Principals Discuss Early Implementation of the ASSISTments Online Homework Tutor for Mathematics

ASSISTments Efficacy Study Report 2

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Introduction

This report presents the findings from interviews with principals about their schools' participation in the ASSISTments program. The purpose of the interviews was to explore the following areas:

- To what extent schools had formal or informal policies or expectations regarding homework practice and completion and specifically for seventh-grade mathematics
- To what extent schools had concerns about homework completion rates and specifically for seventh-grade mathematics
- Whether the school had existing practices or norms for teachers to discuss student learning outcomes, and how often teachers met to focus on data
- The extent to which principals met with teachers to discuss data
- What common benchmark assessments the school used for seventh-grade mathematics
- What other initiatives in the district or school could impact curriculum, instruction, assessment, or professional development and what the current priorities were in the school
- Factors related to the community such as broad socio-economic status, or level of support for education, that might affect teaching and student achievement in the school.

In addition, the principals were asked questions specifically about the early implementation of the ASSISTments program in their schools. These questions concerned:

- Principals' impressions about teachers' reactions to the ASSISTments summer training and early implementation efforts
- Teachers' level of interest in using ASSISTments
- Teachers' expectations about using ASSISTments
- Factors that might present challenges for implementation
- Factors that would be important to the success of the efficacy study and implementation.

Methodology

The goal of the study is to conduct a randomized control efficacy trial of ASSISTments, an online formative assessment and tutoring platform that supports teachers in their use of homework to improve math instruction and learning. To conduct the study, the project team planned to recruit classrooms from 52 public schools serving students in the 7th grade, with implementation lasting two years per cohort of teachers (in treatment condition), with a total of two cohorts. Cohort 1 sites began in September 2012; Cohort 2 began in September 2013. The RCT design randomly assigned schools to condition, with half serving in either the treatment or control group.

To measure student learning, the project team will use math achievement scores on a nationally normed achievement test, TerraNova, as the outcome measure. *The New England Common Assessment* (NECAP) will be used for covariate scores, obtained prior to intervention. *SmarterBalanced* (being introduced in spring 2014)will be an additional outcome measure. The data analytic strategy will include a three--level hierarchical linear regression model (students nested within teachers nested within schools), and include both moderator (e.g., student characteristics, such as low--baseline math achievement, special education, ELL, socioeconomic background) and mediator analyses (e.g., the link between use of the intervention with student homework completion rate).

As a part of a series of data collection activities, principals in all participating schools were interviewed in the early fall of the first year of their school's participation.

A research team from the Center for Research and Evaluation (CRE) at University of Maine interviewed cohort 1 principals from the treatment and control sites in October and November 2012.[1] There were nine treatment sites and eight control sites, for a total of 17 principals. After these interviews, one of the treatment schools with one participating teacher withdrew from the study, so cohort 1 had 16 schools for the remainder of the study. Two more interviews were conducted later, one in January 2013 and one in June 2013. All interviews were conducted in person at the school site except for one where the principal returned responses by email in January 2013. A team of six researchers (three faculty and three graduate students) met for training on the protocol and conducted the interviews. Cohort 1 interviews were digitally recorded and transcribed, producing a total of 633 minutes of interviews and a transcript of 202 single-spaced pages. Interviews with the treatment site principals were longer than those for control site principals, about 45 minutes compared with 30 minutes, because of the additional questions about the ASSISTments implementation effort. On average, interviews were 37 minutes long and 12 typed pages (single-spaced) in length.

1 The interview protocols for principals in the control group and the treatment group are in Appendix A.

Cohort 2 interviews took place in October and November 2013 with principals from the 14 treatment sites and in September and October 2014 with principals from the 14 control sites, for a total of 28 principals. One faculty member and one staff member from the Center for Research and Evaluation conducted the 14 interviews by phone in fall 2013, and the same individuals, along with an SRI researcher conducted the interviews in fall 2014. Interviews were digitally recorded and transcribed. The cohort 2 principal interviews produced 828 minutes of interviews and 286 pages of transcripts. Interviews for cohort 2 ranged from about 20 minutes to 50 minutes, with longer interviews resulting from the protocol for treatment sites. On average, cohort 2 interviews were 30 minutes long and 10 typed pages in length.

After the first round of interviews in fall 2012, data were compiled in tables that briefly described and summarized the responses and patterns for homework policy, school priorities, data practices, and concerns about the study. The preliminary results were shared informally and posted on the shared Google site with the study team. After the second round of interviewing in fall 2013, the data were reorganized and compiled to include data for each principal's responses, summaries for each of the two cohorts, and an overall summary for both cohorts (although without the cohort 2 control sites). These data form the basis of the analysis reported here. Data from the fall 2014 interviews were also incorporated for the final analysis presented in this report.

In addition, we decided to collect any formal written policies on homework from all schools in the study. In fall 2014, we telephoned the main school offices and looked for policies posted on school or district websites. This provided a more accurate source of information on the question of whether formal policies existed. Given that several of the principals were new to their schools at the time of the interviews, some were not yet familiar with the policies. We examined the documents and tabulated the relevant information to analyze the type of policy (district policy manual or school handbook), whether the policy addressed the general purpose of homework and/ or suggested time (number of minutes) and frequency (number of days) for homework assignments, and whether the policy specifically mentioned expectations for math homework. The interviews were useful for understanding the principals' perceptions of informal expectations and practices around homework in the school.

Findings

We present the findings by broad topics and point out the general trends as well as differences across the schools or cohorts. Again, where we talk about 45 participating schools and principals throughout this report, one cohort 1 treatment school withdrew from the study after the principal interviews were conducted. Thus, the study ended up with 44 participating schools across the two cohorts.

Homework Policies and Expectations

Examination of the formal district and school policies revealed that the overwhelming majority of schools participating in the study did have some formal policy concerning homework. There were no real differences between the two cohorts or the two conditions (control and treatment) on whether they had a formal policy. In cohort 1, 14 of the 17 schools had one and in cohort 2, 27 of the 28 schools did. Homework policies were communicated in district policy manuals and student or parent handbooks in roughly the same proportion. Some of the four schools without a formal homework policy indicated they are moving toward standards-based reporting of student performance and thus are not grading homework in the traditional way.

When we examined the language of the formal policies, we found that the cohort 1 schools were more likely to have policies that addressed the general purpose of homework, while the cohort 2 schools' policies were more likely to cover both the purpose of homework and the suggested number of minutes per night and occasionally frequency of homework over the week. In cohort 1, eight schools had policies that addressed purpose only, while six schools had policies that addressed purpose and time on homework. In cohort 2, nine schools had policies that addressed purpose only, while 18 schools' policies addressed purpose and time. Treatment schools were somewhat more likely than control schools to have policies suggesting time duration of homework. Across the 41 schools with some formal homework policy, 17 addressed the purpose of homework only while 24 addressed both the purpose and suggested time.

Of the 41 schools with a policy on homework, only one school, a cohort 1 control site, mentioned expectations specifically for mathematics homework. This included a suggestion for the number of minutes per night and frequency during the week. For all other schools, the policy language was very general and covered all content areas together.

While the formal policy documents express the intended expectations about homework, the interviews helped capture informal expectations and enacted homework practice within schools. Most of the principals we interviewed were able to answer questions about homework expectations readily, but a few had been newly appointed at the time of the interviews and were not yet familiar with the formal policies and informal practices regarding homework in their new schools for particular grade levels or content areas. They were more hesitant

and provided very general responses to the questions. Therefore, some caution is needed in reviewing the interview data.

When asked about homework expectations specifically for seventh-grade or middle-level mathematics, all 45 principals indicated that some homework was expected for mathematics but that it generally was up to the teacher to decide when and how much to assign. When asked whether math homework was usually graded or counted toward a grade, the majority of principals indicated that homework was graded for mathematics (38 of 45). Four principals indicated that homework was not graded, and three principals said that it was sometimes graded. Again, some of these schools were in transition to a standards-based proficiency model.

Frequency and Duration of Homework

Of the 41 schools that had a formal policy on homework, 24 provided guidelines on the number of minutes per night or frequency of homework for all subjects. Most of the guidelines for middle grades or seventh-grade specifically were in the 60- to 90-minute range per night. Several schools used the 10-minute per grade level guideline, suggesting 70 minutes per night for seventh-grade homework across all subjects. Frequency for homework was mentioned less often in the policies. Four schools had policies that suggest homework be assigned four nights per week. Others indicated homework should be assigned "nightly" or did not specify a frequency. Again, only one school had a policy that specifically mentioned homework expectations for math: 30 minutes per night and four nights a week.

In the interviews, principals consistently said that homework in general (for various subjects) was typically assigned four nights a week and typically not on Friday night because of sports and extra-curricular events. No principal reported homework being assigned less than three nights per week. A common expectation for seventh graders was that all homework combined should take about 70 minutes per night. Many principals explained that this was a district-level standard of 10 minutes per grade level. Some principals gave a range in time; 45 minutes was frequently the minimum time that students should be working on homework in general across various subjects, and no principal reported that students should be given more than 2 hours of homework nightly.

When asked about the frequency and amount of homework expected for mathematics specifically, principals also consistently reported that math homework was typically assigned four nights per week and in no cases should be given less than twice weekly. Ten to 30 minutes per night was cited as the minimum expectation for the duration of math homework, and 60 minutes was the longest time that students would be expected to work on math homework each night. When the two conditions were compared, no control school principal said that math homework should take longer than 30 minutes per night. Note that for treatment schools, the principals more often mentioned that decisions about homework frequency were up to the math teachers or teaching team. When we examined the expectations for time spent on homework for all homework and for math homework specifically, it was apparent that schools/ principals expected

students to spend a larger portion of their homework time on math than on other subjects. This expectation is consistent with the goal of many of the participating schools to improve students' performance on math assessments cited by 18 of the 45 principals we interviewed.

Concerns About Homework Completion

Homework completion was a concern for many of the principals, with almost a third (15) indicating that it was a definite concern for their students in general. Another 19 principals stated that homework completion was a concern for a subset of their students, estimated to be between 5% and 30% of students. Similar concerns were voiced about homework completion for seventh-grade mathematics specifically. The consistent reason given for noncompletion of homework was the lack of parental support for homework in some students' homes. Other principals cited lack of student effort or motivation. Two cohort 2 treatment principals and four cohort 2 control principals noted that homework completion was not a concern at all. Principals described efforts their schools had implemented to provide more homework support and tutoring to students before school, after school, or during the school day. Some representative comments from principals are provided below. A comprehensive list of quotations is provided in Appendix B. Principals voicing minimal or modest concern about homework completion shared the following comments:

> Do we have a small percentage of kids who are negligent or let's just say lazy, unmotivated to do it? In some cases the environment at home is not conducive, and we understand that as well.

> We have not had a significant problem with kids getting their math homework in. Both of our middle school teachers do not overburden kids with so-called "busy work." Also, they allow for class time to work with those few who do not get it in on time, or these same kids do attend our afternoon study sessions.

> Yes, and it's based upon motivation, based upon home support. So I don't have a number about it but depending upon the age group especially.

Principals voicing higher levels of concern about homework completion said:

> Yes, that's one of our biggest problems. We feel it is lack of motivation for kids to do - to complete work, to complete it in a timely fashion and to put enough energy and effort into it to make it worthwhile…. When a child is at the level where they're missing three assignments they stay after school every night, five days a week until they're caught up.

> I would say that I hear it more from the math teacher. I'm not sure it's math specific in terms of completion. I haven't heard so much in seventh-grade ELA or seventh-grade social studies but definitely hear it from seventh-grade math.

> Yeah, I think that they think that homework completion is a problem, and I think specifically

> within math, the inability of students to complete, um, homework, it just is a problem.
>
> Yes. And, you know, and what we've just implemented this year using some resources, our Title I resources, to offer an opportunity for students to have an hour of help, if you will, with their homework. And it seems that a lot of our students are seeking that help for math.

Principals' concerns about homework completion were consistent with what we heard in the teacher interviews[2], in which a majority of teachers expressed some concern about homework completion, often for a significant portion of their students (more than 25–30%).

Data Use Practices

We asked a series of questions to understand the extent to which and how teachers at the participating schools were collaborating at the start of the study on examining and using student data for decision making, what expectations principals held, and principals' involvement in this effort.

When asked if teachers met in grade-level teams, content teams, or both, principals indicated that their schools were just as likely to have teachers meet in grade-level teams as in content teams. Twenty-eight principals said they have grade-level teams, and 29 said they had content teams. Small grade schools were more likely to meet in grade-level teams only, while at middle schools teachers often met in both grade-level teams and content teams. There were no significant differences by cohort or by condition.

In terms of frequency of teacher team meetings, principals indicated that teachers meet more frequently in grade-level than in content teams. About a third (17) of the principals said that their teachers met in grade-level groups at least weekly (with six meeting daily), and 19 principals said their content teams met at least monthly (eight of which met weekly). Another five principals said that their curricular teams met only quarterly.

While there was not a large difference between control and treatment schools in these frequencies, it is noteworthy that of the treatment schools, more of the cohort 2 schools (10 of 14) indicated having weekly grade-level teacher meetings than cohort 1 schools (3 of 9). It would be interesting to survey teachers near the end of their two-year participation to see whether any changes occurred in how they meet to examine and discuss student performance data and whether the ASSISTments intervention triggered more change in treatment schools than control schools.

When asked about their own participation in these team meetings, 18 of the 45 principals said they regularly attended the meetings monthly or more frequently, while 16 indicated that they minimally interacted with teachers in this capacity. Half the principals who indicated monthly (or more frequent) attendance were from the cohort 2 control condition, which was sampled most recently, so this may represent a unique population or a changes in the expectations of administrators regarding team meetings. Overall, however (and

2 Findings from teacher interviews will be analyzed and shared in a separate report.

more specifically for treatment schools), the responses indicated a low level of engagement by principals directly in teacher team meetings on student performance data.

The interviews probed principals' expectations for how teachers should spend their team meeting time and expectations about teachers examining student data more generally. More than half (26) of the principals explicitly stated they wanted teachers to have discussions during team meetings based on student performance data. Although cohort 2 treatment schools had more frequent grade-level teacher meetings, cohort 1 treatment principals more frequently stated that those meetings should include data-driven discussion (8 of 9) than their cohort 1 control counterparts (5 of 8), the cohort 2 control principals (9 of 14), or the cohort 2 treatment principals (4 of 14). Only 10 principals offered more specifics about what they wanted teachers to discuss. The topics included improving assessment scores, focusing on student learning needs, being proactive, planning for interventions, developing more hands-on approaches, and using ASSISTments more. Some representative statements about expectations for teachers to examine data included the following from treatment site principals from both cohorts:

> They're expected to look at the data. We've actually generated these huge—we started them—data sheets on each class last year that lists the NWEA (Northwest Evaluation Association) scores, their NECAP (New England Common Assessment Program) scores, and their writing prompt scores, and we've color coded them for ones that are receiving RTI (Response to Intervention) services, ones that receive special ed services. And then we've looked at the kids who are falling below the "meets" [proficiency] level and trying to figure out how to address their needs.

> We want them to discuss [in monthly content team meetings] how students are doing. We want to know overall, like what percentage of them are showing growth, what percentage is not. What percentage of students is in each category. And then the students who are the lowest, what are we doing to bring them up?

> Constantly. So we have one meeting a month, one meeting a week. It's called Common Planning Time, and they are supposed to spend that time on curriculum and assessment. Which is hardly enough time. And then Wednesday's are the vertical and the team.

> I would assume they are discussing that every day…. I walk in on teachers all the time. They are sitting down. They are saying, "I had so and so last year. You have him this year. You know I am having trouble with this or that. Can you help?" We have RTI meetings on kids and develop plans together.

> And that's really what, you know, what we're asking teachers to examine. So they're looking at student work, they're looking at the results of student work, they're looking at a breakdown of the results of those students, student works, to determine where there may be shortcomings in either our curriculum or in our instruction.

> They should be living it and dreaming it. We're very conscious of our state assessment tests, not that we are, um, … driven by them, but we are certainly guided by the expectations. We do want our students to do well. We do a lot of work in looking at the assessment and looking at how our students perform from the previous year. And then we focus our instruction on the areas that students need to improve on for the following year. So that, you know, that end-of-the-day time, especially when we get back our data, the staff work on that together. And usually it's in content groups.
>
> That should be driving their instruction, you know, we look at them in terms, we do RTI regularly and benchmark assessments, so that we know what direction to go in with them individually and as a group.
>
> Whereas a majority of principals did express the expectation that teachers would examine student data during their team meetings, others said that teachers engaged in data discussion during their professional learning community (PLC) time or inservice days. Notably, four cohort 2 control principals indicated a focus on examining data for the RTI process and for identifying which students needed interventions.

We found a disconnect between principals' stated goals and actions regarding data use in their schools. Principals were fairly emphatic about their expectation that teachers would examine student data to inform instruction, yet they indicated minimal direct involvement as principals in that effort. It would be interesting to survey principals at the conclusion of their two-year participation in the ASSISTments project to see whether they report any changes in their own expectations for teachers' use of data, leadership practice, and involvement with teachers regarding data use, and whether the ASSISTments intervention triggered more change in this regard in treatment schools than in control schools.

Use of Common Benchmark Assessments

The NWEA Measures of Academic Progress® (MAP) test and NECAP test were the most commonly used assessments by schools to provide data about students for the teacher meeting discussions. Of the 45 schools, the NWEA and NECAP assessments were used in 34 schools and 20 schools, respectively. At the time of the interviews, cohort 1 control schools used these two assessments more commonly than the treatment schools. All control schools used the NWEA, and 6 out of 8 used the NECAP. For cohort 2, more treatment schools reported using the NECAP (9 of 14 versus 2 of 14), while far more control schools reported administering the NWEA (13 or 14 versus 8 of 14). Principals from three cohort 2 treatment schools described using universal screening for their RTI programs, and another several schools in all cohorts were using curriculum-based or common assessments. The most recently interviewed principals, cohort 2 control, were the only ones (8 of 14) that indicated giving the Smarter Balanced test, which is aligned with the Common Core standards. Other assessments that principals mentioned were TerraNova (3 schools),

aimsweb tool (3), Northwestern (1), Scholastic Math Inventory (1), STAR Assessments (1), and the Iowa Algebra test (1). One principal indicated that the school used no formal assessments, and another principal indicated the school is in a state of flux and planned to change assessments.

Other Initiatives and Priorities for Participating Schools

Across the 45 principals, we found that schools focused on a myriad of school and district initiatives. About half (21) of the principals mentioned a shift to implement the Common Core standards, with three of these principals mentioning specific software and curriculum packages used to that end. It is noteworthy that while half the principals discussed this as a major priority, only two cohort 1 control schools mentioned it as a school focus.

The implementation of RTI was the second most commonly cited initiative, being a major focus of 17 schools. Principals of these schools stated that this paradigm shift was a major priority, with five of the cohort 2 treatment schools adding that this initiative included movement toward a competency- or proficiency-based high school diploma, and one cohort 2 control school specifically connecting the RTI program to math achievement. Treatment site principals described this effort in their schools:

> And the other thing that we're working very hard on is our RTI process. We're fortunate that we have early release on Fridays that we devote to PLCs. So that is when we look at students and monitor their process and evaluate data.

> So currently they're working on, looking at the architecture of how we have RTI throughout our school … supporting students who are not meeting standards so, you know, they generate that goal at the beginning of the year. Sometimes it's based around the math goal or the literacy goal or the vocab goal, and then they work on it and review their data every other week and plan from that.

About a quarter (12) of the principals said that literacy/reading/language arts was a focus, with no major difference in frequency between cohort or condition.

Other initiatives were mentioned by fewer principals. Six discussed their efforts at Positive Behavior Intervention Support. Cohort 2 schools exclusively mentioned the implementation of teacher evaluation systems as a priority (14) and discussed programs geared toward individualized or customized learning (9). This finding may have been influenced by the timing of the principal interviews as all the cohort 2 interviews occurred in fall 2013 or later, at least one year after the cohort 1 interviews, and in the interim the state made teacher evaluation a priority.

Less frequently named priorities were the switch to and specific training for iPads (4), antibullying programs (3), being a Continuing Improvement Priority School (3), implementing science initiatives (2), increasing the use of data in pedagogical practice (2), having an inquiry-based approach

as an International Baccalaureate school (1), using open-ended questions for deeper student engagement (1), professional development on math instruction (1), suicide counseling (1), the enhancement of 21st century skills (1), and combining 7th- and 8th-grade classrooms (1).

Teacher and Principal Expectations About ASSISTments

Principals from treatment schools (9 in cohort 1 and 14 in cohort 2) were asked how interested their teachers were in using ASSISTments and what expectations the teachers and they themselves had about the use of ASSISTments in their school. Broadly, principals consistently indicated that their teachers were very interested in using this homework tool, that they had expressed positive views of the summer training, and were eager to begin or had already begun to use ASSISTments in their classrooms at the time of the principal interviews. Principals had heard only about minor aspects that were frustrating initially to teachers, related to the normal process of learning to use a tool for the first time and convincing students to enter their homework answers into the program after they had solved them on paper.

Comments revealed the expectation that ASSISTments would help teachers use their class time more efficiently, provide a quick window into individual students' understanding to inform teaching and differentiation, provide a broader range of information about student learning and homework effort, and give students instant feedback on their homework answers. Some representative views from treatment site principals in both cohorts included the following:

> I think the big thing is the time savings that they'll get … and that's what interested me a lot about it, was they have a pretty clear picture of where kids are solid on the concepts or the skills or where they really need to do some reteaching or reinforcing before the kids even walk in the door that day, which is amazing…. If the homework is corrected before you even get there then you jump right into the reinforcing. And I think that is going to be a great time saver. So that's their expectation, is to help them with that part, that's the biggest…. It's really going to bring to light the kids that are really struggling I think, who are maybe just the outliers. And that becomes an individual student conversation. So I think it's going to be helpful there. And then it gives them opportunity to work with small groups and really plan out how they're going to differentiate.

> I think it allows him to track students' progress better. Better, easier, quicker, once he, you know, goes through that learning process. So, the tracking. He thinks, in the conversations that I've had with him, that kids are getting it.

> They're getting far more information about students, about all of their students than they were ever able to devise on their own. And so, you know, they can see, you know, and it's not always the same students who struggle. …. So that I think that they are excited about what they're seeing in the in the math portion of their kid's brain.

> Very interested. They are very interested in making it work. They've spoken positively about it. …They are hoping that it's going to help them be more effective with using their classroom time. I think that they see it as providing some useful formative information and helping identify areas of concern for particular students. You know, being able to be a little bit more targeted.

One principal described how a veteran teacher was thinking about retiring but stayed and was very enthusiastic about having this homework tool:

> She, you know, was contemplating retiring this year coming, which would have been a real loss for our school and for our kids. And she was skeptical because she has seen everything. You know how veteran teachers are. But she said, I spoke with her yesterday, and she said, "[Name], this is the best thing! I wish I would have had this in my first year of teaching." And what she stressed most with her kids was the instant feedback for kids.

Concerns Specific to the ASSISTments Study

Principals from treatment schools (23) were also asked to share any concerns about implementing ASSISTments in their schools and what factors would be critical for the success of the study. Hardware issues and limited access to the Internet for students living in rural areas were among principals' more common concerns. One principal said,

> …for kids who don't have computer access at home, which are quite a few. So we had to accommodate those kids to be able to be on the same page and part of the work, which I believe—I can't remember exactly how he solved that, but I'm pretty sure kids come in in the morning to do their work.

Another principal indicated not anticipating needing LCD projectors to implement ASSISTments:

> The biggest barrier was, How are we going to make sure that each classroom had the technology? I mean, we didn't have extra LCD projectors hanging around. So I have had to tie them up, you know, because they need them in their classrooms. It would have been helpful I think if people know ahead of time.

Three cohort 1 principals expressed concern about students not being able to take their laptops home from school because of either school policy or noncompliance from parents. Two cohort 2 principals mentioned that they had heard of issues using ASSISTments with iPads at an early point in the school's implementation of the devices that year. Issues related to using iPads with ASSISTments were communicated to the team and were resolved.

Six principals were concerned about whether teachers would have sufficient time and focus to incorporate ASSISTments into their practice. This concern was primarily found among cohort 2 principals (one from cohort 1, five from cohort 2). Three cohort 1 principals were concerned with the

delayed launch of using ASSISTments at the start of the school year because of the administration of testing in September.

Software functionality was a concern for four principals. Three cohort 2 principals noted that early and ongoing support from Worcester Polytechnic Institute (WPI) was a crucial concern, two cohort 1 principals were apprehensive about whether there was sufficient flexibility within the program for teachers to make any needed adjustments, one cohort 2 principal lamented the absence of prebuilt hints, and one mentioned the missing ability to require units with numerical answers. One principal also noted that students found the red "X" response to errors discouraging.

When asked what factors would contribute to the success of the study, the most commonly voiced factor was teacher buy-in. Five principals were concerned about this (two in cohort 1, three in cohort 2), and two of them noted that having such buy-in was most likely contingent on teachers seeing results with their students. Related to that idea, one principal from each cohort stated that it was imperative that the school follow through with implementation long enough to see an impact (through higher test scores).

Another concern shared by four principals (two from each cohort) was that technical roadblocks would have to be minimal (e.g., log-in issues, data-entry errors in answers) for the study to succeed.

The availability of support and continued training for teachers was mentioned by four principals (two in cohort 1, two in cohort 2). Additional concerns included having fidelity of implementation across teachers and schools (1), gaining support of parents (1), and the need of teachers to maintain focus throughout the study (1).

Summary

Analysis of the formal school or district policies on homework revealed that the vast majority (41 of 45) of the schools in cohorts 1 and 2 did have a formal policy articulating that homework was generally expected. Only one school had a policy that specifically mentioned homework expectations for math. Of the 41 schools with policies, 24 included guidelines on the number of minutes per night and days per week for homework assignments. Cohort 1 school policies were more general and described the purpose of homework, while cohort 2 policies included both general purpose and suggested time and frequency for homework. More of the treatment schools included suggestions for time and frequency than the control schools. For policies that suggested time for homework, the typical guideline was 60–90 minutes per night for all grades, and several policies suggested 70 minutes specifically for seventh-grade homework across all subjects. Most of the policies indicated homework was expected daily or did not specify frequency.

In the interviews, all 45 principals indicated that some homework was expected for math, but that it was generally up to the teacher to decide when and how much to assign. The majority of principals (38 of 45) indicated that math homework was generally graded. Some schools were in transition to standards-based proficiency grading, and were

reexamining their practice for grading homework or counted homework more toward effort than part of academic performance.

Consistently principals said that homework for math specifically was typically assigned four nights per week, Monday through Thursday. Principals indicated a minimum expectation of 10–30 minutes per night for math homework and 60 minutes as the maximum. Almost half the principals said their schools had concerns about students not completing homework, and this was especially true for math. This concern was echoed in the teacher interviews.

A majority of schools used grade-level teams for teachers to plan and review student data and content-specific teams to work on curriculum. Principals indicated that teachers met more frequently in grade-level teams than in content teams. Those with grade-level teams met weekly, while content teams met monthly. However, about one-quarter of the schools with teacher teams (all from cohort 2) met far more regularly, with six grade-level teams meeting daily and eight curricular teams meeting weekly. Five principals said their content teams met even less often, on a quarterly basis.

While principals indicated an expectation for teachers to use their team meetings to discuss student performance data, only 18 of the 31 principals said that they regularly attended these meetings monthly or more frequently.

The NWEA MAP and NECAP were the most common benchmark assessments used in their schools. Of those schools interviewed most recently, the Smarter Balanced test has apparently taken the place of the NECAP. Other tests were mentioned by three or fewer schools.

Principals listed a variety of initiatives and priorities under way in their schools beyond their involvement in ASSISTments. About half the principals mentioned implementing the Common Core standards, which affected the instructional materials teachers were asked to use for mathematics in 2013–14. Response to Intervention was mentioned by 17 principals as a high priority, 12 indicated a priority in literacy/ reading/language arts, and 18 specifically mentioned that math was a priority. Some schools were also shifting away from the use of laptops and implementing iPads for students in fall 2013.

Principals said their teachers were quite positive about the ASSISTments tool and its potential for increasing efficiency in homework review and providing more in-depth understanding of students' learning and homework effort through the instant feedback to students on homework.

Broadly, principals did not indicate serious concerns about their school's participation in the study. Six principals did indicate some concern about whether teachers would have time to integrate ASSISTments into their practice given the other initiatives taking place in their school. Five principals indicated that technical training and support would be critical for the success of the study.

A few principals (three or four) mentioned concerns about potential technology and logistics issues. One concern for the small rural schools was the issue of Internet connectivity in the homes, and

whether all students in a seventh-grade math class would be able to take their laptops home at night. Some of these classes may include advanced 6th-graders, and the school may have a policy not to allow 6th-graders to take their laptops home. Other students' parents may not have signed the forms necessary to allow laptops to go home.

Concluding Thoughts

Many of the school principals indicated concerns about the high percentage of students who consistently did not complete homework. In the research literature, low academic expectations have been associated with low student achievement. Given that these schools joined the ASSISTments study largely because of their desire to improve student math achievement, it would be interesting to see whether their participation in the study motivates them to reassess their homework policies or, expectations or to institute other actions or supports to encourage homework completion, particularly at the middle grade level.

The interviews also indicated that principals did not routinely participate in teacher grade-level team or content team meetings to discuss student performance data. While principals said they expected teachers to use this time to look at student data, among other things, their lack of involvement is a missed opportunity to communicate expectations to teachers, to guide productive discussions on data, and to hold teachers accountable for using data to inform curriculum and instruction decisions. This is not an uncommon phenomenon in schools today. In Maine, the streamlined structure of district central offices and persistent state education funding cuts mean that school principals often have a broader range of job responsibilities than in the past, and they do not typically have an assistant principal to share these duties. It would be interesting to see if principals alter their leadership behavior regarding teacher data discussions in part as a result of the ASSISTments intervention.

The participating schools were simultaneously engaged in implementing many other broad initiatives at the time of the study. Most important, they were shifting from the Maine Learning Results and state assessment system to the Common Core standards (in fall 2013) and Smarter Balanced Assessments (in 2013–14). This required teachers to learn about the curriculum changes and to begin to incorporate instructional materials to bring their curriculum up to the higher academic expectations for seventh-grade math. Our teacher interviews generally indicated that schools were holding off on purchasing new textbooks to align with the Common Core and were using a mix of different instructional resources for the time being. In addition, many schools had been focused on implementing Response to Intervention strategies and improving their literacy or reading achievement. Still, despite these demanding times for teachers and administrators, neither the principal nor teacher interviews indicated strong concerns about their ability to complete their participation in the study and, for treatment schools, to implement ASSISTments in the classroom.

There are a number of interesting research questions about the potential for the ASSISTments intervention to trigger changes in principal and or teacher behaviors and school policy and expectations for homework. However, these changes will remain undocumented unless a final exit interview with principals is conducted at the conclusion of their participation. For the treatment schools, this could be done in spring or early fall semester after their participation ends. For the control schools, principal exit interviews would have to be delayed until after teachers participated in the summer training and returned to school to begin implementing ASSISTments in the classroom. Therefore, it might be possible to interview a subsample of principals, for example only the treatment school principals.

Appendix A: Protocols for Interviews

Protocols for Interviews:

- Principal Interview Protocol: Control Group
- Principal Interview Protocol: Treatment Group

Principal Interview Protocol: Control Group

Overview of the project

Thank you again for participating in this important research study funded by the U.S. Department of Education. This study aims at helping all Maine teachers to understand how to use homework more effectively to improve student learning. We would like to learn from you about district and school policies on homework and whether there might be any implementation issues.

Homework Policy

Let's start with the school policy.

1. Do you currently have any general policy on homework for 7th grade?

Is the homework for 7th grade in your school,

- Required or optional?
- Graded?
- Does homework count toward students' course grades?

Does your district or your school have any suggestions or expectations on homework for 7th graders across all subjects?

- *How many days per week should homework be assigned?*
- *How long each assignment should be in terms of # of problems, and # of minutes?*
- *Does your school or district offer any guidelines for teachers or parents about how much time students are expected to spend each night on homework in general?*

2. Do you currently have any general policy on homework for Math?

Is the homework for Math in your school,

- Required or optional?
- Graded?
- Does homework count toward students' course grades?

Does your district or your school have any suggestions or expectations on homework for Math?

- *How many days per week should homework be assigned?*
- *How long each assignment should be in terms of # of problems, and # of minutes?*

3. Do teachers in your school feel that homework completion is a problem in general? How about for math homework in 7th grade?

4. Do you have any concern with your students' performance in math?

Other things going on

5. What other initiatives related to curriculum, assessment, or professional development are taking place in your school or district currently?

In what ways might these other initiatives impact homework practices or math instruction?

6. What are the major priorities or areas of focus currently in your school or district?

Professional Development Community:

7. Do teachers at your school meet either in content teams or grade level teams each week?

How much time do teachers get to meet in their teams each week?

What are your expectations about how this meeting time should be used?

8. To what extent do you expect teachers to discuss student learning outcomes?

(Probe if teachers are expected to look at individual, classroom, or grade level outcomes, and if they are expected to use data to make decisions about instruction and interventions.)

9. Do teachers administer common benchmark assessments for 7th grade math?

(**Which assessments?** For what purposes? What is done with that data? By school administrators? By teachers?)

10. How often do you meet with math teachers to discuss student learning data and to strategize about modifying instruction, curriculum, or programs?

School community

11. Please tell me a little bit about your community.

[a general description of the community, such as broad socio-economic factors that may affect student learning outcomes. For example, if the community is growing or declining, if businesses have closed recently resulting in increased unemployment, etc.]

12. How would you describe the students attending your school?

[e.g.,situations such as having kids from different countries who speak different languages, having high poverty families, etc.]

13. How would you assess the level of support for education in your community?

Principal Interview Protocol: Treatment Group

Overview of the project

[Note: The project debrief can be omitted if interview is in person and interviewer has gone through the informed consent with the principal.]

Thank you again for participating in this important research study funded by the U.S. Department of Education. This study aims at helping all Maine teachers to understand how to use homework more effectively to improve student learning. During this school year, 7th grade mathematics teachers from your school will start assigning homework within ASSISTments. Students are expected to complete homework on their laptops. We would like to learn from you about district and school policies on homework and whether there might be any implementation issues.

Homework Policy

Let's start with the school policy.

1. Do you currently have any general policy on homework for 7th grade?

Is the homework for 7th grade in your school,

- Required or optional?
- Graded?
- Does homework count toward students' course grades?

Does your district or your school have any suggestions or expectations on homework for 7th graders across all subjects?

[Probe:

- *How many days per week should homework be assigned?*
- *How long each assignment should be in terms of # of problems, and # of minutes?*
- *Does your school or district offer any guidelines for teachers or parents about how much time students are expected to spend each night on homework in general? }*

2. Do you currently have any general policy on homework for Math?

Is the homework for Math in your school

- Required or optional?
- Graded?
- Does homework count toward students' course grades

Does your district or your school have any suggestions or expectations on homework for Math?

[*Probe for things such as*

- *How many days per week should homework be assigned?*
- *How long each assignment should be in terms of # of problems, and # of minutes?]*

3. **Do teachers in your school feel that homework completion is a problem in general? How about for math homework in 7th grade?**

4. **Do you have any concern with your students' performance in math?**

Implementation

Worcester Polytechnic Institute (WPI), the provider of the ASSISTments technology, hosted the first summer professional development workshop for participating teachers at Falmouth Middle School in August. During the workshop, teachers were introduced to features of ASSISTments and trained on how to use ASSISTments for homework assignments and reviews. The workshop discussed how to use ASSISTments to make decisions about instruction, to differentiate instruction for students, and to use homework more effectively. The workshop went well and the feedback we have received was largely positive.

5. **Have you heard anything from your teachers about the workshop or about the study as a whole?**

6. **From your perspective, how interested are the teachers in using ASSISTments?**

7. **What expectations do teachers have related to their use of ASSISTments?**

8. **We would like to get your perception about things that might be difficult for the study. Do you foresee any obstacles for either students or teachers using ASSISTments for homework following our specified model that anticipates teachers to use ASSISTments for homework assignments and reviews 3 times per week and about 20 minutes for each assignment. What could be the barriers?**

9. **Do you have any thoughts on whether the parents will be supportive of this study? If not, why?**

10. **Overall, what do you think would be the most important factor to the success of the study?**

11. How is the implementation of ASSISTments going so far in your school? Are there any difficulties to date with the implementation? (please explain)

Other things going on

12. What other initiatives related to curriculum, assessment, or professional development are taking place in your school or district currently?

In what ways might these other initiatives impact the implementation of ASSISTments, homework practices, or math instruction?

[Schools might have many different things going on. Probe for things that might take much time from professional development, ability to provide release time for teachers, etc.]

13. **What are the major priorities or areas of focus currently in your school or district?**

Professional Development Community:

14. Do teachers at your school meet either in content teams or grade-level teams each week?

How much time do teachers get to meet in their teams each week?

What are your expectations about how this meeting time should be used?

15. To what extent do you expect teachers to discuss student learning outcomes?

(Probe if teachers are expected to look at individual, classroom or grade level outcomes, and if they are expected to use data to make decisions about instruction and interventions.)

16. Do teachers administer common benchmark assessments for 7th grade math?

(Probes: Which assessments? For what purposes? What is done with that data? By school administrators? By teachers?)

17. How often do you meet with math teachers to discuss student learning data and to strategize about modifying instruction, curriculum, or programs?

School community

18. Please tell me a little bit about your community.

[Probe for a general description of the community, such as broad socio-economic factors that may affect student learning outcomes. For example, if the community is growing or declining, if businesses have closed recently resulting in increased unemployment, etc.]

19. How would you describe the students attending your school?

[Probe for situations such as having kids from different countries who speak different languages, having high poverty families, etc.]

20. How would you assess the level of support for education in your community?

Appendix B: ASSISTments Study Interview Data Representative Quotations from Principal Interviews, by Topic

Concerns about HW completion rates:

Q: Do teachers in your school feel that HW completion is a problem in general? For 7th gr math

- **Minimal concern, or only a small portion of the students not doing hw:**

  Do we have a small percentage of kids who are negligent or let's just say lazy, unmotivated to do it? In some cases the environment at home is not conducive and we understand that as well.

  …we have not had a significant problem with kids getting their math homework in. Both of our middle school teachers do not overburden kids with so-called "busy work". Also, they allow for class time to work with those few who do not get it in on time, or these same kids do attend our afternoon study sessions.

  I think the community basically realizes that it's--I don't have a lot of parent complaints about the amount of homework, the frequency of homework, the expectation that it be done. In fact, sometimes I have the opposite complaint--my kids don't seem to have much homework.

  Yes and it's based upon motivation, based upon home support. So I don't have a number about it but depending upon the age group especially.

The teachers have not found that homework completion has been a problem. We had a problem a few years ago. We implemented something at the high school level and also at the middle school level. If students are consistently not doing homework, teachers will do what they call an academic detention. Call a parent…

I wouldn't say on a broad scale. Students who struggle in school-- there's a correlation I would say between students who struggle in school and not doing homework. And you could argue whether it's chicken and egg.

I don't think teachers feel that homework completion is an issue. I believe that we have processes in place in which kids can come in before school to ask questions if they don't understand something.

There are always some issues as far as getting all the kids to, to get all of their homework completed. Um, we have uh a lot of kids that are involved in a great deal of after-school activities, whether it be athletic or clubs or whatever it might be. But budgeting time is difficult. We have a homework lab that we offer in the mornings for our kids, and this is where it takes place and also in the afternoon we have one too.

The majority of students get their homework done. We do offer a homework support a

couple of nights a week, for students that do have difficulty getting it done.

- **More concern, or larger segment of the students not doing homework:**

  Yes, that's one of our biggest problems. We feel it is lack of motivation for kids to do - to complete work, to complete it in a timely fashion and to put enough energy and effort into it to make it worthwhile…. When a child is at the level where they're missing three assignments they stay after school every night, five days a week until they're caught up.

  I would say that I hear it more from the math teacher. I'm not sure it's math specific in terms of completion. I haven't heard so much in 7th grade ELA or 7th grade social studies, but definitely hear it from 7th grade math.

  Very much so. We were all very concerned.

  Ya, I think that they think that homework completion is a problem. And I think specifically within math, the inability of students to complete homework, it just is a problem.

  Yes. And, you know, what we've just implemented this year, using some resources, our Title I resources, to offer an opportunity for students to have an hour of help, if you will, with their homework. And it seems that a lot of our students are seeking that help for math.

  Probably 25% of our students have a problem with homework completion. And when I say problem, that it affects their grade. 25, maybe even as much as 30, by the time we're getting into 8th grade.

  But for the most part I think, you know, probably it's like 70% regularly [do homework]. You know, that's not a bad turnout of homework.

  Yes. Homework completion is an ongoing bugaboo. 6th, 7th, and 8th. In in 7th, we've had teachers who have tried to do the weighting, my homework at a zero percent of final grade, in the past, as a way to really use, you know, performance tasks as the way to (?) calculate a grade. And they've seen that that has a negative effect on the day to day homework. So they they've certainly found that homework completion is an ongoing issue.

  We find that certain sub-groups struggle more, uh for example, our [lower] SES population struggles. Um students that, you know, don't have as many risk factors, like attendance or, you know, uh low socio-economics or behavioral issues, they, you could give them loads and loads and loads of homework and they would get that done. We (laugh), that's very, it's a very difficult gap. And so, you know, again, that academic focus period is essential because that does provide the support that students would need.

  We've made it a goal of our school to have homework completion improve, so we've been doing some school-wide work around making announcements in the morning to encourage

students to keep up their good work, and try to be very positive that this is the culture and this is what's happening around you, so be on board with that. We have the 7th grade procedure that we use, where it's automatic stay after school if you don't have it done. The teachers give pretty thorough feedback about the homeworks. And I think that has created some buy-in around it.

- **Alternative view: questioning the importance of homework:**

  We're trying to separate out what students know and behavior, and I see homework completion as a behavior--you do it or you don't do it, and it might show what you know, but it also might not. … However, the more we read, and research supports that homework is not the most effective thing for some of the reasons I pointed out--family situations, some kids go home and let's face it, they're taking care of a younger sibling, and parents aren't home. There's a whole - - they're hungry. There's a whole raft of issues, like some students are at a disadvantage, so I think if we can take advantage--we have 9 to 5 here or whatever, you know, 7 to 2:30, that's what we need to be focusing on and not relying on homework but using that as a support is more of what we do here to the best that we can.

Principal's expectations for how Ts should spend meeting time/ work with data:

Q: What are your expectations about how this meeting time should be used?

Q: To what extent do you expect teachers to discuss student learning outcomes?

Use of team time for just *general planning:*

That specific time is supposed to be for--it's the only time that all of them can get together on that team. Sometimes they have to deal with student issues. But the intent is to really use that time to work on these interdisciplinary projects and to coordinate with one another…

Well, I do expect them to really be looking at instruction and looking at the curriculum, looking at their assessments, making sure they're aligned, making sure they're making them current and, you know, making them effective for kids.

There's a cycle – they should focus on standards, instruction, and progress monitoring. They also talk about unit planning, assessments, and intervention. They send me a weekly update, and I meet monthly with the PLC team facilitator.

Well, they, they should be uh going over current curriculum. And obviously currently best practices. Uh they should be using the time for uh collegial assistance. Collegial assistance of each other. Um and just trying to improve, uh just trying to get from each other to improve instruction.

Use of team time for examining *student learning and data:*

We want them to discuss how students are doing. We want to know overall like what percentage of them are showing growth, what percentage is not. What percentage of students is in each category. And then the students who are the lowest, what are we doing to bring them up? (describing use of monthly content team mtgs)

The reason we don't do the nuts and bolts stuff in staff meetings is because that's where I want it done, on the team level. I can disseminate all my information by email. I don't need to talk to the crowd. So that's where they talk about the kids. They talk about what they're doing in the classroom because most teams are trying to align, you know, what they're doing with what's going on in the other classrooms. So it's very team centered. In the content meetings, they'll--just that. They're content meetings and they're more talking about, for example, we just did district writing bumps and they were all focused on that language.

Constantly. So we have one meeting a month-- one meeting a week. It's called Common Planning Time and they are supposed to spend that time curriculum and assessment, which is hardly enough time, and then Wednesday's are the vertical and the team.

I would assume they are discussing that every day…. I walk in on teachers all the time. They are sitting down. They are saying "I had so and so last year. You have him this year. You know I am having trouble with this or that. Can you help?" We have RTI meetings on kids and develop plans together.

What we ask teachers to do is at each grade level, and as a content area, so math teachers in 6th 7th and 8th grade will meet, and they'll look at the resources that we have. Try to look at say, you know, so what resources do we need, in addition to the resources that we have, that are going to help us to get to where we need to be in May of 2015.

They should be living it and dreaming it. We're very conscious of our state assessment tests, not that we are um… driven by them, but we are certainly guided by the expectations. We do want our students to do well. Um we do a lot of work in looking at the assessment and looking at how our students perform, um from the previous year. And then we focus our instruction on the areas that students need to improve on for the following year. So that, you know, that end of the day time, especially when we get back our data, the staff work on that together. And usually it's in content groups.

Those teams today spent today breaking down all the math data and the ELA data for NWEA, which is our fall testing. So they've been able to rank all of our students and tell us which, what areas of weakness all of those students have.

So currently they're working on, um, we're looking at the architecture of how we have RTI

throughout our school. … supporting students who are not meeting standards so, you know, they generate that goal at the beginning of the year. Sometimes it's based around the math goal or the literacy goal or the vocab goal, and then they work on it and review their data every other week, and plan from that.

I wish that I could say that they're all looking at data and trying to best meet kids' needs by using data. I think a lot of it, the meeting times have to do with planning times, (I: Mhm) making sure people are on the same page, um moving forward. Possibly talk about some individual needs. (I: Mhm) But I think we're trying to make it more focused on data.

This week my assistant principal and myself are meeting with the teams to talk about our NWEA data.

So they're [content teams] looking at different ways they're uh, what they're covering for content, how they're doing it, what they're using for strategies. And then at the grade level, it's just uh co-planning to make sure that kids across the grade get a common expectation.… They're also looking at common assessments and looking at student work when they administer common assessments.

Um uh what I'm really working at, on, with um the junior-senior high school, is looking at data. Basing their conversations on what they have for data. Um and moving forward in that way.

Use of inservice/ early release days/ PLC time to *examine data:*

One of the things we started years ago with the science and NWEAs and NECAPs and that was data analysis because the science teacher's brains work like that. Then I found out math teacher's brains work like that really, really good too. So we've started doing item analysis on both NECAP and NWEAs. And looking at where the strengths and weaknesses as a whole and then individual students so that when we find a student lacking in a skill we can address that skill. And we also make plans for the school, each of my contents areas they discuss the results and they make themselves a content goal. It's our goal to, you know, increase the NECAP math scores by two points and this is how we're going to do it. And they develop strategies.

And the other thing that we're working very hard on is our RTI process. We're fortunate that we have early release on Friday's that we devote to PLCs so that that is when we look at students and monitor their process and evaluate data.

So it's a shift we're making. We're trying to--first of all it got additional PLC time built into our professional development this year which is really time totally devoted student outcomes, looking at data, sharing best practices, those kinds of things.

So they'll get together as math teachers and we also have our vertical meetings. Sometimes

the entire 7th grade will get together with the entire 6th grade but since they're not teaching common subjects this year our curriculum coordinator has set it up so now all the math teachers in our building, 5, 6, 7, 8 will get together once a quarter and they'll go over this data and start saying okay, what are we seeing as trends, what are some of the things we need to spend more time on and those are the things that we're working on.

We've really tried to make the shift in the last 5 years to see themselves as professional learning communities, you know, without that sort of guiding. I guess that sort of guiding principle of it has to be about the student work. It has to be about the student work as it relates to the essential learning targets that have been identified.

Our next district-wide minimum day that we have they're expected to make a presentation on the cross-cutting practices that they've, you know, some of the strategies that they've implemented in their classroom.

The PLCs is really for the professional development and to continue to um move our curriculum ahead. Um, and really that's a time when the departments are looking at NWEA data, you know, informal assessments, those kinds of things, and seeing what the trends are. Where we're strong, where we're challenged.

Principal's expectations around data:

They're expected to look at the data. We've actually generated these huge--we started them, data sheets, on each class last year that lists the NWEA scores, their NECAP scores, their writing prompt scores and we've color coded them for ones that are receiving RTI services, ones that receive special ed services, and then we've looked at the kids who are falling below the "meets" [proficiency] level and trying to figure out how to address their needs.

I mean we keep a real close eye on which students are having difficulties. I think that's one of the strengths here is that we use a lot of data to figure out where our kids are not meeting the expectations. We have the NWEA testing we do that gives us a starting point.

So we shared that in a faculty meeting and we just--and one of their tasks for this last couple of months and were going to meet again December 6 is to think about how you measure student growth. How do you measure whether kids are learning in your content area and in your class and what we're going to do is we're going to come up with a list and share with each other on how we measure and then were going to do a showcase in the spring where we are going to have kids demonstrate what they've learned either demonstrate or perform, apply or discuss or present something.

And that's really what, you know, what we're asking teachers to examine. So they're looking at student work, they're looking at the

results of student work, they're looking at a breakdown of the results of those students, student works, to determine where there may be shortcomings in either our curriculum or in our instruction.

That should be driving their instruction, you know, we look at them in terms, we do RTI regularly, and benchmark assessments, so that we know what direction to go in with them individually and as a group.

With customized learning, we're really focusing in on the individual. With the students that are in the classroom you might have clusters of students at various places. And so you can certainly address it that way…

And the other expectation is that periodically they sit at a table and uh look at student work. So they learn from each other.

And the math team I think will have to create it as we go. My hope would be that we're pulling down the common assessment data, and we're looking at the literal individual performances of students on individual problems. And diagnosing where are the weaknesses, overall.

We've actually done some of that. Um, but… it's, you have to, uh, we're working right now to get good, good data. So, you know, the, we have the NECAP data, and that's, it's okay. It's not necessarily 100% beneficial. We have, we use the AIMSWEB here. And that too gives some quality data, but some of it isn't quite as effective. Uh, so we're talking about how we use formative assessments uh to give us data that we can use to inform our teaching and better inform where our students are. … For intervention and enrichment.

Perceptions of Teachers' interest in using ASSISTments/ teachers' expectations related to ASSISTments: (treatment sites only)

Q: From your perspective, how interested are the teachers in using ASSISTments?

Q: What expectations do teachers have related to their use of ASSISTments?

I think the big thing is the time savings that they'll get when… and that's what interested me a lot about it was they have a pretty clear picture of where kids are solid on the concepts or the skills or where they really need to do some re-teaching or reinforcing before the kids even walk in the door that day, which is amazing… .If the homework is corrected before you even get there then you jump right into the reinforcing. And I think that is going to be a great time saver. So that's their expectation is to help them with that part, that's the biggest…. It's really going to bring to light the kids that are really struggling I think, who are maybe just the outliers. And that becomes an individual student conversation. So I think it's going to be helpful there. And then it gives them opportunity to work with small groups and really plan out how they're going to differentiate so.

He is using the program, right. And very motivated. I think it fits into his teaching style and, you know, he likes the technology part of it and sees the value of having kids use that technology.

I think it allows him to track student's progress better. Better, easier, quicker, once he, you know, goes through that learning process. So the tracking. He thinks, in the conversations that I've had with him that it's - kids are getting it.

I'm not really sure. They literally just got their hands on it. We had some laptop deployment issues. We had some book issues. We had to order some books that we were short so they were a little tardy in getting rolling.

The two that are piloting it are very excited about it and I see that especially in math where it's a pretty linear, you know, process. I think they'll be a lot of people will buy into that. I think the two people that are piloting it are great--would be great ambassadors for the rest of the staff…. . I spoke with one of them at length yesterday about how cool it was and, you know, the kids that were--that are not necessarily math kids were excited and engaged with it when they were going through the showcase thing yesterday.

They went to the training. They see great potential in it. I'm not saying they haven't had some frustration because they have but they understand that it is a work in progress and that they are definitely positive. They were all on the webinar last night.

It really came from her (teacher's) interest in so I think there's that much more investment. Well there's good investment and I think that investment is based on her interest, not being told let's just do it.

I think he feels that the best part of it is that the kids are getting a little bit of help. They get-- I think he feels that it's combating so many other issues besides just keeping track of the homework. It's kind of flipped the classroom around and he feels the structure of the way math is being handled this year is actually beneficial to the kids. I think he and I both feel that we are going to see some evidence in our scores this year that will show that this help, this assistance that it does bring to kids when they're working on this is getting [teacher] more understanding of what the kids need literally that day before he even begins.

I think they expect to have consistency, a clear method for tracking students, not waiting for progress reports.

They're getting far more information about students, about all of their students than they were ever able to devise on their own. And so, you know, they can see they, you know, they and it's not always the same students who struggle. …. So that I think that they are excited about what they're seeing in the math portion of their kid's brain.

They're definitely interested and want to want to use anything that can help them get those students to do homework and succeed.

He really thinks it's helping the kids and uh it, you know, because obviously when you have a lot of kids and a lot of specific questions, it's just uh it's just a great support system for them.

He expects that it will help students make quicker progress in learning a skill. By, again, not building on bad habits.

Very interested. They are very interested in making it work. They've spoken positively about it. …They are hoping that it's going to help them be more effective with using their classroom time. I think that they see it as providing some useful formative information and helping identify areas of concern for particular students. Um, you know, being able to be a little bit more targeted.

…both of the teachers are really student centered, so I think what they were seeing when the kids were buying into it, almost instantaneous, then that was a good thing for them to see that kids understood the importance of it, they were taking it seriously. And they were working hard to you know, what are the next steps I need to do to you know get at the correct answer. So that's what you want. You want kids to be self-motivated. You want kids to push themselves. You want them to challenge themselves. And then you can facilitate that learning.

She's you know, was contemplating retiring this year coming, which would have been a real loss for our school and for our kids. And she was skeptical because she has seen everything. You know how veteran teachers are. But she said, I spoke with her yesterday, and she said "(name), this is the best thing. I wish I would have had this in my first year of teaching." And what she stressed most with her kids was, is the instant feedback for kids.

She's very interested. In fact, ironically, we were uh presenting to the school board last night about different (?) of technology in the school currently. And (name) shared about ASSISTments, and we're part of an RSU, and um a couple of board members asked if other schools could sign up if it's a free service. And we said well it's in pilot right now I believe. Um but um but the video that sort of goes along with it, that um sort of your video that sort of explains a bit about ASSISTments, with reference to science and other subject area, I think that's what that caught their attention. So I would say that (name) is interested in using it and I would say that others as they learn about it are very interested in the concept.

Her general expectations is to, you know, increase the homework return, and the completion of homework at home. To communicate clearly with parents and it just holds everybody more accountable I think…

Principal's expectations related to ASSISTments:

What I hope they'll get is ability to pick and choose problems and mathematical queries for students to be involved with. And I'm hoping that there's a quick and easy way to assess how students are doing, and that that can be used in planning instruction, ongoing instruction.

Certainly as a school we're trying to really increase our use of formative assessment and that that is a big push. And I think that that aspect of this will be really powerful, and that it will be to (name)'s advantage to have it…

I know for us, I mean, certainly it's student learning. You know, we understand with math that there are gaps that need to be filled in, so that students have a solid foundation to continue to build their math knowledge.

Implementation of ASSISTments (treatment sites only)

Q: How is the implementation of ASSISTments going so far in your school?

- **Concern about time to incorporate ASSISTments:**

I think implementation is going very well. I think the difficulties are just the time demands on (name) identifying clues, or hints that they can (?) and … She wants to do the right thing. And works hard to really encourage children to have a passion for math, as well as understand it.

So it's just balancing those time demands, but she's working at it.

- **Delayed launch of ASSISTments:**

I'm not really sure. They literally just got their hands on it. We had some laptop deployment issues. We had some book issues. We had to order some books that we were short so they were a little tardy in getting rolling.

- **Students view it as more work:**

…the kids will be doing that um that there'll be basically the double entry. They'll do the work in their notebooks and that they will then enter it into ASSISTments. I did hear from one of the other teachers that that was taking the kids, it was taking a little bit of a sales job, to have them do that. Because the kids' experience of it was that it was sort of double dipping, you know, having to do the work twice.

- **Technology issues/ lack of internet at home:**

…he [teacher] has a few kids who don't have access to computers, but most, you know, excuse me, not computers as much as um access to the internet. … they can use it in in school, because they have internet here, but they just aren't able to use it when they go home.

…for kids who don't have computer access at home, which are quite a few. So we had to accommodate those kids to be able to be on the same page and part of the work, which I believe-- I can't remember exactly how he

solved that but I'm pretty sure kids come in in the morning to do their work.

The biggest barrier was how are we going to make sure that each classroom had the technology. I mean we didn't have extra LCD projectors hanging around. So I have had to tie up, you know, them because they need them in their classrooms. We do know that going into it. It would have been helpful I think if people know ahead of time.

Just within the last 24 hours, she said (name), I made this discovery. Um, and I think where the hint button is, is a problem for the students. On their iPads. That they're hitting the hint button, and it's really not a hint button, uh because it marks the problem wrong and gives them the answer. So it's not giving them a hint. It's giving them the answer and marking what they did wrong.

- **Hints not available, just answers:**

  …if you go to hint it would give the answer and he wanted it to, you know, maybe last a little longer. That you get a hint rather than, you know, the kid gives up and boom, he's got the answer.

- **Students don't like the Red X message**

There's no second chance. Um, the teachers felt that the red X, next to when they get it wrong, is such a negative connotation. Uh… you know, like the red marking pen, you know, when you when you write a paragraph…

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