

Reflecting on the AIM4S³™ Mathematics Framework and the Learning Policy Institute Report on Professional Development

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Promising practices...

Over five years ago, Erin Mayer and I started an action research adventure in her Albuquerque classroom to explore the question, “How can we make mathematics more accessible and engaging for our students?” This action research has taken on a life of its own, leading to a partnership with Dual Language Education of New Mexico (DLeNM) in the development of a powerful framework: Achievement Inspired Mathematics for Scaffolding Student Success (AIM4S³™). AIM4S³™

is designed to support elementary and middle school teachers in delivering high-quality targeted instruction for students who are often underserved—our language learners, students from lower socioeconomic backgrounds, and those who struggle with mathematics.

The Learning Policy Institute recently released a report, *Effective Teacher Professional Development*, that addressed the question:

What are the features of effective professional development? The report affirmed that the AIM4S³™ Professional Development Framework incorporates all of the elements that the researchers identified as key to effective professional development. These findings also support our team’s ongoing efforts to ensure that AIM4S³™ professional development reflects effective classroom practice.

For the report, Linda Darling-Hammond, Maria E. Hyler, and Madelyn Gardner (2017) reviewed 35 studies that “demonstrated a positive link among teacher professional development, teaching practices, and student outcomes” (p. v). They found that effective professional development includes the following characteristics:

1. is content focused;
2. incorporates active learning utilizing adult learning theory;
3. supports collaboration, typically in job-embedded contexts;

4. uses models and modeling of effective practice;
5. provides coaching and expert support;
6. offers opportunities for feedback and reflection; and
7. is of sustained duration.

What is AIM4S³™?

AIM4S³™ is an instructional framework; it is not a curriculum. Teachers use the programs and resources that their district has adopted plus any other appropriate supplemental materials. AIM4S³™ is based on the beliefs that 1) teachers as professionals need to have the tools and knowledge to make informed decisions based on the instructional needs of their students, and 2) all students can be successful mathematical problem solvers if provided access and well-designed supports.



Teachers generate strategies that will support students in meeting content and language objectives.

Five Key Instructional Principles (KIP) provide the pedagogical foundation

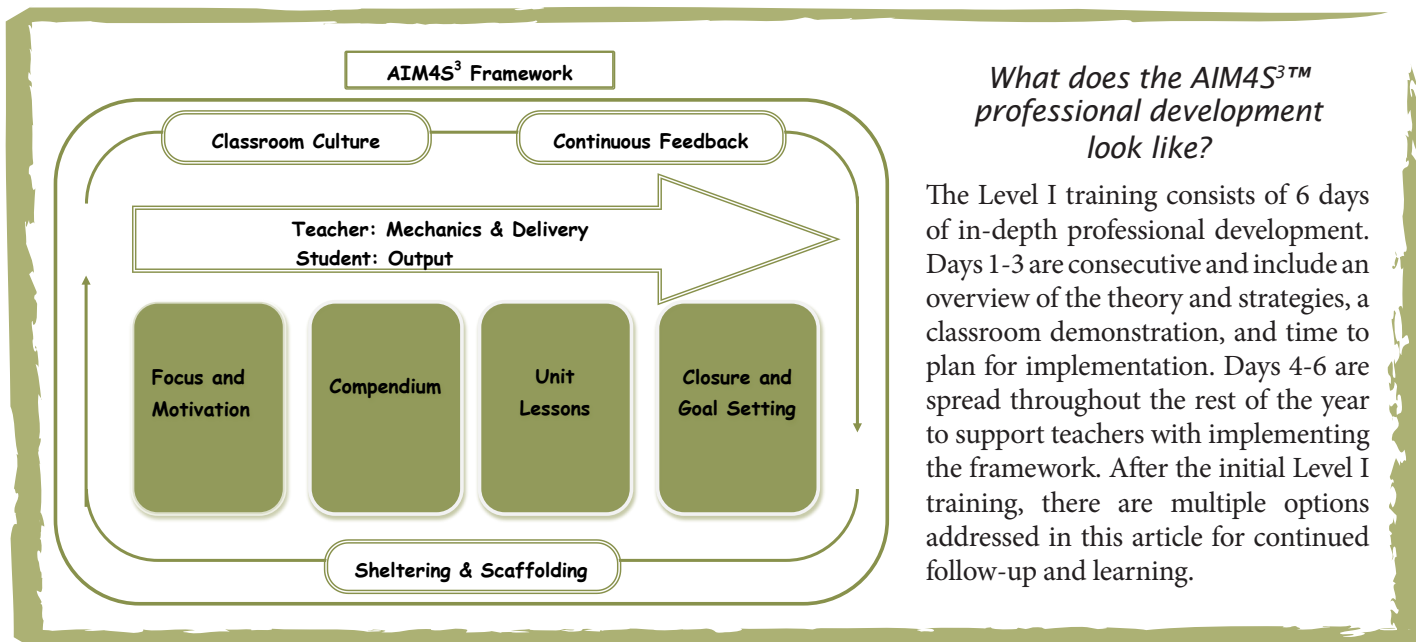
for the framework: *Continuous Feedback, Teacher Mechanics and Delivery, Student Output, Positive Classroom Culture, and Sheltering and Scaffolding*. Continuous feedback from both the teacher and the students drives the teaching and learning. Mechanics and delivery refer to the methods the teacher uses to present the material and how the teacher engages or interacts with the students. Throughout the unit, this framework emphasizes effective mechanics and delivery as well as frequent opportunities for student output. Strong sheltering and scaffolding practices and a positive classroom culture based on risk-taking and a growth mindset surround all elements of instruction (Boaler & Dweck, 2016).

In addition to the KIP, there are four Component Areas that are specific to how teachers plan mathematics instruction. *Focus and Motivation* ensures that we plan activities that hook students,

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What does the AIM4S³™ professional development look like?

The Level I training consists of 6 days of in-depth professional development. Days 1-3 are consecutive and include an overview of the theory and strategies, a classroom demonstration, and time to plan for implementation. Days 4-6 are spread throughout the rest of the year to support teachers with implementing the framework. After the initial Level I training, there are multiple options addressed in this article for continued follow-up and learning.

make math relevant, and also provide us with informal formative assessment data. The *Compendium* is a community resource built with students that creates a reference that grounds student learning and includes student inquiry and student-friendly standards and mathematical practices. The *Unit Lessons* provide the heart of the unit and are driven by standards and careful planning to shelter and scaffold instruction, leading to student success. Finally *Closure and Goal Setting* wraps up the unit by making sure students are an active part of the assessment process—reflecting on their own learning and setting goals as a classroom community as they move forward.

How does AIM4S³™ address these seven features of effective professional development? It...

... is content focused. AIM4S³™ has been specifically developed to give teachers the tools to deliver high-quality math instruction that is accessible to all students, specifically language learners and students who struggle with mathematics. In other trainings, we found that general sheltering strategies were helpful but did not meet the wide range of professional development needs that are specific to mathematics. This framework supports teachers in developing 1) a deeper understanding of their grade-level standards, 2) a pedagogy that actively engages students as problem solvers, and 3) strategies to provide access to the content and language of mathematics for all students, especially language learners. AIM4S³™ provides a system to support schools in implementing best practices as identified

by the National Council of Teachers of Mathematics (NCTM) in their publication *Principles to Action: Ensuring Mathematical Success for all*.

... incorporates active learning. Teachers deepen their understanding of the framework through analyzing classroom scenarios, studying video, collaborating in teams to identify scaffolding and sheltering strategies, and experiencing math lessons from the perspective of the learner. Through these lessons, they not only deepen their understanding of the mathematics they teach but also see how the Key Instructional Principles and the Component Areas of AIM4S³™ all work together to increase students' mathematical understanding and problem-solving abilities. We are constantly working to make this professional development mirror what effective instructional practices look like in our classrooms.

... supports collaboration. High-level implementation of AIM4S³™ is built on collaboration. Grade level and team planning opportunities are provided on Days 2-6 of the Level I training. We highly recommend that schools target grade-level teams when choosing teachers to attend the training. These teams support each other with planning and materials development after the training, leading to higher levels of implementation and greater student success.

On-site follow-up typically targets teams participating in facilitated planning, lesson study protocols, or





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classroom observations. For classroom observations, we use DLeNM's instructional rounds protocol, VISITAS™, which gives teachers a chance to visit each other's classroom, look at data, and decide together on professional development next steps.

... uses models of effective practice. Strong professional development provides teachers with a clear vision and examples of what best practices look like in action. During the training, teachers observe classroom demonstrations, view models of unit planners, and get access to the AIM4S^{3™} follow-up on-line resources which include videos, articles, chants, and a Compendium bank to support their continued growth over time.

... provides coaching and expert support. AIM4S^{3™} trainers provide coaching and specific feedback during the Level I training, often meeting with individuals and grade-level teams to review unit planners and Compendiums that teachers have developed to use in their classrooms. Districts have supported on-site follow-up at specific schools so that trainers can provide coaching that addresses needs identified by individuals and grade-level teams. We are currently developing additional protocols and observation tools in response to teacher requests for more targeted constructive feedback.

... offers feedback and reflection. Feedback and reflection are built into all areas of AIM4S^{3™} professional development. On Days 4-6 of the Level I training, teachers are asked to bring artifacts from their classrooms to share with other teachers. We then do a gallery walk where participants walk the walls, ask each other questions, and share successes and challenges. Teachers consistently give our trainer team the feedback that seeing each other's work and reflecting together gives them new ideas and deepens their understanding of the framework. After the gallery walk, the trainers facilitate a conversation to answer questions, share learning, and address misconceptions and next steps. Additionally, participants have the opportunity during afternoon planning to review their artifacts and planning documents with a trainer to get specific feedback.

... is of sustained duration. When AIM4S^{3™} first began, the initial training was 3 days long and included classroom demonstrations. Participants

often shared that this was powerful, but it wasn't enough. Teachers wanted ongoing support implementing the framework with students. Based on this feedback, Days 4-6 for implementation support were added to the Level I training, as well as a yearly AIM4S^{3™} Summer Institute. We also provide on-site follow-up coaching and administrator trainings. In addition, districts can develop their own cadre of AIM4S^{3™} trainers to build capacity and sustainability. Upon completing their certification, these educators provide Level I training and follow-up within their own districts.

Implications of the Learning Policy Institute report on professional development

Reflecting on the Learning Policy Institute report, it is evident why both teachers and our trainer team are frustrated when administrators think AIM4S^{3™} will be a quick fix. At a minimum, AIM4S^{3™} is a year-long commitment, but we have seen the greatest impact on students and teachers when schools target deepening teacher practices around mathematics instruction for 2 to 3 years. The report defines effective professional development as “structured professional learning that results in changes in teacher practices and improvements in student learning outcomes” (p. v). If our goal is to increase student achievement, the school community must commit to prioritizing key professional development goals and providing the time, support, and resources for teachers to truly own and implement their learning. AIM4S^{3™} makes that commitment—teachers and students deserve no less.

References

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For more information about AIM4S^{3™}, please visit www.AIM4Scubed.dlenm.org.