

# The Effectiveness of On-Demand Modules as a Professional Development Intervention for Teachers

**Objective:** We use the Kirkpatrick evaluation model as a means to evaluate the short term impact of a professional development intervention on the pedagogy of teachers in the classroom. **Method:** Pre and post-intervention survey results and performance assessments of 115 teachers in a teacher preparation program and local elementary school district were analyzed for each of the 4 levels of the Kirkpatrick evaluation model. **Results:** Evidence of support for impact in each of the 4 levels is found, with mixed support found in learning gains only. **Conclusion:** The study adds to the field a full evaluation of a professional development intervention. This not only provides practitioners with confidence in the use of the intervention, it also provides proof of the legitimacy of non-facilitated, online professional development.

## Introduction

Today, more than ever, teachers are being held accountable for their role in student learning. Schools rely on professional development (PD) to bridge gaps in knowledge and skills. These options tend to vary widely in quality, and often teachers and school administrators lack the time and money to access the resources they need. With this in mind, The Sanford Inspire Program, of the Center for the Art and Science of Teaching (CAST) housed in Arizona State University's Mary Lou Fulton Teachers College, created On-Demand Modules. These 60 minute or less micro-courses build teacher's knowledge, skills, and mindsets so they can inspire students toward powerful academic and social outcomes.

Because effective teachers are better able to contribute to the success of students, it is vital that the professional development they seek out be of high quality and proven to be successful. As Naugle, Naugle, & Naugle (2000) notes, "a teacher's effectiveness is a multifaceted picture of how the learners in their charge grow under their direction." With this in mind, we set about creating a small study to evaluate the impact of our modules on teachers. We chose to work with the Kirkpatrick framework of evaluation, which is comprised of 4 levels: reaction, learning, behavior, and results. For each of the levels, we laid out specific data to be collected in order to show what, if any, impact our modules have on the user. Because there are so many options for professional development and these options vary so widely in quality, we contributed to the literature by conducting this in-depth study.

### *Objective of the Evaluation*

The goal of this evaluation was to investigate the impact of On-Demand Modules as PD interventions on teachers at various levels of development. The evaluation focused primarily on short-term changes evident in teachers' knowledge, skills, or dispositions depending upon the module they completed as a development intervention. This evaluation did not intend to state unilaterally that On-Demand Modules are the only intervention responsible for change in teacher pedagogy, but that change occurs after intervention in each of the framework's identified leveled areas.

### *Evaluation Questions*

The purpose of this project was to gauge how users of On-Demand Modules feel/respond to the various aspects of the intervention; what knowledge they acquired, skills improved, or dispositions altered after completing the interventions; if they learn something from our modules, did they then utilize it in their classroom practice immediately, and what big picture results occurred from utilizing these practices. Each of these align to the 4 levels of evaluation on the Kirkpatrick framework, and are laid out in more detail below:

1. How do users feel about the various aspects of the module?
2. What knowledge was acquired, skills improved, or dispositions changed after completing the module?

3. Do users who learned something from our modules utilize it in their classrooms immediately?
  - a. Why or why not?
4. Do users who learned something from our modules utilize it in their classrooms over the long-term?
  - a. Why or why not?
5. Do users feel better prepared to inspire students after completing our modules?
  - a. Are they better prepared?

## Literature Review

According to the National Research Council (1999), “In order to achieve America’s educational goals, it is imperative that excellent teachers be recruited, prepared, and supported in every school.” However, the current state of professional development, its broad-sweeping definitions, and trends in spending often make this imperative seem out of reach for many districts. Traditional definitions of professional development are similar to that of Hassell’s (1999), as the “process of improving staff skills and competencies needed to produce outstanding educational results for students.” Because of this wide definition of ‘what counts’ as professional development, activities such as formal workshops or seminars are lumped together with informal, unstructured lunchroom chats on daily instructional activities.

Recent survey data from the Boston Consulting Group (supported by the Gates Foundation and presented at the 46<sup>th</sup> annual Learning Forward Conference) highlighted this very issue of broad definition. Survey results showed a clear disconnect between the “types” of professional development teachers want and the “types” administrators are willing to pay for. Specifically, it noted that administrators preferred to spend professional development money on in-house professional learning communities and workshops while teachers preferred to have professional development delivered via courses or conferences (Quattrocchi, 2014).

This broad definition also makes evaluating professional development in a systematic way a challenge. However, according to Desimone (2009), some consensus has recently been found around “characteristics of professional development that are critical to increasing teacher knowledge and skills and improving their practice and which hold promise for increasing student achievement.” Here, she cites and codes into 5 features the work of Hawley & Valli, 1999; Kennedy, 1998; and Wilson & Berne, 1999. This conceptual framework includes features such as: content focus, active learning, coherence, duration, and collective participation (Desimone, 2009), all of which the On-Demand Module creation process engages in new and innovative ways.

### *The Sanford Inspire Program in the Center for the Art and Science of Teaching at Arizona State University*

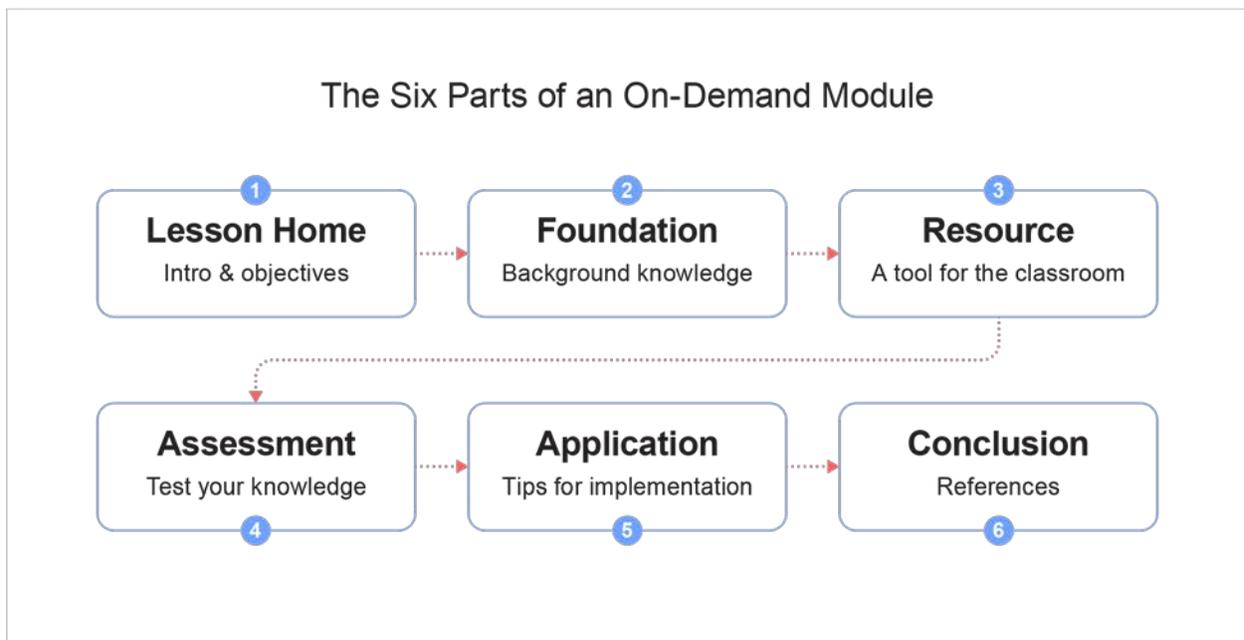
At the Sanford Inspire Program, we reimagine how teachers experience and interact with PD by creating engaging, research-based, personalized, online professional development experiences called On-Demand Modules. Rather than requiring all teachers to sit through a day-long PD workshop that may vary in terms of quality, cost, and evidence of effectiveness (Hill, 2009), we provide teachers the opportunity to exercise autonomy over their own development. This strategic approach to PD allows teachers to select the appropriate module they need based on the feedback they receive from their students, peers, instructional coaches, and principals. We cover a wide variety of topics, such as Building Relationships with Students, Giving Effective Praise, Identifying Signs of Child Abuse and Neglect, Delivering Consequences, and Understanding the Impact of Trauma on Students. There are currently 57 modules in use with over 5,000 unique educators from 32 states and 7 countries (including the US, Ireland, Australia, Mexico, Pakistan, Canada and Great Britain). The impact of the modules has been both far reaching and extremely effective.

### *On-Demand Modules*

Our free, research-based, online modules are created by synthesizing current scholarly literature and closely collaborating with subject matter experts, including university faculty. Each part of the design of an On-

Demand Module is created with an Adult Learning Theory orientation. From this perspective, all modules are designed to target learners where they are in their learning journey. Unlike traditional forms of PD, our modules provide districts with scalable resources that are 1) rigorously evaluated for effectiveness and best practice implementation, 2) built to respond to the type of PD coaches want and need, and 3) capable of bringing about a consensus on best-practices in the coaching profession along with a common language to build upon. All modules are organized into five domains of practice (Learning Environment, Planning & Delivery, Motivation, Student Growth & Achievement, and Professional Practices) and are aligned to commonly used teacher evaluation frameworks. Each of our On-Demand Modules is grounded in current research and provides teachers with a tool or strategy that can be used in the classroom immediately. On-Demand Modules are available to anyone, anytime, anywhere there is an internet connection.

The components of each module include a consistent set of six core sections: Lesson Home; Foundation; Resources; Assessment; Application; and Conclusion. Upon successful completion of a module, teachers earn a certificate that can be used as evidence of their learning and credited towards PD recertification hours. Each of the six components is described in detail in the figure below.



### *Kirkpatrick’s Four Level Evaluation Model*

Because we hold teachers largely responsible for the success of our children in school and beyond, (Naugle, Naugle, & Naugle, 2000), a systematic way of evaluating the professional development options available to teachers is vital. The Kirkpatrick four-level model of training evaluation (Kirkpatrick, 1959a; Kirkpatrick 1959b; Kirkpatrick 1960a; Kirkpatrick 1960b) remains one of the most widely used models of evaluation, in education and beyond. This is largely due to the clearly defined levels of evaluation that each build progressively upon one another and its focus on learner outcomes that dive deeper than just learner satisfaction or reaction. The Kirkpatrick model, which was minimally updated by Kirkpatrick in 1996, suggests researchers gather direct and indirect data on to assess four hierarchicalized levels of program outcomes which include: 1) learner reaction, 2) learning gains by the learner, 3) learner behavior changes, and 4) big picture results of the gains and changes (Kirkpatrick, 1996). Because PD is being designed more purposefully (Loucks-Horsley et al., 2009) and the link between reaction and motivation has been studied, we can begin to measure reaction and changes in learning and behavior as a way of quantitatively evaluating PD.

#### Level 1: Reaction

Typically, this level of evaluation involves a learner completing a post-intervention survey to share their reaction to the intervention. This focuses primarily on how interesting the intervention was, how motivated the user was to complete it, and how much attention the learner paid the intervention. It may also focus on how the learner feels about the delivery of the content, the content itself, and the overall learning experience. At this level of evaluation, research is focused exclusively upon “how participants feel about the various aspects of the training program,” (Kirkpatrick, 1996). This is important as Kirkpatrick believed a more receptive learner will take in more information from the training and be more likely to recommend the intervention to their colleagues as valuable (Kirkpatrick, 1996). Additional research around teacher PD agrees. It shows that teacher’s reaction to a PD program significantly affects how much they feel they have learned, their motivation to apply what they have learned, and their support of the program as valuable to peers (Kirkpatrick, 1996; Naugle, Naugle & Naugle, 2000). Related studies have found that teacher motivation in PD is directly linked to the ability to enact the content and skills learned in the PD program in their classrooms (Karabenick & Conley, 2011). If the ultimate goal is for teachers to take what they learn back into the classroom, it is important to measure teacher reaction to PD.

### Level 2: Learning

Once support has been documented for a positive reaction to the intervention, Kirkpatrick recommends moving on to studying the learning that takes place for users. This is often conducted via a pre/post assessment of the learners’ knowledge, skills, or dispositions. It may also include analyzing grades and/or scores pre and post-intervention. For this level, research is solely focused on the change in “knowledge acquired, skills improved, or attitudes changed due to training,” (Kirkpatrick, 1996). This is a logical and important level to assess because for many programs of professional development, the acquisition of knowledge, skills or new dispositions is often the sole goal of the training (Naugle, Naugle, & Naugle, 2000). However, for quality PD, not only is learning important, the long-lasting impact of the training on behavior and results should be the focus. Upon successfully demonstrating learning took place, Kirkpatrick recommends continuing to the next level of documenting potential behavior changes in learners.

### Level 3: Behavior

In his third level of evaluation, Kirkpatrick focuses on behavior. Typically, documentation supporting behavior changes on the part of the learner often includes a demonstration of skills rather than selecting a predetermined answer on a knowledge-based quiz. Kirkpatrick made 5 general recommendations when assessing behavior changes: 1) assess the behavior before and after the intervention, 2) the person assessing the behavior change should be somewhat familiar with the learners’ performance before and after the intervention, 3) the analysis of the pre/post demonstration of skill should include statistical analysis when possible, 4) the demonstration of skill post-intervention should take place after a period of at least three months, and 5) a control group not receiving the intervention should be used to compare results to those who did (Naugle, Naugel, & Naugle, 2000). This level is particularly important in program evaluation if no behavior change is observed. Researchers can rely upon their prior levels of evaluation to determine if negative reaction to the intervention, a lack of learning, or other outside factors beyond the control of the program caused a lack of change in learner behavior (McLean & Moss, 2003). This information can then be used to improve the program prior to the next implementation for study.

### Level 4: Results

The final level of evaluation in the Kirkpatrick model is that of the impact that occurred as a result of the training. While for corporate trainings this may involve reducing manufacturing costs, or increasing quality of product or lowering absenteeism in the workforce, it is a little more difficult to define in our field. In education, the big picture results might include increasing student motivation, bettering the lives of our students, or making our communities a better place; which makes this level the most difficult to measure for our particular needs.

While many have defined the Kirkpatrick model as the standard model of evaluation for the past several decades (Newstrom, 1978; Bernthal, 1995; Kaufman, Keller & Watkins, 1996; Carliner, 1997), a few limitations of the model have been identified. The first and most often cited is that it is called a model, but does not meet the standard criteria of a model, but rather a taxonomy for evaluation (Holton, 1996). Regardless of what it is called, Alliger and Janak (1989) nicely summarized the “model’s” power to “provide a vocabulary and rough taxonomy for criteria (p. 331) in program evaluation. In addition, some – including Kirkpatrick – have found evaluation of levels 3 and 4 to be quite difficult and often overlooked or avoided altogether (McLean & Moss, 2003). Challenges with measuring these levels include 1) proving that all change in learner behavior be attributed to one intervention or program (McLean & Moss, 2003) and 2) big picture results outside of corporate trainings are hard to nail down and measure systematically (McLean & Moss, 2003).

## **Methods**

The sources of data for this study included surveys of both pre-service teachers in the Arizona State University Senior Year Residency (SYR) program and in-service teachers in the Glendale Elementary School District (GESD) New Teacher Induction program, observations of these teachers’ practice, and an analysis of their quiz scores in the module they completed. The surveys included a pre-assessment aligned to levels 2-4 and a post-assessment aligned to levels 1-4. The observations were conducted by trained individuals looking for demonstration of skill on a rubric unique to each module topic. Quiz results were pulled after the module was completed and compared to the pre-assessment attempt by each teacher.

### *Sample*

In order to verify transfer of learning from module to adult learner, we partnered with an SYR cohort and the GESD New Teacher Induction cohort. This study was conducted over the course of the spring 2016 semester and includes 115 respondents, 11.3 percent in the SYR and 88.7 percent in the GESD. All participants were asked to complete surveys about their reaction, learning, and behavior changes before and after completing 1 of 10 identified On-Demand Modules. Available module titles include: Creating Classroom Rules, Giving Clear Directions, Creating Student-Centered Behavior plans, Delivering Effective Feedback, Preparing to Differentiate: Student Readiness, Helping Students Believe They ‘Can’ Achieve, Developing Behaviors for Cooperative Learning, Structuring Cooperative Learning, Using Feedback to Foster Discussion, and Preparing to Differentiate: Learner Profile. Participants were then observed for learning gains via their in-module quiz results and behavior changes via in-person observations of their teaching practice. All observations of teaching practice took place during a two-week window between February 29 and March 11, 2016 by trained observers who were formerly teachers, coaches, and/or administrators.

Participants in this study taught a range of grade levels including: Early Elementary (24.1 percent), Upper Elementary (36.6 percent), Middle School (31.3 percent), and Other (8.0 percent). Others predominantly included “specials” teachers who taught music, art, and physical education across all grade levels. The majority of participants were also considered ‘novice’ teachers as 98.2 percent of them reported having been in their role for less than 4 years. As is typical of many studies involving teachers, participants were largely female (74.5 percent) and under the age of 30 (83.6 percent).

### *Procedures*

The formal evaluation of On-Demand Modules utilizes the 4-level Kirkpatrick evaluation model for systematic review through instruments/interventions detailed below. The pre-assessment for the study was created to measure levels 2-4 prior to the completion of the intervention. Participants were given a paper version of the survey, which was one-page front and back, in addition to a one-page consent form detailing their rights as a participant. Items included topics on motivation, comfort with the topic, the quiz for the module, extent of the problem they are addressing via PD, results they hope to see and basic demographics. All items on the pre-

assessment were Likert-scale or categorical in nature. No open-ended items were included in the pre-assessment. The post-assessment for the study measured all 4 levels of the evaluation framework after completion of the intervention. Once again, participants were given a paper version of the survey, which was one-page front and back, in addition to a one-page consent form.

### Sample Pre-Assessment

Generally, how motivated would you say you are in each of the following areas:

	Very Unmotivated	Somewhat Unmotivated	Neutral	Somewhat Motivated	Very Motivated
Improve your teaching practice	<input type="radio"/>				
Complete professional development that is mandated	<input type="radio"/>				
Complete professional development that is optional	<input type="radio"/>				
Complete professional development that has an incentive attached (ie: stipend, gift card, micro-credential, etc)	<input type="radio"/>				

### Learning Assessment

	Not at All	Slightly	Neutral	Somewhat	Very
How knowledgeable are you on the topic of creating student-centered behavior plans?	<input type="radio"/>				
How comfortable do you feel in using student-centered behavior plans with students in your classroom?	<input type="radio"/>				
How important are student-centered behavior plans for students in your classroom?	<input type="radio"/>				

**Which step should be taken if Christina does not meet her SMART goal?**

**SMART goal = For the next month, Christina will decrease her tardies to zero and be in her seat before the bell rings.**

- When Christina is tardy for the 3rd time, she will be sent to the principal’s office to discuss her behavior before she can return to the classroom.
- When Christina is tardy for the 3rd time, she will have to give up her cell phone for the day in order to pay closer attention to instruction.
- When Christina is tardy for the 3rd time, she will sit in the front of the class for the day to cut down on distractions.
- When Christina is tardy for the 3rd time, she will make up the lost time from the three tardies by reviewing the instruction she missed at lunch for 10 minutes.

**Which statement is NOT a benefit of a student-centered behavior plan?**

- A behavior plan provides a cure for misbehavior and makes a teacher’s life easier.
- A behavior plan helps the teacher and student share perspectives and find common ground in order to solve problems more effectively.
- A behavior plan provides positive replacement skills that reduce negative behavior and the need for consequences.
- A behavior plan helps prevent misbehavior before it occurs by providing positive, proactive strategies that empower the student.

**Brian constantly distracts instruction in Mr. Hill’s science class. He likes to run around and talk with other groups and disrupt their scientific experiments. Mr. Hill redirects Brian and uses classroom consequences, but Brian’s behavior does not improve. Mr. Hill decides it’s time to talk to Brian. He wants to find out why Brian chooses not to follow the classroom rules and expectations. Mr. Hill’s decision to talk with Brian and find out the “why” behind his behavior illustrates which of the following key elements of a behavior plan?**

- Identifies stakeholders that can help
- Develops a monitoring system
- Addresses the needs of the student
- Creates a SMART goal for improvement

**Javier’s teachers wrote a behavior plan to help him decrease his outbursts in class and learn to participate in a constructive way without disrupting instruction. They developed a tracking sheet to monitor hand-raising, and set up a meeting with Javier’s parents. During the meeting, his parents agreed to sign the tracking sheet each night. If**

**Javier continued calling out in class, he would spend 10 minutes listening silently in the next class before being allowed to share. To everyone's dismay, the behavior plan had little impact on Javier's misbehavior.**

**In hindsight, the teachers realized they made a misstep when they were creating the plan. What was it?**

- The plan did not have a monitoring process.
- The plan lacked an aligned consequence.
- Javier was not involved in the planning process.
- Javier's parents did not explain the plan to him.

**Mr. DeVore, a Spanish teacher, checks for understanding frequently with his students. He recently noticed that Samantha does not participate in class discussions. This is having an adverse effect on her overall grade since oral participation makes up 1/3 of it. After careful observation, talking to her other teachers, and discussing his concerns with Samantha's parents, Mr. DeVore theorizes that Samantha is reluctant to participate due to a lack of confidence. He speaks with Samantha. Then he meets with her and her parents.**

**As they continue the student-centered behavior plan process, which of the following statements models the "next step" for the behavior plan?**

- Create a SMART goal, and make sure it's specific, measurable, attainable, resourceful, and timed.
- Create a SMART goal, and make sure it's specific, measurable, attainable, relevant, and time-bound.
- Determine consequences, and make sure they are punitive.
- Determine consequences, and make sure they align to the SMART goal.

#### **Behavior Assessment**

**How often do you struggle with individual student misbehaviors in your classroom?**

- Never
- Rarely
- Sometimes
- Often
- Always

**How many times, on average, do you need to stop to address misbehaviors of individual students in your classroom?**

- 0-5 times
- 6-10 times
- 11-15 times
- 16-20 times
- Over 20 times

**How much instructional time, on average, is lost each day due to repeated individual student misbehavior in your classroom?**

- None
- A Little
- Some
- A Lot

#### **Results Assessment**

**How prepared do you feel to meet the needs of your students each day?**

- Very Prepared
- Somewhat Prepared
- Somewhat Unprepared
- Very Unprepared

**How strongly do you feel you inspire your students?**

- Very Strongly
- Somewhat Strongly
- Not Very Strongly
- Not at All

#### **Demographics**

**What level do you currently work with or teach? How long have you been in your current role?**

- Early Elementary (PreK-2nd grades)
- Upper Elementary (3rd-5th grades)
- Middle School (6th-8th grades)
- High School (9th-12th grades)
- Special Education
- Other \_\_\_\_\_

- Less than 1 year
- 1-4 years
- 5-9 years
- 10-14 years
- 15-19 years
- Over 20 years

**How**

**And what is your gender?**

- Male
- Female

**And in what year were you born?**

## Sample Post-Assessment

**How much of a priority is professional development at your school?**

- Very High Priority
- High Priority
- Priority
- Low Priority
- Very Low Priority

**And does your school tend to work with outside groups to provide professional development, or do they create the curriculum on their own?**

- Work with outside groups exclusively
- Work with outside groups mostly, but also design their own
- Design their own mostly, but work with outside groups as well
- Design their own exclusively

### Reaction Assessment

**I found the module on Creating Student-Centered Behavior Plans to be...**

	Strongly Agree	Agree	Disagree	Strongly Disagree
easy to navigate throughout	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
organized or sequenced logically	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
engaging	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
interactive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
high quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**I found the content of the module on Creating Student-Centered Behavior Plans to be...**

	Strongly Agree	Agree	Disagree	Strongly Disagree
concise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
accurate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
useful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**After completing the module on Creating Student-Centered Behavior Plans, I...**

	Strongly Agree	Agree	Disagree	Strongly Disagree
feel my individual needs were met	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
learned something new about the topic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel it was easy to locate technical support, if I needed it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
think it effectively met the objectives of the module.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
think novice teachers at my school would find this helpful.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
think it was beneficial to my future practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
would recommend this module to a novice teacher in need of further refinement on the topic.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
intend to use the content in my classroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
intend to use the module resources (or any supplemental documents included in the resource) in my classroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
feel better prepared on the topic of the module.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Researchers and content experts who are familiar with the modules' content created the observation rubrics. Several meetings took place over the course of the spring 2016 semester to finalize the rubrics and on two separate occasions all 10 observers met to norm on the scales and practice the rubrics on videos of teachers in the field. These rubrics were then put into an online form for observers to complete on location during the observation to assure they did not rely upon memory to calculate scores later.

### Sample Observation Rubric

Teacher Name:

Teacher Site:

Was this a NULL visit?

- Yes
- No

If so, why?

- Teacher to observe is out due to sickness, vacation, etc and substitute is present
- Independent Practice taking place
- Testing taking place
- Lunch/Recess/Specials class taking place
- Other (lockdown, all day PD, etc \_\_\_\_\_)

Did the teacher's response to misbehavior:

- Indicate the teacher and/or student may be tracking the behavior of the student
- Indicate the teacher is inquiring why the misbehavior happened
- Indicate the teacher's consequence is logically aligned to the misbehavior
- Indicate the teacher is giving consequences rather than punishments
- Indicate the teacher is differentiating the consequence by student/using school-wide consequences with flexibility for each student

Did you have the opportunity to see misbehavior and/or teacher response to misbehavior in your observation?

- Yes
- No

### *Analysis Methods*

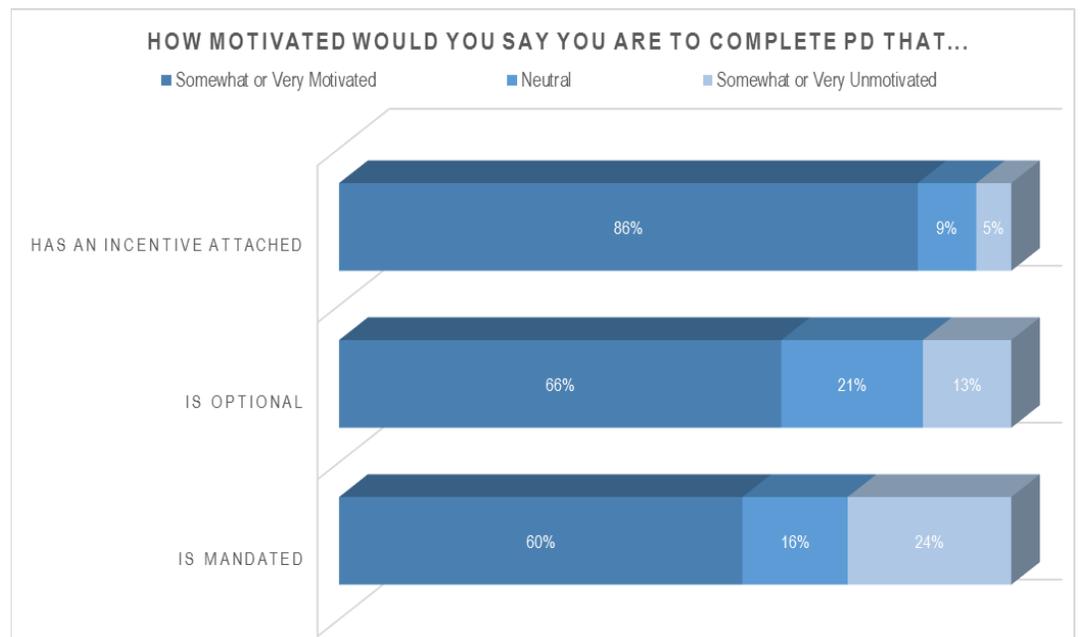
After all data collection was completed, pre/post surveys were linked by respondent in addition to their performance assessment scores and the results of their quiz. The Kirkpatrick evaluation model was then utilized to assess the impact of the On-Demand Module as an intervention. This evaluation model includes 4 levels of education outcomes: participants' reaction to the module, the learning (knowledge, skills or dispositions) that may have taken place, the potential subsequent behavior change to pedagogy, and any final results of that change occurring. This model is widely used outside the education field for systematic reviews, even adopted by the Best Evidence Medical Education Collaboration in 2003 (Hill, Yu, Barrow & Hattie, 2009). Descriptive statistics were conducted on all items created for analysis.

## Results

### Level 1: Reaction

Teachers participating in this study overwhelmingly reported being motivated to improve their teaching practice (91.3%). Additionally, all teachers reported that professional development was at least a 'priority' at their school, with 78.8 percent reporting it was a 'high' or 'very high' priority. When asked specifically what kind of PD motivated them most, 86 percent chose incentivized PD. This is a full 20 percentage points higher than the next categories of 'optional' (60%) and mandated (60%). Interestingly, when examining the least motivating categories, it is clear

teachers found mandated PD quite unmotivating, with 1 in 4 teachers reporting so. Teachers also reported reaching out to other teachers, their instructional coaches and evaluators, or their administrators for follow-up observations and feedback on their practice in addition to completing an On-Demand Module to refine their practice on the topic. The rest of the level 1 items can be grouped into questions around the



ease of use of the intervention, the quality of its content, and how likely the learner feels they are to implement what was learned in their classroom.

### Ease of Use

Well over 90 percent of participants reported that the module they completed was easy to navigate (94.0%), organized or sequenced logically (95.9%), and that it was easy to locate technical support if it was needed (90.8%). By role, SYR teachers found the module to be a little less easy to navigate (88.9%) than GESD teachers (94.5%), while women found the module less easy to navigate (91.8%) than men (100%). However, SYR teachers found the module to be organized and sequenced logically (100%) more so than GESD teachers (96%), while both men and women agreed in equal numbers the module was organized and sequenced logically (96%).

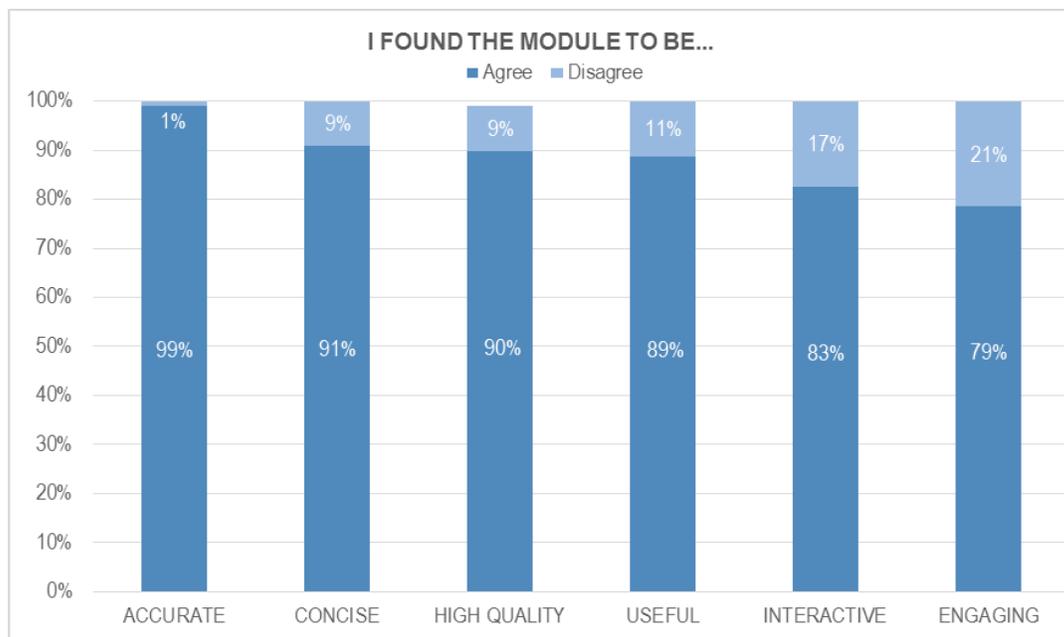
### Quality of Content

Overall, the majority of participants reported the module they completed was accurate (99%), concise (91%), high quality (90%), useful (89%), interactive (83%) and engaging (79%). Additionally, 88 percent reported learning something new from the module and 87 percent thought teachers at their school would also find this

helpful. By role, teachers in SYR reported the module was accurate (100%) in similar numbers to GESD. However, they reported the module was concise (100%), high quality (100%), useful (100%), interactive (100%), and engaging (100%) in higher numbers than GESD teachers. Particularly in engaging, where there was a 23 percentage point difference. Additionally, men reported the module was accurate (100%), high quality (92%), and interactive (83%) in similar numbers to women. Men reported the module was concise (96%), useful (95.8%) and engaging (83.3%) in higher numbers than women. This is clearest when examining usefulness, where there was a 10 percentage point difference between how useful men (96%) and women (86%) reported they found the module.

### Likelihood to Implement

After completing a module, 96 percent of participants intended to use the content in their classroom, and 82 percent intended to use the module resource. Additionally, 89 percent reported the module was beneficial to their future practice. Specifically by role, SYR participants reported intending to implement content (100%) only slightly higher than GESD teachers (95.6%), but reported intending to implement the resource in



much higher numbers (100%) than GESD teachers (80%). Additionally, men reported feeling better prepared by the module (92%) only slightly more than women (90%). Therefore, we found strong evidence of an extremely positive reaction to the module as an intervention.

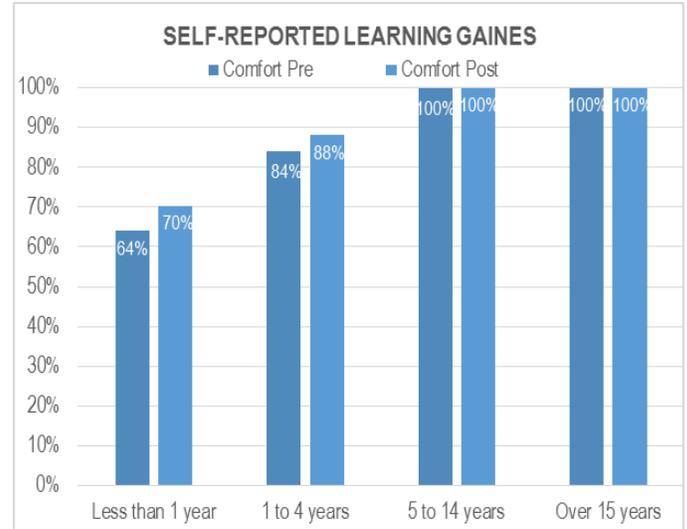
### Level 2: Learning

#### Self-Reported Learning Gains

Overall, participants report an increase in knowledge on the topic of the module they completed. Prior to completing the module, 68 percent said they were ‘mostly’ or ‘very knowledgeable’ on the topic and after exposure to the module, 76 percent said they were ‘mostly’ or ‘very knowledgeable’ on the topic. The graphic below highlights that this 8 percentage point increase was largely experienced by those who reported being in their position for less than 1 year. In addition to knowledge, participants were asked how comfortable they were with performing the skill being covered by the module. Prior to completing the module, 72 percent of participants reported they were ‘mostly’ or ‘very comfortable’ performing the skill, and after exposure to the module, 79 percent reported the same. This 7 percentage point increase was largely reported by those in their

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first 4 years of service. Finally, participants were asked how important the topic of the module was. Both before and after module exposure 93 percent of participants reported the topic was ‘mostly’ or ‘very’ important. When broken down by gender, men reported larger changes in knowledge before and after the module (21 percentage points) than women (3 percentage points). However, women reported larger changes in comfort with the skill before and after modules (15 percentage points) than men (3 percentage points).



### Quiz Results

Modest learning gains were found upon examination of participants quiz scores before and after module exposure. Prior to the module, 45 percent of participants passed the quiz with at least a C letter grade (70%+); after the module, 55 percent of participants passed the quiz with at least a C letter grade. While both GESD and SYR teachers started the pre-module quiz with the similar C or better passage rates (45 percent), GESD teachers saw a modest 9 percentage point increase post-module while SYR teachers saw a large increase by 21 percentage points. The majority of quiz score gains were experienced by those in their first 4 years of teaching. A large gap is apparent by gender as prior to the module, only 25 percent of men passed the quiz with a C or better, while 54 percent of women did. Post-module, men increased the C or better grade by 13 percentage points, while women increased C or better grades by 4 percentage points. This learning difference is supported by additional analysis of self-reported learning gains above. While women reported larger changes in comfort performing the skill of the module, men reported much larger changes in knowledge after exposure to the module. Here, we find stronger evidence of self-reported learning gains. While modest learning gains are evidenced via the quiz results, because modules require 100% mastery in order to receive a certificate, the evidence is much strong when examining the self-reported gains.

### Level 3: Behavior

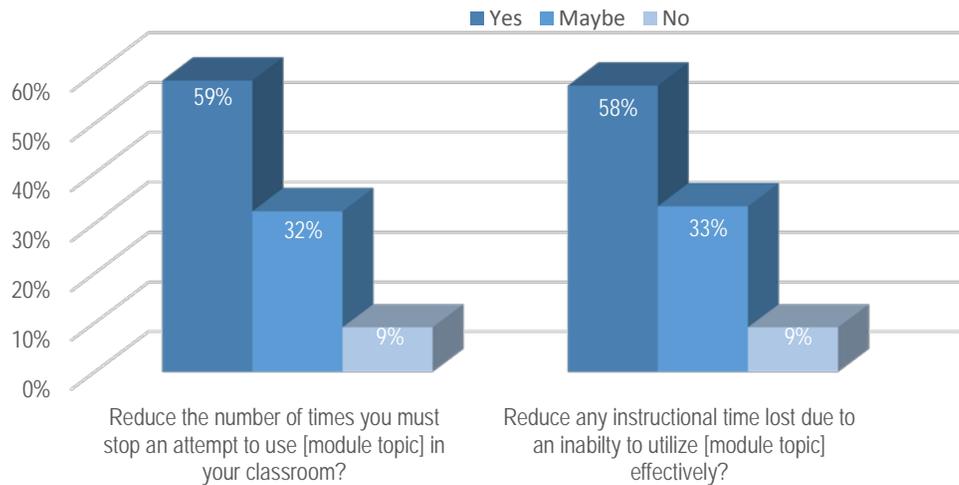
#### Self-Reported Behavior Changes

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Prior to module exposure, participants were asked about the frequency, rate, and duration of the problem they were trying to solve by completing the module [i.e.: students misbehaving]. Overall, 53 percent of participants reported having to stop their instruction more than 6 times because of the problem, and 91 percent reported experiencing the problem at least ‘sometimes’ and losing at least ‘a little’ instructional time because of it. While 54 percent of both male and female participants reported having to stop their instruction more than 6 times because of the problem, 94 percent of women reported experiencing the problem at least ‘sometimes’ while only 86 percent of men did so. Additionally, more women (94%) reported losing at least ‘a little’ instructional time because of the problem as opposed to men (82%). Additionally, teacher candidates reported losing instructional time (100%) in higher numbers than GESD teachers (90%).

After being exposed to a module, 91 percent reported it would reduce the instructional time lost due to an inability to utilize the module’s proposed strategy. The difference between genders is apparent once again, as 96 percent of men reported the module would reduce the frequency they missed opportunities to incorporate what they learned and 96 percent reported it would reduce instructional time lost. Ninety-two percent of women reported the module would reduce the missed opportunities to incorporate what they learned and 89 percent reported it would reduce instructional time lost. Additionally, teachers in SYR reported about 10 percentage points higher than GESD teachers that the module would reduce the instructional time lost.

AFTER COMPLETING THE MODULE, DO YOU THINK IT WILL HELP YOU...



### Observations

Observations were only conducted with GESD teachers in attempt to provide additional evidence of behavior change. Of the 91 GESD teachers who were eligible for an observation, trained observers were unable to observe 22 of them due to district testing and 4 opted-out of the observation all-together. Therefore, 65 teachers were successfully observed. Evidence of at least 1 skill from the module was found in 96 percent of the observations conducted and in about a quarter of the observations (28%), more than 5 of the skills from the module were found. On average, observers found direct, observable evidence for about 35% of the skills covered in module actively being used in classroom. Teachers in their second to fourth year of service had higher rates of observable skills as 97 percent demonstrated 1 skill, while only 94 percent of first year teachers demonstrated a skill. Additionally, men demonstrated skills from the module more often than women, as 100 percent of them demonstrated 1 skill while only 94 percent of women demonstrated a 1 skill, and 31 percent of

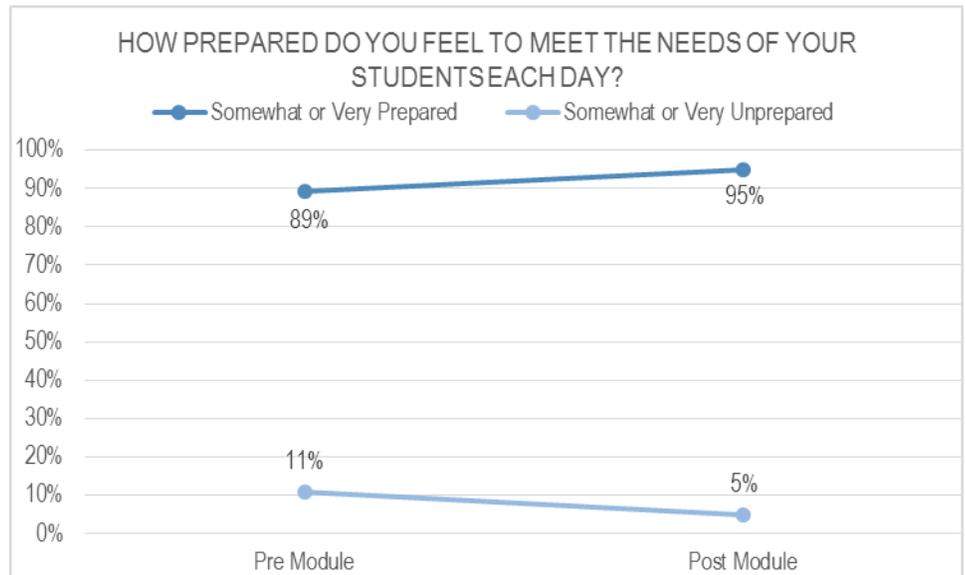
men demonstrated more than 5 skills, while only 27 percent of women did so. Therefore, we find strong evidence of both self-reported behavior change and directly observable behavior change.

#### Level 4: Results

##### Prepared to Meet the Needs of Students

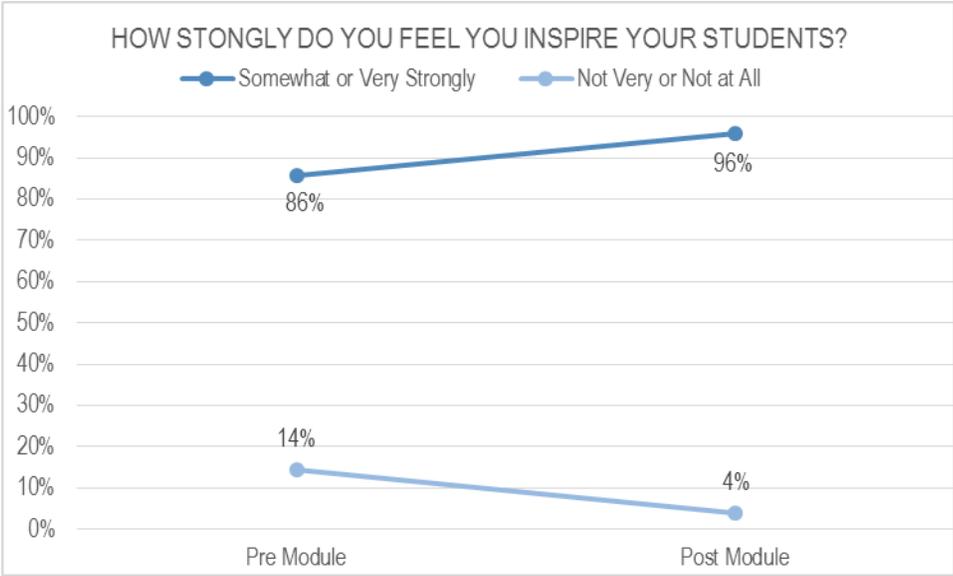
Participants were asked prior to completing a module how prepared they felt to meet the needs of their students each day. On average, 89 percent reported they were ‘somewhat’ or ‘very’ prepared. However, 100 percent of SYR teachers reported they were ‘somewhat’ or ‘very’ prepared, while 88 percent of GESD teachers reported the same. Additionally, the number of teachers reporting they felt prepared increased as their tenure increased. Finally, 86 percent of men and 90 percent of women reported they were prepared prior to the module.

After exposure to the module, 95 percent of participants reported feeling prepared to meet the needs of students, a full 6 percentage point increase from prior to module exposure. GESD teachers increased 7 percentage points, while teacher candidates remained high at 100 percent. Additionally, while women only reported a 3 percentage point increase post-module, men reported a solid 14 percentage point increase in feeling prepared to meet the needs of students post-module.



##### Inspire Students

Participants were also asked prior to completing a module how strongly they felt they inspired their students. On average, 86 percent of participants reported they ‘somewhat’ or ‘very strongly’ inspired their students. Prior to a module, 100 percent of teacher candidates reported ‘somewhat’ or ‘very’ strongly inspiring students, only 84 percent of GESD teachers reported the same. Additionally, the number of teacher who reported they inspire students increases as their tenure in teaching does. While 85



percent of both men and women report inspiring their students before module exposure, men saw a much higher percentage point change (15 percentage points) post-module than women (10 percentage points). And while GESD teachers increased post-module by 16 percentage points, SYR teachers actually reported inspiring students in lower numbers post-module (96%), if only by 4 percentage points. Therefore, we find strong evidence to support the achievement of our proposed big picture results of completing a module for PD. Because our work focuses primarily on helping prepare teachers to inspire their students towards powerful success, we feel the evidence clearly demonstrates we are meeting that objective by offering these high quality resources for professional growth.

**Conclusion**

Our results indicate that On-Demand Modules are 1) extremely well received as an intervention for PD among teachers, 2) contributing to clear self-reported and modest directly measured learning gains, 3) being applied in the classroom, and 4) resulting in better prepared teachers ready to inspire their students. When examined by gender, role, and tenure, our results show that On-Demand Modules appear more beneficial for men and those in our study with less than 5 years of experience. It also highlights that while men reported stronger learning gains post-module, women reported feeling much more comfortable with the skill they learned in the module. This finding may be an interesting topic of future research around modules and may be useful in the marketing of the product to partners.

*Limitations of the Study and Future Research*

Due to limitations of resources and time, we were unable to survey and observe an adequate number of participants to test these findings for significance. Future research on this intervention should seek to answer if these findings are statistically significant. The study also did not compare the intervention to a control group for similar reasons. Future studies that incorporate a control group would more strictly align to Kirkpatrick’s recommendations for comprehensive study and would more robustly support the positive impact of the intervention on teachers. Finally, future research should also seek to better understand the difference between

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self-reported and actual learning gains. Quiz questions are rigorously written and tested before the module is available to the general public, and yet a number of the study's participants did not end up passing the quiz or completing it. A better understanding of the reason (certificate of completion is not mandatory, quiz was too hard, quiz questions were not aligned to content, experience was too long to complete, etc.) the quiz was so often failed or skipped altogether will assure the entire experience of completing a module is as positive as the experience with the content.

<b>Demographics</b>	<b>Percent of participants who agreed the module they completed was easy to navigate<sup>1</sup></b>	<b>Percent of participants who agree the module they completed was high quality<sup>2</sup></b>	<b>Percent of participants who agree the module they completed met their individual needs<sup>3</sup></b>	<b>Percent of participants who agree they intend to implement the content of the module they completed<sup>4</sup></b>
<b>Role</b>				
Teacher Candidate	88.9%	100%	87.5%	100%
GESD Teacher	94.5%	88.8%	75.8%	95.6%
<b>Tenure</b>				
Less than 1 year	94.4%	88.5%	73.6%	94.4%
1 to 4 years	92.8%	90.5%	81.0%	97.6%
5 to 14 years	100%	100%	0%	100%
Over 15 years	100%	100%	100%	100%
<b>Gender</b>				
Male	100%	91.6%	84.0%	96.0%
Female	91.7%	88.9%	75.0%	95.9%
<b>Overall Average</b>	94.0%	89.8%	76.8%	96.0%

1, 2, 3, 4 Percent of participants who reported they ‘agree’ or ‘strongly agree’

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Demographics	Percent of participants who were knowledgeable on the topic of the module <sup>1</sup>		Percent of participants who were comfortable performing the skill of the module <sup>2</sup>		Percent of participants who thought the skill was important <sup>3</sup>	
	Pre	Post	Pre	Post	Pre	Post
<b>Role</b>						
Teacher Candidate	54.5%	87.5%	18.2%	100%	81.8%	100%
GESD Teacher	69.3%	75.0%	78.2%	77.1%	94.0%	92.4%
<b>Tenure</b>						
Less than 1 year	59.4%	72.2%	64.1%	70.4%	90.6%	94.4%
1 to 4 years	81.8%	81.0%	84.1%	88.1%	95.5%	90.5%
5 to 14 years	100%	100%	100%	100%	100%	100%
Over 15 years	0%	0%	100%	100%	100%	100%
<b>Gender</b>						
Male	71.4%	92.0%	89.3%	92.0%	100%	96.0%
Female	66.7%	69.9%	69.1%	75.3%	90.1%	91.8%
<b>Overall Average</b>	67.8%	76.0%	72.3%	79.0%	92.9%	93.0%

<sup>1</sup> Percent of participants who reported they were mostly or very knowledgeable on the topic of the module

<sup>2</sup> Percent of participants who reported they were mostly or very comfortable performing the skill of the module

<sup>3</sup> Percent of participants who thought the skill of the module was mostly or very important

<b>Demographics</b>	<b>Percent of participants who agreed the module would help reduce the frequency of missed opportunity to use the topic in their classroom<sup>1</sup></b>	<b>Percent of participants who agree the module would help reduce the number of times they stopped an attempt to use the module topic in their classroom<sup>2</sup></b>	<b>Percent of participants who agree the module would help reduce instructional time lost due to an inability to utilize the module topic effectively<sup>3</sup></b>
<b>Role</b>			
Teacher Candidate	87.5%	100%	100%
GESD Teacher	93.5%	90.1%	90.1%
<b>Tenure</b>			
Less than 1 year	90.8%	87.0%	88.9%
1 to 4 years	95.3%	95.3%	92.9%
5 to 14 years	100%	--%	--%
Over 15 years	100%	100%	100%
<b>Gender</b>			
Male	96.0%	100%	96.0%
Female	91.8%	87.5%	88.8%
<b>Overall Average</b>	93.0%	90.9%	90.9%

<sup>1, 2, 3</sup> Percent of participants who reported ‘yes’ or ‘maybe’

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Demographics	Percent of participants who feel prepared to meet the needs of their students each day <sup>1</sup>		Percent of participants who feel they inspire their students <sup>2</sup>	
	Pre	Post	Pre	Post
<b>Role</b>				
Teacher Candidate	100%	100%	100%	95.6%
GESD Teacher	88.2%	94.6%	84.1%	100%
<b>Tenure</b>				
Less than 1 year	86.0%	90.9%	82.8%	94.6%
1 to 4 years	95.5%	100%	91.1%	97.6%
5 to 14 years	100%	100%	100%	100%
Over 15 years	0%	100%	0%	--%
<b>Gender</b>				
Male	85.7%	100%	85.1%	100%
Female	90.2%	93.2%	85.4%	94.5%
<b>Overall Average</b>	89.3%	95.0%	85.5%	96.0%

<sup>1, 2</sup> Percent of participants who reported ‘very’ or ‘somewhat’

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