Math Badging Receives Illinois Educators' Seal of Approval

Executive Summary

The Illinois Math Badging Initiative (IMBI) is an effort to pilot alternative credentialing in math that allows for equitable student outcomes and certifies student learning through a variety of methods. Each math badge a student can earn contains mathematical content and practice expectations, learning principles, examples of rich tasks and evidence of learning. Badges can be certified using a portfolio of evidence, skills assessment or performance assessment.

Teach Plus Illinois assembled a group of math educators across the state to better understand how IMBI would alter the delivery of math content in Illinois and provide suggestions to schools who plan to implement this approach with a focus on supporting teachers. Over several months, this group learned about math badging both abstractly and through discussions with practitioners in the IMBI pilot sites, and offered their thoughts about the value of the badging approach, how schools can implement effectively, and how the IMBI pilot might eventually be scaled up to serve more students.

Findings

1. Math badging offers students significant benefits and can make math content more accessible
2. Math badging is a significant departure from the curricular framework currently used in Illinois
3. Teachers want robust systems for documenting learning that are clear and transferable

Recommendations

1. Schools should offer math badging opportunities despite the challenges of implementation
2. Schools should share implementation models so stakeholders can envision math badging
3. Schools should provide space for deep learning discussions, both internally and externally
4. As badging expands, practitioners should establish clear and consistent assessment practices to make student progress transferable across classroom, district, and even state contexts

Methodology

Teach Plus convened seven math educators from across Illinois who currently work with the target population for transitional math badging. This panel conducted one focus group to explore existing issues with the delivery of math content in Illinois and share thoughts about how a badging approach might help address these, five consultancy meetings with individual schools piloting or planning for a math badging approach, and a final focus group to reflect on what they had learned about the badging approach and offer their recommendations on the expansion and implementation of math badging from a teacher perspective.

Findings

1. Math badging offers significant benefits and can make math content more accessible

The focus group believes that assessing students with quizzes or tests does not give a full picture of what a student knows, gives students math anxiety, and prioritizes remembering information only for the assessment that is quickly forgotten. All focus group participants recalled students who performed well during class and then did not show their learning on a final assessment, like one who said, “students generally memorize what they think they will be tested on, rather than focus on the skills that can be applied.” Others recalled students who were “Nervous about doing "bad," so they would rather not try.”

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Focus group members identified flexibility as the key benefit of badging, as it gives teachers more opportunities to differentiate and students more choice, leading to greater engagement. Math badging also gives students agency in how they certify their learning and apply it, allowing students to use multiple modalities and decide the way that works the best for them.

2. Math badging is a significant departure from the curricular framework currently used in Illinois

Respondents pointed out that the idea of math badging would be a significant change from the approach many teachers at their school currently use. Many math educators still teach math using a curriculum in which students work on abstract problems not grounded in a real world context, and move on to a new topic even when learning is not mastered. Additionally, the structures of high schools give students little choice, assigning them to a defined path of math coursework. There is little or no flexibility in what classes students are taking or the time allotted to extend topics.

Respondents shared that implementation of new curriculum often takes years, and teachers have to be open to letting go of teaching practices that do not serve students, while simultaneously avoiding feelings of inadequacy in their profession. One respondent pointed out that “teachers need continuous, high quality PD to learn how to facilitate learning in a problem-based setting [and] time to collaborate with other teachers to shift their mindset…If the teachers don't believe, then it will fail in those classrooms.”

3. Teachers want robust systems for documenting learning that are clear and transferable

Student grading and transferability surfaced in multiple focus group sessions. Because this approach is new, teachers want to know how student work will be documented and credited, particularly for students that move classes, schools, or even states. Recognizing that implementation will require a lot of time and effort, participants asked, “Not every school and university will be engaging in badging or recognize badging when students transfer high schools or apply to colleges, so what is the benefit?”

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This principle was very important among teachers because they are invested in student learning in the long term. They acknowledge that every classroom in a school will not look exactly the same, nor should it, but the definition of what a portfolio is and how it should be collected will need specificity among teachers and across contexts.

RECOMMENDATIONS

1. Schools should offer math badging opportunities despite the challenge of implementation

As practicing teachers, focus group members know math students are most motivated when working on real world problems that connect to their lives, and demonstrating their learning through authentic and relevant tasks rather than abstract tests. Additionally, math instruction should offer multiple entry points and be accessible to all learners.

Multiple respondents said that the best learning in their classroom has come from project based learning and performance tasks, with one explaining that “performance assessments allow students more freedom in how they want to solve and how they enrich the problem to make it more relevant to their own interests.” They also know that applied learning is deeper learning: “Math badging requires application of content, and the use of the upper levels of Bloom's Taxonomy. Those are two things that have largely been missing from math instruction in the majority of high school math classrooms.”

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After hearing from pilot schools and exploring math badging, focus group participants were clear that it benefits students, especially those with gaps in their foundational math knowledge, by giving them ways to demonstrate their understanding and an ability to see the relevancy of math in their lives. While they noted that badging would be difficult to implement for a variety of reasons, the benefits for students were significant and clearly described.

2. Schools should share implementation models so stakeholders can envision math badging

While they were clear about the benefits, practical concerns about implementation surfaced many times. Professional development is needed to provide teachers with clear models on what different components of badging look like, such as a portfolio or performance assessment connected to an established curriculum and aligned to badge completion. Clear models will allow teachers, students, and parents to feel confident and safe in trying a new approach.

Additionally, it is important that schools acknowledge the reality that our state assessments and college assessments are not project-based performance tasks, and offer ways to bridge those gaps. We cannot expect teachers to independently resolve these conflicting expectations. School-level expectations and support will help teachers feel less conflicted in navigating competing pressures in how to prepare students for the future.

3. Schools should provide space for deep learning discussions, both internally and externally

In our final focus group, we asked which ideas, information, resources, or experiences were most helpful in both building understanding of the badging approach and shaping teachers' opinions of it. Every focus group member agreed with one who said that "hearing personal experiences from other teachers was the most helpful to know about how realistic it is and how the implementation is most effective."

One teacher noted that from research and readings alone, she "wasn't able to…really understand what these badges look like, and how I might implement in my classroom," but that "It was most helpful listening to teachers speak about their classroom experiences." Another went into depth on the importance of not just hearing the success stories, but also learning about challenges:

"...we want that real information."

> *I did like talking with other people who had struggled through it. You know, they weren't saying that everything was perfect because when you first hear about this, you're like, "oh, I don't know how this is gonna work for me…it doesn't sound like it's going to be super easy." And then when you go to training and they're like, "Oh, it's going to be a breeze," then you almost feel a little bit defeated, like, well, clearly, I must have something wrong. And so, hearing about other schools, and challenges they may have faced, that was just super helpful. Okay…this is how they adjusted to whatever issue arose. And I really do think that's so helpful, because when you sit there and no one has any questions or says everything works perfect, we know that's not usually how it goes. And we want that real information.*

Focus group participants agreed that schools should begin with a small group of teachers who are invested in the idea of math badging, and provide space and time for them to work with other schools to learn how they are applying the framework and gather ideas and resources. One teacher said, "I like hearing other teachers' positive mindset of 'This is gonna work, and this is how it's going to work, and if it doesn't work, this is how I'm going to change it…I appreciated the positivity of hearing other teachers that were already implementing it."

Then, that group needs significant opportunities to engage with colleagues locally to allow other educators to see the benefit and impact as well as to collaborate and problem solve together. One participant said, "PD is necessary, I think, for any change to get off the ground - but especially in this magnitude," and added, "The initial roll out [needs] a lot of really good PD and sharing of resources - and continually, it needs to be ongoing, like PLC-type [learning]." At the state level, it would also be helpful to support schools by establishing a network of like-minded educators to serve as a resource and to offer high-quality professional development for teachers as they put a new framework into place.

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Participants were clear that implementing a dramatically different framework for instruction like math badging requires lots of time, training, discussion and resources. If schools choose to implement badging, it should be the sole focus for the educators involved; implementation is likely to be unsuccessful if it is "one more thing" on top of multiple other competing demands. As one participant put it: "it all comes down to the level and quality of PD and resources that are offered. I don't think this initiative will succeed without both."

4. As badging expands, practitioners should establish clear and consistent assessment practices to make student progress transferable across classroom, district, and even state contexts

One of the most salient concerns of focus group members was providing a clear, consistent way of documenting and certifying learning from a badge. Consistent transferability is important for all stakeholders to address and to thoroughly understand. Our group discussed possibilities like using a progress-to-goal bar that could be fillable for a badge, or a pie chart based on the math content standards and practice expectations that had been achieved. These could serve as student-friendly ways to document the parts of a badge that were already earned and visually represent progress toward badge completion for all stakeholders in a school.

With an eye toward equity, our focus group discussed how writing components, like explaining mathematical thinking in writing, might hinder progress for some of the students most in need of a new approach to math. One reflected on her co-taught classroom: "I think of the students with IEPs that maybe don't get services right now in math, but have reading and writing goals [that] would also have to be applied now to their math classroom." Teachers wondered where other means of document progress might be offered for students with writing challenges that would still allow them to demonstrate math learning goals, and pointed out that consistent implementation is the key to equity so that student success doesn't depend on the ability of an individual teacher to differentiate equitably.

Finally, the group noted the critical importance of portability in scaling the program, so that student learning is recognized across contexts, even if a student transfers to another school.

CONCLUSION

The Illinois Math Badging Initiative has the potential to transform the delivery of math content across Illinois—and, more importantly, to transform learning and access for students. Focusing on the critical components of supporting teachers, harnessing student motivation, and providing clear assessment guidance can create more equitable opportunities for students.

The respondents in our group were unanimously excited and energized by this approach to mathematics instruction. While we recognize that old habits die hard, and overcoming a century of institutional inertia will be difficult, we believe that it is time to put student needs before adult comfort and invest in math instruction that works. Providing more opportunities for authentic assessment and real-world learning is critical as students form a math identity and learn to apply these skills to shape their future.

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