4) on the Phase 1 Questionnaire (continued) (1=poor, 5=excellent)

	Getting Started	Foundations	Project AAIMS	Measures Intro	Algebra Basic Skills
Q6: The quality of the animation used in the module (clarity, audibility, contributes to understanding).	4.6	3.9	4.3	4.4	4.5
Q7: The quality of the audio narration used in the module (clarity, audibility contributes to understanding).	4.5	4.6	4.5	4.9	4.4
Q8: Your level of engagement while working on this module.	4.0	4.4	4.3	4.4	5.0
Q9: Your level of understanding of the content.	4.5	4.8	4.5	4.9	4.6
Q10: The ease with which you could navigate through the system.	4.5	4.5	4.9	4.8	4.9

We applied the same color coding process illustrated in Appendix D to the Phase 2 (comments on every page of every module) feedback from the Cohort 1 teachers. These were summarized in the document in Appendix F. In this chart, we first identified if the change needed to be made before Cohort 2 (which was planned for the summer of 2012) or if it could wait until Cohort 3. Because our timeline was delayed due to the change in technical teams and the development of a new platform, we were balancing the iterative changes needed for the modules with a desire to maintain our revised schedule. Each item was also coded as a Technical (T) or Content (C) issue.

Cohort 2: July 2012 – September 2012

The second teacher cohort included two Iowa teachers and three South Carolina teachers. We were unable to recruit four teachers in each state because the work with the modules took place during the summer. This group of five teachers completed revised versions of the first five modules (with revisions based on feedback from Cohort 1 teachers), and four additional

measures (Algebra Foundations [AF], Algebra Content Analysis, Data Management, Evaluating Student Progress). The last two of these modules represented the completely new content (as compared to the face-to-face training) because they provided users with instruction about the online data management system. As with Cohort 1, a two-stage process was used with the teachers to complete the modules in Phase 1 with support available from one of the project's graduate assistants, followed by Phase 2, where they returned to the modules independently and provided comments on every page.

The comments on the early modules (Getting Started, Core Concepts, Project AAIMS) were focused almost exclusively on technical aspects (loading speed, audio quality) rather than content, which provided us with evidence that our previous revisions had been effective in addressing content and presentation concerns. The feedback on the four modules related to administration and scoring of the measures (Measures Intro, ABS, AF, ACA) revealed some challenges related to the audio and concerns about our use of differing narrators across the modules. In addition, the content concerns were relatively minimal, suggesting that we had incorporated previous feedback into our design of the newer modules to create higher quality initial versions. Feedback on the two modules related to data management (Data Management, Evaluating Student Progress) provided helpful suggestions about future possibilities (integrating school information systems with the PD-APM system to increase efficiency for teachers; changing the format for entering student demographic information).

Following the completion of Cohort 2, we compiled a list of changes for Cohort 3 (see Appendix G). In addition, we engaged in discussions with the two Iowa teachers who had participated in Cohort 2. They were a general education and special education co-teaching team and expressed great interest in being able to use the measures with their students. We directed them to information about the face-to-face training, but they were particularly interested in the ability to use the online data management system we were developing. We came to an agreement that would provide them with early access to the data management system tools for use with their students; they would provide us with feedback and serve as beta testers for the system prior to our implementation with the Cohort 3 teachers. We used "Cohort 2.5" to refer to this unplanned implementation of the system. Before we describe the work conducted with Cohort 2.5, we first describe the data management components of the system.

Previewing the End Result: Data Management Tools

The second major component of the PD-APM system comprises the data management tools. These tools included three elements: progress graphs, skills analysis reports, and error analysis reports. The data management hub includes two tabs: Students and Probes. The Students tab, illustrated in Figure 3, allows users to enter student names, and enroll students in courses and periods.

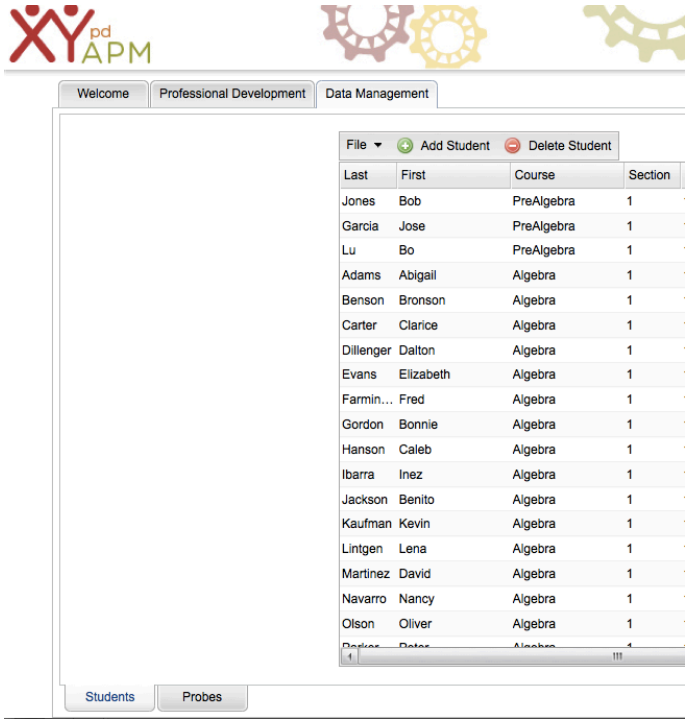


Figure 3. Students tab in Data Management hub

The Probes tab, shown in Figure 4, is used to assign a measure to a class of students. The user selects the course, measure, and section in the window at the top of the page and then chooses the type of measure and form number. Clicking on Add Form in the Form Options box on the right. This opens a dialogue box where the user indicates which students completed the form and the date of administration. Once this information is submitted, a window opens where the user can enter total score data for the students.

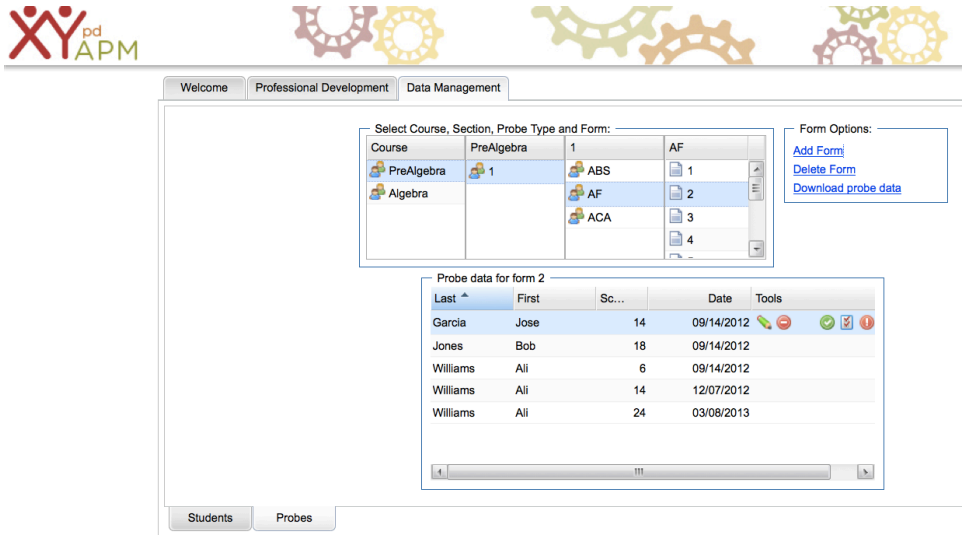


Figure 4. Probes tab in Data Management hub

The image in Figure 4 shows the line for a student named Jose Garcia is highlighted, which causes the tools to be displayed. Each of the icons takes the user to a different feature. The pencil icon (Edit Probe) takes the user to an interface where student performance can be recorded at the item level, allowing the generation of reports on Skills and Errors (described in more detail below). The red circle with a white horizontal bar (Delete Probe) is used to delete a student from this administration of the measure, most often when the student was absent. The green circle with the white checkmark (Progress) takes the user to the student's progress graph. The icon showing a white page with red checkmarks takes the user to the Skills Analysis reports, while the red circle with the white exclamation point takes the user to the Error Analysis reports.

Progress Graphs

The graphing interface was designed to enable several features of importance to algebra progress monitoring users. At the most basic level, the graph automatically displays the student's progress in a chart similar to those typically used for the IEPs of students with disabilities. Figure 5 illustrates a progress monitoring graph for a student in a spring semester course. Data for the student is shown in blue, along with his trendline. Class comparison data is shown in red. Using these data, it is evident that the level of the student's scores is significantly below the class average, but the slope of the student's data (reflecting his rate of growth) is substantially more steep than the average rate of growth for the class. Users can use the options below the graph to select comparison data representing mean performance for students in the same period, taught by the same teacher, in the same course in the same building, or in the same course in the same district. Users can also toggle on and off a trendline (regression line) superimposed on the data.

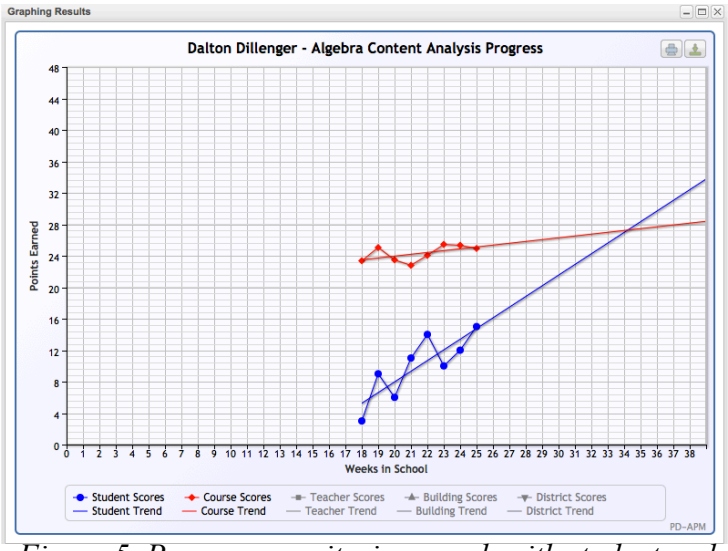
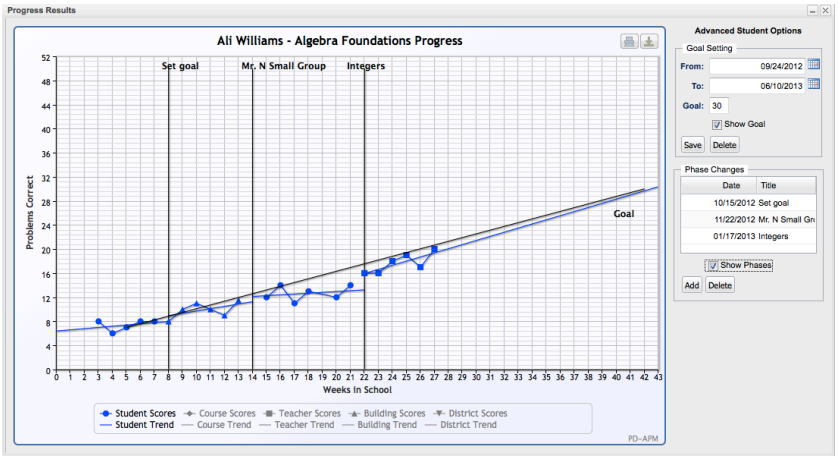


Figure 5. Progress monitoring graph with student and comparison data



Two other features allow users to set a goal for a student and to record an intervention change. The graph in Figure 6 shows these tools applied to a case study (from the Instructional Decision Making module) for a student named Ali Williams. The teacher used the first five data points in the series to

Figure 6. Progress monitoring graph showing a goal and phase changes

establish a baseline, or initial level of performance, for Ali. The first vertical solid line (marked Set Goal) is a phase change, showing that a goal was set for Ali. The goal is noted on the graph with a solid black line that begins at the mean score of Ali's baseline data (about 8 problems correct) and goes to the end of year goal set by her teacher (30 problems correct).

After another five weeks of data collection, Ali's trend line was less steep than the goal line and, if it were projected out to the goal, would fall short of the desired 30 problems correct. The second solid vertical line represents an instructional change made in an effort to accelerate Ali's rate of learning. The notation, Mr. N Small Group, suggests that Ali began participating in small group instruction with Mr. N. Data collected over seven weeks with this instructional change produced a flat trendline, which is interpreted as no improvement in Ali's rate of learning. As a result, a different instructional change was implemented that involved mini lessons on integers. The data collected thus far suggest that this intervention is having positive effects. Ali's trendline is showing an upward slope, and the projection of the trendline out to the goal at the end of the year suggests that if Ali continues this rate of progress, she will achieve her goal.

Skills Analysis Reports

The second major tool available in the Data Management hub provides Skills Analysis reports. Each of the measures was designed using a test specification template that outlined the skills and subskills assessed in each measure. The PD-APM system includes programmed versions of the measures that users can access to enter item-level data for individual students. This interface is presented in Figure 7 for Form 2 of the ABS measure. The user sees a version of the key for the measure (e.g., 9 is the correct answer for the first problem) and uses the radio buttons (green C for correct, red slash for incorrect, NR for no response) to record the student's scored response.

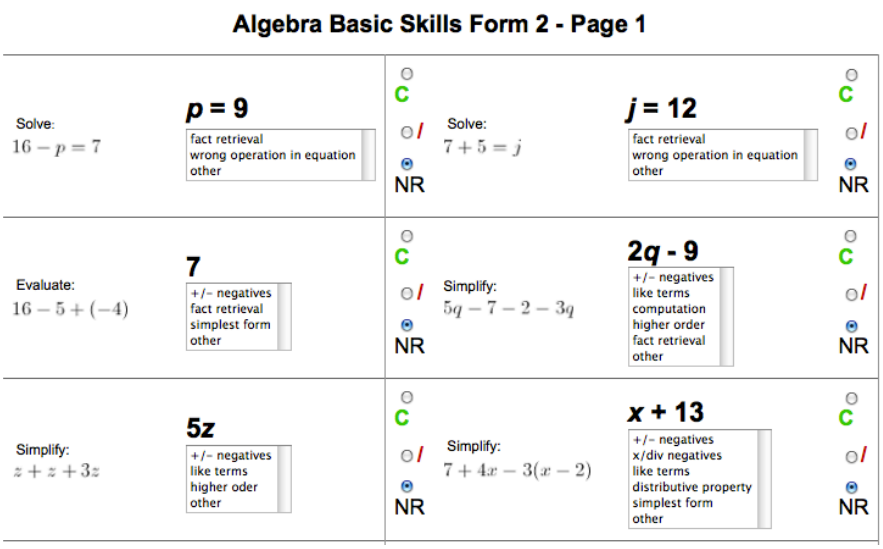


Figure 7. Item-level data entry for Algebra Basic Skills

The item-level interface is programmed to link each item on all twelve forms of each of the three types of measures to their respective skill strands. Once teachers have entered item-level data, they are able to access reports summarizing skills performance at the class or individual student level. Class or student proficiency is color coded as proficient (green),

developing (yellow) or struggling (red). The images in Figure 8 illustrate the sample class summary and student skills analysis reports.

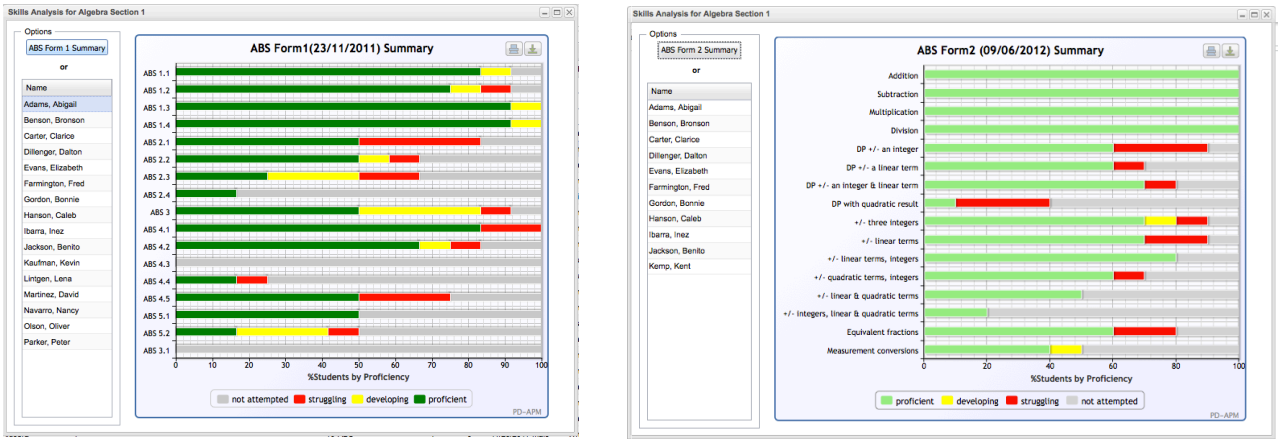


Figure 8. Class summary (left) and student (right) skills analysis reports

Error Analysis Reports

The second type of diagnostic tool built into the interface is the ability to generate reports of common errors. Users can record the types of errors students make by selecting one or more options from a scroll box in the item-level interface (see Figure 7). The scroll box includes a set of common errors associated with that problem type. As with the skills data, the error type options are linked to specific problem types and individually programmed for each item on all twelve forms of each of the three types of probes. As with the Skills reports, the Error reports can be generated at the class or individual student levels. The format for the error reports is displayed in Figure 9. Having summarized the data management features, we next describe the work completed in Cohorts 2.5 and 3, both of which included use of the data management tools.

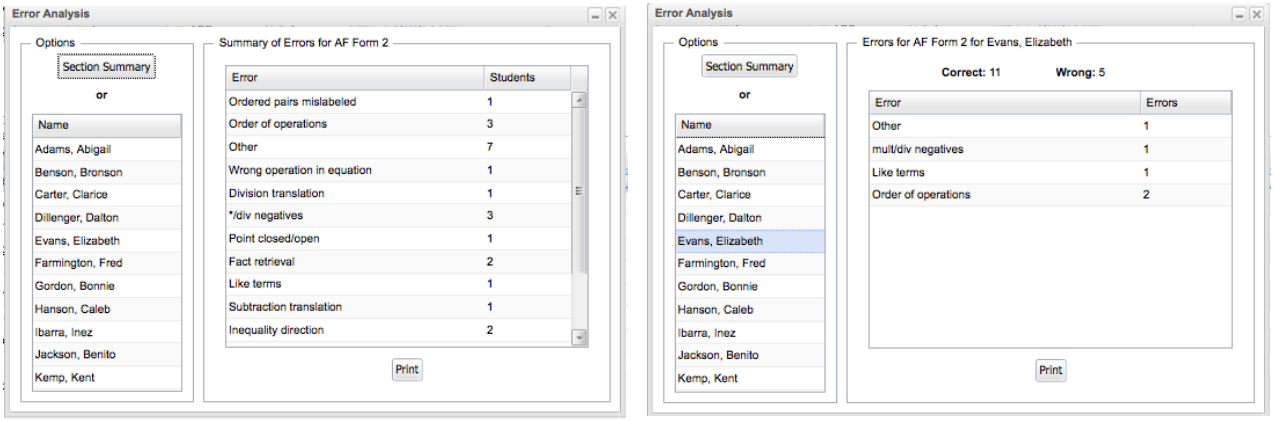


Figure 9. Class Summary (left) and Student (right) Error Analysis Reports

Cohort 2.5: October 2012 – May 2013

At the same time as Cohort 2.5 was working with the data management tools (they had already completed the professional development modules available at that time), the project team was making revisions to the modules in preparation for Cohort 3. These included re-recording all of the audio files for the professional development modules. In earlier iterations, we received

user feedback that our use of rotating narrators (the key personnel) had an unintended consequence. Rather than adding variety, users reported it was distracting to change between narrators and adjust to differences in dialect. In addition, the differing conditions under which each narrator recorded her audio results in variation in background noise and audio volume that were noted by users. To minimize these distractions, we opted to use a single narrator and engaged in rerecording nearly all of the audio files during the first six months of 2013.

In mid-October 2012, we met with the teachers to orient them to the data management tools and provide them with the materials needed (measures, directions, keys) to implement algebra progress monitoring with their students. Each teacher administered measures to and entered data for one class of students. In addition, we asked the teachers to enter item-level data for several measures so that we could test the skills and error analysis features. We held a debriefing session with the teachers in early January 2014 to review their use of the data management tools, any difficulties they had encountered, and the data generated for their students.

The teachers reported that the navigation and data entry interface were easy to use. A major barrier was associated with the item-level entry, which was time consuming to complete for multiple students. The graphs were a particular highlight of the system, as they provided visual evidence of trends that were not available when teachers were reviewing numerical scores in a gradebook format. The comparison data was valuable for providing a frame of reference for individual student growth. The teachers did suggest exploring a more efficient interface for viewing student graphs in sequence. The ability to share graphs with students and discuss their individual progress was seen as a noted strength.

Given this was the first use of the skills and errors diagnostic features, teacher were able to provide valuable input. We'd asked them to select three students in their class and enter skills and error data for each on probe over a 10-week period. The teachers perceived more value in the skills reports than the error reports. In a surprising finding, the teachers reported that the gray sections of the skills analysis reports (denoting which items the students did not attempt) were especially valuable in getting students to attempt items that reflected new skills they were learning in class. They also reporting using the skills reports with students, who enjoyed seeing the color coding changing to be more green as they solidified their application of particular skills. While they noted that the time required to enter the data likely would not be feasible for all students, that having this tool available would be extremely valuable for specific situations: students who move in to the district, are receiving supplemental instruction, or who do not seem to be responding to instructional or intervention adjustments.

Only one of the teachers entered any error data for students. In further discussion, the teachers perceived little value to the Error Analysis feature. Though the process of scoring the students' papers, they were able to identify common error patterns and thus the summary report on errors duplicated information they had obtained through the scoring process.

Cohort 3: April 2013 – June 2013

Cohort 3, which comprised nine teachers (two from Iowa, seven from South Carolina), was the first group to complete all of the PD-APM professional development modules as a

complete whole. Because they were also asked to implement algebra progress monitoring (and the system's data management tools), we altered our procedures to include only the Stage 2 (self-paced completion of the modules), with comments on the modules requested, but not required. In addition, we converted the Phase 1 Module Feedback Form (Appendix B) to an electronic format and embedded the open ended items and Likert ratings into the modules at three points; teachers provided their feedback on the first three modules (Getting Started, Core Concepts, Project AAIMS); the "measures modules" (Measures Introduction, Algebra Basic Skills, Algebra Foundations, Algebra Content Analysis); and the data management modules (Intro to Data Management, Evaluating Student Progress, Instructional Decision Making, Skills Analysis, Error Analysis). The mean ratings are reported in Table 2.

In addition to completing the professional development modules, Cohort 3 teachers also administered one measure of each type to at least one of their classes, scored these measures, and then used the data management tools to set up their classes (entering student names) and enter the total scores for each student. Teachers then identified three target students in the class and entered item-level and error data for these students on each of the three measures.

Cohort 3 also provided the opportunity to implement our primary implementation fidelity measure related to knowledge change. Teachers completed a 25-item assessment of algebra progress monitoring. This measure (see Appendix H) included multiple choice items tapping understanding of general progress monitoring concepts, as well as the specific measures and data management tools taught in the PD-APM professional development modules. The mean score on the pretest score was 7.4 items, while the mean posttest score was 18.8; this represents a statistically difference $t(8) = -10.49$, $p < .001$.

A secondary implementation fidelity measure was the degree to which the professional development modules provided teachers with sufficient training and practice to accurately score students' algebra progress monitoring assessments. As part of the modules, teachers completed practice scoring activities and checked their scoring against a provided "scoring checksheet" with expert scoring. Teachers also completed a "test" activity that required scoring a measure for a fictitious student (Max) and entering their scoring at the item-level; the system provided immediate feedback on the percentage of agreement with an expert-scored key. We set a threshold of 90% agreement as an indication of the effectiveness of the training. We also examined teachers' accuracy in scoring their students' papers across all three types of measures. We checked the scoring accuracy 32 individual student papers across the nine teachers and obtained a mean accuracy percentage for Algebra Basic Skills of 100% (all papers were scored with perfect accuracy. For Algebra Foundations, the mean scoring accuracy was 94% across 34 papers (range = 63 – 100). For Algebra Content Analysis, the mean scoring accuracy was 97% across 27 papers (range = 88 -100). Please note that data were not included for one teacher who scored the ACA measures, but clearly had not completed the module with fidelity, as scores of correct and incorrect were assigned, rather than points ranging from -1 to 3.

Teacher feedback on the modules was incorporated into a final round of revisions. This work occurred simultaneously with the activities of Cohort 3 and included changes identified for Cohort 3, but prioritized as of lesser importance, as well as items identified by Cohort 3 teachers as they completed the professional development modules. These changes included the

identification of problems with the functioning of the data management system, ongoing issues with browsers other than Firefox, and some audio and content errors in need of correction.

Table 2. Mean Ratings for Cohort 3 Teachers (N = 9) on the Phase 1 Questionnaire (1=poor, 5=excellent)

	Cluster 1	Cluster 2[a]	Cluster 3
Q1: Your overall level of satisfaction with this module.	3.9	4.1	4.3
Q2: The organization of the module.	4.8	4.8	4.5
Q3: The appropriateness of the module's level of difficulty.	4.7	4.5	4.5
Q4: The clarity of the content in the module.	4.3	4.4	4.6
Q5: The quality of the graphics used in the module (clarity, contributed to understanding).	3.6	4.0	4.4
Q6: The quality of the animation used in the module (clarity, audibility, contributes to understanding).	3.8	3.6	4.1
Q7: The quality of the audio narration used in the module (clarity, audibility contributes to understanding).	3.9	4.0	4.3[b]
Q8: Your level of engagement while working on this module.	3.8	4.3	4.1
Q9: Your level of understanding of the content.	4.2	4.3	4.3
Q10: The ease with which you could navigate through the system.	4.1	--[c]	--[c]

Note. [a]n = 8; [b]n = 7; [c]data unavailable

Cohort 4: August 2013 – July 2014

This last cohort of teachers (Cohort Four) provided a pilot test of the entire PD-APM system, including its data management component for student progress monitoring. The PD-APM research team measured whether the system contributed substantively to teachers' skills and knowledge about progress monitoring and their use of the online system, whether teachers were able to score student probes reliably and to enter scores accurately in the online system, and whether teachers could enter skills and errors information from student probe results. Feedback from teacher evaluations within the online system allowed refinement of the professional development program, which evolved into a more user friendly and commercially available forthcoming iteration of the online system, ThinkSpace 2.0.

Method

Overall Design

This pilot study was conducted from August 2013 to July 2014 in Iowa, Minnesota, and South Carolina. Following the completion of a module that demonstrated navigation the online system platform, ThinkSpace, 29 teacher participants completed eleven online modules about progress monitoring and the use of measures for students in algebra. They collected progress monitoring data across a period of ten weeks, scored, and entered data using the online management system. Teachers provided on feedback about the system at several checkpoints in the professional development system, through written questionnaires and oral interviews, and by completing pre- and post-assessments of progress monitoring knowledge. Throughout our description of the Cohort 4 pilot study, we use ThinkSpace and PD-APM interchangeably to describe the online professional development modules and data management tools created in this project.

Participants

Teachers. A total of 29 teachers participated in this study. The teachers received professional development using the ThinkSpace-based training system and monitored the progress of their students in at least one class. They were assigned or chose one algebra measure to administer for at least 10 weeks, scored the students' probes, and entered data into the PD-APM system. Participating teachers represented four school districts in South Carolina, five schools in Iowa, and three schools in Minnesota. Twelve teachers were from South Carolina, including seven special education teachers and five general education teachers. Fourteen of the teachers were from Iowa, including nine special education teachers and five general education teachers. Three general education teachers from Minnesota participated. Four teachers from Minnesota had been recruited initially to participate, but two chose to discontinue participation in the study, and a third teacher was added soon thereafter. Demographic information for the participating teachers is provided in Table 3. Written consent was obtained for all teachers using procedures approved by the Institutional Review Boards at Iowa State and Clemson.

Table 3. Demographic Characteristics of Teacher Participants

Teacher[a]	School	Gender	Position[b]	Ethnicity	Years Teaching	Years Teaching Algebra	Teaching Certification[c]
1	A	F	GenEd	Caucasian	12	12	SMath
2	B	F	SpEd	Other	13	8	EE, LD, BD, ID
3	C	F	GenEd	Caucasian	23	23	SMath
4	D	F	SpEd	Caucasian	20	20	LD
5	D	F	SpEd	Caucasian	29	20	LD
6	E	F	SpEd	Caucasian	15	5	ECE, EE, LD,BD, ID
7	E	F	GenEd	Caucasian	8	6	SMath
8	E	F	GenEd	Caucasian	2	2	SMath
9	E	F	SpEd	Caucasian	8	4	LD, BD, ID
10	F	F	GenEd	Caucasian	6	2	SMath
11	F	F	SpEd	Caucasian	4	1	EE, LD
12	G	F	SpEd	Caucasian	25	3	LD, ID
18	H	F	SpEd	Caucasian	16	0	EE, LD
19	J	M	SpEd	Caucasian	6	5	EE, SEG
20	I	F	GenEd	Caucasian	-	-	-
21	H	F	SpEd	Caucasian	17	0	SEG
22	I	F	SpEd	Caucasian	6.5	0	ECE, EE, SEG
23	H	F	GenEd	Caucasian	15	15	SMath
24	H	M	SpEd	Caucasian	4.5	0	SEG
25	I	F	SpEd	Caucasian	23	0	LD
26	H	F	GenEd	Caucasian	20	20	SMath
27	K	F	SpEd	Caucasian	8	0	EE, SEG
28	I	F	GenEd	Caucasian	-	-	-
29	I	F	GenEd	Caucasian	23	20	MMath, SMath
30	L	M	SpEd	Hispanic	8	6	SMath, SEG
31	L	F	SpEd	Caucasian	21	13	SMath, BD
32	M	M	GenEd	Caucasian	-	-	-
33	O	M	GenEd	Caucasian	10	10	MMath, SMath
34	N	F	GenEd	Caucasian	6	6	MMath, SMath

Note. [a]Teacher identification numbers are not consecutive because a group of interested teachers in South Carolina participated in limited aspects of the data collection; they are not included in this report because they did not work with the PD-APM system; [b]GenEd = General Education, SpEd = Special Education, [c]BD = SpEd Behavior Disorders, ECE = Early Childhood Education, EE = Elementary Education, ID = SpEd Intellectual Disabilities, LD = SpEd Learning Disabilities, MMath = Middle School Math, SEG = SpEd General, SMath = Secondary Math.

Students. Students participating in the classes selected for progress monitoring ranged from Grades 7 to 12. These students ($N = 460$) were enrolled in 7th and 8th grade General Math, Pre-Algebra, and high school level Algebra/Geometry Foundations, Skills and Instructional Strategies, and Algebra 1 courses. Students in the courses represented typically developing, general education classroom students; students on Individualized Education Plans (IEPs) in inclusive classrooms; and students in special education classrooms who were provided with mathematics support by special education teachers. Table 4 provides the number of students, including students with IEPs, involved in each of the classes teachers chose for progress monitoring, along with a general description of the course.

Table 4. Teacher Course and Student Information

Teacher	School	Course	Students (*N*)	Students on IEPs (*N*)	Course Description	Grade(s) Taught
1	A	Algebra I	29	13	GenEd	9-11
2	B	Tutorial I	11	11	SpEd	9
3	C	Algebra I	22	1	GenEd	9
4	D	Academic Support	9	9	SpEd	10
5	D	Academic Support	8	8	SpEd	9-12
6	E	Academic Support	9	9	SpEd	9
7	E	Algebra I	17	0	GenEd	9-10
8	E	Algebra I-CP	13	0	GenEd	9
9	E	Academic Support	7	6	SpEd	11
10	F	Algebra I AB	15	7	GenEd	9
11	F	Algebra I	16	7	SpEd	9
12	G	Academic Advancement	9	7	SpEd	10
18	H	Skills	4	2	SpEd	9-10
19	J	Pre-Algebra	6	6	SpEd	9-12
20	I	Math 7	22	3	GenEd	7
21	H	Skills	4	4	SpEd	9-12
22	I	Math 7	19	3	SpEd	7
23	H	Algebra 1	17	0	GenEd	9-11
24	H	Skills	4	2	SpEd	9, 10, 12
25	I	Math 8	23	5	GenEd	8
26	H	Algebra 1	13	1	GenEd	9-12
27	K	Resources	11	11	SpEd	7-11
28	I	Math 7	20	1	GenEd	7
29	I	Math 8	12	12	GenEd	8
30	L	Algebra/Geom. Foundations	23	1	At Risk	10-12

Table 4. Teacher Course and Student Information (continued)

Teacher	School	Course	Students (*N*)	Students on IEPs (*N*)	Course Description	Grade(s) Taught
31	L	Algebra/Geom. Foundations	47	0	At Risk	10-12
32	M	Math Resources	55	10	At Risk	9-12
33	O	Algebra 1 Lab	12	0	At Risk	9-12
34	N	TransMath 2	47	0	At Risk	8

To provide context for the study, demographic information also is provided for participants' schools and/or districts. Table 5 lists the participants' school demographic information, including the state and school/education district in which the school was located, number of participant teachers in each school, the student grades the schools served, student enrollment and surrounding community population. Information is also reported, as available, for student diversity percentages, student free/reduced lunch percentages, and student English Language Learner (ELL) percentages, and percentages of students with an Individualized Education Plan (IEP).

Table 5. PD-APM School Profile

School (State[a])	PD-APM Teachers (*n*)	Grades Served	School Enrollment (Community)	Student Diverse Backgrounds (%)[b]	Student Free/Reduced Lunch (%)	Student ELL (%)	Student IEPs (%)
A (SC)	1	9-12	290 (100)	5.5	58 (district for A, B, C)	-	15 (district for A, B, C)
B (SC)	1	9-12	960 (4,300)	23	58 (district for A, B, C)	-	15 (district for A, B,C)
C (SC)	1	9-12	745 (2,400)	10	58 (district for A, B, C)	-	15 (district for A, B,C)
D (SC)	2	9-12	1025 (5,200)	21	49 (district for D, E)	4 (district for D, E)	12.3 (district for D, E)
E (SC)	4	9-12	700 (3,300)	11	49 (district for D, E)	4 (district for D, E)	12.3 (district for D, E)
F (SC)	2	9-12	1760 (27,000)	38	58 (district for F)	-	12.5 (district for F)
G (SC)	1	9-12	820 (3,000)	24	45	-	13

Table 5. PD-APM School Profile (continued)

School (State[a])	PD-APM Teachers (*n*)	Grades Served	School Enrollment (Community)	Student Diverse Backgrounds (%)[b]	Student Free/Reduced Lunch (%)	Student ELL (%)	Student IEPs (%)
H (IA)	5	5-8	420 (5,100)	3	33	0	15
I (IA)	5	9-12	525 (5,100)	3	8	0	10
J (IA)	1	9-12	220 (4500)	<1	35	<1	12
K (IA)	1	7-12	275 (3200)	<1	40	0	7
L (IA)	2	9-12	2100 (204,000)	43	63	6	16
M (MN)	1	7-12	400 (3,000)	3.5	36	0	9.5
N (MN)	1	9-12	320 (2,800)	15.5	44	<1	13.5
O (MN)	1	9-12	1050 (3,350)	4.5	21	<1	8

Note. All enrollment numbers and demographic percentages are approximate. [a]SC=South Carolina, IA=Iowa, MN=Minnesota. [b]Diverse backgrounds refers to race, culture, and ethnic backgrounds. Some school-level or district-level data were unavailable.

Dependent Measures

Teacher measures. Sources of data for teachers were the knowledge test, ThinkSpace evaluation data, a teacher questionnaire, and accuracy checks. These measures enabled researchers to evaluate whether teachers were able to acquire the necessary knowledge and skills to use the PD-APM system successfully. In addition, researchers would consider teacher feedback when making refinements to the system.

Knowledge test. The knowledge test (see Appendix H), designed by the researchers, included 25 multiple-choice questions. This knowledge test assessed teachers' general knowledge of progress monitoring and specific use of the three algebra progress monitoring probes, including administration, scoring, and ThinkSpace data entry.

Module evaluation. Module evaluation (see Appendix B) data were obtained in the form of feedback pages in the online system. The feedback pages contained Likert items and open-ended questions to be completed at three points during their online training (beginning, middle, end); teachers evaluated the quality of the system, their learning engagement, and the ease of navigation. Teachers also responded to open-ended questions about their learning, including what portions of the training contributed to and hindered their understanding, the appropriateness of the time they spent in training, information that would be most helpful to teachers, potential revisions to the system, and their use of troubleshooting resources.

Teacher questionnaire. The teachers also completed a questionnaire (see Appendix I) at the final meeting that asked them to identify the course in which they progress monitored, to estimate the time spent looking at student data, to identify tasks performed during the training and project, to describe instructional decisions based on progress monitoring data, and to answer questions about the ThinkSpace system. In addition, teachers responded to several oral questions posed by project staff about using the PD-APM system.

Accuracy percentages. Accuracy checks helped determine how well the professional development modules trained teachers to score and enter data, and whether teachers could do so accurately. These accuracy checks included scoring accuracy, compliance with data entry procedures, and data entry accuracy. Procedures for obtaining these percentages are described in a later section.

Student measures. Sources of student data for this study included scores on the progress monitoring measures and slope of improvement on the measures across 10 weeks. In addition, concurrent and predictive validities were examined by correlating student probes scores or slope with the Iowa End-of-Course (Algebra 1) test (IEOC) and teacher ratings of overall student proficiency in algebra.

Progress monitoring measures. The progress monitoring measures were developed by Dr. Anne Foegen, Principal Investigator, and her colleagues with funding from a federal grant, Project AAIMS: Algebra Assessment and Instruction--Meeting Standards (U.S. Department of Education, Office of Special Education Programs, #H324C030060, 2004-2007). The procedural measures in this study represented the current versions, developed through an ongoing process of data analysis, teacher feedback, and revision. The measures included Algebra Basic Skills, Algebra Foundations, and Algebra Content Analysis. Each of the three types of measures included twelve alternate forms. We used level of score as well as slope to examine student performance and progress. Slope data were calculated using ordinary least squares regression to represent student growth on the algebra progress monitoring measures. General descriptions of the content and format of the three types of progress monitoring measures follow.

Algebra Basic Skills. The Algebra Basic Skills measure was developed to represent foundational skills that students need to be successful in algebra. The items on these measures address solving simple equations, using the distributive property, computing with integers, combining like terms, and using proportional relationships. Students are given 5 minutes to complete these two-page probes. The 60 items on the Algebra Basic Skills forms are scored as either correct or incorrect.

Algebra Foundations. The Algebra Foundations measure was designed to reflect core concepts and skills essential in algebra understanding. The items represent five core concepts or skills that are essential understanding algebra. These items include: writing and evaluating expressions; calculating with real numbers; graphing inequalities and linear equations; solving simple equations and simplifying expressions; and generalizing and extending patterns and functions. Students are given 5 minutes to complete 50 items, which are scored as either correct or incorrect.

Algebra Content Analysis. The Algebra Content Analysis measure includes items from the first two-thirds of a traditional Algebra I course. Fourteen algebraic topics are included, ranging from evaluating expressions, to calculating the slope of a line, to solving systems of linear equations. Students are given 7 minutes to complete 16 items, which are scored using a rubric. Students have the opportunity to earn partial credit for showing work, as scoring for each item ranges from -1 (incorrect response without evidence of student work, judged as a guess) to 3 (correct response).

The Iowa End Of Course (IEOC) Algebra 1 assessment. The IEOC was a paper-and-pencil standardized examination that measured achievement in Algebra 1 content. Iowa Testing Programs at the University of Iowa College of Education developed the test, which included 30 items; we used students' raw scores for data analysis.

Student proficiency ratings. Teachers entered student proficiency ratings in the online data management system at the beginning and end of the project. The ratings represented teachers' judgments of students' corresponding levels of algebra proficiency. Each student was rated on a scale from 1 (very low proficiency) to 7 (very high proficiency).

Procedures

Initial meeting. PD-APM research staff led face-to-face meetings with teachers prior to their participation in the study; for the Minnesota teacher who joined the study after her colleagues, the meeting was held virtually. The staff presented information about the study and gathered informed consent from the teachers. Students were not asked to complete informed consent, because no identifying information was gathered from them. Instead, students chose pseudonyms that were used for all probes, ThinkSpace system entry, and Iowa End-of-Course Algebra (IEOC) testing. During the initial meeting, teachers received a PowerPoint slide printout with information about progress monitoring and the purpose of the PD-APM project. They were also given a checklist with their weekly project responsibilities, and a PD-APM research staff member showed them how to gain initial access the online system.

During this first meeting, teachers filled out a demographics form, an information sheet, and a knowledge pretest. The demographics form requested information about teaching experiences, teaching credentials, gender, and ethnicity. The information sheet asked for email addresses and a password to create ThinkSpace accounts for the teachers. The knowledge pretest assessed teachers' general knowledge of the online system and progress monitoring.

PD-APM professional development. The PD-APM online system provided module-based professional development about algebra progress monitoring and using the online data management system. The PD-APM modules included videos, images, spoken audio, transcripts, online scoring accuracy exercises, and additional resources to support teachers' engagement with activities related to progress monitoring, scoring, and using the online data management system. As teachers worked through the modules, the online system included self-check questions where they had the opportunity to answer questions that reviewed module information and then view expert responses to self-evaluate their own learning. They also were asked to give feedback through three evaluation pages built into the system (beginning, middle, and end). Additionally, teachers could add comments throughout the modules as they navigated through the training. The

purpose of these comments was to provide feedback to the project staff for future revisions to the PD-APM system.

The PD-APM professional development provided an initial module, Getting Started, which familiarized teachers with navigating the ThinkSpace platform. This was followed by eleven instructional modules focused on progress monitoring and the use of three, specific algebra progress monitoring tools as well as the use of the online data management system for score entry, graphs, and skills and error analyses. The first instructional module, Core Concepts, introduced teachers to the key ideas and historical roots of progress monitoring. The next module, Project AAIMS, described how the measures used in this project were developed. The Measures Introduction module followed, which provided basic information about the three, algebra progress monitoring measures.

The next three modules, Algebra Basic Skills, Algebra Foundations, and Algebra Content Analysis, provided teachers with an overview of the algebra content assessed on each measure, as well as how to administer and score each measure. Each of these modules allowed teachers to experience taking the probes as a student. Each also contained two opportunities for teachers to score and enter data from example student probes; the system provided immediate feedback on their scoring accuracy. Teachers were required to achieve at least 90% scoring accuracy before moving on to the next module. If they were successful in scoring with 90% accuracy, they could choose to move onto the next module or practice scoring another student example.

The next training module, Intro to Data Management, described the capabilities of the PD-APM data management system, including: adding classes or individual students, editing student data, deleting probes for students who were absent, checking student progress, examining skills reports, and entering common errors made for generating errors reports. The following module, Evaluating Student Progress, taught teachers how to input student scores and view and interpret progress graphs. The Instructional Decision Making module then showed teachers how to add student goals to graphs, to document instructional changes, and to evaluate the effects of their instruction on students' progress. The final two modules, Skills Analysis and Error Analysis, showed teachers how to input item-level skills and errors information for students and to generate individual and class reports that teachers could use to inform their instructional decisions.

After teachers successfully completed the professional development modules, they were given access to the Data Management system. Here, they could upload and add students by course section, insert probe types by week, and enter student scores. After entering several student scores, the online system graphed a trend line of student progress. Teachers had the option to insert phase changes to indicate modifications in instruction and set goals for future student achievement. They also could compare individual student scores (data points) and trend lines to the average of the total class.

Progress monitoring. Each teacher in the PD-APM project administered the Algebra Basic Skills, Algebra Foundations, and Algebra Content Analysis measures to their classes. Teachers were responsible for administering a primary and secondary probe each week to monitor students' progress for a total of 10 weeks. The primary measure was negotiated between

a PD-APM researcher and the teacher in order to meet the concerns and needs of teacher and class. The secondary measure was selected by the teacher. Although they were required to monitor only one class, several teachers administered probes and entered data into the system for two or more classes. Only data from one class were used to summarize project results, however. Teachers also gave a tertiary measure during the initial two (i.e., weeks 1 and 2) and final two weeks (i.e., weeks 9 and 10) of the project as a way to document growth on these measures. They administered the IEOC at the beginning of the project and during the last week of their progress monitoring. They also rated their students' proficiency using the online system at the beginning of the project, and then again when they were completed with 10 weeks of measure administration. Algebra proficiency was rated on a scale from 1 (very low proficiency) to 7 (very high proficiency).

After administering and scoring the primary measure, teachers returned the paper copies to a member of the PD-APM staff, who checked their scoring reliability across the entire class. Project staff provided feedback to the teacher about their disagreements in scoring. Any teacher not meeting a 90% mean reliability criterion was required to return scored paper copies of the second probe of the primary measure to check again for accuracy in scoring and to receive feedback from the researchers. Teachers were not required to score any student probes from secondary and tertiary measures, although a few teachers chose to do so, in which case, the same reliability procedure was conducted in order to ensure teacher accuracy with scoring.

In addition to scoring the weekly probes for every student, teachers were responsible for entering item-level and error data for two students from each of the 10 weekly probes. They were instructed to target students who had IEPs or for whom teachers perceived to be at risk in algebra content attainment. When teachers scored these student probes, they entered each student response into the ThinkSpace system, and the system generated individual reports (and class reports, when applicable) identifying the types of skills and levels of performance (proficient, developing, struggling, or not attempted). When students provided an incorrect response, teachers were instructed to select from a drop-down menu the type of error the student made on the item, and the system would generate errors reports that included the types of errors students made and the number of students in the class, when applicable, who exhibited each type of error.

In South Carolina, six teachers administered Algebra Basic Skills, four administered Algebra Foundations, and two administered Algebra Content Analysis as their primary measure. In Iowa, nine teachers administered Algebra Basic Skills and six administered Algebra Foundations as their primary measure. In Minnesota, two teachers administered Algebra Basic Skills and one administered Algebra Foundations as their primary measures. Table 6 lists the teachers' primary, secondary, and tertiary measures.

Table 6. Teachers and Primary, Secondary, and Tertiary Probes Administered

Teacher	School	Course Type	*N*[a]	Primary Measure	Secondary Measure	Tertiary Measure
1	A	Algebra 1	29	ACA	ABS	AF
2	B	Tutorial 1	11	ABS	AF	ACA
3	C	Algebra 1	22	AF	ACA	ABS
4	D	Academic Support	9	ABS	AF	ACA
5	D	Academic Support	8	ABS	AF	ACA
6	E	Academic Support	9	ABS	AF	ACA
7	E	Algebra 1	17	AF	ACA	ABS
8	E	Algebra 1	13	ACA	AF	ACA
9	E	Academic Support	7	ABS	AF	ACA
10	F	Algebra 1	15	AF	ABS	ACA
11	F	Algebra 1	16	ABS	AF	ACA
12	G	Academic Advancement	9	AF	ACA	ABS
18	H	Skills	4	AF	ABS	ACA
19	J	Pre-Algebra	6	ABS	ACA	AF
20	I	7th Grade Math	22	ABS	ACA	AF
21	H	Algebra Foundations	4	AF	ABS	ACA
22	I	7th Grade Math	19	ABS	ACA	AF
23	H	Algebra 1	17	ABS	ACA	AF
24	H	Skills	4	AF	ABS	ACA
25	I	Math 8	23	ABS	AF	ACA
26	H	Algebra 1	13	AF	ACA	ABS
27	K	Instructional Strategies	11	AF	ACA	ABS
28	I	7th Grade Math	20	ABS	AF	ACA
29	I	Math 8	12	ABS	AF	ACA
30	L	Algebra-Geometry Foundations	23	ABS	AF	ACA
31	L	Algebra-Geometry Foundations	47	AF	ABS	ACA
32	M	Math Resources	55	ABS	AF	ACA
33	O	Algebra 1	12	AF	ACA	ABS
34	N	Trans Math 2	47	ABS	AF	ACA

Note. [a]Number of students. ABS = Algebra Basic Skills, AF = Algebra Foundations, ACA = Algebra Content Analysis

Final meeting. At the end of the project, teachers administered the final two weeks of their tertiary measure, filled out their students' end proficiency rating in ThinkSpace, and

administered the IEOC examination once again. The PD-APM researchers met with teachers for a final meeting. The teachers completed a knowledge posttest, which was the same test they took at the beginning of the project. Teachers also filled out questionnaires that asked them to rate and describe their classroom experiences with the measures and the online system. Members of the PD-APM research staff then led individual or focus group interviews around four, open-ended questions:

1. Tell me about how you fit algebra progress monitoring into your classroom routine.
2. How did your students react to taking the measures?
3. Did you share data with any of your students? If so, explain how.
4. Have you discussed this project or shared student data with your colleagues or students' parents? If so, explain.

In South Carolina, the majority of interviews were not audiorecorded, but extensive notes were taken by the PD-APM research staff who conducted the interviews. In Iowa, all but one interview was recorded, but the PD-APM research staff took notes during every meeting. At the conclusion of the meetings, the PD-APM researchers gathered all of the teachers' data, including all administered probes and IEOC booklets and bubble sheets.

Scoring and data entry reliability. Reliability procedures allowed the PD-APM research staff to determine whether the system was successful in training teachers to score and enter student probe data accurately and to enter student error information. Researchers looked at the scored student probes and accessed teachers' ThinkSpace accounts when recording reliability information. The procedures occurred in three waves.

Wave One: Teacher scoring reliability and data entry accuracy for primary measures. Members of the PD-APM research staff determined teacher scoring reliability by checking the teachers' scoring on all papers for the teachers' primary measure for the first two primary forms (Weeks 1 and 2). For the Algebra Basic Skills and Algebra Foundations measures, scoring reliability was determined by dividing the number of scoring agreements by the total number of scored items (agreements / total number of agreements + disagreements). If the teacher scored an item with which the PD-APM researcher did not agree, it counted as a disagreement. For the Algebra Content Analysis measure, scoring reliability was determined by subtracting the number of scoring disagreements from sixteen, and then dividing that by sixteen (16 – number of disagreements / 16).

In addition to determining how accurately teachers scored the probes, researchers recorded student probe information in a shared spreadsheet file for analyses of student achievement and progress. To ensure accurate student probe information, teacher reliability was examined again. Even if teachers had "passed" the original 90% accuracy criterion for scoring a class, researchers rescored any class of probes for which the teacher's accuracy fell below 95% (using point-by-point agreement). Researchers continued rescoring all sets of probes for a teacher's class until 95% criterion for accuracy was met on a set of probes. If the teacher's scoring reliability was 95% or above for their first 2 weeks of data, researchers continued rescoring student weekly probes but scored only 20% of the class papers or a minimum of five papers per class, whichever was more, to continue to check for scoring reliability. If the mean for

any class fell below the 95% threshold, researchers rescored all student probes in the class that week and made any necessary corrections to the student's total score in the student data spreadsheet used for analyses. In addition, if researchers found an individual student probe that had less than 90% agreement, researchers rescored that probe and made any necessary corrections, even if the class average exceeded 95% accuracy.

To determine the reliability of teachers' entry of student scores into the ThinkSpace system, the PD-APM research staff compared the teachers' scores written on the student probe to the score entered into the system. Researchers determined the number of student papers for which the scores matched, as well as the number that did not match. They calculated data entry accuracy percentage for each week of data entry by dividing the number of matches by the number of total students (data entry matches / number of total students). This interrater data entry (IDE) percentage was entered into a shared spreadsheet file. Any discrepancies in IDE were corrected by correcting the student's total score on the probe in the student score spreadsheet.

Wave Two: Skills and error data entry. Next, the PD-APM research staff determined whether teachers entered skills and errors information for at least one student each week of their primary probe administration. To do this, researchers logged into the teachers' ThinkSpace accounts and recorded whether the teachers entered some skill and errors data for one or more students.

Then, researchers randomly selected one of the students for whom teachers had entered item-level data to determine level of accuracy in recording these item-level data for the primary measure during Week 2. This procedure was followed to check the reliability of teachers' item-level entry of their students' scored probes into the PD-APM system. Researchers counted the number of item responses where the teacher's scoring on the paper copy of the measure matched what was entered into the system. They divided this number by the total number of responses entered (matches / matches + nonmatches) to get a percentage of accuracy for item-level data entry and entered the percentage into the shared spreadsheet file. They repeated this process again for Weeks 6 and 10. If the student was absent and did not have probe data, they choose a probe from the week before or after and used the same process. If there were no data for either of the adjacent weeks for the selected student, then researchers selected a different student in the class and used the same process.

Wave Three: Secondary and tertiary measure scoring and reliability. Researchers scored and entered into data files individual student scores from the secondary and tertiary measures. One member of the PD-APM research staff scored student probes across weeks. A different researcher rescored 20% (minimum of five) of the papers to ensure accurate scoring. When a disagreement occurred, the scorers discussed and resolved the issue to determine a final score to enter for each student. For teachers who chose to score their own secondary or tertiary measures, research staff used procedures from Wave One to ensure accurate scoring, but teachers' scoring reliability was not reported; only the students' probe scores were entered into a student spreadsheet file.

Results

Analyses focused on both the online professional development and data management system and the degree to which the progress monitoring measures reflected student growth under typical instructional conditions. First, data were analyzed to determine if the system worked accurately and efficiently and whether it contributed to teachers' knowledge and skills about progress monitoring. Specifically, we evaluated accurate and efficient use of training modules and scoring tools, teachers' accurate and efficient use of tools to manage student data, and teachers' satisfaction with progress monitoring and the online system. Some data could not be accessed due to either system technical issues or because some participants chose not to respond to some evaluation questions.

A second aspect of this study focused on the effects of progress monitoring on students. Data were analyzed to determine the score growth that occurred from the beginning of data collection to the end by type of measure. Growth was examined by looking at the primary measures teachers scored and entered, along with the secondary measures, which were given weekly but for which teachers were not required to score or enter data. The tertiary measures, given only during the first and final two weeks of the project, served as a pre- and post-indicator of growth on a third type of measure for each class. Student probe data also were compared to the IEOC results and student proficiency ratings to determine concurrent and predictive validity. Ultimately, the analyses of the teacher and student data sources were used to evaluate whether the PD-APM professional development system for progress monitoring functioned as intended.

Teachers' Use and Satisfaction with the Online System

Teacher knowledge of and skills in using the PD-APM system. One goal of this study was to determine to what extent the online professional development system and the progress monitoring process contributed to teachers' knowledge and skills in algebra progress monitoring. Sources of data included knowledge pretests and posttests, ThinkSpace system evaluations, and postproject teacher questionnaires.

Knowledge test. Prior to beginning the project, teachers took a 25-item, multiple-choice (4 stems) pretest that measured their knowledge about progress monitoring and the PD-APM system. It was scored as either correct (1 point) or incorrect (0 points) for each item. They also took this same knowledge test during their final meeting with project staff. Cronbach's alpha for the items on the knowledge pretest and posttest were .86 and .83, respectively, indicating strong internal consistency. Table 7 provides means and standard deviations for knowledge pretests and posttests. Teachers improved significantly from pre- to posttest, $t(28) = -7.59$, $p < .001$. It should be noted that two teachers took knowledge pretests at a distance, due to complications with scheduling and distance for travel, and received pretest scores of 17 and 18--the two highest pretest scores across the sample. Consequently, fidelity of their pretest results remains unclear.

Table 7. Teacher Knowledge Pretest and Posttest Results

	N	*M*	*SD*	Minimum	Maximum
Pretest	29	9.97	5.02	2	18
Posttest	29	17.66	2.83	12	23

Ratings of understanding module content. Teachers completed the same evaluation questions at three points throughout their ThinkSpace module training. One of the questions on these evaluation pages asked teachers to indicate from 1 (lowest) to 5 (highest) their level of understanding of the content. The results indicated that teachers judged the PD-APM professional development system as contributing to their level of understanding of the progress monitoring measures and the online data management system, with the majority of teachers selecting a 4 or 5 rating, indicating high agreement. Table 8 provides the number of teachers who provided each rating.

Table 8. PD-APM Evaluation Results: Level of Understanding

	Evaluation Response Frequency[a]						
Module	1	2	3	4	5	Total Responses (*n*)	*M*
PA (beginning)	1	1	2	11	9	24	4.08
ACA (middle)	0	1	1	11	7	20	4.20
EA (end)	0	1	4	11	12	28	4.21

Note. [a]1=lowest, 5=highest. PA=Project AAIMS module, ACA=Algebra Content Analysis module, EA=Errors Analysis module

Accurate and efficient use of training modules and scoring exercises. All teachers who began the professional development and chose to continue their participation completed all modules. Thirty participants initially started the study, and 29 completed it. Two teachers chose to discontinue participation with the project in its early phase. One teacher had partially completed the online professional development, and one teacher had not yet begun the online training. Another teacher was added into the study soon after the two teachers withdrew from participation.

Accuracy in scoring measures. Teachers completed a scoring accuracy exercise for which their percentage of accuracy was calculated by the ThinkSpace system (with completed measures for a hypothetical student Max). If teachers did not achieve 90% scoring accuracy, or if they wanted to have more practice, they could attempt a second scoring exercise (with hypothetical student Rachel). Table 9 displays the numbers of teachers for whom algebra progress monitoring measure scoring accuracy data were available, including the mean level of accuracy and minimum and maximum levels of accuracy across the teacher participants.

Table 9. Measure Scoring Accuracy by Type of Progress Measure

Module Scoring Exercise	*n*	Min. (%)	Max. (%)	Mean (%)
Algebra Basic Skills				
Attempt One (Max)	27	91.7	100	98.88
Attempt Two (Rachel)	5	90.2	100	97.56
Algebra Foundations				
Attempt One (Max)	26	92.5	100	97.69
Attempt Two (Rachel)	2	97.3	97.3	97.3
Algebra Content Analysis				
Attempt One (Max)	26	50	100	85.84
Attempt Two (Rachel)	13	62.5	100	88.48

Teachers were able to use the PD-APM professional development to learn to score progress monitoring measures accurately. Teachers exhibited high levels of accuracy on scoring the Algebra Basic Skills (*M* = 99%) and Algebra Foundations (*M* = 98%) measures but appeared to be less accurate with the Algebra Content Analysis (*M* = 86%) measure. More teachers practiced scoring a second ACA measure (Rachel) than with the other two measures. Accuracy improved slightly (*M* = 88%) with the second practice exercise.

Time spent viewing modules. The following table lists the results from a coded, open-ended evaluation response on the ThinkSpace system that asked, "Was the time you spent to complete these modules reasonable? Why or why not?" Responses that indicated a "no" with or without explanation were coded with a 0; responses that indicated an "okay," "somewhat," or some variation of moderate satisfaction, were coded with a 1; responses that indicated a "yes" with or without explanation were coded with a 2.

Table 10. PD-APM Evaluation: Was the Time You Spent on the Modules Reasonable?

	Evaluation Response Frequency[a] (*n*)			
Module	0	1	2	Teachers Responding
PA (beginning)	0	3	21	24
ACA (middle)	0	3	17	20
EA (end)	6	8	14	28

Note. [a]0 = no, 1 = somewhat/okay, 2 = yes. PA=Project AAIMS module, ACA=Algebra Content Analysis Module, EA=Errors Analysis module

Across modules, teachers generally indicated that the time they spent engaged with the modules was reasonable. For example, 21 of 24 respondents and 17 of 20 respondents indicated that time spent in the earlier and middle set of modules, respectively, was reasonable. Three teachers indicated that the time spent in each of these two sets of modules was somewhat reasonable, and no one indicated that the time spent was unreasonable. However, six of the teachers reported that their time spent was unreasonable for the last set of modules. These teachers also reported having difficulty with Internet connectivity, being busy with other activities, and that they thought the system could have fewer, or more condensed modules and videos for these two sets of modules.

Time spent examining student data. During the final meeting, teachers completed a questionnaire that asked them to indicate the amount of time they spent looking at student data. The questionnaire asked teachers to indicate on a Likert-type scale (1 - 4) if the overall time they spent on professional development, administering measures to students, and scoring student probes was acceptable. Frequencies for each rating are provided in Table 11.

Table 11. Questionnaire Results: Time on PD, Administration, and Scoring

Questionnaire Item	Evaluation Response Frequency[a] (*n*)					
	1	2	3	4	Total Responses	*M*
The amount of time I spent completing the professional development modules for this project was acceptable.	0	2	15	12	29	3.34
The time it took to administer the measures to my students was acceptable.	1	1	9	18	29	3.52
The time it took to score the measures was acceptable.	1	3	7	18	29	3.43

Note. [a]1 = completely disagree, 2 = disagree, 3 = agree, 4 = completely agree

The majority of teachers rated each of the activities as a 3 or 4, indicating general agreement that the time to engage in using the professional development system, in administering measures to students, and in scoring the measures was acceptable.

Accurate and efficient use of tools to manage student data. Another aspect of this study was to determine whether the PD-APM professional development and data management system provided an accurate and efficient use of tools for managing student data. We examined the accuracy of teachers' scoring and data entry and looked at the features they reported using within the data management system.

Accuracy in using data management system. To evaluate whether teachers could generalize scoring procedures accurately to their students' probes, the project staff evaluated the

percentage of accuracy for teachers' scoring. Level of agreement using a point-by-point method ([number of agreements / number of agreements + number of disagreements] multiplied by 100) was calculated for each week of data. In addition to checking scoring on the probes themselves, accuracy was checked for data entry of probe information in the data management component of the online ThinkSpace system. Percentages of accuracy for scoring and data entry are provided in Table 12. Scoring accuracy remained high across all three types of measures, and data entry of probe information was accurate as well.

Table 12. Interrater Scoring and Data Entry Agreement

	Week									
	1	2	3	4	5	6	7	8	9	10
Primary Measures	Percent of Scoring Agreement (*n*)									
ABS	99.0 (15)	98.0 (16)	98.5 (17)	98.4 (17)	98.8 (17)	98.9 (17)	98.1 (17)	99.0 (17)	98.9 (16)	99.3 (16)
AF	90.3 (8)	95.9 (9)	96.1 (9)	96.2 (9)	97.0 (9)	96.1 (9)	97.0 (9)	97.8 (8)	96.6 (8)	97.6 (8)
ACA	96.0 (2)	97.0 (2)	99.0 (2)	96.5 (2)	98.0 (2)	96.0 (2)	95.5 (2)	97.5 (2)	97.5 (2)	98.5 (2)
Secondary Measures	Percent of Data Entry Agreement (*n*)									
ABS	96.9 (13)	94.2 (16)	94.3 (16)	96.8 (16)	98.6 (16)	95.3 (16)	99.1 (16)	96.5 (16)	97.5 (15)	97.0 (15)
AF	90.4 (9)	90.2 (9)	91.9 (9)	93.6 (9)	100 (9)	89.7 (9)	98.9 (9)	95.5 (8)	99.0 (8)	92.3 (8)
ACA	96.0 (2)	100 (2)	100 (2)	96.0 (2)	100 (2)	100 (2)	100 (2)	100 (2)	100 (2)	100 (2)

Use of system features and time spent viewing student data. On the final meeting questionnaire, teachers were asked to indicate whether they performed the following tasks during the project. Although none of these tasks were required of them, they were available through the PD-APM system and were addressed during the professional development. These tasks included examining student progress graphs, comparing student and class progress graphs; reviewing progress graphs, inserting phase changes, examining individual student skills information, examining class skills information, reviewing skills information with students, examining individual student errors information, examining class student errors information, and reviewing errors information with students. Table 13 indicates the frequency with which teachers responded to prompts by circling "yes" or "no."

Table 13. Final Questionnaire: Indications of Task Engagement

Questionnaire Item	Frequency of Response (N = 29)	
	No	Yes
Examining student progress graphs	8	21
Comparing student and class progress graphs	13	16
Reviewing progress graphs with students	18	11
Inserting phase changes	26	3
Examining individual student skills information	4	25
Examining class skills information	14	15
Reviewing skills information with students	16	13
Examining individual student errors information	2	27
Examining class student errors information	13	16
Reviewing errors information with students	11	18

It appears that many teachers took advantage of a number of the available data management tools provided by the PD-APM system, such as examining student progress graphs. In fact, teachers indicated a mean of 45.36 minutes per week looking at student data (n = 28, range of 5 – 150 minutes. However, most teachers did not use several available features of the system, such as inserting phase change lines. Although most teachers reported looking at student progress graphs, only about half of these teachers reported reviewing graphs with their students.

Teacher satisfaction. To determine levels of teacher satisfaction with the PD-APM system and progress monitoring, teachers responded to evaluation questions embedded in the online system. They indicated on a Likert-type scale their level of satisfaction (1 = low satisfaction, 5 = high satisfaction) with the modules, the appropriateness of the modules' levels of difficulty, and their engagement while working on the modules. Teachers evaluated the ThinkSpace system three times throughout their professional development modules (beginning, middle, and end). The evaluation results are listed in Table 14.

Teachers appeared to be satisfied generally with modules, the appropriate levels of difficulty, and their level of engagement within the online system. The highest mean ratings were reported for appropriate level of difficulty of the set of modules in which teachers learned how to administer and score the three types of algebra measures and the modules in which they learned to use features of the data management system. These modules were highly interactive due to embedded exercises for which teachers had to practice the skills. The lowest mean rating was provided indicated for the prompt: "Your level of engagement while working on these modules" following the Project AAIMS module. This result may have been due to these beginning modules providing background and information about the development of the system and measures and did not have as many opportunities for active engagement of activities or practice as the other two sets of modules.

Table 14. PD-APM Ratings: Satisfaction, Difficulty, and Engagement

	Evaluation Response Frequency[a]						
Rating Item and Module	1	2	3	4	5	Total Responses (n)	Mean
Your overall level of satisfaction with these modules							
PA (beginning)	0	0	4	11	9	24	4.21
ACA (middle)	0	0	2	12	6	20	4.20
EA (end)	0	0	2	12	6	20	3.93
The appropriateness of these modules' levels of difficulty							
PA (beginning)	1	0	3	12	8	24	4.08
ACA (middle)	0	0	1	10	9	20	4.40
EA (end)	0	0	4	10	14	28	4.36
Your level of engagement while working on these modules							
PA (beginning)	1	1	5	10	7	24	3.88
ACA (middle)	0	0	4	9	7	20	4.15
EA (end)	0	1	2	17	8	28	4.14

Note. [a]1 = low satisfaction, 5 = high satisfaction. PA = Project AAIMS module, ACA = Algebra Content Analysis Module, EA = Errors Analysis module

During the final meeting, teachers completed a questionnaire that asked them to indicate whether they felt the content on the progress measures was appropriate for their classes. The questionnaire asked teachers to indicate on a Likert-type scale (1 = completely disagree, 2 = disagree, 3 = agree, 4 = completely agree) their level of agreement. Results indicated that teachers agreed that the content of the measures was appropriate for their classes (M = 3.36, with 1 = 1 response, 2 = 2 responses, 3 = 11 responses, 4 = 15 responses).

System features. To determine the quality of the PD-APM system features, teachers were asked to evaluate the organization of the modules, clarity of the module content, quality of graphics in the modules, quality of animation in the modules, quality of narration in the modules, and ease of navigation through the PD-APM system. They indicated on a Likert-type scale their level of satisfaction (1 = low satisfaction, 5 = high satisfaction) with the modules. The evaluation ratings are listed in Table 15.

Table 15. PD-APM Ratings: System Organization, Navigation, and Quality

Rating Item and Module	Evaluation Response Frequency[a]						
	1	2	3	4	5	Total Responses (N)	*M*
The organization of these modules							
PA (beginning)	1	0	2	6	15	24	4.42
ACA (middle)	0	0	2	8	10	20	4.40
EA (end)	0	2	4	8	14	28	4.21
The clarity of the content in these modules							
PA (beginning)	0	0	2	11	11	24	4.38
ACA (middle)	0	1	5	8	6	20	3.95
EA (end)	0	0	6	9	13	28	4.25
The quality of the graphics used in these modules (clarity, contributes to understanding)							
PA (beginning)	0	1	4	5	14	24	4.33
ACA (middle)	0	1	3	7	9	20	4.20
EA (end)	0	1	2	9	16	28	4.43
The quality of the animation used in these modules (clarity, audibility, contributes to understanding							
PA (beginning)	0	1	5	8	10	24	4.13
ACA (middle)	0	2	5	4	9	20	4.00
EA (end)	0	1	3	12	11	28	4.21
The quality of the narration used in these modules (clarity, audibility, contributes to understanding							
PA (beginning)	0	0	4	8	12	24	4.33
ACA (middle)	0	0	4	8	8	20	4.20
EA (end)	1	0	1	12	14	28	4.36
The ease with which you could navigate through the system							
PA (beginning)	1	1	3	6	13	24	4.21
ACA (middle)	1	2	1	7	9	20	4.05
EA (end)	1	3	0	9	12	25	4.12

Note. [a]1 = lowest, 5 = highest. PA = Project AAIMS module, ACA = Algebra Content

Teachers appeared to be generally satisfied with the quality, organization, and navigability of the PD-APM system; means ranged from 3.95 – 4.42. All mean ratings were equal to or higher than 4.0 except for one. The lowest mean rating was observed for the prompt: The clarity of the content of these modules (*M* = 3.95), following the Algebra Content Analysis module. This set of modules focused on probe administration and scoring. This lower rating may be explained because of the greater difficulty of scoring the ACA probes. When teachers rated this middle set of modules, they had just completed practice in scoring the ACA measures, which was a more complicated measure to score than the previous two measures. Few teachers were as accurate scoring this measure during the practice exercise(s) as they were with ABS and AF. Scoring ACA measures was more complicated due to the awarding of partial credit for work shown.

At the end of the project, teachers indicated on their final questionnaire their level of agreement with the statement: I used the student progress data to inform my instructional decision making. Level of agreement was rated on a Likert-type scale (1 = completely disagree, 2 = disagree, 3 = agree, 4 = completely agree). Results indicated that teachers agreed that measures helped inform their instructional decisions (*M* = 3.00; 1 = 1 response, 2 = 5 responses, 3 = 16 responses, 4 = 7 responses).

Student Descriptive Data

Algebra progress measures. Data for all three types of algebra progress monitoring are provided. Teachers administered both the primary and secondary probe types weekly to their students. The tertiary probe type was administered only at the beginning (Weeks 1 & 2) and the end (Weeks 9 & 10) of the progress monitoring data collection period.

Level of scores. To determine growth from the beginning of the progress monitoring period to the end, the average of the first two measures was compared to the average of the last two measures administered. Students for whom at least one measure was available at both pretest (i.e., Weeks 1 & 2) and posttest (i.e., Weeks 9 & 10) were used in the analysis. Sample size, means, and standard deviations are provided in Table 16. A dependent-measures *t*-test was performed to determine whether change in scores was significant from pretest to posttest. Table 17 shows that students grew significantly in their scores on all three types of progress monitoring measures.

Table 16. Descriptive Statistics for Pre- and Posttest Scores on Three Algebra Progress Measures

Measure	*n*	*M*	*SD*	*SEM*
PreABS	442	11.56	6.23	.30
PostABS	442	15.98	8.75	.42
PreAF	460	12.72	6.12	.29
PostAF	460	14.90	7.35	.34
PreACA	352	12.65	7.54	.40
PostACA	352	14.30	9.11	.49

Note. ABS = Algebra Basic Skills; AF = Algebra Foundations; ACA = Algebra Content Analysis. *M* = Mean. *SD* = Standard deviation. *SEM* = Standard error of the mean.

Table 17. Difference of Scores on Three Algebra Progress Measures from Pre- to Posttest

				95% CI		
Measure	*n*	*M*	*SD*	Lower	Upper	*t*
Algebra Basic Skills	442	4.42	5.87	3.87	4.96	15.80^{***}
Algebra Foundations	460	2.18	4.44	1.77	2.59	10.51^{***}
Algebra Content Analysis	352	1.65	6.31	0.99	2.31	4.91^{***}

Note. ***$p < .001$. *M* = Mean difference. *SD* = Standard deviation. CI = Confidence Interval.

In addition, intercorrelations among the three types of progress measures are provided in Table 18 for premeasures given at Weeks 1 and 2 and in Table 19 for postmeasures given at Weeks 9 and 10. All intercorrelations are significant at the .001 level. Correlations between AF and ACA and between ABS and AF are moderately high. The more moderate correlation was observed between ABS and ACA.

Table 18. Intercorrelations Among Progress Measures at Pretest

PreMeasure	ABS	AF	ACA
ABS	1.00		
AF	$.73^{**}$	1.00	
ACA	$.51^{**}$	$.68^{**}$	1.00

Note. **$p < .01$. ABS = Algebra Basic Skills; AF = Algebra Foundations; ACA = Algebra Content Analysis.

Table 19. Intercorrelations Among Progress Measures at Posttest

PostMeasure	ABS	AF	ACA
ABS	1.00		
AF	.73**	1.00	
ACA	.55**	.69**	1.00

Note. **$p < .01$. ABS = Algebra Basic Skills; AF = Algebra Foundations; ACA = Algebra Content Analysis.

Slope data. In addition to examining change in level of score on the progress measures, we examined student growth across time. Ordinary least squares regression was performed for any student who had scores for at least 5 of the 10 progress measures administered of the same type. Teachers were required to score the students' primary measures. Thus, they were able to view student scores over time. Even though research staff primarily scored the secondary measures, teachers were required to administer 10, weekly secondary measures, along with the primary measures. Most teachers did not view student scores on these secondary measures, however. Slope of improvement results are provided in Table 20. Slopes across all students for whom at least 5 data points were available are provided by type of measure. Then, slopes are shown for separately for students by their primary measure and secondary measure designations. On average, students appeared to grow by about ½ item correct each week on the AF measure and about ½ point per week on the ACA measure. For ABS, weekly growth was about ¾ item weekly. Greater growth was exhibited for ABS when it was used as the primary measure. However, students appeared to grow faster on the AF measure when it was used as a secondary measure, rather than the primary measure. Weekly growth appeared more comparable for ACA as either a primary or secondary measure.

Table 20. Slope of Improvement for All Students With at Least Five Data Points

Measure	*n*	*M*	*SD*	Minimum	Maximum
Overall					
Algebra Basic Skills	374	0.72	0.75	-2.10	5.42
Algebra Foundations	374	0.43	0.61	-2.33	3.60
Algebra Content Analysis	248	0.48	0.83	-2.75	2.66
Primary Measure					
Algebra Basic Skills	298	0.81	0.77	-2.10	5.42
Algebra Foundations	174	0.33	0.65	-2.33	3.60
Algebra Content Analysis	58	0.53	0.75	-0.91	2.21
Secondary Measure					
Algebra Basic Skills	76	0.35	0.53	-1.18	1.69
Algebra Foundations	200	0.52	0.57	-0.81	2.43
Algebra Content Analysis	168	0.45	0.83	-2.75	2.60

Concurrent and predictive validity for performance level scores. Validity of the progress measures was evaluated by examining correlations of the measures with other outcomes, namely teacher ratings of student proficiency in algebra and student scores on the

IEOC. Teachers rated student proficiency and administered the IEOC early in the project and again at the end of the project. Because teachers administered all three progress measures during the first 2 weeks of the data collection period as well as the last 2 weeks, the mean score for the algebra premeasures and the mean score for the algebra postmeasures were correlated with the pre- and post-IEOC and pre- and postproficiency ratings, respectively, to examine concurrent validity of the progress measures. Tables 21 provides correlations for both pre- and postmeasures. Most of the validity coefficients are moderate, and all validity coefficients are significant. Correlations of progress measures appear stronger for teachers' proficiency ratings than with the IEOC, especially for postmeasures. Although significant, the weakest correlation was the postmeasure score with the IEOC.

Table 21. Concurrent Validity

	IEOC	Proficiency Ratings
PreMeasures		
Algebra Basic Skills	$.32^{**}$	$.40^{**}$
Algebra Foundations	$.37^{**}$	$.46^{**}$
Algebra Content Analysis	$.34^{**}$	$.48^{**}$
PostMeasures		
Algebra Basic Skills	$.10^{*}$	$.50^{**}$
Algebra Foundations	$.24^{**}$	$.61^{**}$
Algebra Content Analysis	$.37^{**}$	$.61^{**}$

Note. $*p < .05$. $**p < .01$. IEOC = Iowa End-of-Course (Algebra) test

Predictive validity of the progress measures also was evaluated. Premeasures were correlated with the post-IEOC and teachers' ending proficiency ratings. Table 22 shows correlations across all students by type of measure. All predictive validities were low but significant for the post-IEOC. ACA showed the highest correlation with the IEOC external assessment. All three measures showed significant, but comparable moderate correlations with teachers' ending proficiency ratings.

Table 22. Predictive Validity Across All Students

PreMeasures	Post-IEOC	Ending Proficiency
Algebra Basic Skills	$.15^{**}$	$.50^{**}$
Algebra Foundations	$.25^{**}$	$.59^{**}$
Algebra Content Analysis	$.34^{**}$	$.57^{**}$

Note. $**p < .01$. IEOC = Iowa End-of-Course (Algebra) test

Predictive validity of slopes. In addition to the performance level scores, predictive validity was examined for slope. Table 23 shows correlations between slope of improvement across all students for whom it could be calculated and the post-IEOC assessment and the teachers' ending proficiency ratings for students. Only the slope for the ACA measure demonstrated a significant correlation between slope and the post-IEOC, and it was a weak

correlation. Low, but significant, correlations were demonstrated between slope and teachers' ending proficiency ratings for all three measures.

Table 23. Predictive Validity of Slope with Post-IEOC and Ending Proficiency Rating

	Post-IEOC	Ending Proficiency
ABS slope	.08	.24**
AF slope	.03	.17**
ACA slope	.14*	.25**

Note. *$p < .05$. **$p < .01$. IEOC = Iowa End-of-Course (Algebra) test; ABS = Algebra Basic Skills; AF = Algebra Foundations; ACA = Algebra Content Analysis.

Descriptive information for the IEOC and proficiency ratings. The IEOC was used as an external measure for pretest and posttest analyses. Some students had missing test scores, including absence the day of test administration, change to another class or school, or addition to class after data collection began. Pre- and posttest mean scores were 9.56 (n = 471) and 10.54 (n = 464), respectively. Similarly, ratings of students algebra proficiency were completed by teachers on a pre- and posttest basis. The mean preproficiency rating was 3.27 (n = 414), and the mean postproficiency rating was 4.04 (n = 416). Table 24 provides the breakdown across all participating students according to specific rating.

Table 24. Students Obtaining Each Rating for Beginning and Ending Algebra Proficiency

	n	1	2	3	4	5	6	7
Beginning	414	67 (16%)	74 (18%)	92 (22%)	87 (21%)	59 (14%)	25 (6%)	10 (2%)
Ending	479	36 (8%)	47 (10%)	98 (20%)	108 (23%)	94 (20%)	68 (14%)	28 (6%)

Note. Percentage given in parenthesis. 1 = lowest proficiency; 7 = highest proficiency.

Discussion

Summary

PD-APM online professional development system. During the pilot study, participant feedback from 29 general and special education teachers from three states indicated that they were able to participate successfully in the online professional development system to improve their knowledge of and skills in using progress monitoring in algebra. Based on results of a 25-item, multiple-choice assessment, teachers improved significantly from the beginning of the project to the end in their knowledge of progress monitoring and in the identification of features and procedures associated with the online system. At three checkpoints in the series of instructional modules, teachers provided an evaluation of the information covered in the modules, rating their understanding of the content addressed, appropriateness of the level of difficulty of information, level of engagement while working through the modules, and overall satisfaction with the modules. Means from Likert-type ratings of 1 to 5 illustrated that the majority of teachers responding were satisfied or highly satisfied (80-90%) with the difficulty of the modules, their level of engagement during the modules, and viewed the professional development modules positively overall. Satisfaction with level of engagement with the first

grouping of modules was rated a little lower (70% satisfied or highly satisfied) than the others. This set of modules presented an historical perspective of progress monitoring and the development and technical features of the progress monitoring measures. Consequently, the interactive features focused on module content in the form of self-checks. In the other two groupings of instructional modules, participants were required to practice scoring measures or to enter data in the management system.

Regarding judgments of the reasonableness of time spent on the modules, all teachers responding to the questions thought that time spent on first two groupings of modules was reasonable or somewhat reasonable. Six of the respondents, though, indicated that time spent on the last set of modules was unreasonable. They also reported having difficulty with Internet connectivity, being busy with other school activities, or recommended that the videos be shortened or that the modules be condensed. However, at the end of the project, teachers again rated their level of agreement with statements about the acceptability of time spent on several aspects of the algebra project. On a scale of 1 – 4, with 4 indicating the greatest agreement that time spent was acceptable, teachers reported a mean score of 3.34 for acceptability of spent time spent on the instructional modules. Even higher mean scores were reported for acceptability of time spent administering algebra probes to students and for scoring algebra probes. Overall, teachers appeared satisfied with the content of the training they received and the amount of time they invested to learn and practice the content over the course of the pilot study.

Teachers also evaluated more technical features of the online system. At three checkpoints throughout the instructional modules, they rated overall organization of the modules, clarity of content, quality of graphics, quality of animation, quality of narration, and ease of navigation through the system. On a scale of 1 – 5 with 5 representing the greatest level of satisfaction, mean ratings were 4.0 or above for all system features being evaluated except for one. Consequently, teachers reported great satisfaction with the overall design of the system as well as graphics, animation, narration, and navigation. The mean rating that fell just below 4.0 ($M = 3.95$) was the clarity of content for the second set of modules. This set of modules focused on administration of probes and specific scoring procedures. Teachers had just completed the ACA module when reporting their ratings. The ACA measure was the most difficult to score of the three measures, because it relied on using a rubric and evaluating student work. Procedures allow for awarding partial credit, with -1 to 3 points earned for each item. Accuracy in scoring during the practice exercises provided in the modules indicated that teachers were less accurate in scoring student work for this measure than for ABS and AF, and that about half of the teachers made use of a second ACA scoring exercise to practice procedures.

Accuracy of progress monitoring activities. Although teachers found scoring ACA probes to be more difficult than the other two types of probes during practice exercises, their high ratings of understanding the content were corroborated by high levels of accuracy in scoring their own student probes and in entering data in the management system. Teachers were able to apply knowledge and skills acquired during the instructional modules to administering and scoring accurately their assigned measure for progress monitoring. Although only two teachers used the ACA measures with their own students, both teachers achieved high levels of accuracy with scoring across all 10 weeks of the data collection period. In fact, interrater agreement indicated 95% accuracy or above for each set of student ACA probes. Researchers who

conducted interrater agreement checks for each set of probes calculated at least 98% agreement across 17 teachers' scoring of ABS measures and at least 95% agreement with 9 teachers scoring AF measures, except during the first week of test administration, which was 90% agreement. AF measures required more than one response for some items, so teachers initially overlooked some answers. With feedback for this set of probes, however, teachers improved their level of accuracy. Consequently, teachers were able to use the modules in the online system to learn how to administer and score accurately at least one type of algebra measure.

In addition to checking the scoring accuracy of student probes, researchers checked the accuracy of teachers' data entry of probe information into the data management system. Specifically, researchers evaluated whether teachers could enter results of student probes accurately. Interrater agreement with data entry was at least 95% across all three types of measures except in a few instances. For 3 sets of AF probes, interrater agreement with data entry fell to 90%, and for 2 weeks of ABS probes, interrater agreement fell to 94%. Teachers using the ACA measures were highly accurate, with 100% agreement during all weeks except for two, in which agreement fell to 96%. Overall, teachers were very accurate in recording student scores in the data management system. They also were able to use data management features to enter item-by-item information for student probes as well as access a skills and errors reports for students. Researchers found that teachers were able to use a drop-down box successfully to select common errors made by at least one of two selected students for this aspect of the study. Although not required to use all the data management features that were available during the project, over half of the teachers reported on their final questionnaire that they used the majority of available features at least some of the time. For example, most of the teachers reported examining student progress graphs and comparing individual and class graphs. Teachers appeared to be able to apply the knowledge and skills acquired from the professional development modules to use data management features successfully.

Discussion during oral interviews also indicated that teachers thought the professional development enabled them to better understand their students' algebra performance. Although based more on the hand-scoring of the student probes than accessing the data management system for skills and error reports, teachers reported using common mistakes individual students made on the probes to direct what instructional support they still needed to provide during individual, small-group, or class reviews. Additionally, all but a few teachers agreed or agreed completely that the content of the algebra measures was appropriate for their students.

Student progress measures. Teachers demonstrated that they could give ongoing progress monitoring measures across time and could score probes and enter data accurately. The technical adequacy of all three measures had been established previously, but a secondary aspect of our research focused on a continued effort to validate the three types of algebra tools used as appropriate progress monitoring measures. Consequently, we asked teachers to give two forms of each of the three types of algebra tools during the first and last two weeks of the progress monitoring period. Although teachers were required to score only their primary measure, they agreed to administer two types of algebra tools each week, giving us information on two of the measures for which to calculate slope. Teachers rated each student's overall proficiency prior to progress monitoring and again at the end of the project. They also administered the IEOC near the beginning of the project and again after students completed 10 weeks of progress monitoring.

Thus, for the approximately 500 students whose teachers were participating in the project, we could examine validity coefficients with other algebra assessments as well as examine slope of improvement for the progress monitoring measures.

Assessing student change is a key component of progress monitoring. Using the average of the first two assessments compared to the average of the last two, results indicated that students improved significantly in their performance from the beginning of the progress monitoring period to their ending performance on all three of the progress measures. Additionally, slope data were calculated for students who were present for at least half of the probes. Students grew significantly across time (i.e., 10 weeks) on all three types of algebra measures. Across all students (i.e, with primary and secondary measures collapsed), ABS showed the greatest weekly growth of almost .75 items correct. Both AF and ACA demonstrated .4 item or .5 point improvement each week, respectively. Weekly rates of improvement improved slightly for ABS and ACA when they were used as the primary measure, that is, when teachers scored and looked at data on these measures. Interestingly, weekly growth on AF was greater when it was used as a secondary measure than a primary measure.

Correlations of the algebra tools administered at the beginning and end with pre- and postassessments of the IEOC and teachers' proficiency ratings illustrate concurrent validity. Scores on the first two and last two forms of each measure were related significantly to students' scores on the pre- and postassessments, respectively, of the IEOC and teacher ratings. Though significant, correlations were weaker with the IEOC than with teacher ratings of students' algebra proficiency. Correlations appeared lower with the post-IEOC for ABS and AF than with ACA. Because the IEOC is a broad-based test covering a variety of aspects of algebra, these results support the notion that ACA likely reflects more algebra-focused content than ABS or AF, which focus more on basic skills needed to be successful in algebra or on the foundational skills of beginning algebra. All three measures were significantly and moderately related to teacher judgments of student algebra proficiency at both pre- and posttest, lending support for concurrent validity of the progress tools.

Predictive validity of the measures was addressed by correlating the average of the first two scores as well as student slope improvement with the post-IEOC assessment and post-ratings of algebra proficiency. Beginning performance on each of the three algebra measures were significantly correlated to the post-IEOC scores and to the algebra proficiency ratings. As would be expected, of the three measures, correlations were weakest between the ABS and post-IEOC, a little higher between the AF and post-IEOC, and the highest between the ACA measure and the post-IEOC. However, all three premeasures correlated significantly and moderately with teachers' end-ratings of student algebra proficiency. Another aspect of predictive validity is correlation between the slope of improvement and final scores on the IEOC and proficiency ratings. Student slope of improvement was significantly related to ending proficiency ratings but not to the post-IEOC scores, except for ACA. It should be noted that, although students grew over the project period on the algebra measures, the IEOC did not reflect much student change. Because it is such a broad-based measure and the interval between administration of the pre- and postmeasures was not lengthy, it is probable that this test would not be as sensitive to student change as would the algebra measures and the teacher ratings.

Because an important feature of progress monitoring emphasized in the instructional modules focused on the recognition that progress data can be used for judging whether students are making adequate improvement and for making instructional decisions, teachers were allowed to indicate which of the three types of probes they preferred to use as the primary measure for progress monitoring with their selected group of students. Only two teachers agreed to use ACA. Although most teachers were hesitant to select this measure that required more complex procedures for scoring, after having had experience with administration and scoring with ABS or AF, some of the teachers reported ACA would be a measure they would like to try in the future with students, because it enabled them to think more carefully about student work and the mistakes that students made.

Limitations

Timing issues. Although Cohort 4 teachers were able to test the full functionality of the ThinkSpace online professional development system during our pilot year, several limitations should be noted. First, several technical glitches with the online system and a delay in getting the last modules prepared for uploading prevented us from starting with the pilot teachers in fall as originally planned. Recruitment became more challenging, as we neared close to the end of the first semester before we had the online system functioning fully. Because of these timing issues and our need for having a full 10 weeks of data collection with the algebra measures in addition to administration of the pre- and post-IEOC, we allowed some teachers to begin assessing students before they had completed all the professional development modules. Although teachers were not allowed to administer any progress measures until all the instructional modules focused on test administration and scoring were completed, they could administer probes to their students before viewing instructional modules dealing with use of data management tools. To ensure data collection of progress measures across 10 weeks before interfering with schools' scheduled high-stakes testing, some teachers started administering and scoring probes while they were still working through instructional modules about the data management system. Consequently, some teachers did not know how to enter data into the management system until after a number of weeks of progress data had already been collected. Thus, some teachers did not score and enter data on a week-by-week basis; rather they scored multiple sets of probes at one time and entered data in the same way. Because some teachers were not able to use data management features of the system regularly throughout the progress monitoring period, their more limited experience with the data management system over time may have affected how they viewed progress graphs, whether they utilized skills and errors report generated by the system, and how they made instructional decisions for their students.

Researchers administered knowledge posttests during the final meeting with teachers. However, some teachers were able to complete all the instructional modules before beginning 10 weeks of data collection with their students. Several teachers who had completed instructional modules many weeks before taking the knowledge posttest remarked that they thought their scores would have been better if they had been able to take the test closer to the time when they finished the modules. Consequently, some teachers took the knowledge posttest closer to the time they actually finished the modules, while other teachers took the posttest much later with the test functioning more as a maintenance measure. It is likely that the mean score correct may

have been higher for this group of teachers if everyone had taken the knowledge posttest shortly after completing the professional development modules.

Teacher compliance issues. When teachers were asked to implement and follow research guidelines in their classrooms, largely unsupervised, some concerns with procedural fidelity occurred. Even when they were given feedback and were assigned a member of the PD-APM research staff to check up on their progress, some did not complete the research tasks as required. An Iowa teacher did not include her students' scored probes for which she entered item-level entry into the ThinkSpace system. Therefore, performing item-level reliability was not possible, and all scoring reliability and data entry reliability excluded the missing students from her total calculations.

Another Iowa teacher entered all of the student data into the ThinkSpace system without scoring most of the papers. Because much of her scoring appeared to be "eyeballed" scoring, performing scoring reliability was difficult, and her data entry reliability was very low. The research team chose not to include her scoring reliability in data analysis and rescored all of her probes and adjusted her students' scores as needed.

A third Iowa teacher gave probes to all of his students (nearly 50 total) and did item-level entry for most of the students during the first few weeks of the project. This process, though, appeared to overwhelm him, and he fell behind in all subsequent data entry. It took months for him to score and enter student data for the remaining weeks. Additionally, he included a note on one of his class' scored papers that indicated he forgot to set the timer as required of the probe and was unsure how much extra time his class took to work on their probe that week. This particular group of student probes was discarded and not entered.

Other issues. Although we were able to evaluate teachers' accuracy with scoring and data entry, no direct observations were made of teachers during test administration or while they used the data management tools. Several technical problems were exhibited throughout the project period, including glitches with printing probes, difficulty saving responses to the online questions and ratings, and/or student data having to be reentered. Although technical problems were resolved ultimately, several teachers' responses within the online system were lost.

Implications for Practice

In sum, the full functionality of the ThinkSpace online system was tested during the pilot study and worked as intended. Cohort 4 teachers demonstrated that they were able to use the online system effectively for professional development in algebra progress monitoring. They were able to use information acquired through the online instructional modules and apply it with a group of their own students. Teachers used modules both to learn to administer and score algebra measures accurately and to enter student data accurately in the data management component. Teachers reported high levels of satisfaction with the online modules, both in terms of system features, such as graphics, videos, and navigation, and in terms of the content and organization of the modules. They judged time spent as being appropriate to the tasks. Pilot study teachers demonstrated that this online system could be used as an appropriate and successful delivery mechanism for professional development in algebra progress monitoring, both among general education algebra teachers and special educators.

Based on results and feedback from teachers, several potential improvements could be identified. For example, expanding the scoring exercises, particularly for ACA, could provide teachers with additional practice they may want with the more complicated set of scoring procedures. Teachers indicated that a lot of information about progress monitoring in algebra was presented in the instructional modules. Although they were able to use the data management features, many of the teachers indicated that they thought they could do more with skills and error analyses given more time and practice using the system. Because teachers reported looking at student graphs but not sharing them with their students as frequently, instructional modules could imbed more information about strategies for making informed decisions about student progress and for better involving students in evaluating their own progress.

Teachers addressed technological features of the system as difficulties were reported. Due to changes in staffing occurring at Iowa State University where the online system is housed, the ThinkSpace platform currently is being upgraded to support additional applications. The research team is working with staff in technology to migrate the online professional development system to a new platform in order to be able to provide access to future participants.

Future Directions

As we have shared our work on PD-APM with colleagues through professional conferences and informal interactions, we have become aware of considerable interest in algebra progress monitoring, as well as interest in the system IES funding has allowed us to develop. As noted in the previous paragraph, we learned of impending changes to the ThinkSpace platform at Iowa State University in the spring of 2013. Dr. Pete Boysen, the technical team lead for the project, announced his upcoming retirement (in summer 2014) at that time. Dr. Boysen is the creator of ThinkSpace and his appointment included development work on the platform with faculty from several disciplines across the university. When he announced his retirement plans, it became clear that university administration did not intend to hire someone to sustain the ThinkSpace platform. Dr. Boysen had been doing some development work related to ThinkSpace with a consulting company (Sixth Edge) to create a second generation system that was more stable and addressed several of the issues our users had identified that were also being noted in other ThinkSpace applications. Subsequent planning for sustaining several tools developed on the ThinkSpace platform took place with Sixth Edge as an entity that would assume leadership of the platform in the future.

With the approval of our project officer, funds we had allocated to Dr. Boysen's salary were shifted to a consulting contract with Sixth Edge to support the development of ThinkSpace 2.0. This work began in the summer of 2013 and continues to the present. The section below describes the updated version of the PD-APM system on the second generation ThinkSpace platform.

PD-APM 2.0

Our work with SixthEdge on the ThinkSpace 2.0 platform has been framed by a focus on the sustainability of the system. Our discussions have included work on a business plan that balances limited school and teacher budgets with the costs associated with maintaining the

second generation system, storage/server costs, technical support, and future system enhancements. In the sections that follow, we provide an illustration of the 2.0 version, outline the current status of the system, and describe our plans for making system widely available to practitioners and researchers.

PD-APM and ThinkSpace 2.0. The current version of PD-APM is characterized by a stable platform resulting from changes to the ThinkSpace system architecture, a fresh "look" resulting from the contributions of designers who are part of the 2.0 team, and the incorporation of new features suggested by PD-APM cohort teachers. The 'hub' concept from the first system is maintained in the dashboard of the new system. The image in Figure 10 shows an administrator's dashboard; teacher users would not have the center bar labeled Account Management.

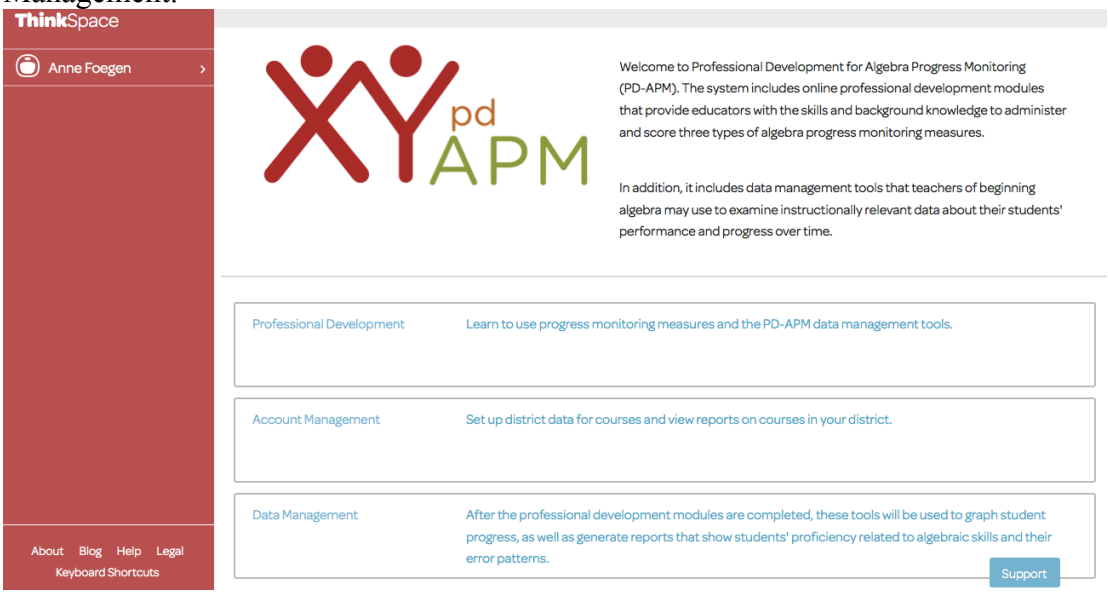


Figure 10. PD-APM dashboard in ThinkSpace 2.0

From this dashboard, users can select Professional Development to access the modules. New features (see Figure 11) include an overview of the module topic, a listing of the number of pages to complete in the module, and a status indicator (upper left corner of each module box) indicating whether the module has been completed.

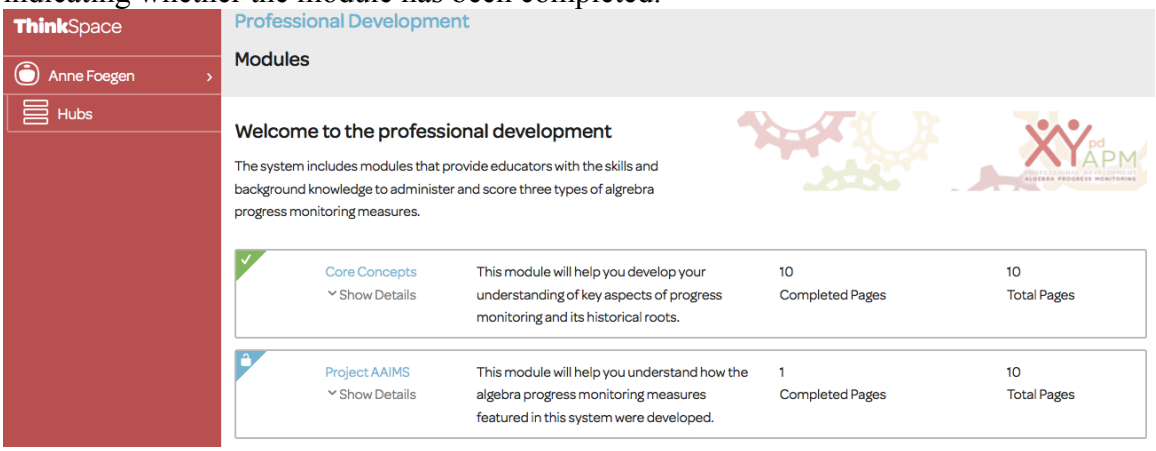


Figure 11. Modules interface

The modules include similar features as the 1.0 version (audio and video presentation of information, interactive activities), as well as new enhancements. The video source has moved to YouTube, which has enabled substantially faster loading (to address past user concerns). To improve consistency, all pages use a video "player," even when the video plays a still image to accompany the audio. This change allowed us to avoid have two different types of players in the modules pages (one for audio, and one for video). The images in Figure 12 illustrate the module interface, including a progress bar (green dots) at the top of each page, an improved toggle system for displaying audio or video transcripts for users who prefer that modality, and a more intuitive format for the self-check questions.

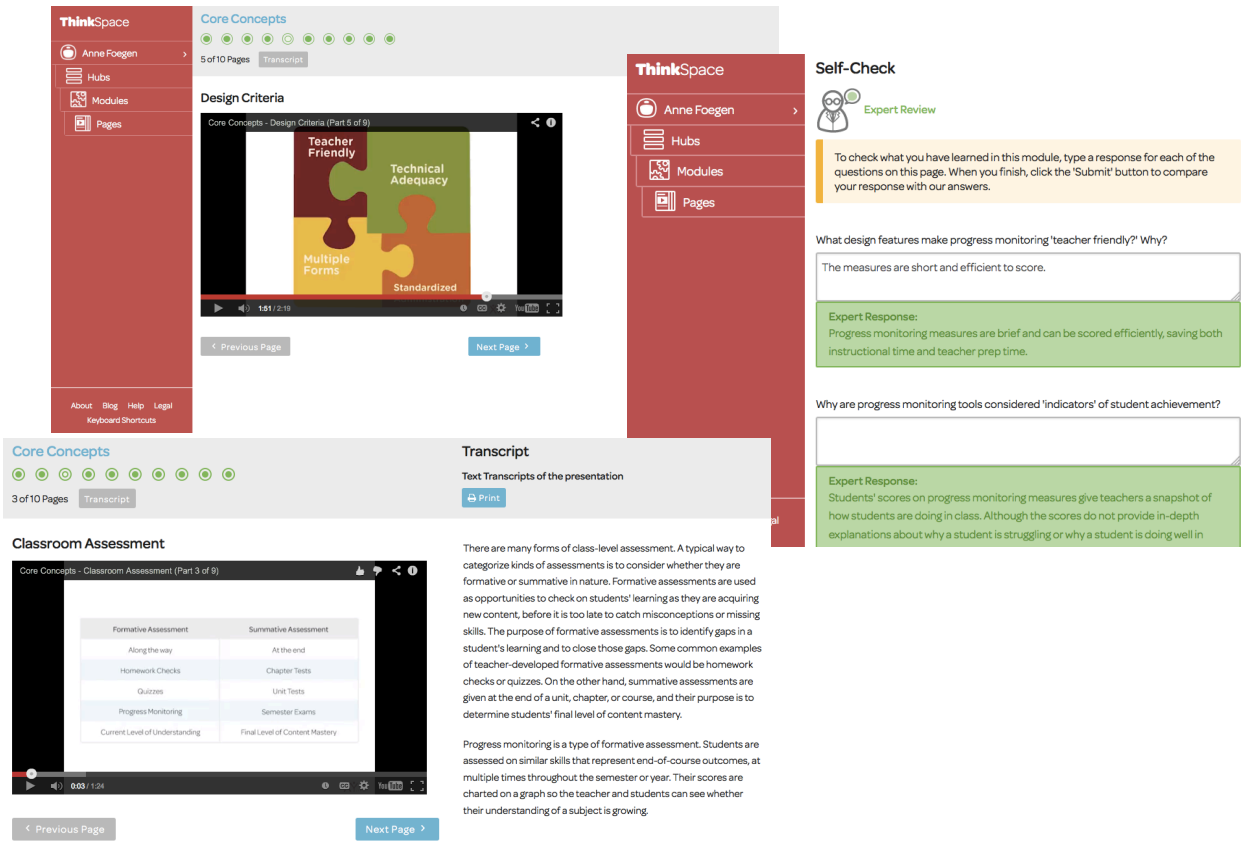


Figure 12. Professional development module screen shots

The data management system has also been enhanced during the shift to the ThinkSpace 2.0 platform. The Data Management hub in the dashboard provides the user with access to four activities: Roster Management, Probe Management, Progress Graphs, and Diagnostic Data (see Figure 13). The Sixth Edge designers and developers held several meetings with the PD-APM team prior to (and during) the development of the new platform in order to understand the functions of the components in the 1.0 version, as well as the recommendations of our teacher cohort groups regarding desired features.

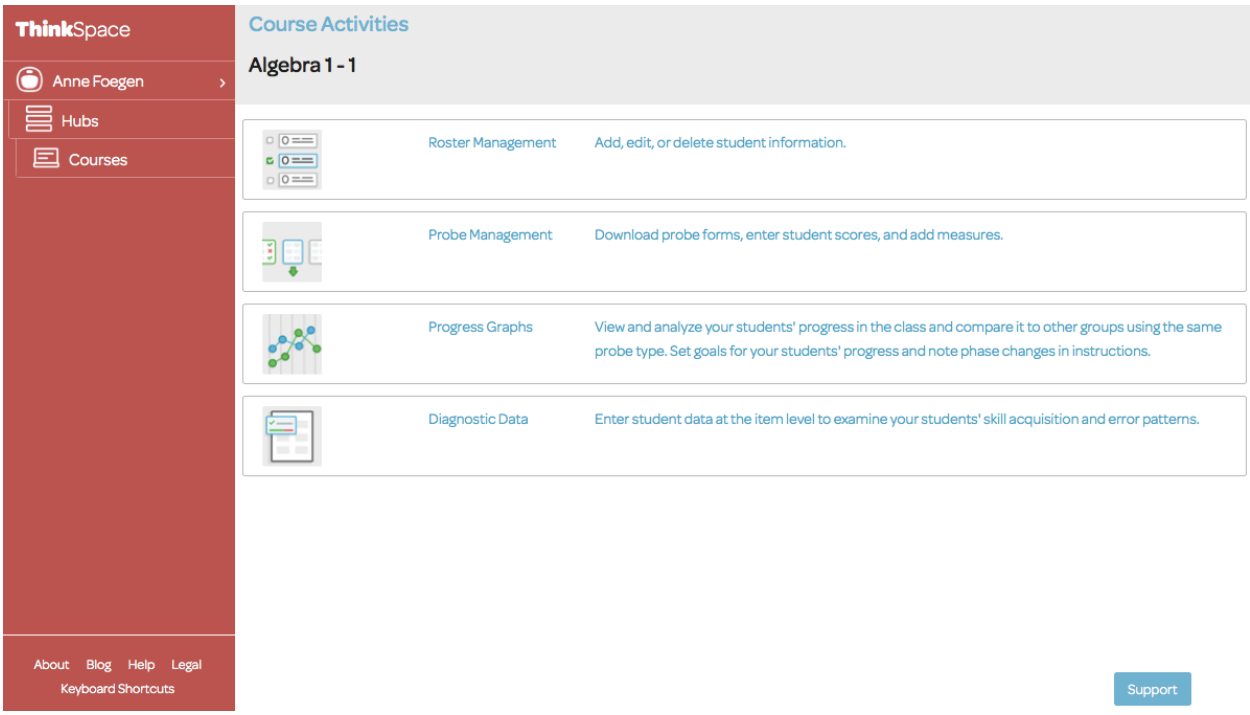


Figure 13. Data management tools

The Roster Management activity allows teachers to create and modify class rosters as students join and leave the class. The Probe Management activity allows teachers to download e-versions of the measures, and to efficiently enter total scores (see Figure 14).

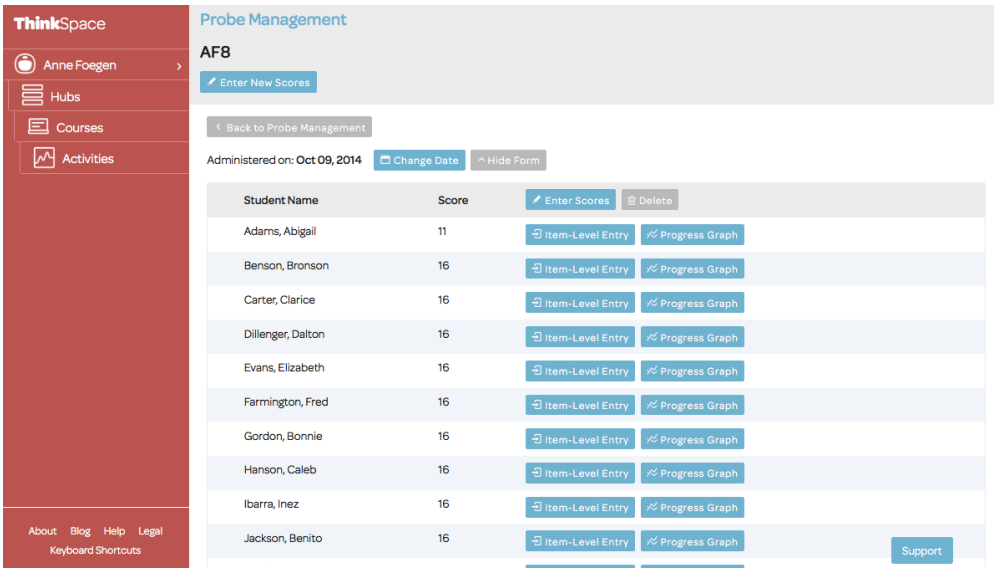


Figure 14. Probe management interface.

The Progress Graphs interface offers exciting new options for users, including a cleaner visual display; options to set, display, and modify individual student goals; and options to toggle on and off comparison data (for the teacher, course, building, and district) as well as trendlines and data points. The images in Figure 15 illustrate these new features. One specific example of

incorporating PD-APM cohort teacher feedback is seen in the forward/back arrows in the image on the right, which allow users to efficiently "click through" the individual graphs for all students in the class to review progress. This feature represents a dramatic enhancement over the 1.0 system, where users had to return to a class menu after viewing a student graph and from there select another student in order to view a new graph.

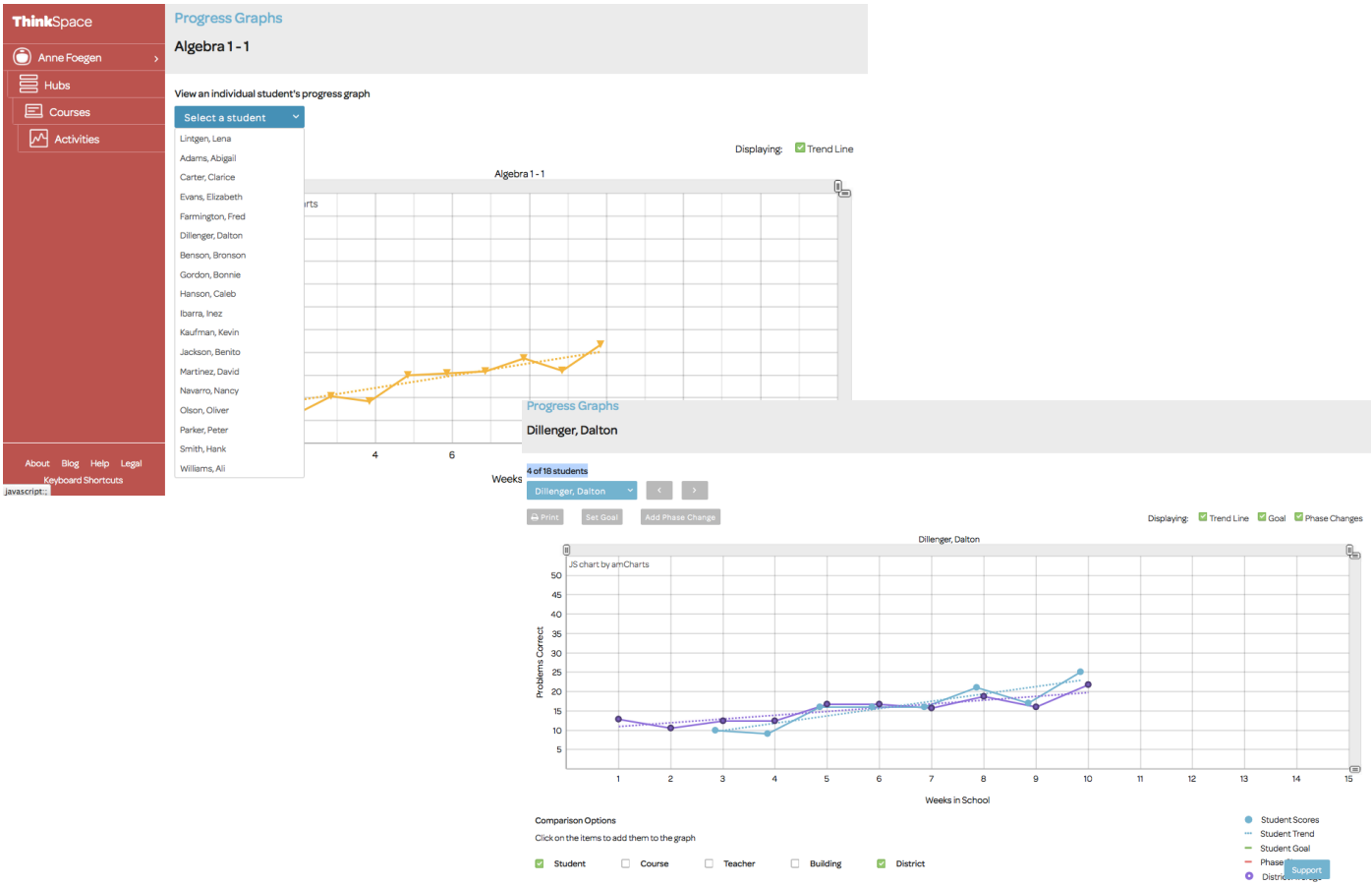


Figure 15. Progress graph interface

Finally, the diagnostic features introduced in the 1.0 version of PD-APM are maintained in the Diagnostic Data activity in the new system. A new item-level data entry interface has been designed (see Figure 16) to be more intuitive and efficient. Skills and error reports continue to be available based on the item-level data.

We have worked with PD-APM cohort teachers to do usability testing on the new interface and teachers who have experienced both systems consistently offer strong support for the enhancements, visual appeal, and intuitive design in the new interface. The changes in the structure of the interface, led by the ThinkSpace 2.0 designers, have resulted in a system that is simple to navigate—to the point that we no longer have a "Getting Started" module to explain how to navigate the system!

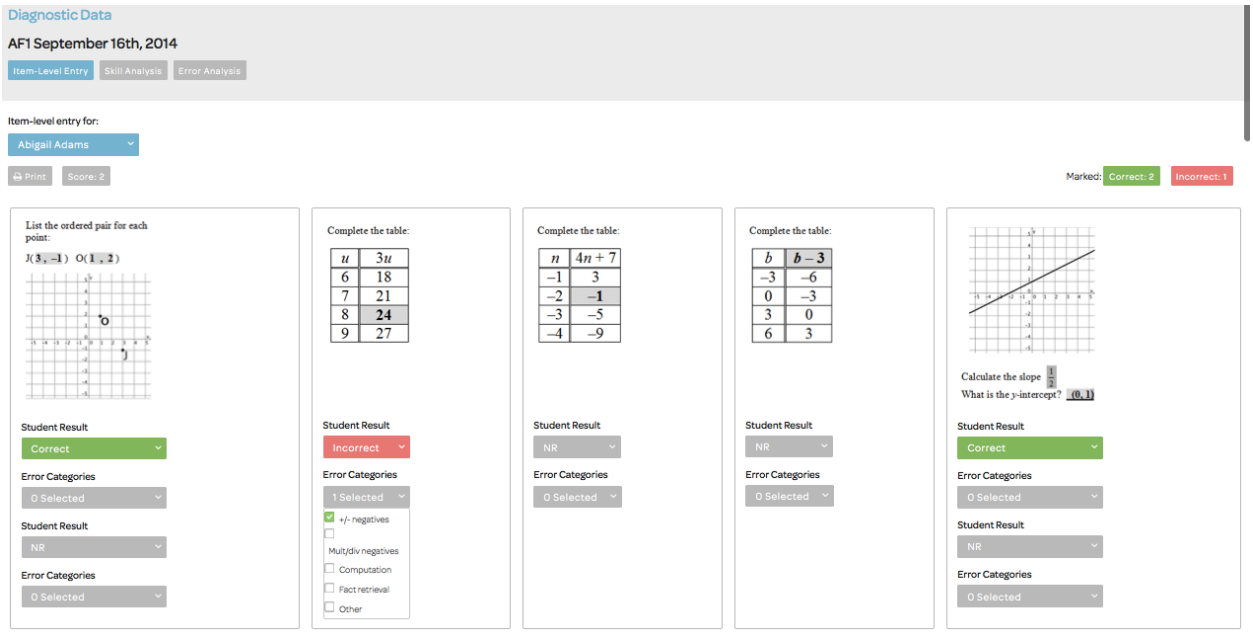


Figure 16. Item-level data entry interface

Current status of PD-APM 2.0. As of the submission of this report (October 31, 2014), we are continuing the process of converting the professional development modules from the ThinkSpace 1.0 platform to the 2.0 platform. This work entails incorporating feedback from Cohort 4 users, reconfiguring the organization of the module content to optimize newly available features, and creating new media files (graphics, audio, video) as needed.

The first two modules (Foundations, Project AAIMS) are completed and uploaded to the system. Development work is complete on the next two modules (Measures Introduction, Algebra Basic Skills) and only the creation of media files remains. Two additional modules (Algebra Foundations, Algebra Content Analysis) are in progress and will be completed relatively quickly, as the format parallels that of the Algebra Basic Skills module.

The remaining modules have been condensed from five to four (Intro to Data Management, Evaluating Student Progress, Instructional Decision Making, and Diagnostic Data) due to the combination of the former Skills Analysis and Error Analysis modules into a single (Diagnostic Data) module. We anticipate the translation of these modules to ThinkSpace 2.0 will move more slowly, as the majority of the images will need to be updated to show the new interface and the sections that provide instruction on using the data management tools will have to be revamped to illustrate new organizational structures and implementation procedures.

We are doing informal beta testing of the system with participants in another IES-funded project (Algebra Screening and Progress Monitoring [ASPM], #R324A110262). Teacher participants in this project used PD-APM 1.0 to input student data and access progress monitoring graphs as part of the 2013-14 research activities involving monitoring student progress with procedural measures. Because the ISU-based access to PD-APM was ending in June 2014, we worked with the ThinkSpace 2.0 team to adapt the PD-APM interface to accommodate three additional conceptual measures of algebra progress that ASPM teachers are

implementing during the 2014-15 school year. This has the added benefit of providing user feedback on the data management tools prior to a public release of the system.

Providing access to the system. Our original plans to have a publicly available version of PD-APM in Fall 2014 proved to be overly ambitious given other demands on the ISU research team and the Sixth Edge ThinkSpace 2.0 development team. As noted above, we are using the data management tools with teacher participants in a related grant project and continuing our development work to achieve a final product.

We have begun discussions with the Sixth Edge leader about pricing structures and contractual agreements. Our goal is to set the fees for system use at a level that provides sufficient resources to support the maintenance and future enhancement of the system, while at the same time recognizing the constrained budgets of teachers and school districts. Discussions will also be taking place with the Iowa State legal advisors about modifying existing fiscal and contractual arrangements in place to support the delivery of face-to-face workshops; new arrangements will be needed for teacher access to the professional development modules and for ongoing (subscription-based) access to the data management tools (based on a schedule that accounts for the numbers of classes, students, and teachers using the system within an organization). The mechanism currently in place for billing face-to-face workshop clients will also need to be adjusted to reflect the new configuration; processes must also be put in place for a portion of the collected fees to be transferred outside of the university to Sixth Edge.

While we have several prospective clients patiently waiting for the completion of the 2.0 system, we also anticipate undertaking a marketing effort to make teachers and administrators aware of the PD-APM system and the wealth of resources available through the system to support monitoring student progress in algebra. We plan to exhibit the system at educational conferences, offer webinars to demonstrate the system and its features, and host regional meetings of existing algebra progress monitoring users (who have participated in past face-to-face workshops) to introduce them to the latest advances available through the online system.

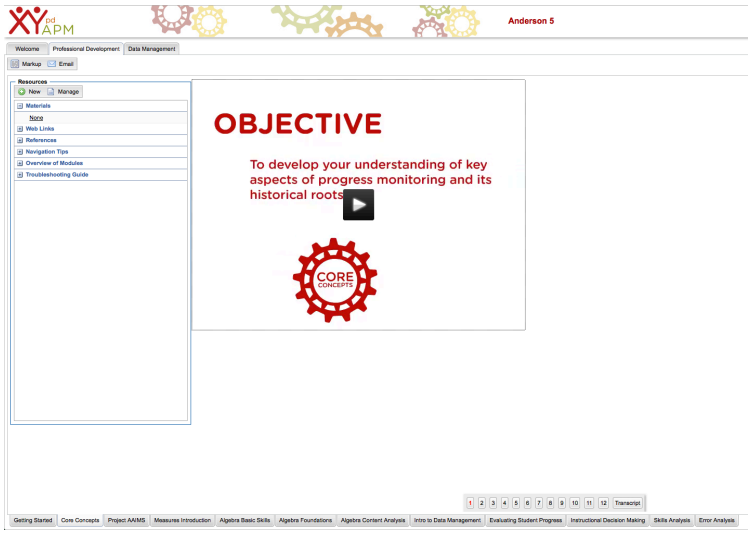
Future Research

As this project concludes, we turn our attention to future work. Our dissemination of PD-APM has been limited largely to professional conference presentations. We will refocus the efforts that have been centered on iterative development and completion of the pilot study to the development of scholarly articles and practitioner pieces that will be submitted to leading journals. In addition, we will explore future funding opportunities in collaboration with our Sixth Edge colleagues, including the Small Business Innovation Research program, as a means of expanding the PD-APM system to incorporate more recent work on other funded projects. We will design future research and grant applications to address two critical needs in the field. The first is the development and/or coordination of intervention guidance for teachers with respect to algebra content. Progress monitoring data can alert teachers when students' growth trajectories are failing to meet expectations and, with the use of the diagnostic tools in PD-APM, may allow identification of specific skill gaps and error patterns. The next step is to provide teachers with support in selecting or developing interventions to address students' needs. The second is the need to expand the content of progress monitoring tools for secondary mathematics beyond algebra to include geometry and more advanced algebra topics.

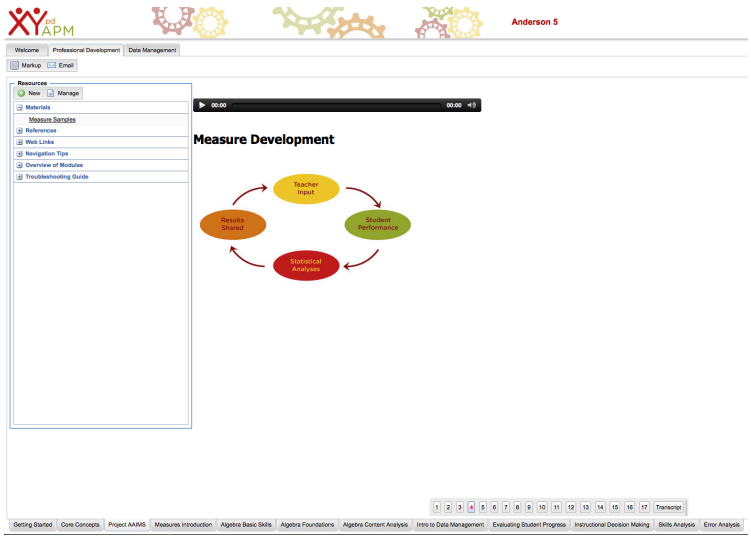
Format and Features of the PD-APM System in Thinkspace

This appendix includes a series of annotated screen shots that illustrate the format and features of the professional development modules in the PD-APM system. The intent is to provide a general sense of the nature of the modules, rather than an exhaustive compilation of all possible features.

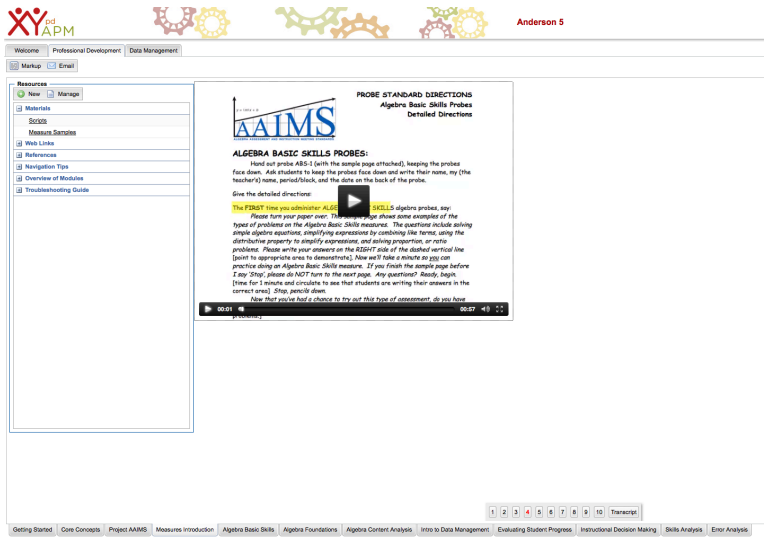
The professional development modules each shared a set of consistent features. First, each module opened with an animation of the gear theme and presentation of the objective(s) for the module. All videos were displayed in a player window with an arrow button that could be clicked to initiate the video.



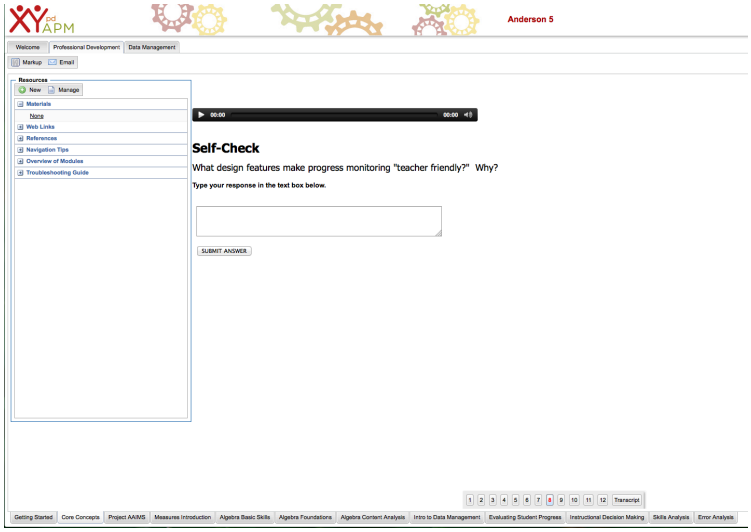
The content in the modules was presented in a variety of formats. Some pages included text or graphics, paired with an audio file of the narration.



On other pages, animations were used to draw teachers' attention to particular features of the material being presented. In the image below, yellow highlighting was used to draw teachers' attention to a specific aspect of the presentation.

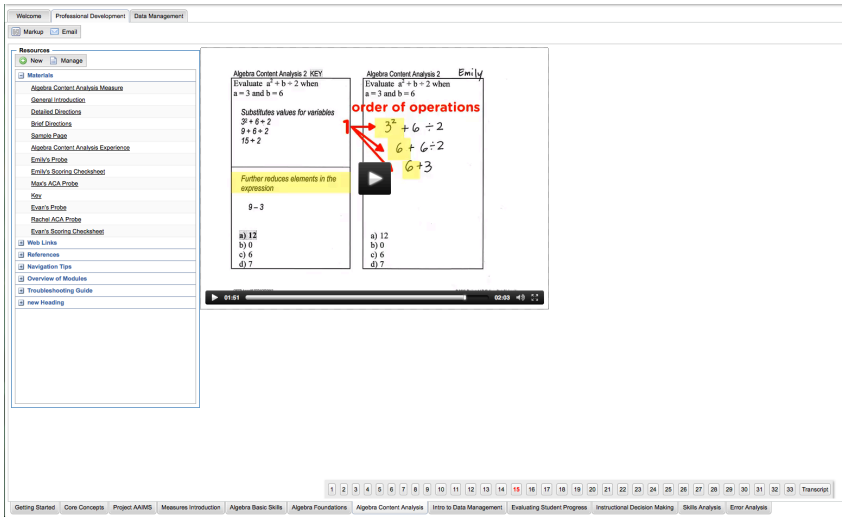


In modules that were focused primarily on sharing information, a series of self-check questions was included at the end of the module to allow teachers to self-evaluate their learning. After entering a response, the teacher could click "Submit" to view an expert response to the same question.

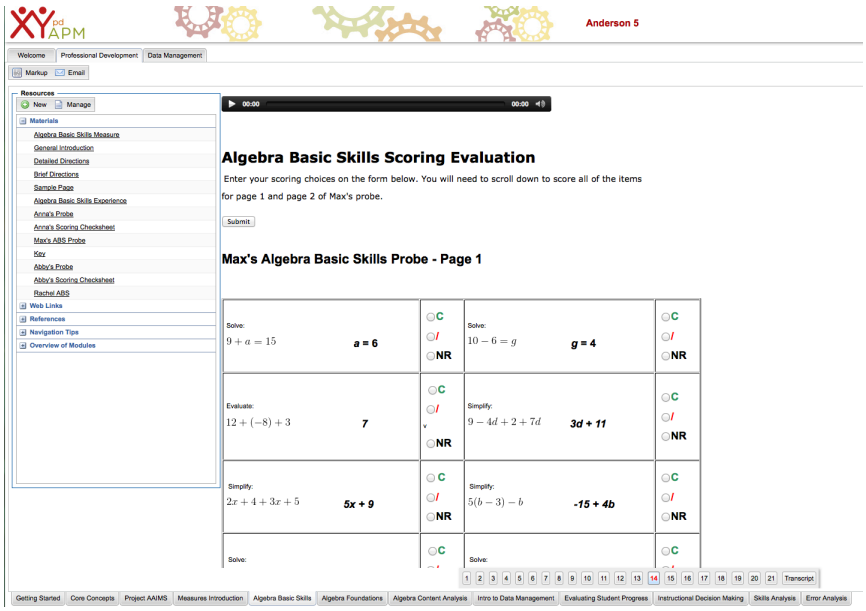


The three modules that taught teachers how to administer and score the three types of measures included several unique features. One was a simulation activity in which the teacher took on the role of a student and the video provided the directions and timing for completing the measure. Following the simulation, information about scoring was provided and users completed a guided scoring

activity. The image below shows a video animation of the scoring process for the Algebra Content Analysis measure.

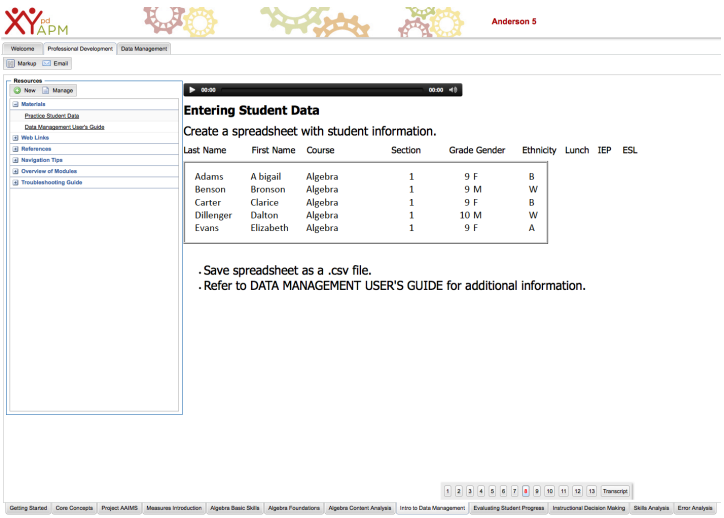


After completing the practice activity and having an opportunity to compare their scoring to an expert key, teachers completed an exercise to demonstrate their learning about accurate scoring procedures. The image below shows an interactive page where teachers entered the scores they assigned a fictitious student named Max by choosing the radio button (to the right of each problem) that corresponded to the score they gave. After all scores were entered, teachers clicked submit and were provided with immediate feedback on the percentage accuracy for their scoring.



The last five modules provided training on the use of the data management tools. As they learned how to work with these tools, teachers were provided with interactive

tasks in which they would complete an activity using the tool in order to practice using the tools. The image below shows in activity that users complete as they are learning how to import class data using a .csv file.



Professional Development in Algebra Progress Monitoring
Module Feedback Form

Name/Code Number: _____ Computer: PC Mac

Module: _____ Operating System: _____

Time started: _____ Time completed: _____

What is your general impression of this module?

Which segments of the module were particularly helpful in enhancing your understanding of the content in this module? Why?

Were there segments of the module that hindered your understanding of the content in this module? If so, what suggestions do you have for improvement?

Was the time needed to complete the module reasonable? Why or why not?

Please rate each of the following aspects of the module and provide comments to clarify your rating (use the back of the page if necessary).

How would you rate	**Excellent**				**Poor**
The organization of the module	5	4	3	2	1
The difficulty of the content presented in the module	5	4	3	2	1
The clarity of the content in the module	5	4	3	2	1
The quality of the graphics used in the module (clarity, contributes to understanding)	5	4	3	2	1
The quality of the animation used in the module (clarity, audibility, contributes to understanding)	5	4	3	2	1
The quality of the audio narration used in the module (clarity, audibility contributes to understanding)	5	4	3	2	1
Your overall rating/level of satisfaction with this module	5	4	3	2	1
Your level of engagement while working on this module	5	4	3	2	1
Your level of understanding of the content	5	4	3	2	1
The ease with which you could navigate through the system	5	4	3	2	1

Will this information be of benefit to teachers? Please elaborate.

What are the most important revisions we should make to this module before it is used by teachers?

user_id	q_block_id	comment	c_datetime
114	5	That was lovely! ===> remainingQuestions=	2010-06-21 11:11:04
536	5	I think that there is supposed to be a audio clip for this page as there is a replay button, but nothing is coming up. ===> remaining(	2010-10-17 21:06:17
537	1	I previously sumbitted a comment that stted the audio did not come up, but it worked after I closed the webpage and started over	2010-10-17 21:08:01
537	7	This page seems fine. I do wonder what the numbering of items means though. ===> remainingQuestions=	2010-10-17 21:09:02
537	8	The audio and directions are clear. ===> remainingQuestions=	2010-10-17 21:10:00
537	10	The audio stated to "select the module you would like to complete and then..." It ended in what seemed to be the middle of what	2010-10-17 21:11:24
537	2	I like the graphics for this page. The audio on this page is distinctly different from previous pages. ===> remainingQuestions= 21 22	2010-10-17 21:12:40
537	2	The audio says to click the more about button, but there isn't one. Intead, the names and titles are hyper-linked. ===> remainingQ	2010-10-17 21:14:33
537	2	The audio scenario here is a little odd to me. I like the idea of being creative, but I would want a statement that tells me exactly wh	2010-10-17 21:19:27
537	2	I like this page. The comments are straightforward, and the graphic and animation went well with the audio. There isn't a audio ba	2010-10-17 21:22:01
537	2	This is a basic page but works well. ===> remainingQuestions=	2010-10-17 21:23:04
539	4	ok ===> remainingQuestions= 4 5 6 7 8 9 10 11 12 13 14 15 16 18 19 17	2010-10-18 11:13:19
539	4	ok ===> remainingQuestions= 5 6 7 8 9 10 11 12 13 14 15 16 18 19 17	2010-10-18 11:13:43
539	4	It would be nice to have bullet points here to go along with the audio. ===> remainingQuestions= 6 7 8 9 10 11 12 13 14 15 16 18 1	2010-10-18 11:15:44
539	4	There is no audio bar on this page. It would be nice to have the pictures include the persons name as well. Some of the pictures ar	2010-10-18 11:19:57
539	4	ok ===> remainingQuestions= 8 9 10 11 12 13 14 15 16 18 19 17	2010-10-18 11:22:09
539	4	There is no audio bar. There should be a label for the x-axis. ===> remainingQuestions= 9 10 11 12 13 14 15 16 18 19 17	2010-10-18 11:23:55
539	4	There are two audio files playing at the same time on this page. The legend on the graph is hard to read. ===> remainingQuestions	2010-10-18 11:25:59
539	4	There is no audio bar. ===> remainingQuestions= 11 12 13 14 15 16 18 19 17	2010-10-18 11:28:51
539	4	ok ===> remainingQuestions= 12 13 14 15 16 18 19 17	2010-10-18 11:30:42
539	4	ok ===> remainingQuestions= 14 15 16 18 19 17	2010-10-18 11:31:14
539	4	ok ===> remainingQuestions= 16 18 19 17	2010-10-18 11:32:01
539	4	ok ===> remainingQuestions= 16 18 19 17	2010-10-18 11:32:32
539	4	ok ===> remainingQuestions= 18 19 17	2010-10-18 11:33:06
539	4	ok ===> remainingQuestions= 18 19 17	2010-10-18 11:33:26
539	4	ok ===> remainingQuestions= 19 17	2010-10-18 11:33:46
539	4	ok ===> remainingQuestions= 17	2010-10-18 11:34:08
542	2	ok ===> remainingQuestions= 22 23 24	2010-10-18 16:04:32
542	7	ok ===> remainingQuestions=	2010-10-18 16:04:53
542	8	ok ===> remainingQuestions=	2010-10-18 16:05:06
542	10	ok ===> remainingQuestions=	2010-10-18 16:05:20
542	2	ok ===> remainingQuestions= 21 22 23 24	2010-10-18 16:05:34
542	2	ok ===> remainingQuestions= 22 23 24	2010-10-18 16:06:22
542	2	The audio clip won't play in this segment. ===> remainingQuestions= 23 24	2010-10-18 16:07:43
542	2	ok ===> remainingQuestions= 24	2010-10-18 16:09:10
542	2	ok ===> remainingQuestions=	2010-10-18 16:09:23
542	4	ok ===> remainingQuestions= 4 5 6 7 8 9 10 11 12 13 14 15 16 18 19 17	2010-10-18 16:09:42
542	4	ok ===> remainingQuestions= 5 6 7 8 9 10 11 12 13 14 15 16 18 19 17	2010-10-18 16:10:06
542	4	The audio clip won't work. ===> remainingQuestions= 6 7 8 9 10 11 12 13 14 15 16 18 19 17	2010-10-18 16:15:06
542	4	The audio clip will start and stop after every few words or phrases. ===> remainingQuestions= 7 8 9 10 11 12 13 14 15 16 18 19 17	2010-10-18 16:19:34
542	4	This segment would not fully load the audio clip and took a long time to load both the images and the audio clips. ===> remaining(	2010-10-18 16:22:48
542	4	ok ===> remainingQuestions= 9 10 11 12 13 14 15 16 18 19 17	2010-10-18 16:25:08
542	4	When I played the audio clip the first time, there were two people talking. When play again, there was only one voice. Also, the au	2010-10-18 16:27:52
542	4	ok ===> remainingQuestions= 11 12 13 14 15 16 18 19 17	2010-10-18 16:30:47
542	4	ok ===> remainingQuestions= 12 13 14 15 16 18 19 17	2010-10-18 16:34:40
542	4	The audio clip didn't work. ===> remainingQuestions= 13 14 15 16 18 19 17	2010-10-18 16:35:23
542	4	Took a long time for the audio clip to load. ===> remainingQuestions= 14 15 16 18 19 17	2010-10-18 16:36:48
542	4	ok ===> remainingQuestions= 15 16 18 19 17	2010-10-18 16:37:14
542	4	ok ===> remainingQuestions= 16 18 19 17	2010-10-18 16:38:27
542	4	Audio clip would only partially load. ===> remainingQuestions= 18 19 17	2010-10-18 16:39:05
542	4	ok ===> remainingQuestions= 19 17	2010-10-18 16:40:16
542	4	Audio clip would only partially load. ===> remainingQuestions= 17	2010-10-18 16:41:23
542	4	Audio clip would not load. ===> remainingQuestions=	2010-10-18 16:42:32
542	11	ok ===> remainingQuestions= 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-18 16:43:11
542	11	Audio clip took a long time to load and it only partially loaded. ===> remainingQuestions= 36 37 38 39 40 41 42 43 44 45 46 47 48	2010-10-18 16:44:22
542	11	ok ===> remainingQuestions= 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-18 16:45:26
542	11	ok ===> remainingQuestions= 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-18 16:46:06
542	11	ok ===> remainingQuestions= 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-18 16:46:38
542	11	ok ===> remainingQuestions= 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-18 16:48:08
542	11	ok ===> remainingQuestions= 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-18 16:49:45
542	11	ok ===> remainingQuestions= 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-18 16:51:12
542	11	This audio clip and the graphics would not load. ===> remainingQuestions= 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60	2010-10-18 16:53:11
542	11	The audio clip and the graphics won't load. ===> remainingQuestions= 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-18 16:55:16
542	11	I had to click on the refresh button 4 or 5 times to get the audio to load. The graphics didn't load at all. ===> remainingQuestions=	2010-10-18 16:57:06
542	11	ok ===> remainingQuestions= 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-18 16:58:47
542	11	The audio clip would not fully load, but it completed loading after I clicked the refresh button. ===> remainingQuestions= 47 48 49	2010-10-18 17:00:21
542	11	ok ===> remainingQuestions= 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-18 17:00:50
542	11	ok ===> remainingQuestions= 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-18 17:01:32
542	11	I had to click the refresh button 4 times to get the audio clip to fully load. ===> remainingQuestions= 50 51 52 53 54 55 56 57 58 5	2010-10-18 17:04:53
542	11	The audio clip would not load. ===> remainingQuestions= 51 52 53 54 55 56 57 58 59 60 61	2010-10-18 17:05:44
542	11	ok ===> remainingQuestions= 52 53 54 55 56 57 58 59 60 61	2010-10-18 17:07:01
542	11	I had to click on the refresh button to get the audio clip to load. ===> remainingQuestions= 53 54 55 56 57 58 59 60 61	2010-10-18 17:08:12
542	11	ok ===> remainingQuestions= 54 55 56 57 58 59 60 61	2010-10-18 17:09:43
542	11	I had to click on refresh button 3 times to get the audio clip to play. ===> remainingQuestions= 55 56 57 58 59 60 61	2010-10-18 17:11:50
542	11	ok ===> remainingQuestions= 56 57 58 59 60 61	2010-10-18 17:14:16
542	11	ok ===> remainingQuestions= 57 58 59 60 61	2010-10-18 17:14:34
542	11	ok ===> remainingQuestions= 58 59 60 61	2010-10-18 17:15:09
542	11	ok ===> remainingQuestions= 59 60 61	2010-10-18 17:15:29
542	11	Audio clip does not work. ===> remainingQuestions= 60 61	2010-10-18 17:16:30
542	11	Audio clip does not work. ===> remainingQuestions= 61	2010-10-18 17:17:10
542	5	ok ===> remainingQuestions=	2010-10-18 17:18:16
543	11	ok ===> remainingQuestions= 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-18 17:27:55
543	11	The audio sounds like it says to click on the radio to download the measure samples, but the document is linked at at materials ne	2010-10-18 17:29:57
543	11	ok ===> remainingQuestions= 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-18 17:31:08
543	11	The picture is the same one shown in a previous module, which might seem to not add anything new for the audience. ===> remai	2010-10-18 17:32:43
543	11	Ok ===> remainingQuestions= 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-18 17:33:51
543	11	ok ===> remainingQuestions= 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-18 17:35:32
543	11	ok ===> remainingQuestions= 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-18 17:36:04
543	11	There is no audio bar on this page. ===> remainingQuestions= 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-18 17:36:56
543	11	ok ===> remainingQuestions= 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-18 17:39:31
543	11	ok ===> remainingQuestions= 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-18 17:40:26
543	11	The graphic does not show up on this page. ===> remainingQuestions= 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-18 17:40:59
543	11	ok ===> remainingQuestions= 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-18 17:42:25
543	11	ok ===> remainingQuestions= 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-18 17:42:58
543	11	ok ===> remainingQuestions= 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-18 17:43:36
543	11	ok ===> remainingQuestions= 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-18 17:44:33
543	11	It seems very odd to me that correlation coefficients are being explained to math teachers who teach this concept in algebra I. ===>	2010-10-18 17:47:55
543	11	ok ===> remainingQuestions= 51 52 53 54 55 56 57 58 59 60 61	2010-10-18 17:48:48
543	11	ok ===> remainingQuestions= 52 53 54 55 56 57 58 59 60 61	2010-10-18 17:50:08
543	11	ok ===> remainingQuestions= 53 54 55 56 57 58 59 60 61	2010-10-18 17:51:57
543	11	ok ===> remainingQuestions= 54 55 56 57 58 59 60 61	2010-10-18 17:52:51
543	11	ok ===> remainingQuestions= 55 56 57 58 59 60 61	2010-10-18 17:54:09

543	11	ok ===> remainingQuestions= 56 57 58 59 60 61	2010-10-18 17:54:29
543	11	ok ===> remainingQuestions= 57 58 59 60 61	2010-10-18 17:54:58
543	11	ok ===> remainingQuestions= 58 59 60 61	2010-10-18 17:55:15
543	11	ok ===> remainingQuestions= 60 61	2010-10-18 17:55:51
543	11	ok ===> remainingQuestions= 61	2010-10-18 17:56:28
550	1	ok ===> remainingQuestions=	2010-10-20 16:01:51
550	7	ok ===> remainingQuestions=	2010-10-20 16:02:15
551	2	Graphics and audio are good. ===> remainingQuestions= 21 22 23 24	2010-10-20 16:03:31
551	2	I do not see any pictures of the Project Team as said in the audio. ===> remainingQuestions= 22 23 24	2010-10-20 16:04:27
551	2	There are question marks instead of apostrophes in the Text box. ===> remainingQuestions= 23 24	2010-10-20 16:06:02
551	2	Whenever I clicked Replay it took me to a page that said thank you for your participation. It never replayed the audio. ===> remair	2010-10-20 16:07:05
551	2	Ok ===> remainingQuestions= 24	2010-10-20 16:09:13
551	2	ok ===> remainingQuestions=	2010-10-20 16:09:36
551	4	Graphics are good. ===> remainingQuestions= 4 5 6 7 8 9 10 11 12 13 14 15 16 18 19 17	2010-10-20 16:10:26
551	4	graphics are good! ===> remainingQuestions= 4 5 6 7 8 9 10 11 12 13 14 15 16 18 19 17	2010-10-20 16:10:36
551	4	ok ===> remainingQuestions= 5 6 7 8 9 10 11 12 13 14 15 16 18 19 17	2010-10-20 16:12:33
551	4	ok ===> remainingQuestions= 6 7 8 9 10 11 12 13 14 15 16 18 19 17	2010-10-20 16:14:09
551	4	The audio cut out several times. It did not do this when I watched it in the lab so it may have been my internet connection. Graphi	2010-10-20 16:17:39
551	4	I really like the graphics that compare the concepts. Audio is good. ===> remainingQuestions= 8 9 10 11 12 13 14 15 16 18 19 17	2010-10-20 16:19:49
551	4	ok ===> remainingQuestions= 9 10 11 12 13 14 15 16 18 19 17	2010-10-20 16:21:36
551	4	This page has two different people talking at the same time. Both immediately start playing but if you press pause, one stops. ===>	2010-10-20 16:22:58
551	4	ok ===> remainingQuestions= 11 12 13 14 15 16 18 19 17	2010-10-20 16:24:01
551	4	ok ===> remainingQuestions= 12 13 14 15 16 18 19 17	2010-10-20 16:25:23
551	4	I like how it shows your answer and reads the correct answer to you. Audio is good. ===> remainingQuestions= 13 14 15 16 18 19	2010-10-20 16:26:14
551	4	ok ===> remainingQuestions= 14 15 16 18 19 17	2010-10-20 16:26:39
551	4	ok ===> remainingQuestions= 15 16 18 19 17	2010-10-20 16:27:38
551	4	ok ===> remainingQuestions= 16 18 19 17	2010-10-20 16:29:06
551	4	ok ===> remainingQuestions= 18 19 17	2010-10-20 16:29:38
551	4	ok ===> remainingQuestions= 19 17	2010-10-20 16:30:08
551	4	ok ===> remainingQuestions= 17	2010-10-20 16:30:28
551	4	ok ===> remainingQuestions=	2010-10-20 16:35:29
551	4	ok ===> remainingQuestions=	2010-10-20 16:38:14
551	11	ok ===> remainingQuestions= 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-20 16:38:46
551	11	I do not see the "Radio button" that the audio talks about. I clicked on the Measure Samples button and it opened a PDF of the me	2010-10-20 16:39:59
551	11	ok ===> remainingQuestions= 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-20 16:41:02
553	11	When I clicked on the website it knocked me out of the program. ===> remainingQuestions= 38 39 40 41 42 43 44 45 46 47 48 49	2010-10-20 16:43:55
553	11	ok ===> remainingQuestions= 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-20 16:44:51
553	11	ok ===> remainingQuestions= 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-20 16:46:20
553	11	ok ===> remainingQuestions= 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-20 16:46:51
553	11	Graphics are good. ===> remainingQuestions= 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-20 16:47:51
553	11	ok ===> remainingQuestions= 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-20 16:48:59
553	11	ok ===> remainingQuestions= 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-20 16:49:57
553	11	The audio cut out in the middle several times. May be due to my internet. ===> remainingQuestions= 45 46 47 48 49 50 51 52 53 5	2010-10-20 16:51:03
553	11	Audio cut out. May be because of internet. ===> remainingQuestions= 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-20 16:52:03
553	11	ok ===> remainingQuestions= 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-20 16:52:31
553	11	ok ===> remainingQuestions= 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-20 16:53:00
553	11	ok ===> remainingQuestions= 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-20 16:53:32
553	11	Audio cut out. I pressed play and it started over and stopped at the same spot again. ===> remainingQuestions= 50 51 52 53 54 55	2010-10-20 16:54:50
553	11	ok ===> remainingQuestions= 51 52 53 54 55 56 57 58 59 60 61	2010-10-20 16:55:07
553	11	ok ===> remainingQuestions= 51 52 53 54 55 56 57 58 59 60 61	2010-10-20 16:55:25
553	11	ok ===> remainingQuestions= 52 53 54 55 56 57 58 59 60 61	2010-10-20 16:56:32
553	11	ok ===> remainingQuestions= 53 54 55 56 57 58 59 60 61	2010-10-20 16:57:45
553	11	ok ===> remainingQuestions= 54 55 56 57 58 59 60 61	2010-10-20 16:58:46
553	11	Audio wouldn't buffer very far so it would not play. ===> remainingQuestions= 55 56 57 58 59 60 61	2010-10-20 17:00:25
553	11	ok ===> remainingQuestions= 56 57 58 59 60 61	2010-10-20 17:01:08
553	11	ok ===> remainingQuestions= 57 58 59 60 61	2010-10-20 17:01:26
553	11	ok ===> remainingQuestions= 58 59 60 61	2010-10-20 17:01:49
553	11	ok ===> remainingQuestions= 59 60 61	2010-10-20 17:02:02
553	11	ok ===> remainingQuestions= 60 61	2010-10-20 17:02:18
553	11	ok ===> remainingQuestions= 61	2010-10-20 17:02:45
553	11	ok ===> remainingQuestions=	2010-10-20 17:03:03
572	1	ok ===> remainingQuestions=	2010-10-24 12:58:49
572	1	ok ===> remainingQuestions=	2010-10-24 12:58:50
572	7	ok ===> remainingQuestions=	2010-10-24 12:59:44
573	6	ok ===> remainingQuestions=	2010-10-24 13:02:03
573	2	ok ===> remainingQuestions= 21 22 23 24	2010-10-24 13:02:39
573	2	the audio says that there is a "more about" link under each person's picture, but there are no pictures and no links that say "more	2010-10-24 13:07:10
573	2	I had to hit the "refresh" button before the audio would work. ===> remainingQuestions= 23 24	2010-10-24 13:10:39
573	2	ok ===> remainingQuestions= 24	2010-10-24 13:12:12
573	4	had to hit the refresh button to get the audio to work ===> remainingQuestions= 4 5 6 7 8 9 10 11 12 13 14 15 16 18 19 17	2010-10-24 13:15:53
573	4	had to hit the refresh button to get the audio to work ===> remainingQuestions= 5 6 7 8 9 10 11 12 13 14 15 16 18 19 17	2010-10-24 13:16:55
573	4	i had to hit the refresh button before the audio would work. also when I push the glossary, resources, and contact us buttons a pa	2010-10-24 13:22:43
573	4	ok ===> remainingQuestions= 7 8 9 10 11 12 13 14 15 16 18 19 17	2010-10-24 13:26:07
573	4	ok. but there are still the same problems that I mentioned earlier with the buttons. I want you to know thought that the "text" but	2010-10-24 13:29:07
573	4	ok ===> remainingQuestions= 9 10 11 12 13 14 15 16 18 19 17	2010-10-24 13:31:01
573	4	ok ===> remainingQuestions= 10 11 12 13 14 15 16 18 19 17	2010-10-24 13:32:42
573	4	ok ===> remainingQuestions= 11 12 13 14 15 16 18 19 17	2010-10-24 13:35:04
573	4	ok ===> remainingQuestions= 12 13 14 15 16 18 19 17	2010-10-24 13:37:31
573	4	i had to hit the refresh button to get the audio to work ===> remainingQuestions= 13 14 15 16 18 19 17	2010-10-24 13:38:17
573	4	had to hit the refresh button to get the audio to work ===> remainingQuestions= 14 15 16 18 19 17	2010-10-24 13:39:26
573	4	had to hit the refresh button to get the audio to work ===> remainingQuestions= 15 16 18 19 17	2010-10-24 13:40:25
573	4	had to hit the refresh button to get the audio to work ===> remainingQuestions= 16 18 19 17	2010-10-24 13:41:29
573	4	had to hit the refresh button to get the audio to work ===> remainingQuestions= 18 19 17	2010-10-24 13:42:19
573	4	had to hit the refresh button to get the audio to work ===> remainingQuestions= 19 17	2010-10-24 13:45:20
573	4	i had to hit the refresh button to get the audio to work ===> remainingQuestions= 17	2010-10-24 13:47:01
573	11	had to hit refresh to get the audio to work ===> remainingQuestions= 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54	2010-10-24 15:26:26
573	11	had to hit refresh button to get the audio to work. i would also change the word "radio button" to "link" it is a much more commo	2010-10-24 15:28:12
573	11	I had to hit the refresh button to get the audio to work. ===> remainingQuestions= 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 5	2010-10-24 15:30:01
573	11	I had to hit the refresh button to get the audio to work. ===> remainingQuestions= 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 5	2010-10-24 15:30:52
573	11	I had to hit the refresh button to get the audio to work. ===> remainingQuestions= 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 5	2010-10-24 15:32:23
573	11	I had to hit the refresh button to get the audio to work. ===> remainingQuestions= 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 5	2010-10-24 15:34:20
573	11	I had to hit the refresh button to get the audio to work. ===> remainingQuestions= 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 5	2010-10-24 15:35:12
573	11	ok ===> remainingQuestions= 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-24 15:36:10
573	11	ok ===> remainingQuestions= 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-24 15:36:43
573	11	ok ===> remainingQuestions= 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-24 15:38:10
573	11	I had to hit the refresh button to get the audio to work. ===> remainingQuestions= 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 6	2010-10-24 15:39:08
573	11	I had to hit the refresh button to get the audio to work. ===> remainingQuestions= 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 6	2010-10-24 15:40:43
573	11	ok ===> remainingQuestions= 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-24 15:41:01
573	11	ok ===> remainingQuestions= 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-24 15:41:18
573	11	ok ===> remainingQuestions= 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-24 15:41:59
573	11	I had to hit the refresh button to get the audio to work. ===> remainingQuestions= 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-24 15:42:57
573	11	I had to hit the refresh button to get the audio to work. ===> remainingQuestions= 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-24 15:43:50
573	11	I had to hit the refresh button to get the audio to work. ===> remainingQuestions= 51 52 53 54 55 56 57 58 59 60 61	2010-10-24 15:45:39

573	11	ok ===> remainingQuestions= 52 53 54 55 56 57 58 59 60 61	2010-10-24 15:46:36
573	11	I had to hit the refresh button to get the audio to work. ===> remainingQuestions= 53 54 55 56 57 58 59 60 61	2010-10-24 15:47:09
573	11	I had to hit the refresh button to get the audio to work. ===> remainingQuestions= 54 55 56 57 58 59 60 61	2010-10-24 15:48:59
573	11	ok ===> remainingQuestions= 55 56 57 58 59 60 61	2010-10-24 15:50:03
573	11	I had to hit the refresh button to get the audio to work. ===> remainingQuestions= 56 57 58 59 60 61	2010-10-24 15:51:21
573	11	I had to hit the refresh button to get the audio to work. ===> remainingQuestions= 57 58 59 60 61	2010-10-24 15:55:12
573	11	I had to hit the refresh button to get the audio to work. ===> remainingQuestions= 58 59 60 61	2010-10-24 15:55:32
573	11	ok ===> remainingQuestions= 59 60 61	2010-10-24 15:55:58
573	11	I had to hit the refresh button to get the audio to work. ===> remainingQuestions= 60 61	2010-10-24 15:56:19
573	11	I had to hit the refresh button to get the audio to work. ===> remainingQuestions= 61	2010-10-24 15:59:36
577	4	The speaker sounds like she is talking in a tunnel, but it is still understandable. Graphics are workable but could be more attractive	2010-10-26 10:52:30
577	4	On each page with an audio bar, you can't see the whole thing. It's not a huge deal, but it is a little annoying. ===> remainingQuest	2010-10-26 10:53:36
577	4	Good content. Weak graphics, animations-could easily lose the teacher's attention. ===> remainingQuestions= 6 7 8 9 10 11 12 13	2010-10-26 10:55:00
577	4	Nothing happened on this page-no sound, pictures, animation, or audio bar. ===> remainingQuestions= 7 8 9 10 11 12 13 14 15 16	2010-10-26 10:56:28
577	4	Good explanations-needs something to keep the listener's attention. Maybe highlight or enlarge the symbols as they are being dis	2010-10-26 10:59:10
577	4	Nothing happened on this page-no pictures, graphs, or audio. ===> remainingQuestions= 9 10 11 12 13 14 15 16 18 19 17	2010-10-26 10:59:44
577	4	The audio said there was supposed to be a sample graph to look at. There was nothing to see-only an audio bar. ===> remainingQ	2010-10-26 11:00:28
577	4	Nothing happened on this page--no audio, pictures, etc. ===> remainingQuestions= 11 12 13 14 15 16 18 19 17	2010-10-26 11:01:45
577	4	ok ===> remainingQuestions= 13 14 15 16 18 19 17	2010-10-26 11:02:45
577	4	It would be nice to show the text for "Your answer" and the "correct answer on the same page. ===> remainingQuestions= 13 14 1	2010-10-26 11:03:30
577	4	ok ===> remainingQuestions= 15 16 18 19 17	2010-10-26 11:05:02
577	4	ok ===> remainingQuestions= 16 18 19 17	2010-10-26 11:05:49
577	4	ok ===> remainingQuestions= 18 19 17	2010-10-26 11:06:21
577	4	ok ===> remainingQuestions= 17	2010-10-26 11:07:19
577	4	ok ===> remainingQuestions= 17	2010-10-26 11:07:39
577	4	ok ===> remainingQuestions= 17	2010-10-26 11:08:01
577	4	Could be better if the speaker said "you have reached the end of the foundations module. what would you like to do next?" ===> r	2010-10-26 11:08:56
577	11	graphics are workable, but not very attractive. ===> remainingQuestions= 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 5	2010-10-26 11:09:44
577	11	Audio says to click on the "radio button." I don't see a radio button anywhere. ===> remainingQuestions= 36 37 38 39 40 41 42 43	2010-10-26 11:10:32
577	11	ok--could use more moving graphics. ===> remainingQuestions= 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 5	2010-10-26 11:11:45
577	11	good information-not very attractive to look at. I could see myself losing attention ===> remainingQuestions= 38 39 40 41 42 43 4	2010-10-26 11:13:06
577	11	ok ===> remainingQuestions= 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-26 11:13:43
577	11	Could use more animation. ===> remainingQuestions= 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-26 11:15:33
577	11	could use more attractive graphics to display "the winners" ===> remainingQuestions= 41 42 43 44 45 46 47 48 49 50 51 52 53 54	2010-10-26 11:16:29
577	11	Nothing on page-no audio, pics, etc. ===> remainingQuestions= 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-26 11:16:55
577	11	nothing on page. ===> remainingQuestions= 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-26 11:17:10
577	11	nothing on page ===> remainingQuestions= 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-26 11:17:25
577	11	good graphic ===> remainingQuestions= 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-26 11:18:07
577	11	ok ===> remainingQuestions= 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-26 11:20:12
577	11	ok ===> remainingQuestions= 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-26 11:20:27
577	11	ok ===> remainingQuestions= 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-26 11:20:46
577	11	ok ===> remainingQuestions= 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-26 11:21:36
577	11	This information isn't too confusing, but do practitioners in the field want/need to know this information? ===> remainingQuestio	2010-10-26 11:23:26
577	11	ok ===> remainingQuestions= 51 52 53 54 55 56 57 58 59 60 61	2010-10-26 11:24:02
577	11	ok ===> remainingQuestions= 52 53 54 55 56 57 58 59 60 61	2010-10-26 11:25:16
577	11	ok ===> remainingQuestions= 53 54 55 56 57 58 59 60 61	2010-10-26 11:26:54
577	11	ok ===> remainingQuestions= 54 55 56 57 58 59 60 61	2010-10-26 11:27:34
577	11	All technical adequacy pages are ok, but I think they could be explained more concisely. I think a teacher would get bogged down i	2010-10-26 11:29:10
577	11	ok ===> remainingQuestions= 55 56 57 58 59 60 61	2010-10-26 11:30:40
577	11	ok ===> remainingQuestions= 56 57 58 59 60 61	2010-10-26 11:31:11
577	11	ok ===> remainingQuestions= 57 58 59 60 61	2010-10-26 11:31:43
577	11	ok ===> remainingQuestions= 59 60 61	2010-10-26 11:32:15
577	11	ok ===> remainingQuestions= 59 60 61	2010-10-26 11:32:28
577	11	ok ===> remainingQuestions= 60 61	2010-10-26 11:33:02
577	11	ok ===> remainingQuestions= 61	2010-10-26 11:33:38
577	11	It would be nice to have a progress bar on each page that lets you know where you are in that individual module. I like the graphic	2010-10-26 11:34:48
578	2	It is hard to know when this slide is over and to move on to the next one. ===> remainingQuestions= 22 23 24	2010-10-29 12:16:35
578	2	I don't think there is a link at the bottom to see the students' names like it says in the message. ===> remainingQuestions= 22 23 2	2010-10-29 12:17:30
578	2	I didn't really like this slide because it was hard to follow the conversation without any visual aid. I would have liked to see some te	2010-10-29 12:18:30
578	2	no comment ===> remainingQuestions= 24	2010-10-29 12:19:09
578	4	good information ===> remainingQuestions= 4 5 6 7 8 9 10 11 12 13 14 15 16 18 19 17	2010-10-29 12:20:10
578	4	This information could maybe have been incorporated with the previous slide to save time. ===> remainingQuestions= 5 6 7 8 9 1	2010-10-29 12:21:01
578	4	The description of types of assessment probably isn't necessary if this is being used by teachers already in the field. The explanatio	2010-10-29 12:22:16
578	4	Took a long time to load and stopped in the middle. I didn't get to see the whole thing the first time and it keeps stopping in the m	2010-10-29 12:23:14
578	4	This slide was informative and I really liked the visuals. ===> remainingQuestions= 8 9 10 11 12 13 14 15 16 18 19 17	2010-10-29 12:24:00
578	4	The audio on this slide is not very clear. ===> remainingQuestions= 9 10 11 12 13 14 15 16 18 19 17	2010-10-29 12:24:30
578	4	There are two audio tracks playing at the same time. ===> remainingQuestions= 10 11 12 13 14 15 16 18 19 17	2010-10-29 12:25:02
578	4	no comment ===> remainingQuestions= 11 12 13 14 15 16 18 19 17	2010-10-29 12:26:35
578	4	no comment ===> remainingQuestions= 12 13 14 15 16 18 19 17	2010-10-29 12:27:09
578	4	I enjoy that you can check your answer. ===> remainingQuestions= 13 14 15 16 18 19 17	2010-10-29 12:27:30
578	4	no comment ===> remainingQuestions= 14 15 16 18 19 17	2010-10-29 12:27:48
578	4	I enjoy that you can check your answer. ===> remainingQuestions= 15 16 18 19 17	2010-10-29 12:28:11
578	4	no comment ===> remainingQuestions= 16 18 19 17	2010-10-29 12:28:33
578	4	I enjoy that you can check your answer. ===> remainingQuestions= 18 19 17	2010-10-29 12:28:53
578	4	no comment ===> remainingQuestions= 19 17	2010-10-29 12:29:10
578	4	I enjoy that you can check your answer. ===> remainingQuestions= 17	2010-10-29 12:29:31
578	11	This is a good brief introduction. ===> remainingQuestions= 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57	2010-10-29 12:42:40
578	11	This objective could be incorporated with the previous slide. ===> remainingQuestions= 36 37 38 39 40 41 42 43 44 45 46 47 48 4	2010-10-29 12:43:22
578	11	Good information, but maybe change the graphic throughout and have more text so that we can follow along. ===> remainingQue	2010-10-29 12:45:25
578	11	If you click on the link, there is no direct way to get back to the training and once you do get back the audio track plays again. ===>	2010-10-29 12:47:10
578	11	no comment ===> remainingQuestions= 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-29 12:48:03
578	11	Really enjoy the bullet pointed items on this slide. ===> remainingQuestions= 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56	2010-10-29 12:49:41
578	11	no comment ===> remainingQuestions= 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-29 12:50:23
578	11	I can't see the audio bar so it was hard to tell when the audio was finished. ===> remainingQuestions= 42 43 44 45 46 47 48 49 50	2010-10-29 12:51:44
578	11	Still can't see the audio bar and it took a very long time to load. ===> remainingQuestions= 43 44 45 46 47 48 49 50 51 52 53 54 55	2010-10-29 12:52:47
578	11	Took a long time to load, can't see the audio track and I wish that we could see the problems on the screen and on our paper. THis	2010-10-29 12:53:51
578	11	No graphic is shown. ===> remainingQuestions= 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-29 12:54:28
578	11	Maybe have the specific criteria in the section with each different test. ===> remainingQuestions= 46 47 48 49 50 51 52 53 54 55 5	2010-10-29 12:56:04
578	11	no comment ===> remainingQuestions= 48 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-29 12:56:42
578	11	Wish that all of the criteria infomation was in one large chart so I could see it all at the same time. ===> remainingQuestions= 48 4	2010-10-29 12:57:29
578	11	no comment ===> remainingQuestions= 49 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-29 12:58:30
578	11	I like the graph visuals. They make the text easy to follow. ===> remainingQuestions= 50 51 52 53 54 55 56 57 58 59 60 61	2010-10-29 13:03:37
578	11	no comment ===> remainingQuestions= 51 52 53 54 55 56 57 58 59 60 61	2010-10-29 13:04:48
578	11	no comment ===> remainingQuestions= 52 53 54 55 56 57 58 59 60 61	2010-10-29 13:07:34
578	11	There was a lot of talking and it was kind of hard for me to follow. ===> remainingQuestions= 53 54 55 56 57 58 59 60 61	2010-10-29 13:09:29
578	11	no comment ===> remainingQuestions= 54 55 56 57 58 59 60 61	2010-10-29 13:10:31
578	11	The visuals aren't big enough. I can't see them. ===> remainingQuestions= 55 56 57 58 59 60 61	2010-10-29 13:11:04
578	11	The previous slide never loaded so I wasn't even able to comment on it. ===> remainingQuestions= 57 58 59 60 61	2010-10-29 13:18:03
578	11	no comment ===> remainingQuestions= 58 59 60 61	2010-10-29 13:18:57
578	11	no comment ===> remainingQuestions= 59 60 61	2010-10-29 13:20:56
578	11	no comment ===> remainingQuestions= 60 61	2010-10-29 13:21:19
578	11	I like how they show you what you wrote so you can compare it. ===> remainingQuestions= 61	2010-10-29 13:23:11

Professional Development in Algebra Progress Monitoring
In-House Student Pilot Data
Module Feedback Form – Welcome

General Feedback Section

Respondent	Computer/ Browser	Total Time	What is your general impression of this module?
CL_ISU_Math	PC, Firefox	8 mins.	I like the first segment of this module. I thought it was peculiar that it said it wanted me to meet the people that worked on the development of the modules. Usually there is a line at the bottom of the page that could provide that information to people who wanted it. I wasn't particularly interested in the resumes of the creators. The audio for the high school teachers' conversation sounded very scripted. Also, on the page with the contributing universities you have to scroll down to go forward-BAD! Make it fit on one page.
AB_ISU_Math	PC, Internet Explorer	8 mins.	Once it loaded it was good introducing what the project is about. Some slow load times on Internet Explorer.
LD_ISU_SpEd	Mac, Safari	12 mins.	I thought that this module was a good way to introduce the project.
MJ_ISU_Math	PC, Firefox	8 mins.	I think that it is supposed to be a general overview of the project.
AR_CLM_	Mac, Safari	15 mins.	I thought this model was very helpful. It is a good way to show the viewer what to expect and how to use the tools.
KG_CLM	Mac, Firefox	9 mins.	I thought that this model was very helpful and did a great job explaining what the purpose of the program was. The introduction gave appropriate information about what teachers would be learning while completing this program.
JR_CLM	PC, Firefox	6 mins.	It gave me good information and was easy to navigate. It was a little unclear when to stop the first module. The graphics/animations were workable but not particularly aesthetically pleasing.
JC_CLM	PC, Internet Explorer	21 mins.	It is generally informative.

Respondent	Computer/ Browser	Total Time	Which segments of the module were particularly helpful in enhancing your understanding of the content in this module? Why?
CL_ISU_Math	PC, Firefox	8 mins.	I really liked the diagramming that was shown to explain the progression of the modules. This visual helped me organize my thoughts about the whole experience very well.
AB_ISU_Math	PC, Internet Explorer	8 mins.	The overview graphic is very effective in showing the different levels.
LD_ISU_SpEd	Mac, Safari	12 mins.	The staff meeting was helpful because it discussed real questions that teachers have and it told me why these modules are being created. I also liked the graphic that described the different modules that would be included because it gave me an insight to what I should expect.
MJ_ISU_Math	PC, Firefox	8 mins.	The diagram was helpful. I am a visual learner so a little more explanation on the screen would be nice though.
AR_CLM	Mac, Safari	15 mins.	I really liked all of the tools at the bottom (text, glossary, resources, etc.). I feel like this will be very helpful to viewers. It was easier for me to follow along with the text provided. Also, it will be helpful for teachers to be able to contact you with questions.
KG_CLM	Mac, Firefox	9 mins.	I thought the segment where there was a audio clip of what teachers in the school might say about progress monitoring was helpful. It was something that those in the profession could relate to. I also though that the segment when the framework of the program we presented was very helpful because it allowed users to understand what was going to be what.
JR_CLM	PC, Firefox	6 mins.	The discussion with the teachers in a math department at a high school was the most helpful for me in answering many common questions I would have as a teacher.
JC_CLM	PC, Internet Explorer	21 mins.	Looks though the measurement tool was helpful in understanding when the project was going with assessing student progress.

Respondent	Computer/ Browser	Total Time	Were there segments of the module that hindered your understanding of the content in this module? If so, what suggestions do you have for improvement?
CL_ISU_Math	PC, Firefox	8 mins.	The high school teachers' conversation audio was very long and was hard to stay engaged in, especially because it didn't sound like a real, genuine conversation, but rather it sounded like it was scripted.
AB_ISU_Math	PC, Internet Explorer	8 mins.	There is no "more about" button on the meeting the team stage on the talking page with the picture of the students I would have text slides fling through he picture doesn't add value to the information being discussed.
LD_ISU_SpEd	Mac, Safari	12 mins.	None of this first module hindered my understanding.
MJ_ISU_Math	PC, Firefox	8 mins.	The conversation between "teachers" confused me somewhat because I was not sure at first how it related. I think maybe just a written list of objectives on the screen would be good.
AR_CLM	Mac, Safari	15 mins.	I had some trouble opening the program on Safari. I clicked the arrow and it took me straight to the end of the program and wouldn't let me go forward or back. I opened it on a different computer and it was fine. Also, in the text boxes there are question marks instead of apostrophes.
KG_CLM	Mac, Firefox	9 mins.	No.
JR_CLM	PC, Firefox	6 mins.	None that hindered my understanding. The last segment could have been clearer that it was the end of the module. If the speaker said "You have reached the end of the first module; you may stop now or continue", would have been helpful.
JC_CLM	PC, Internet Explorer	21 mins.	I wouldn't say the module was hindered by section, but I found the explanation of correlation coefficients interesting, as teachers are likely very aware of this topic and the labeling of the graphs was peculiar to me.

Respondent	Computer/ Browser	Total Time	Was the time needed to complete the module reasonable? Why or why not?
CL_ISU_Math	PC, Firefox	8 mins.	I think it was reasonable. The time it took the audio clips to load slowed my progress down. If I were doing the module on my own, I would mute the audio that repeats the words on the screen and read them myself.
AB_ISU_Math	PC, Internet Explorer	8 mins.	Yes, it was reasonable it took a little longer since I was writing notes.
LD_ISU_SpEd	Mac, Safari	12 mins.	Yes, it did not take very long and it provided me with a lot of information.
MJ_ISU_Math	PC, Firefox	8 mins.	Yes, it was a short and sweet introduction. It probably could even have been shorter. I just want to start learning.
AR_CLM	Mac, Safari	15 mins.	Yes, it took me a little longer because of the problems, but I feel that I would have been able to complete it otherwise.
KG_CLM	Mac, Firefox	9 mins.	Yes, I feel like I had enough time to complete this module because it was fairly short and presented good information.
JR_CLM	PC, Firefox	6 mins.	I thought it was very reasonable for an introductory module. It gave a lot of information and took just over 5 minutes.
JC_CLM	PC, Internet Explorer	21 mins.	Yes, I didn't feel it went too long and the amount of information covered in the time allowed is adaqueate.

Ratings and Comments Section

Respondent	Computer/ Browser	Total Time	Rating	Rating Item and Comments
				Your overall level of satisfaction with this module
CL_ISU_Math	PC, Firefox	8 mins.	3	
AB_ISU_Math	PC, Internet Explorer	8 mins.	3	Very plain, but achieves the goal of introducing the program.
LD_ISU_SpEd	Mac, Safari	12 mins.	4	Very good
MJ_ISU_Math	PC, Firefox	8 mins.	4	
AR_CLM	Mac, Safari	15 mins.	4	
KG_CLM	Mac, Firefox	9 mins.	5	
JR_CLM	PC, Firefox	6 mins.	4	

JC_CLM	PC, Internet Explorer	21 mins.	4	
				The organization of the module
CL_ISU_Math	PC, Firefox	8 mins.	4	
AB_ISU_Math	PC, Internet Explorere	8 mins.	2	I wish there was more than just a next arrow because there is nowhere to go back a slide except for back arrow on web browser.
LD_ISU_SpEd	Mac, Safari	12 mins.	5	Very clear
MJ_ISU_Math	PC, Firefox	8 mins.	5	Good order
AR_CLM	Mac, Safari	15 mins.	4	
KG_CLM	Mac, Firefox	9 mins.	5	
JR_CLM	PC, Firefox	6 mins.	5	
JC_CLM	PC, Internet Explorer	21 mins.	4	
				The difficulty of the content presented in the module
CL_ISU_Math	PC, Firefox	8 mins.	n/a	
AB_ISU_Math	PC, Internet Explorer	15 mins.	5	It was not difficult, just a welcome.
LD_ISU_SpEd	Mac, Safari	12 mins.	5	I understood everything
MJ_ISU_Math	PC, Firefox	8 mins.	5	Didn't seem difficult
AR_CLM	Mac, Safari	15 mins.	4	
KG_CLM	Mac, Firefox	9 mins.	3	
JR_CLM	PC, Firefox	6 mins.	5	
JC_CLM	PC, Internet Explorer	21 mins.	4	
				The clarity of the content in the module:
CL_ISU_Math	PC, Firefox	8 mins.	4	
AB_ISU_Math	PC, Internet Explorer	15 mins.	4	Fairly clear – more definitions to define key terms.

LD_ISU_SpEd	Mac, Safari	12 mins.	5	Also very clear purpose
MJ_ISU_Math	PC, Firefox	8 mins.	4	I didn't know what they would talk about at first, but eventually understood the goal of the welcome.
AR_CLM	Mac, Safari	15 mins.	5	
KG_CLM	Mac, Firefox	9 mins.	5	
JR_CLM	PC, Firefox	6 mins.	4	Information was clear – not so clear when the module ends.
JC_CLM	PC, Internet Explorer	21 mins.	4	
				The quality of the graphics used in the module (clarity, contributes to understanding):
CL_ISU_Math	PC, Firefox	8 mins.	5	
AB_ISU_Math	PC, Internet Explorer	8 mins.	3	The overview graphic was effective; the picture of the team didn't add anything.
LD_ISU_SpEd	Mac, Safari	12 mins.	4	Pretty good the emblem in the upper left corner could be a littler clearer.
MJ_ISU_Math	PC, Firefox	8 mins.	4	
AR_CLM	Mac, Safari	15 mins.	4	
KG_CLM	Mac, Firefox	9 mins.	5	
JR_CLM	PC, Firefox	6 mins.	5	
JC_CLM	PC, Internet Explorer	21 mins.	3	
				The quality of the animation used in the module(clarity, audibility contributes to understanding):
CL_ISU_Math	PC, Firefox	8 mins.	n/a	
AB_ISU_Math	PC, Internet Explorer	8 mins.	5	Highlighting the overview with the topic being covered was very effective.
LD_ISU_SpEd	Mac, Safari	12 mins.	5	Very good
MJ_ISU_Math	PC, Firefox	8 mins.	5	
AR_CLM	Mac, Safari	15 mins.	4	

KG_CLM	Mac, Firefox	9 mins.	5	
JR_CLM	PC, Firefox	6 mins.	5	
JC_CLM	PC, Internet Explorer	21 mins.	3	
				The quality of the audio narration used in the module (clarity, audibility contributes to understanding):
CL_ISU_Math	PC, Firefox	8 mins.	4	
AB_ISU_Math	PC, Internet Explorer	8 mins.	4	Good, but slow loading.
LD_ISU_SpEd	Mac, Safari	12 mins.	5	Very clear
MJ_ISU_Math	PC, Firefox	8 mins.	5	Very clear. Liked hearing different voices.
AR_CLM	Mac, Safari	15 mins.	5	
KG_CLM	Mac, Firefox	9 mins.	5	
JR_CLM	PC, Firefox	6 mins.	5	The audio was clear and understandable, but maybe adjust the volume levels so all speakers sound the same – just a preference
JC_CLM	PC, Internet Explorer	21 mins.	3	
				Your level of engagement while working on this module:
CL_ISU_Math	PC, Firefox	8 mins.	3	
AB_ISU_Math	PC, Internet Explorer	8 mins.	4	Fairly engaged, btu only because I am taking notes on it.
LD_ISU_SpEd	Mac, Safari	12 mins.	4	Not hard to pay attention
MJ_ISU_Math	PC, Firefox	8 mins.	4	
AR_CLM	Mac, Safari	15 mins.	3	
KG_CLM	Mac, Firefox	9 mins.	5	
JR_CLM	PC, Firefox	6 mins.	4	Engagement was good because each screen was short, but it could probably be improved with more moving parts.
JC_CLM	PC, Internet Explorer	21 mins.	3	

				Your level of understanding of the content:
CL_ISU_Math	PC, Firefox	8 mins.	5	
AB_ISU_Math	PC, Internet Explorer	8 mins.	5	I understood the goal.
LD_ISU_SpEd	Mac, Safari	12 mins.	4	I understood.
MJ_ISU_Math	PC, Firefox	8 mins.	4	
AR_CLM	Mac, Safari	15 mins.	4	
KG_CLM	Mac, Firefox	9 mins.	5	
JR_CLM	PC, Firefox	6 mins.	5	
JC_CLM	PC, Internet Explorer	21 mins.	3	
				The ease with which you could navigate through the system:
CL_ISU_Math	PC, Firefox	8 mins.	5	
AB_ISU_Math	PC, Internet Explorer	8 mins.	2	Can't go back or tell how far along you are.
LD_ISU_SpEd	Mac, Safari	12 mins.	3	Difficult getting started but then it was fine.
MJ_ISU_Math	PC, Firefox	8 mins.	5	
AR_CLM	Mac, Safari	15 mins.	4	
KG_CLM	Mac, Firefox	9 mins.	5	
JR_CLM	PC, Firefox	6 mins.	5	
JC_CLM	PC, Internet Explorer	21 mins.	4	
				Will this information be of benefit to teachers? Please elaborate.
CL_ISU_Math	PC, Firefox	8 mins.		It's a fine welcome – I would cut out the page on the creators.
AB_ISU_Math	PC, Internet Explorer	8 mins.		Yes, it describes what the project is about and its main goals.
LD_ISU_SpEd	Mac, Safari	12 mins.		Yes, teachers will understand how these modules can be helpful to them as educators.

MJ_ISU_Math	PC, Firefox	8 mins.		Yes, it tells them what they will learn.
AR_CLM	Mac, Safari	15 mins.		Yes, it will be of benefit to teachers the module provides information about the creators and papers they have written. This could be a good resource for teachers.
KG_CLM	Mac, Firefox	9 mins.		Yes, because it helps teachers better understand progress monitoring
JR_CLM	PC, Firefox	6 mins.		I think it will be – the question/answer time clears up common questions and dispels common objections.
JC_CLM	PC, Internet Explorer	21 mins.		Yes, this information could be helpful for teachers who would like to monitor this way. The measurement tool seems very long for the allocated time, and I would have a problem using this instrument in my class.
				What are the most important revisions we should make to this module before it is used by teachers?
CL_ISU_Math	PC, Firefox	8 mins.		Make sure it makes them feel like these modules are worth their time. Speed it up.
AB_ISU_Math	PC, Internet Explorer	8 mins.		Easier to navigate and text slides when you are discussing the goals, so it is easier to take notes for teachers.
LD_ISU_SpEd	Mac, Safari	12 mins.		Make sure that it runs smoothly.
MJ_ISU_Math	PC, Firefox	8 mins.		Cut out the “conversation” and make it more direct.
AR_CLM	Mac, Safari	15 mins.		Making sure it will work correctly on all computers and computer programs.
KG_CLM	Mac, Firefox	9 mins.		I think the module is fine like it is. I thought it was very straightforward and easy to follow.
JR_CLM	PC, Firefox	6 mins.		The last screen- tell them they are finished very clearly.
JC_CLM	PC, Internet Explorer	21 mins.		Fix some technical issues such as images not coming up in the segment.

Module Feedback Form – Foundations

General Feedback Section

Respondent	Computer/ Browser	Total Time	What is your general impression of this module?
CL_ISU_Math	PC, Firefox	24 mins.	Too much wait time at end of audio on each page. This module is a good introduction to Progress Monitoring.
AB_ISU_Math	PC, Internet Explorer	15 mins.	I liked it, I think providing technical definitions in writing for each topic would be effective in teaching the teachers.
LD_ISU_SpEd	Mac, Safari	29 mins.	I thought it was helpful and long.
MJ_ISU_Math	PC, Firefox	18 mins.	Very informative about what this is. It had a quiz at the end that I wasn't expecting so now I will pay better attention.
AR_CLM_	Mac, Safari	18 mins.	I thought this module was really helpful in understanding CBM. It provided information about the creators and important aspects of CBM. I really liked all the graphics provided.
KG_CLM	Mac, Firefox	27 mins.	I thought that this module was very well organized and easy to follow. All of the information was presented in a very straight format.
JR_CLM	PC, Firefox	20 mins.	Overall, it is good. There are some sound issues and mistakes that can be corrected. Some features could also be added to enhance it. See notes on back.
JC_CLM	PC, Internet Explorer	7 mins.	I was a little unsure about the goals or objectives of the program though the last section was helpful.

Respondent	Computer/ Browser	Total Time	Which segments of the module were particularly helpful in enhancing your understanding of the content in this module? Why?
CL_ISU_Math	PC, Firefox	24 mins.	It is great having the graphs and having them light up in conjunction with what the narrator I talking about. The text box at the bottom of the page was very helpful for me to stay engaged with the longer audio clips without animations to accompany them.
AB_ISU_Math	PC, Internet Explorer	15 mins.	The graph graphic was very helpful and really explained well with the highlighting of each aspect. The puzzle graphic was effective.
LD_ISU_SpEd	Mac, Safari	29 mins.	I found it helpful when the standards and how the assessments were selected were explained because it helped me understand the process and where you are coming from.
MJ_ISU_Math	PC, Firefox	18 mins.	Good to know that it ahs been studied. Like the visual pictures/symbols to represent the important concepts. The graphs were explained very well.
AR_CLM	Mac, Safari	18 mins.	It provided an objective and materials list. It lets teachers know what to expect. I really liked the questions at the end it is a good review. Also, I liked how it gave my answer and read the correct answer.
KG_CLM	Mac, Firefox	27 mins.	I thought that the Important Concepts segment was very helpful because it explained critical aspects of progress monitoring tools by providing
JR_CLM	PC, Firefox	20 mins.	The example graph showing the student's lack of progress, instructional change line, and improvement was a good explanation of how the whole process works.
JC_CLM	PC, Internet Explorer	7 mins.	The last section that directed the module was helpful because it allows the teachers to see where they are going.

Respondent	Computer/ Browser	Total Time	Were there segments of the module that hindered your understanding of the content in this module? If so, what suggestions do you have for improvement?
CL_ISU_Math	PC, Firefox	24 mins.	Class level assessment page audio never fully loaded until I reloaded the page. CBM page- needs to show audio progress strip to determine if the audio is done or didn't full load as it – it's ambiguous. Two audios in 2nd graph Maria's graph. Sample progress monitoring graph – when highlighting goal line – it appears that the lowest point (at 14) on the graph is also highlighted- this is confusing.
AB_ISU_Math	PC, Internet Explorer	15 mins.	I think PowerPoint slides with writing will help the person watching the module take notes and understand what they are listening to.
LD_ISU_SpEd	Mac, Safari	29 mins.	None I can think of.
MJ_ISU_Math	PC, Firefox	18 mins.	Kind of slow to load sound and picture, long wait time. Explains what assessment is probably isn't needed. CBM History Page → took a long time to load and stopped in the middle. The graph page audio played twice at the same time.
AR_CLM	Mac, Safari	18 mins.	It would be helpful if there were a way to open the text box within the same window as graphics. Maybe on the side on page 9 of this module there were two different voices reading same material. When I pressed pause one stopped. It made it difficult to understand. It also is helpful if there was a button to go back instead of just the browser back arrow.
KG_CLM	Mac, Firefox	27 mins.	On segment 9 (sample progress monitoring graph), the audio clips are very confusing because there are two voices reading the same passage at the same time. I was not able to understand what either was saying. Therefore making it hard to understand the content.
JR_CLM	PC, Firefox	20 mins.	None.
JC_CLM	PC, Internet Explorer	7 mins.	I think that so much information before introducing the objective on goals can be confusing.

Respondent	Computer/ Browser	Total Time	Was the time needed to complete the module reasonable? Why or why not?
CL_ISU_Math	PC, Firefox	24 mins.	The time it took for me to complete this module could have been less had the audio lengths been cut right at the end of the narration as well as if they animation page on CBM had loaded correctly.
AB_ISU_Math	PC, Internet Explorer	15 mins.	The time was reasonable, because there was a lot of information but it was presented efficiently.
LD_ISU_SpEd	Mac, Safari	29 mins.	Yes, because it covered a lot of material.
MJ_ISU_Math	PC, Firefox	18 mins.	Yes.
AR_CLM	Mac, Safari	18 mins.	Yes, it was reasonable. It did not take too long to go through the information.
KG_CLM	Mac, Firefox	27 mins.	I think the time I needed to complete this module was reasonable because I need that time to be sure I understand the content and complete all the audio clips.
JR_CLM	PC, Firefox	20 mins.	Yes, it presents a great deal of crucial information. Each module could potentially add up to a long training time, but I think the benefits of doing the training on your own will out weight the competition time.
JC_CLM	PC, Internet Explorer	7 mins.	Yes, the module was quick to go through.

Ratings and Comments Section

Respondent	Computer/ Browser	Total Time	Rating	Rating Item and Comments
				Your overall level of satisfaction with this module
CL_ISU_Math	PC, Firefox	24 mins.	4	
AB_ISU_Math	PC, Internet Explorer	15 mins.	4	I really liked the highlighting of the graphics.
LD_ISU_SpEd	Mac, Safari	29 mins.	4	I found it helpful but kind of boring.
MJ_ISU_Math	PC, Firefox	18 mins.	5	
AR_CLM	Mac, Safari	18 mins.	4	
KG_CLM	Mac, Firefox	27 mins.	4	
JR_CLM	PC, Firefox	20 mins.	4	
JC_CLM	PC, Internet Explorer	7 mins.	3	

				The organization of the module
CL_ISU_Math	PC, Firefox	24 mins.	5	
AB_ISU_Math	PC, Internet Explorere	15 mins.	5	Effective, made conceptual sense in the setup
LD_ISU_SpEd	Mac, Safari	29 mins.	5	Very good.
MJ_ISU_Math	PC, Firefox	18 mins.	5	
AR_CLM	Mac, Safari	18 mins.	4	
KG_CLM	Mac, Firefox	27 mins.	5	
JR_CLM	PC, Firefox	20 mins.	5	
JC_CLM	PC, Internet Explorer	7 mins.	2	
				The difficulty of the content presented in the module
CL_ISU_Math	PC, Firefox	24 mins.	4	
AB_ISU_Math	PC, Internet Explorer	15 mins.	4	Made sense to teachers who would already have some knowledge of subject.
LD_ISU_SpEd	Mac, Safari	29 mins.	3	Got confusing at times but when I concentrated it was fine.
MJ_ISU_Math	PC, Firefox	18 mins.	5	It wasn't any super new content.
AR_CLM	Mac, Safari	18 mins.	3	
KG_CLM	Mac, Firefox	27 mins.	4	
JR_CLM	PC, Firefox	20 mins.	5	
JC_CLM	PC, Internet Explorer	7 mins.	4	
				The clarity of the content in the module:
CL_ISU_Math	PC, Firefox	24 mins.	5	
AB_ISU_Math	PC, Internet Explorer	15 mins.	4	Fairly clear – more definitions to define key terms.
LD_ISU_SpEd	Mac, Safari	29 mins.	4	Clear when you pay very close attention.

MJ_ISU_Math	PC, Firefox	18 mins.	5	The graphs being highlighted were great.
AR_CLM	Mac, Safari	18 mins.	4	
KG_CLM	Mac, Firefox	27 mins.	4	
JR_CLM	PC, Firefox	20 mins.	5	
JC_CLM	PC, Internet Explorer	7 mins.	3	
				The quality of the graphics used in the module (clarity, contributes to understanding):
CL_ISU_Math	PC, Firefox	24 mins.	5	
AB_ISU_Math	PC, Internet Explorer	15 mins.	5	I didn't like the picture of the class, but everything else helped explain the material well.
LD_ISU_SpEd	Mac, Safari	29 mins.	4	Good.
MJ_ISU_Math	PC, Firefox	18 mins.	5	The graphs being highlighted were great.
AR_CLM	Mac, Safari	15 mins.	5	
KG_CLM	Mac, Firefox	27 mins.	5	
JR_CLM	PC, Firefox	20 mins.	5	I liked these graphics much better than the first module – especially the transitions between images. The movement kept my attention much better.
JC_CLM	PC, Internet Explorer	7 mins.	3	
				The quality of the animation used in the module (clarity, audibility contributes to understanding):
CL_ISU_Math	PC, Firefox	24 mins.	5	
AB_ISU_Math	PC, Internet Explorer	15 mins.	5	The graph animation was very effective.
LD_ISU_SpEd	Mac, Safari	29 mins.	5	Good.
MJ_ISU_Math	PC, Firefox	18 mins.	5	With the graphs good.
AR_CLM	Mac, Safari	18 mins.	5	
KG_CLM	Mac, Firefox	27 mins.	5	

JR_CLM	PC, Firefox	20 mins.	5	Animation was much better in this module – consider highlighting the symbols being discussed on the "Progress Monitoring: important Concepts" screen.
JC_CLM	PC, Internet Explorer	7 mins.	3	
				The quality of the audio narration used in the module (clarity, audibility contributes to understanding):
CL_ISU_Math	PC, Firefox	24 mins.	4	
AB_ISU_Math	PC, Internet Explorer	15 mins.	5	Easy to hear and understand, loaded efficiently
LD_ISU_SpEd	Mac, Safari	29 mins.	2	I couldn't get audio to work unless I hit refresh and sometimes I hat to hit it twice and when I hit replay it would go to the "Thank you" screen.
MJ_ISU_Math	PC, Firefox	18 mins.	5	
AR_CLM	Mac, Safari	18 mins.	4	
KG_CLM	Mac, Firefox	27 mins.	3	One of the audio clips did not work properly.
JR_CLM	PC, Firefox	20 mins.	4	Clear and understandable – feed back on first screen; Concepts Important.
JC_CLM	PC, Internet Explorer	7 mins.	3	
				Your level of engagement while working on this module:
CL_ISU_Math	PC, Firefox	24 mins.	4	
AB_ISU_Math	PC, Internet Explorer	15 mins.	4	When things were happening on the flash videos, I was much more engaged.
LD_ISU_SpEd	Mac, Safari	29 mins.	4	You have to be engaged or you won't know what is going on. ☺
MJ_ISU_Math	PC, Firefox	18 mins.	3	I got bored during progress monitoring.
AR_CLM	Mac, Safari	18 mins.	4	
KG_CLM	Mac, Firefox	27 mins.	4	The length of the audio clips caused me to lose my focus a little.
JR_CLM	PC, Firefox	20 mins.	5	Higher than the first module - moving images make it much better. The slide transitions between images are appropriate.

JC_CLM	PC, Internet Explorer	7 mins.	2	
				Your level of understanding of the content:
CL_ISU_Math	PC, Firefox	24 mins.	5	
AB_ISU_Math	PC, Internet Explorer	15 mins.	4	I have read about these progress monitors before so I think that helped.
LD_ISU_SpEd	Mac, Safari	29 mins.	3	I feel that I understand it fairly well.
MJ_ISU_Math	PC, Firefox	18 mins.	5	
AR_CLM	Mac, Safari	18 mins.	4	
KG_CLM	Mac, Firefox	27 mins.	5	
JR_CLM	PC, Firefox	20 mins.	5	Clear explanations.
JC_CLM	PC, Internet Explorer	7 mins.	3	
				The ease with which you could navigate through the system:
CL_ISU_Math	PC, Firefox	24 mins.	5	
AB_ISU_Math	PC, Internet Explorer	15 mins.	4	Easy to navigate forward, hard if required doing anything else.
LD_ISU_SpEd	Mac, Safari	29 mins.	4	There is no back button.
MJ_ISU_Math	PC, Firefox	22 mins.	3	Took a long time to load.
AR_CLM	Mac, Safari	15 mins.	3	
KG_CLM	Mac, Firefox	27 mins.	5	
JR_CLM	PC, Firefox	20 mins.	5	It would be nice to have a progress indicator on each screen so you know where you are in the module and how much you have left. That is just a bonus, navigating the module was no problem.
JC_CLM	PC, Internet Explorer	7 mins.	4	
				Will this information be of benefit to teachers? Please elaborate.
CL_ISU_Math	PC, Firefox	24 mins.		Yes; the solid foundation about progress monitoring will help teachers complete the rest of the modules.

AB_ISU_Math	PC, Internet Explorer	15 mins.		Yes, very beneficial because it will better explain aspects that many general education teachers might not understand.
LD_ISU_SpEd	Mac, Safari	29 mins.		Yes, I think that it is very important for teachers to know the info. Behind the research and know about correlation coefficients to improve and inform their teaching.
MJ_ISU_Math	PC, Firefox	18 mins.		Yes because they will need to know how to make the graph.
AR_CLM	Mac, Safari	18 mins.		It will really be beneficial to teachers. I really like the graphics given on the page with the thermometer. It provided enough information about CBM that was easy to understand.
KG_CLM	Mac, Firefox	27 mins.		This information will benefit teachers because it explains the need for progress monitoring and the basic aspect of how it's done.
JR_CLM	PC, Firefox	20 mins.		I think this module gave very good foundational knowledge for professionals. It did not use technical CBM jargon that many gen. ed teachers would not be familiar with.
JC_CLM	PC, Internet Explorer	7 mins.		Yes, the information could be beneficial, but I could imagine a more straightforward way of presenting the program would be appreciated.
				What are the most important revisions we should make to this module before it is used by teachers?
CL_ISU_Math	PC, Firefox	24 mins.		Add audio progress boxes to all the pages without them! (drew picture)
AB_ISU_Math	PC, Internet Explorer	15 mins.		Eliminate still pictures, for the flash videos.
LD_ISU_SpEd	Mac, Safari	29 mins.		Fix the audio. I had to refresh sometimes twice on every page to get audio.
MJ_ISU_Math	PC, Firefox	18 mins.		Fix the online videos and audio so I can see and hear everything.
AR_CLM	Mac, Safari	18 mins.		Put some sort of back arrow or menu so it is easier for users to navigate back and forth through the module.
KG_CLM	Mac, Firefox	27 mins.		Only revision that needs to be made is fixing the audio on Segment 9.
JR_CLM	PC, Firefox	20 mins.		"Sample progress monitoring graph" screen has

				two people speaking over each other at the same time. Some pages do not have a pause/play button. I think that it is important to have on each page.
JC_CLM	PC, Internet Explorer	7 mins.		I would list out why the program is important or goals right at the beginning.

Module Feedback Form – Project AAIMS

General Feedback Section

Respondent	**Computer/ Browser**	**Total Time**	**What is your general impression of this module?**
CL_ISU_Math	PC, Firefox	36 mins.	I liked this module the best. It was very organized and smooth flowing. However, it had the most "loading" problems.
AB_ISU_Math	PC, Internet Explorer	38 mins.	Very technical and difficult to stay engaged.
LD_ISU_SpEd	Mac, Safari	26 mins.	I found the module helpful.
MJ_ISU_Math	PC, Firefox	22 mins.	Background information –interesting Find it interesting that the measures are timed. The review section was good.
AR_CLM_	Mac, Safari	23 mins.	I think this module provided a lot of information about project AAIMS. It used a lot of graphics and explanations. This module will be very useful for teachers.
KG_CLM	Mac, Firefox	25 mins.	I thought that the information presented was very organized. The content can be difficult to understand, but I thought the module did a good job presenting it.
JR_CLM	PC, Firefox	23 mins.	Overall good- a little heavy with the technical adequacy part.
JC_CLM	PC, Internet Explorer	20 mins.	There is some good information in the module.

Respondent	Computer/ Browser	Total Time	Which segments of the module were particularly helpful in enhancing your understanding of the content in this module? Why?
CL_ISU_Math	PC, Firefox	36 mins.	Looking at the worksheets while they talk about them was very helpful. More meaningful visuals the better!
AB_ISU_Math	PC, Internet Explorer	38 mins.	The discussion of improvement sensitivity made sense but other definitions were hard to follow.
LD_ISU_SpEd	Mac, Safari	26 mins.	I really appreciated the graphs describing the algebra scores because I thought it did a good job explaining how and why the graphs are made.
MJ_ISU_Math	PC, Firefox	22 mins.	Like the bullet points, the 3 project AAIMS measures with very good and specific examples was the most helpful. Those are what you need to know.
AR_CLM	Mac, Safari	23 mins.	Pg.37m website provided for Project AAIMS. Provides goal for each part of technical adequacy and gives a good description of each. Provides the teacher with a PDF of measures. Provides a description of how the measures are teacher friendly (how long it takes, the format and how it is scored).
KG_CLM	Mac, Firefox	25 mins.	When describing the project AAIMS measures, I thought it was very helpful when each measures problems types were explained and examples were given of the problems. I also thought the Design Criteria Review was very helpful because it expressed that those going thought he module had an understanding of what the terms meant. Very good refresher.
JR_CLM	PC, Firefox	23 mins.	Explanation of what mode the measures teacher friendly – it helps teaches realize what about these measures make them beneficial and easy-to-use.
JC_CLM	PC, Internet Explorer	20 mins.	The interaction section that asks for the teacher to respond to a question was helpful because it required deeper thinking about the content and solidified some concepts.

Respondent	Computer/ Browser	Total Time	Were there segments of the module that hindered your understanding of the content in this module? If so, what suggestions do you have for improvement?
CL_ISU_Math	PC, Firefox	36 mins.	Project AAIMS Measures: Algebra Basic Skills page never loaded (I tried replay once and reloading the whole page once) A few pages had to be reloaded to get the entire audio file to upload.
AB_ISU_Math	PC, Internet Explorer	38 mins.	What is the radio button on the second slide? Text format not consistent in the design criteria review. Need a better explanation of the criterion-related validity.
LD_ISU_SpEd	Mac, Safari	26 mins.	None
MJ_ISU_Math	PC, Firefox	22 mins.	Wasn't sure what the radio button was? The measure sample documents were good but since I couldn't really see it, I got distracted.
AR_CLM	Mac, Safari	23 mins.	On page 35, I wasn't sure what it meant by "radio button". There is a lot of information provided in this module about technical terms. Some teachers may get lost in all the term s and numbers it might be helpful to provide a review at the end of each module that touches on the important parts.
KG_CLM	Mac, Firefox	25 mins.	No.
JR_CLM	PC, Firefox	23 mins.	None.
JC_CLM	PC, Internet Explorer	20 mins.	The beginning slides that give lots of information and only pictures as reference are not helpful. I feel like I'm being lectured to without being forewarned. I think the teacher should also be told that it is helpful to be prepared to write notes. There was too much information to in too short of a time to fully remember or make meaningful sense of the content.

Respondent	Computer/ Browser	Total Time	Was the time needed to complete the module reasonable? Why or why not?
CL_ISU_Math	PC, Firefox	36 mins.	The time it took for me to complete this module was significantly longer than I think it usually would be because I had so many problems with pages not loading or not fully loading.
AB_ISU_Math	PC, Internet Explorer	38 mins.	It was a longer amount of time, but there was a lot of information to cover with no clear breaking points as it was all related.
LD_ISU_SpEd	Mac, Safari	26 mins.	Yes and no. It was a little long but there was a lot of information in there so it might be necessary.
MJ_ISU_Math	PC, Firefox	22 mins.	The loading time was really slow, it was kind of long. Design criteria review page – couldn't see the picture.
AR_CLM	Mac, Safari	23 mins.	Yes, it did not take long at all to go through this module.
KG_CLM	Mac, Firefox	25 mins.	I feel like the time was reasonable to complete the module because the content presented may take some time for teachers to completely understand if they have little prior knowledge of statistics terms presented in the module.
JR_CLM	PC, Firefox	23 mins.	Yes- approx. 20 minutes – it did not take long, but a progress indicator within each module would be nice.
JC_CLM	PC, Internet Explorer	20 mins.	More time could have been used to make the content more interactive with the learner. Perhaps a list of assessments that the teacher has to decide weather they are formative or summative.

Ratings and Comments Section

Respondent	Computer/ Browser	Total Time	Rating	Rating Item and Comments
				Your overall level of satisfaction with this module
CL_ISU_Math	PC, Firefox	36 mins.	4	
AB_ISU_Math	PC, Internet Explorere	38 mins.	3	Good information just very dry and pretty boring.
LD_ISU_SpEd	Mac, Safari	26 mins.	4	Good
MJ_ISU_Math	PC, Firefox	22 mins.	4	
AR_CLM	Mac, Safari	23 mins.	4	
KG_CLM	Mac, Firefox	25 mins.	5	
JR_CLM	PC, Firefox	23 mins.	4	
JC_CLM	PC, Internet Explorer	20 mins.	3	
				The organization of the module
CL_ISU_Math	PC, Firefox	36 mins.	5	
AB_ISU_Math	PC, Internet Explorere	38 mins.	3	Difficult to follow maybe a graphical mapping so you know how its all related.
LD_ISU_SpEd	Mac, Safari	26 mins.	5	Flowed nicely
MJ_ISU_Math	PC, Firefox	22 mins.	5	
AR_CLM	Mac, Safari	23 mins.	4	
KG_CLM	Mac,	25 mins.	5	

	Firefox			
JR_CLM	PC, Firefox	23 mins.	5	
JC_CLM	PC, Internet Explorer	20 mins.	4	
				The difficulty of the content presented in the module
CL_ISU_Math	PC, Firefox	36 mins.	4	
AB_ISU_Math	PC, Internet Explorer	38 mins.	2	Very difficult to take all the content in at once, some definitions were lacking.
LD_ISU_SpEd	Mac, Safari	26 mins.	4	I was familiar with almost all of the material
MJ_ISU_Math	PC, Firefox	18 mins.	4	
AR_CLM	Mac, Safari	23 mins.	3	
KG_CLM	Mac, Firefox	25 mins.	5	Could be difficult to understand some of the content (correlation coefficients)
JR_CLM	PC, Firefox	23 mins.	4	
JC_CLM	PC, Internet Explorer	20 mins.	3	
				The clarity of the content in the module:
CL_ISU_Math	PC, Firefox	36 mins.	5	
AB_ISU_Math	PC, Internet Explorer	38 mins.	1	Some of the issues I was very unclear of.
LD_ISU_SpEd	Mac, Safari	26 mins.	4	Very clear.
MJ_ISU_Math	PC, Firefox	22 mins.	4	Couldn’t really see the pages that were scanned.
AR_CLM	Mac, Safari	23 mins.	3	
KG_CLM	Mac, Firefox	25 mins.	4	

JR_CLM	PC, Firefox	23 mins.	4	Techincal adequacy is difficult and I'm not sure it's even necessary to discuss other than ensuring that the measures are reliable ad valid.
JC_CLM	PC, Internet Explorer	20 mins.	3	
				The quality of the graphics used in the module (clarity, contributes to understanding):
CL_ISU_Math	PC, Firefox	36 mins.	5	
AB_ISU_Math	PC, Internet Explorer	38 mins.	2	I think graphics could greatly enhance this module and make it easier to follow.
LD_ISU_SpEd	Mac, Safari	26 mins.	4	The key for some of the graphs are very hard to read.
MJ_ISU_Math	PC, Firefox	22 mins.	5	The bullets and charts were great.
AR_CLM	Mac, Safari	23 mins.	4	
KG_CLM	Mac, Firefox	25 mins.	5	
JR_CLM	PC, Firefox	23 mins.	5	
JC_CLM	PC, Internet Explorer	20 mins.	3	
				The quality of the animation used in the module(clarity, audibility contributes to understanding):
CL_ISU_Math	PC, Firefox	36 mins.	N/A	
AB_ISU_Math	PC, Internet Explorer	38 mins.	1	Little animation and it could help a lot, like highlighting the statistics you are talking about and fading the ones not in question.
LD_ISU_SpEd	Mac, Safari	26 mins.	5	Very nice, no pausing.
MJ_ISU_Math	PC, Firefox	22 mins.	5	
AR_CLM	Mac, Safari	23 mins.	4	

KG_CLM	Mac, Firefox	25 mins.	5	
JR_CLM	PC, Firefox	23 mins.	5	
JC_CLM	PC, Internet Explorer	20 mins.	4	
				The quality of the audio narration used in the module (clarity, audibility contributes to understanding):
CL_ISU_Math	PC, Firefox	36 mins.	5	
AB_ISU_Math	PC, Internet Explorer	38 mins.	3	Easy to hear, hard to follow since no visual interaction.
LD_ISU_SpEd	Mac, Safari	26 mins.	4	Good but at times it was a little muffled.
MJ_ISU_Math	PC, Firefox	22 mins.	5	
AR_CLM	Mac, Safari	23 mins.	4	
KG_CLM	Mac, Firefox	25 mins.	5	
JR_CLM	PC, Firefox	23 mins.	n/a	On the objective screen, the speaker says to click on the radio button to see sample probes. No radio button. Just say click on the link below that says…
JC_CLM	PC, Internet Explorer	20 mins.	3	
				Your level of engagement while working on this module:
CL_ISU_Math	PC, Firefox	36 mins.	5	
AB_ISU_Math	PC, Internet Explorer	38 mins.	2	I quickly found myself not paying attention.
LD_ISU_SpEd	Mac, Safari	26 mins.	4	More engaged with the movement or emphasis on certain images during certain parts of speech.

MJ_ISU_Math	PC, Firefox	22 mins.	4	
AR_CLM	Mac, Safari	23 mins.	4	
KG_CLM	Mac, Firefox	25 mins.	4	Some audio clips were long.
JR_CLM	PC, Firefox	23 mins.	4	Not as many moving parts ad the foundations module.
JC_CLM	PC, Internet Explorer	20 mins.	2	
				Your level of understanding of the content:
CL_ISU_Math	PC, Firefox	36 mins.	5	
AB_ISU_Math	PC, Internet Explorer	38 mins.	2	I understood the over-arching results and what they meant but couldn't understand the individual findings.
LD_ISU_SpEd	Mac, Safari	26 mins.	5	I understood.
MJ_ISU_Math	PC, Firefox	22 mins.	4	Still don't feel super comfortable with it.
AR_CLM	Mac, Safari	23 mins.	4	
KG_CLM	Mac, Firefox	25 mins.	4	Felt like I understood the content, but I did review a few segments to be ?
JR_CLM	PC, Firefox	23 mins.	4	I feel confident with technical adequacy language, but that section got a little begged down even for me.
JC_CLM	PC, Internet Explorer	20 mins.	3	
				The ease with which you could navigate through the system:
CL_ISU_Math	PC, Firefox	36 mins.	5	
AB_ISU_Math	PC, Internet Explorer	38 mins.	2	You could go forward but not back to review certain items.

LD_ISU_SpEd	Mac, Safari	26 mins.	3	It was a little hard because I had to keep hitting refresh to get audio.
MJ_ISU_Math	PC, Firefox	22 mins.	3	Took a long time to load.
AR_CLM	Mac, Safari	23 mins.	4	
KG_CLM	Mac, Firefox	25 mins.	5	
JR_CLM	PC, Firefox	23 mins.	5	
JC_CLM	PC, Internet Explorer	20 mins.	3	
				Will this information be of benefit to teachers? Please elaborate.
CL_ISU_Math	PC, Firefox	36 mins.		I think this information will be beneficial. It was good to have a mini lesson about correlation coefficients (in case teachers aren't familiar with statistics) before talking about the research findings.
AB_ISU_Math	PC, Internet Explorer	38 mins.		This is somewhat beneficial, but I'm not sure how many teachers are overly interested int e statistical breakdown of the results.
LD_ISU_SpEd	Mac, Safari	26 mins.		Yes, it will help illustrate to teachers how helpful and important progress monitoring can be.
MJ_ISU_Math	PC, Firefox	22 mins.		Yes. Answering the questions audibly at the end helps review.
AR_CLM	Mac, Safari	23 mins.		This will be very beneficial to teachers if there was a review or something they could print out in order to remember it or be able to look back on.
KG_CLM	Mac, Firefox	25 mins.		I think this information would be very helpful for teachers because it covers terms and concepts that they may not be familiar with or have forgotten.
JR_CLM	PC, Firefox	23 mins.		It does have good information. I'm not sure how beneficial the technical adequacy pages are for

				teachers – maybe just say the measures are reliable and valid and give them links for further information.
JC_CLM	PC, Internet Explorer	20 mins.		I believe this is helpful information. Teacherss can see the value of monitoring student progress.
				What are the most important revisions we should make to this module before it is used by teachers?
CL_ISU_Math	PC, Firefox	36 mins.		Make sure pages load properly and efficiently as well as decrease wait time at end of audio clips.
AB_ISU_Math	PC, Internet Explorer	38 mins.		Include graphic organizers and flash animation to explain audio better.
LD_ISU_SpEd	Mac, Safari	26 mins.		Make the audio runs more smoothly.
MJ_ISU_Math	PC, Firefox	22 mins.		Increase the size of the documents so I can see them.
AR_CLM	Mac, Safari	23 mins.		Same as above.
KG_CLM	Mac, Firefox	25 mins.		None
JR_CLM	PC, Firefox	23 mins.		Nothing big stuck out – I would like it if the comprehension questions ensures had my response and the correct response in text form on the same screen.
JC_CLM	PC, Internet Explorer	20 mins.		There are some technical problems such as the “slide” learning two voiceovers at the same time. I would like a back button to review previous content not just a replay. Help teachers organize and process the information.

Getting Started

Name	GS 1	GS 2	GS 3	GS 4	GS 5
A. Simpson	What does AAIMS Stand for?	The video was easy to understand, but may be unnecessary for tech savvy individuals.	Again video was very informative and easy to follow. However, at not point is "clear filter" and "import/export" tabs mentioned. I really like the email feature and the ability to keep favorites and categories.	I think this page should be moved to page 2 of the getting started segment	I like the graphic and the use of gears. You have to scroll during the video to see the whole screen.
E. Wilkes	n/a	At about 1:15 in the video there is a large gap between the words that is very distracting	Everything is ok	This video does not fit completely within the screen even when my browser is maximized. It's not crucial for this video, but it could be for other videos in the program.	It is hard to watch this video because it does not completely fit within my window.
R. Miller	n/a	Even when the video screen is maximized, you cannot see the top and bottom of the screen. The cursor moves to the top and bottom as explanation is happening, and you have to chase it down to see what it being		I'm not sure why this has to be a video. Again, you have to scroll down to see the whole thing.	I like that the graphics show how all the components fit together and kind of drive each other. I also like how the gear lights up when you are talking about that section.

	Audio Issues
	Content Issues
	Compliment
	Display Issues

PD-APM Suggested Changes after Cohort 1

Getting Started

Before Cohort II?	Issue/Suggestion	T/C	Action	Complete	Date
	Scrolling	T	Put the directions from the trouble shooting log in very small font at the bottom/top???		
X	Audio unusually loud on p. 4	T	Re-record??		
X	Videos that load in separate window	T	Rachel will look into alternative so that we can have the file not just a URL		
X	Took too much time (reading script may have been faster)	C	Combine/delete slides (suggestions: combine p.4/5 or switch the order)		
X	Short video (p. 4) too short	C	(see above)		
X	Welcome page confusing	C	Make "to proceed" section more clear		
X	Add a sentence about Thinkspace	C	See issue		
X	Move slides 4 and 5 up to be slides 1 and 2	C	See issue		

Foundations

Before Cohort II?	Issue/Suggestion	T/C	Action	Complete	Date
	Picture on p. 2 could be replaced or words added (multiple requests for text on screen).	C	See issue		
NO?	Confused by the purpose of p. 3	C	Combine?		
	p. 4 – graphics boring/didn't match	C	Change picture?		
NO	Break the 4 puzzle pieces into 4 different slides	C	See issue		
NO	pp. 8 and 11 progress bar moves after speaking is done.	C	Minimum time		
NO	Put all response questions on same page	C	Not possible in ThinkSpace		
X	p.3 took a long time to load	T	Change video size/type		

Project AAIMS

Before Cohort II?	Issue/Suggestion	T/C	Action	Complete	Date
NO	p. 2 add/change graphics	C	Logo from project - Keep		
	Didn't understand research evidence	C	Clarify?		
NO	p. 3 echo	T	Re-record – Summer?		
X	24 pages daunting (p. 5 two comments about wanting to quit)	C	Re-organize and condense		
	Correlation confusing – hard to follow	C	Clarify? Add more?		
X	p. 3 graphics and information repeat	C	Earlier picture will be gone		
	p. 4 graphic boring/replaced	C	See issue		
X	p. 20 Not necessary to talk about the measures that did not make it.	C	Remove?		
	p. 6 add a graphic	C	Add?		
X	p. 11-13 White text in tables	C	Change font color	X	Fall 2011
	p. 14 research is overwhelming	C	Suggestion: keep it to 3-5 sentences		
	Shorten the part about technical adequacy (bored)	C	Shorten?		
	p. 17-18 confusing wordy (comment: will turn people off)	C	Re-write/shorten		

Measures Introduction

Before Cohort II?	Issue/Suggestion	T/C	Action	Complete	Date
X	Combine pp. 2 and 3	C	Combine		
X	Timing slide could be eliminated	C	Remove?		
X	p. 4 confusing at first – number pages on printouts?	C	Number the printout pages		
NO	p. 10 This information could go closer to the beginning	C	Re-order?		

Algebra Basic Skills

Before Cohort II?	Issue/Suggestion	T/C	Action	Complete	Date
X	Too many handouts to sift through	C	Printing is optional on many – change materials needed		
	Restate that all resources can be printed right there	C	See issue		
NO	p. 2 link to test/re-test reliability example	C	Link?		
	p. 2 boring	C	Re-write		
?	p. 3 add examples	C	Add examples		
NO	p. 4-5 progress bar moves after speaker is finished	C	Time mininum		
NO	p. 7 Man's audio much lower than woman's	T	Re-record - Summer		
NO	p. 9 Echo	T	Re-record – Summer		
X	p. 13 can the info. fit better on the page?	C	Make a better fit – will be taken care of with the scrolling exercise		
X	p. 15 include examples of mistakes	C	Spread out and put one or two examples		
X	p. 17 submit button at the bottom and the top of the form	C	Add button at the bottom	X	Jan. 9, 2012
	Put slide about errors before the one about the answer still being correct if it doesn't match exactly	C	Rearrange?		

Changes for Cohort 3

Module & page	Change Needed	Persons Responsible	Completed
Website	Project Description – Change audio and video test to new player Timeline – Do we want to update this? Project Team – Do we need to update the curriculum vitae?		
Welcome			
Getting Started p1	There is one stumble. I don't think it is necessary to re record. Should we tell people how to get back to the module after the Jing in the Jing even though it is on the screen prior to opening the Jing?		
Getting Started p2	Not all modules show up on the bottom, does this matter? Does say how to "get out."		
Getting Started p3	Core Concepts needs to be capitalized in gear 1/16/13 – Error Message "File not found" 2/8/13 still	Eric	
Core Concepts p1	Core Concepts needs to be capitalized in gear, change to Anne's voice – The "o" in objective is cut off File not found in Cohort 3 space	Eric	
Core Concepts p2	Change to Anne's voice		YES
Core Concepts p3	Transfer to mp4 and use new audio (Anne) Will we keep the directions at the top with the new player? NO 2/8/13 Old flash in Cohort 3	Eric	
Core Concepts p4	Change audio to Anne's voice 1/16/13 – Error Message "File not found' 2/8/13 – "File not found" in Cohort 3 space	Eric	
Core Concepts p5	Change to Anne's voice		YES
Core Concepts p6	Transfer to mp4 and use new audio (Anne)	Eric	
Core Concepts p7	Transfer to mp4 and use new audio (Anne)	Eric	
Core Concepts p8	Change to Anne's voice		YES
Core Concepts p9	Change to Anne's voice		YES
Core Concepts p10	Change to Anne's voice		YES
Core Concepts p11	Change to Anne's voice		YES

Core Concepts p12	Core Concepts needs to be capitalized in gear, change to Anne's voice 1/16/13 – Error Message "File not found" 2/8/13-Incorrect audio in new player Do we end with instructions for getting to Project AAIMS like we do at the end of Project AAIMS?	Eric	
Project AAIMS p1	Transfer to mp4 Add title like other modules	Eric	
Project AAIMS p2	Put audio in new player	Rachel	
Project AAIMS p3	Put audio in new player	Rachel	
Project AAIMS p4	Put audio in new player	Rachel	
Project AAIMS p5	Put audio in new player	Rachel	
Project AAIMS p6	Put audio in new player		
Project AAIMS p7	Transfer to mp4 Consistency in having a title for a video?	Eric	
Project AAIMS p8	Transfer to mp4	Eric	
Project AAIMS p9	Transfer to mp4	Eric	
Project AAIMS p10	Transfer to mp4 Audio variability Funky puzzle on Mac 3 step process?	Eric	
Project AAIMS p11	Transfer to mp4 Do we need the word "Diagrams" in this video	Eric	
Project AAIMS p12	Remove counter, transfer to mp4 Funky puzzle on Mac repeating audio at the end Near 1548 a spot from the green arrow stays on the screen when the arrow moves down.	Eric	
Project AAIMS p13	Put audio in new player	Rachel	
Project AAIMS p14	Put audio in new player	Rachel	
Project AAIMS p15	Put audio in new player	Rachel	
Project AAIMS p16	Transfer to mp4	Eric	
Measures Intro p1	Change to Anne's voice (from Pam's), transfer to mp4	Anne, Eric	
Measures Intro p2	Change to Anne's voice, transfer to mp4, wording change 2/11/13	Anne, Eric	
Measures Intro p3	Change to Anne's voice, transfer to mp4	Anne, Eric	
Measures Intro p4	Change to Anne's voice, transfer to mp4, wording change 2/11/13	Anne, Eric	
Measures Intro p5	Change to Anne's voice, transfer to mp4, wording change 2/11/13	Anne, Eric	
Measures Intro p6	Change to Anne's voice, put audio in new player	Anne, Rachel	

Measures Intro p7	Change to Anne's voice, put audio in new player	Anne, Rachel	
Measures Intro p8	Change to Anne's voice, put audio in new player	Anne, Rachel	
Measures Intro p9	Change to Anne's voice, transfer to mp4	Anne, Eric	
ABS p1	Change to Anne's voice (from Pam's), transfer to mp4	Anne, Eric	
ABS p2	Change to Anne's voice, transfer to mp4 Change to new names of problem categories from ASPM	Anne, Eric Jeannette	
ABS p3	Change to Anne's voice, put audio in new player	Anne, Rachel	
ABS p4	Change to Anne's voice, put audio in new player	Anne, Rachel	
ABS p5	Change to Anne's voice, put audio in new player	Anne, Rachel	
ABS p6	Change to Anne's voice, put audio in new player	Anne, Rachel	
ABS p7	Change to Anne's voice, put audio in new player	Anne, Rachel	
ABS p8	Change to Anne's voice, put audio in new player	Anne, Rachel	
ABS p9	Change to Anne's voice, put audio in new player	Anne, Rachel	
ABS p10	Change to Anne's voice, transfer to mp4, have red circle disappear after discussion of not marking skipped items. Mark missed items with a slash.	Anne, Eric	
ABS p11	Change to Anne's voice, put audio in new player	Anne, Rachel	
ABS p12	Change to Anne's voice, put audio in new player	Anne, Rachel	
ABS p13	Change to Anne's voice, put audio in new player	Anne, Rachel	
ABS p14	Change to Anne's voice, put audio in new player	Anne, Rachel	
ABS p15	Change to Anne's voice, transfer to mp4	Anne, Eric	
ABS p16	Create page	Jeannette	
ABS p17	Create page	Jeannette	
ABS p18	Create page	Jeannette	
ABS p19	Create page	Jeannette	
ABS p20	Create page	Jeannette	
AF p1	Transfer to mp4, Add title, change Foundations gear to CORE CONCEPTS Add title to animation	Eric	
AF p2	Transfer to mp4 Change to new names of problem categories from ASPM	Eric Jeannette	
AF p3	Change to Anne's voice, put audio in new player	Anne, Rachel	
AF p4	Change to Anne's voice, put audio in new player	Anne, Rachel	

AF p5	Change to Anne's voice, put audio in new player	Anne, Rachel	
AF p6	Change to Anne's voice, put audio in new player	Anne, Rachel	
AF p7	Change to Anne's voice, put audio in new player	Anne, Rachel	
AF p8	Change to Anne's voice, put audio in new player	Anne, Rachel	
AF p9	Change to Anne's voice, put audio in new player	Anne, Rachel	
AF p10	Transfer to mp4	Eric	
AF p11	Change to Anne's voice, put audio in new player	Anne, Rachel	
AF p12	Change to Anne's voice, put audio in new player	Anne, Rachel	
AF p13	Change to Anne's voice, put audio in new player	Anne, Rachel	
AF p14	Change to Anne's voice, put audio in new player	Anne, Rachel	
AF p15	Transfer to mp4	Eric	
AF p16	Create page	Jeannette	
AF p17	Create page	Jeannette	
AF p18	Create page	Jeannette	
AF p19	Create page	Jeannette	
AF p20	Create page	Jeannette	
ACA p1	Change to Anne's voice (from Jeannette's), transfer to mp4	Anne, Eric	
ACA p2	Change to Anne's voice, transfer to mp4 Change to new names of problem categories from ASPM, if needed	Anne, Eric Jeannette	
ACA p3	Change to Anne's voice, put audio in new player	Anne, Rachel	
ACA p4	Change to Anne's voice, put audio in new player	Anne, Rachel	
ACA p5	Change to Anne's voice, put audio in new player	Anne, Rachel	
ACA p6	Change to Anne's voice, put audio in new player	Anne, Rachel	
ACA p7	Change to Anne's voice, put audio in new player	Anne, Rachel	
ACA p8	Change to Anne's voice, put audio in new player	Anne, Rachel	
ACA p9	Change to Anne's voice, put audio in new player	Anne, Rachel	
ACA p10	Change to Anne's voice, put audio in new player	Anne, Rachel	
ACA p11	Change to Anne's voice, transfer to mp4 Need new visuals	Anne, Eric	
ACA p12	Change to Anne's voice, transfer to mp4 Need new visuals	Anne, Eric	
ACA p13	Change to Anne's voice, transfer to mp4	Anne, Eric	

	Need new visuals Highlighting should not include answers below the line		
ACA p14	Change to Anne's voice, put audio in new player	Anne, Rachel	
ACA p15	Change to Anne's voice, transfer to mp4	Anne, Eric	
ACA p16	Change to Anne's voice, put audio in new player	Anne, Rachel	
ACA p17	Change to Anne's voice, transfer to mp4	Anne, Eric	
ACA p18	Change to Anne's voice, put audio in new player	Anne, Rachel	
ACA p19	Change to Anne's voice, put audio in new player	Anne, Rachel	
ACA p20	Change to Anne's voice, put audio in new player	Anne, Rachel	
ACA p21	Change to Anne's voice, transfer to mp4 Timing is off in this animation	Anne, Eric	
ACA Extra pages	Still need to be developed	Jeannette	
Intro DM p1	Change to Anne's voice, transfer to mp4	Anne, Eric	
Intro DM p2	Change to Anne's voice, put audio in new player	Anne, Rachel	
Intro DM p3	Change to Anne's voice, put audio in new player	Anne, Rachel	
Intro DM p4	Change to Anne's voice, put audio in new player	Anne, Rachel	
Intro DM p5	Change to Anne's voice, put audio in new player	Anne, Rachel	
Intro DM p6	Change to Anne's voice, put audio in new player	Anne, Rachel	
Intro DM p7	Change to Anne's voice, put audio in new player	Anne, Rachel	
Intro DM p8	Change to Anne's voice, put audio in new player	Anne, Rachel	
Intro DM p9	Change to Anne's voice, put audio in new player	Anne, Rachel	
Intro DM p10	Change to Anne's voice, put audio in new player	Anne, Rachel	
Intro DM p11	Change to Anne's voice, put audio in new player	Anne, Rachel	
Intro DM p12	Change to Anne's voice, transfer to mp4	Anne, Eric	
ESP p1	Transfer to mp4	Eric	
ESP p2	Put audio in new player	Rachel	
ESP p3	Put audio in new player	Rachel	
ESP p4	Put audio in new player	Rachel	
ESP p5	Put audio in new player	Rachel	
ESP p6	Put audio in new player	Rachel	
ESP p7	Put audio in new player	Rachel	
ESP p8	Put audio in new player	Rachel	

ESP p9	Put audio in new player	Rachel	
ESP p10	Transfer to mp4	Eric	
ESP p11	Put audio in new player	Rachel	
ESP p12	Transfer to mp4	Eric	
ESP p13	Put audio in new player	Rachel	
ESP p14	Transfer to mp4	Eric	
ESP p15	Put audio in new player	Rachel	
ESP p16	Put audio in new player	Rachel	
ESP p17	Put audio in new player	Rachel	
ESP p18	Put audio in new player	Rachel	
ESP p19	Transfer to mp4	Eric	
Skills Analysis p1	Create gear animation	Eric	
Skills Analysis p2			
Skills Analysis p3			
Skills Analysis p4			
Skills Analysis p5	Create Jing	Anne	
Skills Analysis p6			
Skills Analysis p7	Same audio as page 6	Rachel needs to check	
Skills Analysis p8			
Skills Analysis p9			
Skills Analysis p10	Create Jing	Anne	
Skills Analysis p11	Create Jing	Anne	
Skills Analysis p.12			
Skills Analysis p13			
Skills Analysis p14			
Skills Analysis p15	Create gear animation	Eric	
Error Analysis p1	Create gear animation	Eric	
Error Analysis p2			
Error Analysis p3	Create Jing	Anne	
Error Analysis p4			
Error Analysis p5	Create flash	Eric	
Error Analysis p6	Create Jing	Anne	

Error Analysis p7			
Error Analysis p8			
Error Analysis p9			
Error Analysis p10			
Error Analysis p11			
Error Analysis p12	Create gear animation	Eric	
IDM p1	Create gear animation	Eric	
IDM p2			
IDM p3			
IDM p4	Quieter audio	Anne	
IDM p5			
IDM p6	Create Jing	Anne	
IDM p7			
IDM p8	Loud	Anne	
IDM p9			
IDM p10			
IDM p11			
IDM p12			
IDM p13	Create Jing	Anne	
IDM p14			
IDM p15	Audio switched or image switched with 16		
IDM p16	Audio switched or image switched with 15		
IDM p17			
IDM p18			
IDM p19			
IDM p20	Audio switched or image switched with 21		
IDM p21	Audio switched or image switched with 20		
IDM p22	Create gear animation	Eric	

Name:_____ Date:_____

PD-APM Pretest

1. Which progress monitoring measure is a robust indicator with items representing core concepts that are essential to conceptual understanding of algebra?
   a) Algebra Basic Skills
   b) Algebra Foundations
   c) Algebra Content Analysis
   d) Algebra Problem Solving

2. What does a trendline depict? The trendline shows _____.
   a) the rate of progress needed to reach a specified goal
   b) the student's goal and the rate of growth needed to reach that goal
   c) the student's actual rate of progress across a particular period of time
   d) when the teacher has made an instructional change.

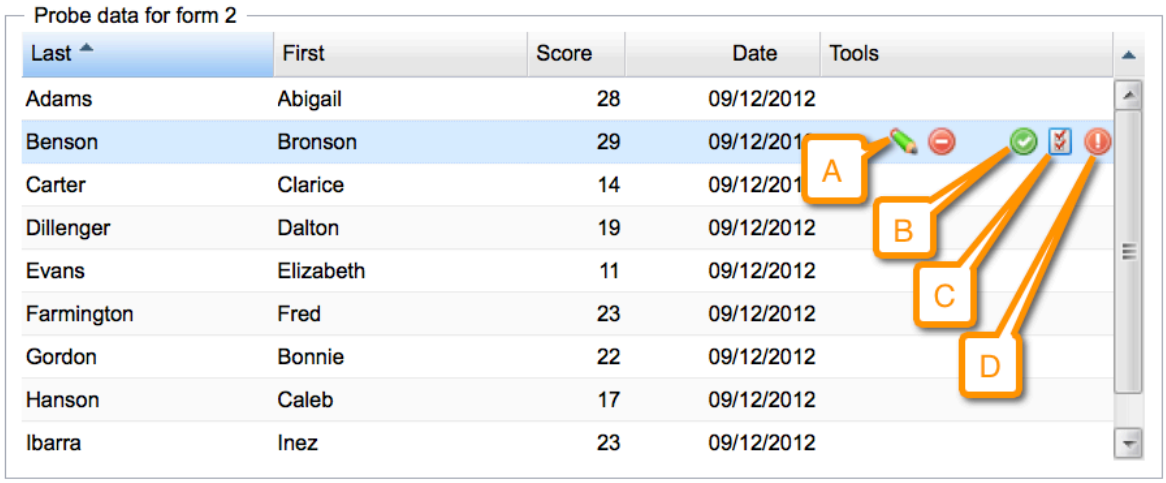
3. What is the purpose of standardized administration when using progress monitoring probes with students?
   a) helps to ensure that scores may be compared over time
   b) enables measures to be brief and to be scored quickly
   c) provides students with enough time to complete all items on the probe
   d) confirms that probes are of constant difficulty

4. For which of the following measures may students earn partial credit for individual items?
   a) Algebra Basic Skills
   b) Algebra Foundations
   c) Algebra Content Analysis
   d) Algebra Problem Solving

5. How is progress monitoring, particularly curriculum-based measurement (CBM), different from teacher-made assessments? Progress monitoring tools _____.
   a) are administered only several times per year
   b) have unknown reliability and validity
   c) are administered only twice per year
   d) have known reliability and validity

6. To add scores for a probe, a teacher must first select the section, probe type, and probe number and then click on _____ to select all students or individual students.
   a) "Add Probes"
   b) "Add Students"
   c) "Add Skills"
   d) "Add Form"

Use the following graphic to answer Items 7 and 8.



7. Which icon represents the selection a teacher makes to generate an individual student's graph?
   a) a pencil icon
   b) a single checkmark icon
   c) a double checkmark icon
   d) an exclamation point icon

8. Which icon represents the selection a teacher makes to generate an Individual Error Analysis Report?
   a) a pencil icon
   b) a single checkmark icon
   c) a double checkmark icon
   d) an exclamation point icon

9. If a teacher has added a form for the entire class and one student is absent when the algebra measure is administered, what should the teacher do?
   a) The teacher needs to delete the student who was absent for the particular day that the student missed taking the algebra measure.
   b) Nothing needs to be done. The data management system will ignore the student who does not have a score entered.
   c) The teacher needs to give two algebra measures to the student who had been absent previously the next time algebra measures are administered to the class.
   d) The teacher needs to enter "absent" by the student's name when entering scores for the rest of the class.

10. Which of the following statements is true regarding curriculum-based measurement (CBM)?
    a) CBM enjoys a long history with several decades of research and development.
    b) CBM was developed to support Response to Intervention (RTI).
    c) CBM research and development began after passage of No Child Left Behind (NCLB) legislation.
    d) CBM is a recent type of assessment used for gathering progress monitoring data.

11. Mrs. Valdez wants to keep track of common errors that her students with learning disabilities are making. What should she do when she needs help recalling the meaning for the error terms listed in the scrollable box for each problem?
    a) Click on the error name itself in the scrollable box.
    b) Look up the error type in a standard mathematics textbook.
    c) Go to the first slide in the Error Analysis professional development module.
    d) Click on the Materials section in the Resources pane for the Error Glossary.

12. Which hub would a teacher use for entering student demographic information and student scores on progress monitoring measures?
    a) Analysis Hub
    b) Student Probes Hub
    c) Data Management Hub
    d) Professional Development Hub

13. What type of assessment is progress monitoring?
    a) formative assessment
    b) summative assessment
    c) standardized, norm-referenced test
    d) end-of-course test

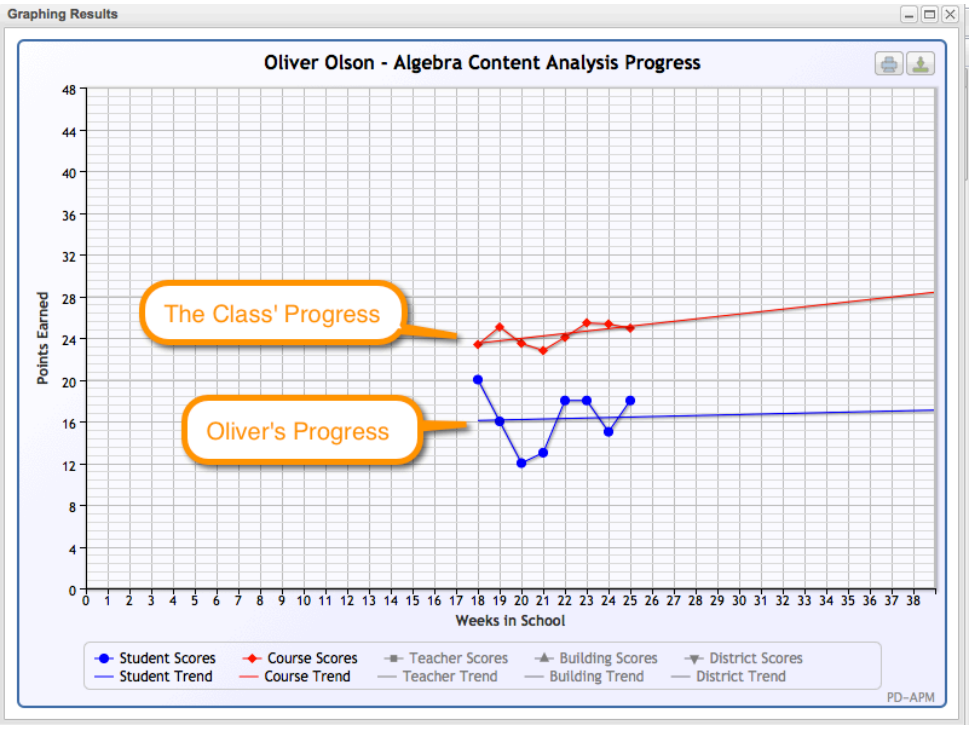
14. Which of the following is the best reason for discarding the scores from the first administration of a probe? Scores often _____.
    a) remain the same from the first to the second administration.
    b) show no significant increase from the first to the second administration.
    c) show a significant increase from the first to the second administration.
    d) decrease from the first to the second administration.

15. Which of the following measures has some problem boxes that contain two answers—both of which need to be scored as correct or incorrect?
    a) Algebra Basic Skills
    b) Algebra Foundations
    c) Algebra Content Analysis
    d) Algebra Problem Solving

16. What does a goal line depict? The goal line shows _____.
    a) the year-end goal and the rate of improvement needed in order to reach the goal by the specified time
    b) the student's actual rate of progress toward reaching the year-end goal
    c) when the teacher has made an instructional change
    d) the student's actual rate of progress across a particular period of time

17. Which design elements ensure that progress monitoring measures are technically adequate?
    a) Measures assess similar skills and have constant difficulty.
    b) Measurement results are reliable, valid, and sensitive to growth.
    c) Standardized administrations enable teachers to make meaningful comparisons.
    d) Measures are relatively brief and are able to be scored efficiently.

18. Oliver's progress is shown related to his peers. What data-based decision would be recommended given the following graph depicting Oliver's progress compared to the rest of his class?
    a) Continue Oliver's current instruction.
    b) Modify Oliver's instruction.
    c) Raise Oliver's goal.
    d) Lower Oliver's goal.



19. How should mathematically equivalent answers be scored? They should be marked _____.
    a) the same as having no response
    b) as incorrect
    c) as earning ½ point
    d) as correct

20. When should the Detailed Directions for administering an Algebra Foundations (AF) probe be used?
    a) each time an AF probe is administered
    b) only the first time an AF probe is administered
    c) after the first time an AF probe is administered
    d) every third time an AF probe is administered

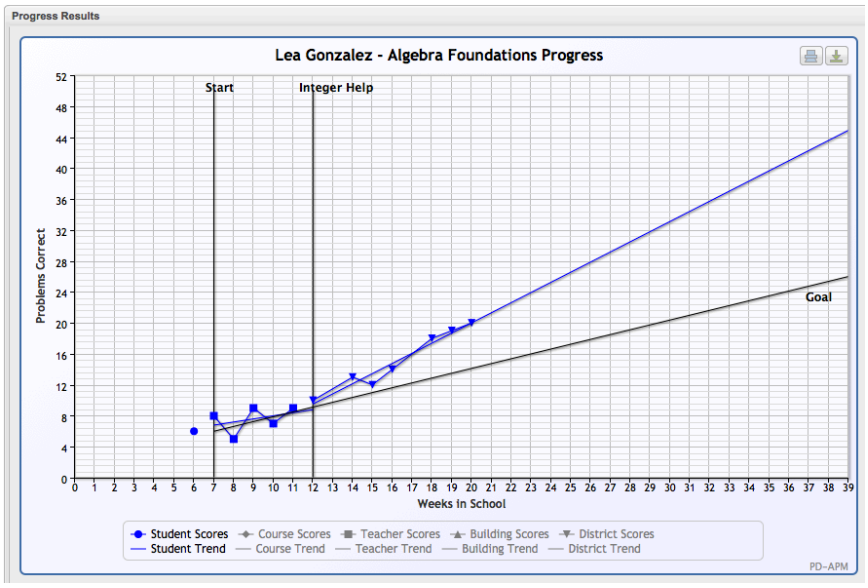
21. What kinds of Skills Analysis Reports are available?
    a) Only Individual-Level Skills Analysis Reports can be generated by the data management system.
    b) Only Class-Level Skills Analysis Reports can be generated by the data management system.
    c) Both Individual- and Class-Level Skills Analysis Reports can be generated by the data management system.
    d) Individual-, Class-, and Building-Level Skills analysis Reports can be generated by the data management system.

22. Lowering a student goal would be recommended _____.
    a) when the student is improving but is not progressing as quickly as expected
    b) when the student is absent frequently
    c) when the student's progress has not changed, on average, across the entire phase
    d) only in rare circumstances

23. Which design elements make progress monitoring "teacher friendly"?
    a) Multiple measures have constant difficulty.
    b) Measurement results are reliable, valid, and sensitive to growth.
    c) Standardized administrations enable teachers to make meaningful comparisons.
    d) Measures are relatively brief and are able to be scored efficiently.

24. Which progress monitoring measure is a robust indicator that focuses on skills that need to be automatic in order to be successful in beginning Algebra or PreAlgebra?
    a) Algebra Basic Skills
    b) Algebra Foundations
    c) Algebra Content Analysis
    d) Algebra Problem Solving

25. What would be the most appropriate instructional decision for the student information displayed on the following graph?
    a) Keep the current goal.
    b) Lower the goal.
    c) Raise the goal.
    d) Double the goal.



PD-APM Teacher Questionnaire

As you complete this form, please focus on only one class when answering, even if you progress monitored in multiple classes.

1. Name of the course you gave measures in: _____

   Number of total students in the course: _____

   Number of students on an IEP in the course: _____

2. Which measure(s) did you score and enter into the system? Check your answer(s).

   [ ] ABS [ ] AF [ ] ACA

3. *In the table below, please write the period of the class you progress monitored for the corresponding measure(s), and indicate how many average total minutes per week you spent looking at student data. If you gave one measure to multiple classes, please think about only one class when answering.*

Measure	Period	Average time per week looking at student data (in minutes)
ABS		
AF		
ACA		

4. *In the table below, indicate whether or not you performed the tasks during your progress monitoring project by circling Yes or No. When completed, rank the top three tasks you performed by writing 1 (top task), 2 (second most), or 3 (third most) in the empty column. Please only rank a total of three.*

Task	Did you perform this task during the project?	Rank the top three tasks you performed (1= performed the most, 2 = performed second most, 3= performed third most)
Progress Graphs		
Examining student progress graphs	Yes / No	
Comparing student and class progress graphs	Yes / No	
Reviewing progress graphs with students	Yes / No	
Inserting phase changes	Yes / No	
Skills Analysis		
Examining individual student skills information	Yes / No	
Examining class skills information	Yes / No	
Reviewing skills information with students	Yes / No	
Errors Analysis		
Examining individual student errors information	Yes / No	
Examining class student errors information	Yes / No	
Reviewing errors information with students	Yes / No	

PD-APM Teacher Questionnaire

5. Please rate the following on a scale of 1-4 (1=completely disagree, 2=disagree, 3=agree, 4=completely agree). Circle your answer.

The amount of time I spent completing the professional development modules for this project was acceptable.	1	2	3	4
The time it took to administer the measures to my students was acceptable.	1	2	3	4
The time it took to score the measures was acceptable.	1	2	3	4
The content of the measures was appropriate for my class.	1	2	3	4
I used the student progress data to inform my instructional.	1	2	3	4
Please explain how you used student progress data to inform your instruction:				

6. What was most valuable about using the progress monitoring measures?

7. Is there any other information you wish you could have gotten from the system? Please explain.

8. Which measure(s) might you use next year? Check your answer(s).

[ ] ABS [ ] AF [ ] ACA

9. Why would you choose these measures for your future class(es)?