Call for Applications: *Foundations of Math* Implementation Sites

Alt+Shift, encompassing Michigan's Integrated Mathematics Initiative (Mi)[2], seeks sites (a building or small district) for usability testing of implementation supports designed to build and support local capacity to provide high quality math education to ALL students, informed by the *Foundations of Math* training course.

Interested sites should

1. Read through the entirety of this document.
2. Identify a team of at least 4 people, including 2 people with a math content background and 2 people with a special education background, who will submit applications to become an instructor of the *Foundations of Math* 5-day course. Requirements for becoming a *Foundations of Math* instructor can be found on page 8 of this document.
3. Contact Kate Fanelli (kate.fanelli@altshift.education) with questions.
4. Visit the Foundations of Math Implementation Site webpage to submit one application each for:
    a. The building or small district
    b. The first potential *Foundations of Math* instructor with a math background
    c. The second potential *Foundations of Math* instructor with a math background
    d. The first potential *Foundations of Math* instructor with a special education background
    e. The second potential *Foundations of Math* instructor with a special education background
    f. Each additional potential *Foundations of Math* instructor

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Overview of *Foundations of Math*

Purpose: Develop the mathematical content knowledge of special education and general education teachers, with a focus on The Components of Number Sense, who work with students who are underperforming in mathematics.

Evidence of Need	Description of Program	Indicators of Success
Students in your district/building are not achieving proficiency in mathematics. Certified K-12 special education teachers and K-6 general education teachers have similar mathematics methods training and are likely underprepared to address needs of students who struggle and students in middle and high school math courses. Student performance in mathematics has been linked to the mathematics knowledge of the teacher. Citation: Faulkner, V., & Cain, C. (2013). Improving the Mathematical Content Knowledge of General and Special Educators: Evaluating a Professional Development Module That Focuses on Number Sense. *Teacher Education and Special Education: The Journal of the Teacher Education Division of the Council for Exceptional Children, 36*(2), 115-131.	*Foundations of Math* is a 5-day training designed to develop teachers' mathematical content knowledge and ability to deliver a coherent mathematical message through instruction. Teachers will • Make instructional choices that support communication and understanding of math in a consistent manner • Emphasize student mathematical thinking using number sense that is fluent, flexible, and guided by meaning • Connect related math concepts to procedures and real world examples Article: The Components of Number Sense Agenda: Main topics for the 5 days	Increased teacher mathematical content knowledge based on pre/post content assessments* Increased teacher understanding of the adult role in improving students' mathematical thinking based on pre and post results on the Teacher Belief Survey Observations of teacher practices by coaches, administrators, or the teachers themselves, consistent with the critical components on the *Foundations of Math* fidelity checklist *as measured in the original research and which are consistent with initial data collected from Michigan course implementations

Implementation Procedure and Structure

Supporting tools for each step of the process will become available as they are developed.
1. Establish a team
2. Engage in collaborative inquiry
    a. Identify the need
    b. Determine if *Foundations of Math* addresses the need
    c. Make a plan and prepare for the intervention
3. Prepare for sustainability of new practice
4. Provide *Foundations of Math* training
5. Put the sustainability plan into action
6. Conduct a program evaluation that includes classroom observations

Figure 1 shows the relationship between the local site, (Mi)^2, and the implementation process.

The first part of the process involves thoughtful collaboration between the site, which commits to fully engage in an implementation process, and (Mi)^2, which commits to provide tools and technical assistance throughout the process.

The second part of the process involves the "why" and how of implementation. Use of the implementation process, with fidelity, increases the likelihood of successful implementation of new practices. During this part of the process, the site engages in the implementation process by establishing teams, conducting training, and evaluating the effectiveness of the implementation plan, while (Mi)^2 provides tools and supports, collects data, and offers technical assistance.
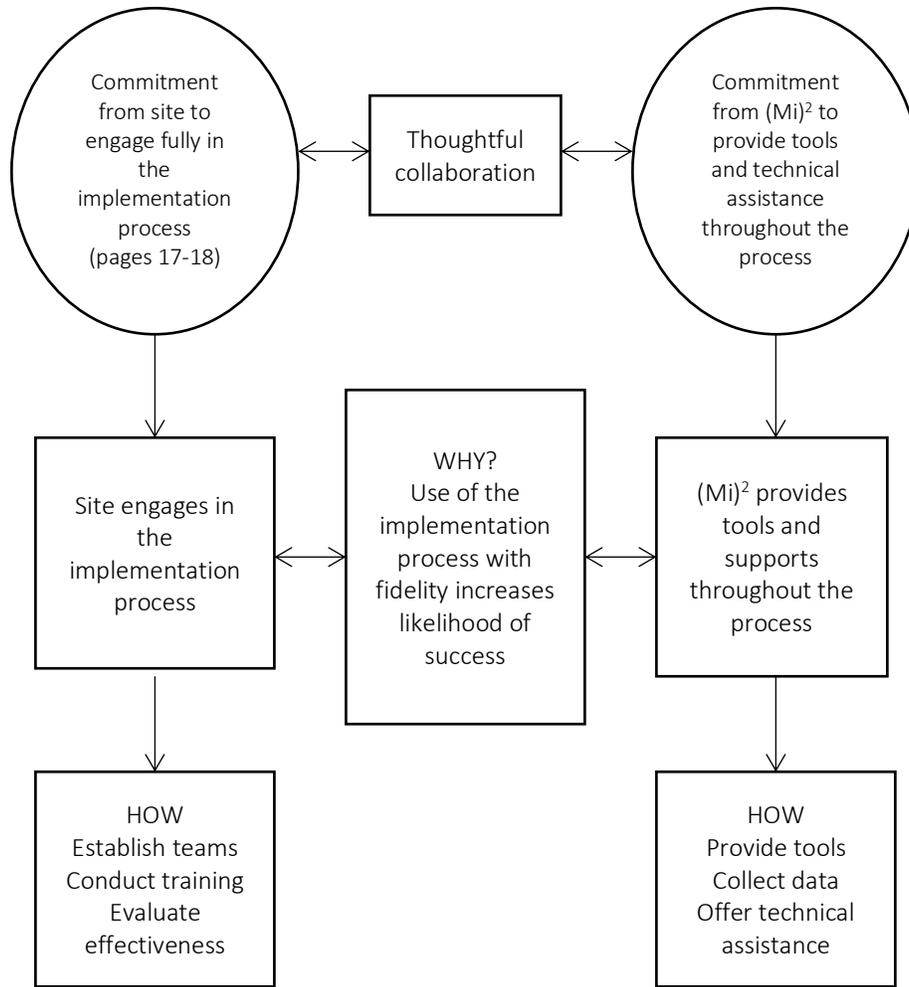
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┌─────────────────┐          ┌──────────────────┐          ┌─────────────────┐
│  Commitment     │          │                  │          │  Commitment     │
│  from site to   │ ◄──────► │  Thoughtful      │ ◄──────► │  from (Mi)² to   │
│  engage fully in │          │  collaboration   │          │  provide tools  │
│  the            │          │                  │          │  and technical  │
│  implementation │          └──────────────────┘          │  assistance     │
│  process        │                                        │  throughout the │
│  (pages 17-18)  │                                        │  process        │
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┌─────────────────┐     ┌──────────────────┐     ┌─────────────────┐
│                 │     │  WHY?            │     │                 │
│  Site engages in │     │  Use of the      │     │  (Mi)² provides  │
│  the            │ ◄─► │  implementation  │ ◄─► │  tools and      │
│  implementation │     │  process with    │     │  supports       │
│  process        │     │  fidelity increases│   │  throughout the │
│                 │     │  likelihood of   │     │  process        │
│                 │     │  success         │     │                 │
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┌─────────────────┐                              ┌─────────────────┐
│  HOW            │                              │  HOW            │
│  Establish teams │                              │  Provide tools  │
│  Conduct training │                             │  Collect data   │
│  Evaluate        │                              │  Offer technical │
│  effectiveness   │                              │  assistance     │
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Figure 1

*based on research from Nancy Love, Jim Knight, and the National
Implementation Research Network

What are Fidelity Checklists?

The *Foundations of Math* fidelity checklist identifies critical components of implementation, and separates them into three phases of implementation:

- Evidence in planning – Did the teacher/practitioner plan using the critical components of *Foundations of Math?*
- Evidence in teaching – Did the teacher/practitioner utilize *Foundations of Math* approaches when teaching the lesson to students?
- Evidence in student behavior – Are the *Foundations of Math* approaches being implemented consistently enough to see the critical components reflected in how students approach and engage in mathematics?

The checklist is intended to be used by teachers and, in some cases, their instructional coaches to identify goals, monitor their progress toward *Foundations of Math* implementation, and revisit key components from the course.

The checklist is NOT intended to be used for evaluative purposes by administration.

Foundations of Math Fidelity Checklist

The goal of *Foundations of Math* is that teachers will use a foundational understanding of the math being taught to provide coherent, conceptual, and consistent math instruction.

The purpose of this checklist is to provide information to (Mi)[2] and your local implementation team related to effectiveness of training and implementation supports. The checklist may also be used by practitioners and coaches to identify areas of strength and areas of growth for *Foundations of Math*.

Indicator of Fidelity	Evident in planning	Evident in teacher practice	Evident in student behavior or response
Making connections for students between multiple Components of Number Sense (CONS) through explicit instruction			e.g. Students make and use connections between the CONS to solve problems.
Making connections for students between multiple CONS through the use of questions			e.g. Students can answer questions that require students to make connections to multiple CONS
Providing opportunities for students to engage in discussions and activities that address the CONS			e.g. Students engage in discourse with each other about multiple CONS
Using real world stories and examples to demonstrate concepts			e.g. Students can explain math using real world examples
Incorporating all three parts of the Prototype for Lesson Construction in each lesson			e.g. Students can model math concretely, discuss math through the use of structures, and record math symbolically
Making connections for students between the three parts of the Prototype for Lesson Construction			e.g. Students can explain connections between the context, structure, and symbolic nature of their math work
Using tools and strategies with students to deepen conceptual understanding first, and procedures second			e.g. Students use tools and strategies to show how concepts are connected to procedures
"Same-ating" - Creating assignments and activities for Tier 1 core instruction that provide multiple levels of understanding at which students may engage, without compromising the content goal of the lesson			e.g. The majority of students are able to engage in and learn from the same math lesson
Using correct, consistent vocabulary when talking about mathematics, and mathematical objects and symbols			e.g. Students also use correct, consistent math vocabulary
Responding to students' mathematical ideas either through his/her own pedagogical content knowledge, or by pursuing the line of thinking until the accuracy of student thought can be verified			e.g. Students report that teachers respond to questions in a thoughtful, systematic way

Regional Instructor Process and Requirements

Regional *Foundations of Math* instructors provide the 5-day course for Level 1 participants within their Intermediate School District (ISD) or Regional Educational Services Agency (RESA). This may include providing the course for school buildings/programs, districts, or the ISD/RESA.

Aspiring *Foundations of Math* instructors, i.e., people who provide the *Foundations of Math* 5-day training, are responsible for documenting completion of Levels 1, 2, and all other trainer requirements. Documentation examples include: instructor emails, completed assignments, assignment feedback, and signatures. **All tasks must completed in sequence.** Steps 2 through 7 must be completed within 18 months.

*** All Level 2 training must be an $(Mi)^2$ sponsored training ***

1. Complete Level 1 training
   - Participate in all 5 days of training (100% attendance)
   - Complete all reading assignments and the 4 assigned Level 1 Learning Tasks
   - Score at least 80% on all Level 1 Learning Tasks

2. Complete Level 2 training
   - Participate in all 5 days of training (100% attendance)
   - Successfully complete 4 assigned Level 2 Learning Tasks
   - Score at least 80% on all Level 2 Learning Tasks

3. Participate in a Trainer-of-Instructors (TOI) day with other prospective instructors
   - Coordinate with $(Mi)^2$ to schedule the TOI day
   - Present a 20-30 minute section of the course to the group
   - Give and receive feedback on those short presentations
   - Pass an instructor assessment of conceptual math knowledge with 80% accuracy

4. Set up a 5-day training in your local setting
   - This is a probationary training, which is part of your certification process
   - Talk with $(Mi)^2$ about proposed training dates (at least 6 weeks prior to proposed dates)

5. Be observed providing the *Foundations of Math* training by $(Mi)^2$ two times during your probationary local course implementation.
   - Work with $(Mi)^2$ to schedule observations during training days 2, 3, or 4
   - Each observation will minimally last 2.5 to 3 hours

6. Complete a video tape self-observation and reflection
   - Video tape yourself during a training for a total of at least 1 hour of footage (this must be done after formal $(Mi)^2$ observations have been done)
   - Review video and write a reflection based on your observed areas of strength, areas for growth, and ideas that you will keep in mind the next time you offer the course.
   - Submit the reflection to $(Mi)^2$

7. Confirm with $(Mi)^2$ the completion of all requirements.

8. Participate in on-going instructor training to maintain certification – You may opt to engage in various opportunities to expand your own capacity as a *Foundations of Math* instructor that will be offered through $(Mi)^2$. As the program expands, $(Mi)^2$ may require re-certification or certification maintenance training to provide updates to research, revised course content, or strengthen fidelity of course instruction.

Expectations for Service on the Implementation Team

The Implementation Team will consist of administrators, teachers, (Mi)[2], regional personnel, and/or Loyola University faculty (including the Center for Science and Math Education CSME). Each member will be an equal partner in the collaborative process of improving the implementation of practices and pedagogy taught in the *Foundations of Math* training course.

Expectations for team members include:
- Participate in all team meetings (in person or virtually), in their entirety
- Ensure technology and/or classroom coverage is set up to support participation
- Respond to requests for feedback by the given date
- Contribute individual expertise to meetings
- Complete assigned tasks (e.g. data collection, interviews, etc.) by the given date

The process will be structured as follows:
- An initial virtual meeting, including the implementation team and district administration, will convene to go over the partnership agreement, discuss the scope of the work, and clarify any questions.
- An initial in-person meeting, at the implementation site, will convene to describe to staff what we are doing, to allow staff to ask questions and provide historical data to Loyola, and to alleviate any anxiety that may go along with having external agencies in the building, studying implementation
- Every 30-45 days, stretching out to every 90 days, the Implementation Team will convene either in person or virtually.

The Implementation Team will also provide ongoing support as more teachers and staff receive training.

Preview of the Site Application

These questions are for review purposes before completing the [online site application](#).

Questions should be addressed **as a group** by stakeholders who will be involved in the implementation process.

Personnel
1. Identify at least 4 potential *Foundations of Math* instructors (2 potential instructors with a math background and 2 with a special education background are required) who have completed Level 1 *Foundations of Math* training and are applying for Level 2 *Foundations of Math* training (Level 2 training is the first step to becoming a certified instructor for the 5-day *Foundations of Math* course).
2. Ensure that your team of potential instructors will be available for the upcoming Level 2 training opportunity.
3. Ensure that your team of potential instructors will be able to commit a minimum of 2 years to this effort.
4. Identify an (Mi)^2 liaison to be the contact person throughout the application and, if accepted, the implementation process.
5. Establish potential dates to offer *Foundations of Math* training for your local site.
6. Will all of the teachers (who teach math - elementary, secondary, special education), interventionists, and coaches from your building/district attend the full five days of training during usability testing? If no, please provide an explanation or time line for getting the remainder of the staff trained.

Need
7. Why are you interested in being an implementation site?
8. What need will *Foundations of Math* address (if not addressed in previous response)?

On-going Job-embedded Supports
9. What supports exist in your school to support ongoing training (check all that apply)?
    a. Instructional coaching
    b. Professional Learning Communities
    c. Peer coaching
    d. Additional related training
    e. Collaborative time focused on math content
    f. Collaborative time for lesson planning
    g. Other (please specify)
    h. None at this time
10. If no supports currently exist, what steps will you take to provide on-going job-embedded support for this process?

Implementation Teams
11. Implementation teams must include one person who has decision-making and resource allocation authority. Provide the name, title, and email address for that person.
12. Implementation teams must include the *Foundations of Math* instructors who provide the training to your staff as well as a person who will serve as the/a building coach for *Foundations of*

Math . Will the supervisors of those people agree to support their full attendance and participation in the implementation team?

13. An established implementation team, with key stakeholders, is critical to implementation success. The Implementation Team will consist of district/site administrators and staff, (Mi)[2] staff, regional personnel and Loyola University faculty. Each member will be an equal partner in the collaborative process of improving the implementation of practices and pedagogy taught in *Foundations of Math.* Team members will:

    - Participate in all team meetings, in person or virtually, in their entirety (approximately every 30-45 days, stretching out to every 90 days)
    - Ensure technology and/or classroom coverage is set up to support participation
    - Respond to requests for feedback by the given date
    - Contribute individual expertise to meetings
    - Complete assigned tasks (e.g. data collection, interviews, etc.) by the given date.

    Give 3-5 essential perspectives, in addition to those already mentioned, that you think should be included on this team.

14. Equally important is having an established, predictable location and time to meet. All members of the team need to be available for meetings and follow up tasks.
    a. How likely are you to ensure that each member receives adequate time to complete his/her responsibilities to the team?
    b. How likely are you to ensure a consistent meeting place and time for the team?

Implementation Readiness

15. Administrator support throughout the chain of command is critical to long-term success of implementation. Provide the names, titles and emails of all building and district administrators who are aware of, and support, your application for this usability testing.
16. (Mi)[2] will work with usability sites to co-construct a fidelity checklist, which defines critical components of the training. Please indicate your level of commitment to co-constructing a fidelity checklist and aligning implementation with the checklist.
17. How equipped is your site to provide adequate resources (e.g. personnel, time, money) to work toward the implementation of the critical components as defined in the fidelity checklist?
18. How concerned is your team about being about working toward meeting critical components of a fidelity checklist?
19. Choose a description that best describes your level of familiarity with implementation science and provide a brief explanation of your choice. Which statement best describes your level of familiarity with implementation science?
    a. I've never heard of it
    b. I think I've heard of it
    c. I've heard of it, but couldn't really say what it is
    d. I know what it is and can talk about it
    e. I know what it is and have been involved in projects that use it
    f. I know what it is and led/developed projects that use it
    g. Other (Please specify)
20. Please list/describe other large-scale initiatives you have implemented, or are currently implementing (e.g., MiBLSi, grant projects, Math Recovery, etc.) that would speak to your site's

capacity to support this implementation at all levels (classroom through upper administration), and your belief and willingness to engage in fidelity of implementation.
21. Has your school/district stopped implementing any large-scale efforts in the last five years? If so, please describe the effort that was stopped, including what factors influenced the stoppage.

Preview of the Instructor Application

These questions are for review purposes before completing the online instructor application.

Questions should be addressed **by the applicant** (and the person completing the application, if that person is not the applicant).

General Information
1. Training to become a *Foundations of Math* instructor involves
   a. Full participation in a five-day course offering as a Level 1 participant, including all readings, assignments, and discussion
   b. Full participation in a five-day course offering as a Level 2 instructor-in-training, including all readings, assignments, discussions, debriefs, and instructor-in-training activities (such as observations, grading homework, and completing reflective surveys)
   c. Successful completion of a math content test covering math content taught in *Foundations of Math*
   d. Completion of a $(Mi)^2$ observation (instructing a five-day course offering with an $(Mi)^2$ observer)
   e. Satisfactory completion of $(Mi)^2$ evaluations
   f. Satisfactory completion of a self-evaluation
   g. Approval from the $(Mi)^2$ to become qualified to instruct *Foundations of Math*
   h. Instruction of the 5-day course at least once within the subsequent school year
   i. Participation in on-going instructor training activities, including an initial Trainer of Instructors day to complete certification.
   j. Willingness and ability to instruct the entire course, including assigning and grading the Learning Tasks that are submitted by participants as part of the course
   k. Willingness to participate with implementation support and/or participation on leadership teams

   Requirements b-h should completed within 18 months. Are you able to meet this time requirement?
2. Contact information including name, title, affiliation, names of co-instructor applicants, and the potential pilot site or district with which you will be working.
3. With which grade level(s) do you currently work?
4. What, if any, subject areas are the focus of your current job?
5. What is your previous experience in education?
6. Where did you complete your Level 1 training?
7. $(Mi)^2$ maintains a network of instructors, statewide, with the skills to provide professional learning opportunities. As a trained instructor of *Foundations of Math* you would be part of that network. Would you be available to instruct the course out-of-district if needed?
8. Has your current supervisor signed an agreement for release time for training and instructing the course?
9. Did you attend all 5 days of Level 1 training and complete all homework assignments with passing rubric scores? (Note: $(Mi)^2$ will verify attendance and homework scores, and may ask for evidence such as emails or scanned assignments should there be any discrepancies.)

Experience

10. In your current position, which of these activities, meant to support professional learning, do you conduct? (check all that apply)
    a. Facilitate professional learning
    b. Coach
    c. Directly support teachers
    d. Directly support students
    e. Other

11. Please provide information about professional learning you have led in the past two years. Previous experience is not a prerequisite to be a *Foundations of Math* course instructor, but is preferred. Information provided here will assist (Mi)² in understanding each potential instructor's areas of expertise, experience with professional learning, and possible needed areas of support as they go through *Foundations of Math* course instructor certification.
    a. Title
    b. Major topics or objectives
    c. Audience background (general or special education, subject area, professional level, etc. where applicable)
    d. Approximate attendance
    e. Duration (multi-day, full day, partial day, lesson study/PLC/coaching, other)
    f. Audience (ISD level, district level, building level, other)

12. As an education professional, what is the primary topic of interest in which you keep current for your own professional learning or continuing education?

Research

13. Are you familiar with the work of (check all that apply)
    a. Liping Ma
    b. Deborah Ball
    c. Sharon Griffin
    d. TIMSS studies

14. Which statement best describes your familiarity with implementation science? (check all that apply)
    a. I've never heard of it
    b. I think I've heard of it
    c. I've heard of it, but couldn't really say what it is
    d. I know what it is and could talk about it
    e. I know what it is and have been involved in projects that use it
    f. I know what it is and have led/developed projects that use it
    g. Other

Motivation

15. List 2 or 3 benefits of becoming an instructor of *Foundations of Math.*

Instruction of the Course

16. How would you describe your comfort level instructing multi-day professional development?
    a. Extremely comfortable
    b. Comfortable
    c. Neutral

d. A little uncomfortable
e. Uncomfortable
17. How would you describe your comfort level being observed and evaluated as an instructor?
    a. Extremely comfortable
    b. Comfortable
    c. Neutral
    d. A little uncomfortable
    e. Uncomfortable
18. Describe one strength you have encountered delivering professional development. If you have yet to deliver professional development, use an example from your professional classroom experience.
19. Describe one difficulty you have encountered delivering professional development. If you have yet to deliver professional development, use an example from your professional classroom experience.
20. Effective instruction of the *Foundations of Math* course has measures of fidelity that are non-negotiable and other areas that are more flexible. How comfortable are you with the idea of instructing a course with non-negotiables in terms of facilitation?
    a. Extremely comfortable – I will instruct with fidelity, no exceptions
    b. Mostly comfortable – I will adhere to the non-negotiables to the best of my ability
    c. Fairly comfortable – I will try to instruct with fidelity, although I do not feel entirely comfortable with the idea of non-negotiables
    d. I have some concerns – If, as an instructor, I want to make certain changes to suit my instruction style or the needs of my audience, I would most likely do so even if those changes are in conflict with non-negotiables
    e. Uncomfortable – professional learning is a specific exchange between the leader and participants and maintaining a flexible environment allows learning to go where it needs to regardless of non-negotiables
    f. If your comfort level is not captured in these choices, please describe it

References
21. Administrator approval is required to become a *Foundations of Math* instructor. Provide the name and email of your supervisor and he/she will receive a short approval form upon the submission.
22. Upload feedback (summaries, feedback forms, etc.) from the last professional learning activity you provided (optional)

Example of an Implementation Site Partnership Agreement

	Alt+Shift/Michigan's Integrated Mathematics Initiative (Mi)[2]	Implementation Site
Level 2 *Foundations of Math* • instructor training – 5 days	Provide 5-day Level 2 Training for the team of local instructors • Registration • Mileage • Lodging • Lunch and dinner	Provide release time for team of local instructors, including 2 people with a math background and 2 people with a special education background, for the 5-day Level 2 training, any travel time, and time to complete assignments, potentially involving • Sub costs • Stipends
2-day Trainer of Instructors (TOI) event • practice presentations • math assessment	Provide a 2-day follow up training called "Trainer of Instructors" • Mileage • Lodging • Lunch and dinner	Provide release time for team of local instructors for the 2-day "Trainer of Instructors" event, including any travel time, and time to prepare for the TOI activities, potentially involving • Sub costs • Stipends
Establish an Implementation Team	Provide consultation on which perspectives should be included on the team	Establish the team, get commitment from team members (see Implementation Team on page 10)
Implementation Study with Alt+Shift and the Center for Science and Math Education (CSME) out of Loyola University in Chicago	Coordinate efforts to set up meetings and ensure communication flow between Alt+Shift, CSME, and Implementation Site Initial virtual meeting with district administration, CSME, and Alt+Shift Work with an implementation team leader who will take on this role as the study goes on Initial face-to-face meeting at the implementation site with CSME and Alt+Shift Implementation team meetings (every 30-45 days) with the implementation team, CSME, and Alt+Shift Attend implementation meetings, both in-person, and virtually	Respond to communications regarding scheduling in a timely manner Respond to communications seeking feedback in a timely manner Complete action items identified at implementation team meetings by the deadline Identify and support the implementation team leader who will gradually take on the role of facilitator/coordinator for the work Ensure entire implementation team is able to attend all meetings for their entirety Host implementation team meetings, and other visits as mutually agreed upon by the team, both in-person and virtually

Local/regional 5-day *Foundations of Math* training with regional instructors	Support local/regional training • Provide and/or lend training materials, including participant books • Conduct site visits to provide and gather feedback on course implementation • Provide technical assistance to instructor team as they prepare to offer the course	Provide full 5-day local/regional training • Schedule training within a year of the TOI day (see above) • Schedule training so all 5 days are concluded within about a 3 month period – not all days offered consecutively • Provide a site • Provide lunch (if offered on site) • Advertise and recruit participants • Provide release time (and related sub or stipend cost) for instructor team to prepare and present the 5-day training
On-going, job-embedded follow up	Provide consultation and technical assistance related to structures and systems that can be utilized to provide on-going, job-embedded follow up, such as coaching, Professional Learning Communities, etc. Provide technical assistance to the providers of that follow up.	Establish and support some form of on-going, job-embedded support including • Ensuring the providers of that support are part of the implementation team • Setting expectations for those providers to provide long term sustained support for practitioners