Introduction

The following summarizes a series of teacher interviews conducted at the Berea College Partners for Education GEAR UP Promise Zone schools that were provided the TI-Nspire system. Teachers have been provided classroom sets of the Navigator hand-held graphing calculator, and to support classroom integration, have access to Texas Instrument's website of lessons and activities, as well as, year-long training and one-on-one coaching.

Over a period of two weeks, elementary, middle and high school math teachers and one high school science teacher answered questions about system use in the classroom, system effectiveness, benefits and challenges, the value of the trainings and coaching provided, and offered their suggestions for improvement. Although the interviews were conducted face-to-face, teachers were made aware that no identifying information would be provided in the report.

Interview Participants

There are sixteen Berea College Partners for Education GEAR UP Promise Zone schools interviewed that were using the TI-Nspire System in grades five through nine. They include four elementary schools: Cumberland Elementary School, East Bernstadt Elementary School, Evarts Elementary School, and Wallins Elementary School; seven middle schools: Casey County Middle School, Clinton County Middle School, Jenkins Middle School, Letcher Middle School, Lincoln County Middle School, Meece Middle School, and Whitesburg Middle School; and four high schools: Jenkins High School, Lincoln County High School, Casey County High School, and Somerset High School.

In total, twenty-five teachers were interviewed across four individual and five small group sessions. Interviewees included sixteen females and nine males teaching 5^{th}, 6^{th}, 7^{th}, and 8^{th} grade math, pre-algebra, algebra 1, algebra 1.5, algebra 2, pre-calculus, transition math, and college and career readiness math. There was one science teacher. Teachers varied in their years in the field.

TI System

Overall Impressions

Overwhelmingly, the TI-Nspire system is a welcome addition to the classroom with teachers providing positive reviews ranging from, "it's good" to gushing "it's phenomenal". Only one teacher expressed general dissatisfaction, "I wouldn't miss it".

All teachers spoke of the learning curve involved in utilizing the system, both for themselves and their students. Teachers more familiar with the TI-73 or TI-83 spoke of the differences in

functions that have required a shift in thought when using the Navigator to solve certain math problems, such as those with decimals or fractions. This was most prominently expressed among teachers of 5th and 6th grade students. Those students are accustomed to the TI-73 which has a button for decimals and fractions, and the transition to the Navigator's use of a menu and additional steps has been difficult. In a few classes this has led to multiple calculator use with the students being given the option to use the TI-73, "the blue one", for some things like computations. However, as noted by several teachers, students pick up technology very quickly and adapt. "I kept both calculators at first. Once kids got use to the Nspire, they dropped the 84s". Some students have even been able to troubleshoot issues, figure out things prior to being taught them, and support peers when they ran into a problem, and at times support teachers, too. As can be expected, teachers with lesser tech skills have admittedly had more difficulty.

Generalized complaints included software issues that caused the system to "freeze up" and the log-in process to stall, and not enough calculators for larger classes or to serve as a substitute when a calculator is not working. For the most part, the new software update rolled out in February and March has solved freezing and other software issues that slowed down use in the classroom.

1.2 Frequency of Use

Twenty teachers (80 percent) reported using the TI-Nspire in some capacity every day, with four (16 percent) using it two to three times per week and one (4 percent) using it one time per week. While most used the device frequently, eight (32 percent) admitted to not logging into the Navigator system. Less frequent use was reported in the lower grades, but in those grades an effort is made to "get it in their hands" at least weekly to keep students familiar with the keyboard and log-in process. The TI-Nspire cannot be used in the 6th grade numeracy class as calculators are not allowed, and in classes that use it daily, they do not use it for those state tested areas in which calculators are not permitted. One teacher noted she is not using it with her special education students.

1.3 Effectiveness and Benefits

Teachers most frequently use the TI-Nspire for bell ringers, quick polls, exit slips, and quizzes. They gave high praise for the TI-Nspire's immediate feedback capability that allows them to assess student understanding and provide students with immediate, real time feedback about how they are doing. Several teachers mentioned using the system for formative assessment. The tool has also demonstrated effectiveness in engaging students in learning, getting a class quickly on task, helping students to focus, increasing student participation in class, helping lower level students experiencing difficulty with certain math concepts, and in making instruction more efficient. When asked about the greatest benefit of the system, teachers stated the positive influence on student engagement and/or the impact of quick feedback on instruction. It is hoped

that both will lead to increased student achievement in the end. Teachers of higher grade levels (7th and 8th) also spoke of the anticipated transition benefit as they will acquire students already familiar with the advanced system by the time they arrive to their classrooms.

1.4 Challenges

When asked about system ineffectiveness and challenges, teacher reiterated the software glitches and the keyboard differences. A few teachers also noted that students find the navigation between screens to be cumbersome for assignments as students must toggle between screens. For example, a student loses the question if they have to use the calculator and vice versa. Several teachers also referred to the TI website in discussing ineffectiveness/challenges. The most frequent website visitors noted that it is difficult to find activities that fit their specific grade level. Activities are listed as middle school or high school and are content specific, but are not mapped to grade level. Shifting through activities requires time far beyond what they have for planning. A few teachers have found some "pretty good" lessons while some teachers have downloaded lessons only to find that they were at too high a level for their class or too lengthy and needed modification. On one teacher's dream list is the opportunity to create her own activities using TI technology. Of those teachers that had not visited the website at all or not visited it outside of trainings, the primary reason given was lack of time once back at school.

Trainings

Overall Impressions

Over the course of the school year, teachers will participate in five to six trainings. At the time of the interviews all teachers had participated in at least two trainings, with the majority having participated in four or more. Trainings are scheduled ahead of time and with few exceptions have taken place according to the schedule. Only one teacher remarked about a cancellation and a problem that arose in obtaining a sub.

Overall, training reviews are mixed. While only one teacher stated she did not find the trainings to be beneficial and if given a choice would not attend future trainings, all teachers voiced the necessity for trainings to be tweaked to better serve the needs of a varied audience. Currently, trainings are broad-based, delivered in a one size fits all approach, and for some are repetitive in nature. Teachers also noted that the trainers, while good, are typically not consistent from one training session to the next. This may lend itself to information being repetitive.

Teachers that are comfortable working with calculators have not found the trainings to be as beneficial as those for whom "technology is not my thing". Additionally, as noted by a few teachers repetitiveness is also the result of some teachers not utilizing the system from one training to another. As one teacher stated, "we use it every day and if teachers haven't done log-

ins, etc. in the interim it can be a hindrance, because it's slowing the training down". Lastly, teachers would like the trainings to be more specific and targeted in approach.

With all that being said, trainings have been "helpful", there is still "a lot to learn", and even the more expert users have learned at least one thing that was not known before. Teachers noted the trainings provide the opportunity to collaborate and in the words of one "reflect with peers, particularly from other schools and get ideas". One teacher providing a big picture view noted that the training is not just "one day" and that she wished all trainings provided the "follow-up" currently being received.

Suggestions for Improvement

Only a few teachers expressed qualms about the volume of required trainings, and their concern was the time away from the classroom in light of the trainings not specifically fitting their needs. Teachers provided several suggestions for how the trainings could be made better.

1. Polling teachers ahead of time for issues and topics
2. Matching technical assistance needs to teacher skill level, i.e.: beginner, intermediate, expert
3. Offering a middle school session and a high school session
4. Offering grade-level specific content
5. Offering 1 – 2 training sessions before the school year begins to reduce out-of-classroom time
6. Providing time for collaborative work between district middle and high school teams
7. Incorporating lessons/activities from the website

Coaching

Overall Impressions

It is in providing feedback about one-on-one coaching that superlatives literally flew out of the mouths of all interviewees. Simply not enough good things could be stated about the coaches.

Like the trainings, coaching visits are scheduled ahead of time. Unlike the trainings, coaching provides the opportunity for teachers to get specific needs met. Teachers are notified in advance of the visits, allowing them to provide insight into what is going on in the classroom, as well as any specific trouble shooting needs. In between visits, teachers email coaches with questions and in turn, coaches have sent emails to teachers when they have come across a relevant broad issue or come across something in one school they believe will benefit others. Some teachers have placed the coach "in the driver's seat" when visiting; others have provided the coach with a schedule.

All teachers have had the opportunity to meet with their coach at least three times, and coaches typically spend the full day at the school attending several classes for the entire class period.

The role the coaches play when visiting, and in the classroom vary. Coaches troubleshoot, teach, help with activities from the website, demonstrate use of the TI-Nspire with students, observe and provide feedback. Teachers expressed appreciation for the coaches' flexibility, hands-on nature and leadership in the classroom. Modeling allows teachers to be "taught", "get ideas", receive a "mini-training", and observe how coaches respond to student questions. Several teachers noted the students look forward to the coaches' visits and one student is on a first name basis with the coach.

Suggestions for Improvement

All teachers would like to see the coaching continue, even the teacher that "wouldn't miss" the TI-Nspire system, and the teacher that would not attend trainings if given the choice. No suggestions were provided for improvement; however, of particular note, one teacher shared that a coach is working on a cheat sheet/troubleshooting document on how to fix common problems.

Conclusion

Berea College GEAR UP Promise Zone's roll out of the TI-Nspire system has been a success. Teachers have been provided technology of value for their classroom that is aiding in improving instruction. Despite a sharp learning curve, the overwhelming majority of teachers are eager to understand and fully use the potential of the system. Students have received early access to an advanced tool that engages them in learning and positions them to be better prepared for challenging coursework in high school and in college, and as noted by one interviewee several career and tech fields.

Typical start-up software glitches are being addressed, and while there is room for improvement, teachers have been provided adequate technical assistance to use the system in their classrooms, and ongoing assistance and development through effective one-on-one coaching. One suggestion for coaching and training is that an emphasis be placed on the full utilization of the Navigator system. It should be noted that the two teachers that provided less than enthusiastic reviews are each the only teacher using the system in their respective school, and teachers that are a part of a larger team expressed higher satisfaction. Those two teachers may benefit from being paired with stronger users.

Teachers have provided thoughtful suggestions that if incorporated will only increase teacher and student satisfaction, system use, and the benefits received by all. By any measure, twenty-four out of twenty-five thumbs up is an excellent start.