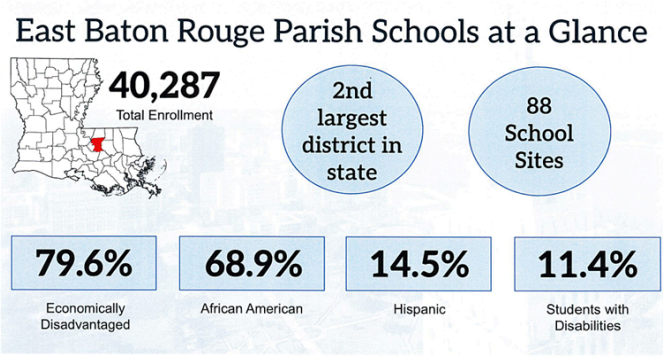
Enhancing Research & Development through Professional Learning: Snapshots from EBRPSS and the NYC Partnership for Math Equity

High-quality professional learning (PL) focused on digital tools is urgent due to the **rapidly increasing adoption of digital tools** in K-12 contexts for student and teacher use. This widespread integration requires that teachers be proficient in using these resources effectively for instruction. **Teachers remain essential** to accomplishing educational outcomes for students, alongside effective digital tools. **Effective implementation of these tools requires targeted teacher PL.** The mere adoption of a digital tool is insufficient for improving teaching and learning – teachers need specific guidance and support through PL to understand how to utilize these tools in ways that align with their curriculum and pedagogical goals. Recognizing this need, this AIMS Mini-Grant project specifically studied how PL was being integrated into research and development (R&D) initiatives involving digital math tools. In the snapshots of practice below, we focus on understanding the PL surrounding the implementation of digital tools in real-world educational settings.

To generate these snapshots, RPPL interviewed East Baton Rouge Parish School Systems (EBRPSS) PL providers and a researcher from the NYC Partnership for Math Equity, their digital tool PL pacing guides, facilitation plans, and summaries of teacher feedback on the PL services. Data were analyzed against the prevailing research evidence on effective teacher PL using RPPL's Dispelling the Myths and Building Better PL briefs. The snapshots of practice that follow describe how each site aligned with the evidence base. RPPL also engaged its network of PL organizations as advisors, bringing their practical experience and insights to the collaboration. All partners collaborated to design the suggestions for the field to consider.

Coherence & Flexibility: East Baton Rouge Parish School System's (EBRPSS) Implementation of DreamBox Professional Learning

EBRPSS partnered with Louisiana State University (LSU) to implement professional learning (PL) on DreamBox, an adaptive math program, to enhance math instruction. They provided PL to support teachers in using DreamBox effectively with their core math curriculum. This project targeted math progress in EBRPSS. The parish has an area of 470 square miles and a population of 446,042, of which 27.8% of residents live below the poverty line. The public school system serves over 40,000 diverse students in grades Pre-Kindergarten –12th grade, and is the second largest in the state.



Format and Content of Dreambox PL in EBRPSS

Over four years, EBRPSS offered a variety of PL opportunities for teachers to support the implementation of the Dreambox tool. Their PL began with district-wide **launch sessions**, which were followed by school-based sessions, and supported by school-based and Dreambox-provided **coaching**. While the district-wide launch was standardized to introduce the platform and its features to teachers across the district, school-based sessions were collaboratively planned between Dreambox and individual principals to be tailored to schools' specific needs. Through a partnership with LSU, EBRPSS conducted **teacher focus groups** and **student "Math Mindedness Surveys,"** the results of which were used to inform the development of **summer PL sessions**. These sessions were differentiated into "Beginner" and "Advanced" cohorts of teachers, acknowledging and supporting teachers at different stages in their experience with the tool. Finally, the larger math PL initiative evolved to include a book study focused on building students' math engagement and identity, and the use of an AI tool to support teachers in selecting lesson plans.

Connections to Evidence-Based PL Practices

The various components of EBRPSS's PL are related to the evidence base for effective PL as outlined by RPPL in their "Building Better PL" and "Curriculum-Based PL" briefs.

- **One-to-one coaching.** Coaching is a strong, evidence-based PL practice that EBRPSS utilized at various levels. DreamBox provided **unlimited 1:1 coaching**. School-based coaches tended to be the most frequent participants in Dreambox coaching, providing coherence for teachers in their experience and use of the tool. School-based coaches then played a crucial role in supporting teachers with DreamBox implementation and aligning it with the core curriculum, providing feedback, and acting as a bridge between teachers and DreamBox coaches. This multi-layered coaching approach provided **personalized, job-embedded support**, a key aspect of effective coaching.

- **Intensive and Sustained.** EBRPSS's four-year commitment to Dreambox PL was considered a significant help to implementation. They had initial launch sessions, ongoing in-school sessions, and differentiated summer sessions for "beginner" and "advanced" teachers. This variety of district-level and school-based PL sessions, during the school year and over the summer, as well as the consistent coaching offerings, indicated a **sustained effort** to support teachers' use of the digital tool and supported deep instructional shifts.

- **Grounded in Practice.** The content of PL sessions and coaching evolved from basic usage to more advanced strategies like data interpretation and lesson assignment. This progression aligns with supporting teachers in their **day-to-day practice** with the specific tool. Summer sessions tended towards showing teachers how to integrate the tool with their core curriculum, supporting teachers' instruction with **concrete instructional materials**.

- **Supports Teachers in Meeting Individual Student Needs.** After receiving questions from teachers, Dreambox PL incorporated training for assigning lessons to individual students. **Tailored lesson assignment** was particularly useful in supporting students' access to and reinforcement of grade-level content, a critical aspect of closing the "opportunity gap" that persists in classrooms across the country (TNTP), and supporting each student to meet

their individual needs.

- **Driven by Effective Leadership.** A **small, consistent group of district PL leaders** executed grant activities from the start, **maintaining coherence** and focus on grant outcomes. A strong three-prong partnership was built across the district, DreamBox, and LSU, allowing them to focus on the same research and practice goals over time. The EBRPSS district PL team found that a consistent team and a single point of contact from DreamBox enabled the EBRPSS to maintain cohesion and implement PL that improved math instruction. Partners had regular meetings with joint agendas, as well as frequent informal contact that went in both directions. The same DreamBox PL leader consistently led PL, monitored district growth, and understood school needs through teacher relationships and school visits.

- **Supported by Measurement for Improvement and Impact:** In collaboration with their research partners at LSU, EBRPSS actively sought **feedback through teacher focus groups and student surveys**, and this **feedback directly influenced their PL offerings**. The focus groups with teachers (offered immediately before the PL sessions) revealed concerns about DreamBox dictating the order of skills, which led to showcasing how teachers could assign lessons to align with their teaching within summer sessions. The student Math Mindedness surveys captured students' perceptions of their math identity and engagement, and informed an added book study initiative aimed at increasing student engagement in math. The fact that EBRPSS gathered feedback and adjusted their PL strategies afterward suggests an iterative approach to improvement and illustrates their **accountability for change and improvement**.

In summary, EBRPSS offered a diverse range of PL opportunities that touched upon several evidence-based practices for effective teacher learning. They incorporated data and feedback to adapt their offerings, utilized coaching as a key support mechanism, and aimed to connect the use of the digital tool with teachers' existing instructional practices. District leaders highlighted that the consistency on their leadership team and with their partners was a key part of the success of this initiative.

Research Powered Implementation: NYC Partnership for Math Equity & Amplify Desmos Math (ADM)

NYC Partnership for Math Equity schools include 27 schools (~3,000 students in total) serving grades 6–8 in 8 geographic districts as well as 2 transfer high schools serving over-age, under-credited students. Within these schools, Amplify PL serves about 85 teachers. Demographics for these schools parallel NYC schools as a whole: 10% Asian, 18% Black, 49% Latinx, 17% White; 26% have an IEP, 16% have limited English proficiency, 80% live in poverty.

The data collected to generate the snapshot of practice from NYC Partnership for Math Equity included interviews with a researcher who conducted observations of Amplify Desmos Math (ADM) implementation, a summary of data on teachers' experiences with the ADM platform from interviews and focus groups, research protocols used with teachers, and newsletters sent to teachers about ADM PL.

Format and Content of ADM PL in NYC

The NYC Partnership for Math Equity offered several types of professional learning to teachers centered around the ADM platform. PL began with **school-wide sessions** designed to provide a foundational understanding of how to use the ADM platform. Each participating school received at least **one monthly in-person session with an ADM coach** who was assigned to their school, and teachers had the opportunity to sign up for **virtual meetings** with coaches. During in-person coaching sessions, coaches observed lessons, provided feedback, modeled lessons, and offered pedagogical and instructional support. **On-demand virtual meetings with ADM representatives** allowed teachers to receive personalized support on integrating the platform into their lesson plans and to address any challenges, as well as further support and clarification as needed. A summer institute was implemented based on the realization that teachers would benefit from **working collaboratively** and asking questions about using the platform. Finally, through their partnership with researchers at NYU's Metro Center, robust **quantitative and qualitative data** was collected and analyzed, in the service of understanding the implementation of ADM. Results were shared back with ADM PL providers to improve support for teachers.

Connections to Evidence-Based PL Practices

The various components of NYC's PL are related to the evidence base for effective PL as outlined by RPPL in their "Building Better PL" and "Curriculum-Based PL" briefs.

- **One-to-one coaching.** Coaching provided continuous, as-needed support, **addressing teachers' questions and fine-tuning implementation.** Coaches emphasized the importance of allowing students sufficient time to work at their own pace on the platform. Coaches also guided teachers on adapting lessons to fit their curricula. While coaching was a key component of the ADM PL teachers received, coaching itself wasn't necessarily the lever that made the most impact - **it was the fact that coaches had prior math classroom experience that supported teachers' implementation.** Coaches' prior experiences gave teachers a sense of security that they "knew what they were talking about," they could anticipate potential issues and misconceptions around particular topics, and they could pivot and adjust in the moment. This created an environment where most of the teachers were welcoming to coaches, had positive rapport with them, and ultimately led to the usage of coaches.

- **Grounded in Practice.** A key focus of PL sessions was emphasizing that teachers should lead the classroom lessons, rather than students working independently on computers. In this way, they **prioritized practice-supportive materials over principles and precepts**, introducing teachers directly to the platform and its intended use in instruction. In addition to providing technical support, coaching sessions also centered on how teachers could effectively integrate this tool into their mathematics instruction and Eureka Math curriculum, providing a **hands-on, practical approach, directly applicable to teachers' day-to-day work**. In many of the NYC schools, **co-teaching was an established model**. When ADM coaches visited, they could easily integrate into this structure, co-teaching lessons side-by-side. The utilization of co-teaching with coaches provided a **job-embedded opportunity for teachers to learn** and receive real-time support, aligning with the principles of BBPL being grounded in practice.

- **Supports Teachers in Meeting Individual Student Needs.** In addition to planning and technical support, coaches highlighted certain features of the platform, like the anonymized screen sharing for presenting student work to the class. This feature helped to create a more inclusive environment, which supported students by lowering anxiety, increasing pride in their work, and helping to develop their math identity, a construct that is particularly supportive to Black students' achievement (Gonzalez et al., 2020).

- **Collaborative.** The summer institute was implemented based on the realization that teachers would benefit from **working collaboratively** and asking questions about using the platform. The institute provided time for teachers to **collaborate with colleagues around instructional improvement** by bringing together teachers who had previous experience with ADM with those who were newer, and aimed to boost usage by providing teachers with the necessary tools and clarification. Sessions allowed for the sharing of knowledge, problem-solving, and building of a supportive community around the platform's use.

- **Supported by Measurement for Improvement and Impact.** To better understand the experiences of teachers and students around the use of ADM in their classrooms and identify potential supports to increase platform usage, NYU PRE collected **quantitative and qualitative data** through different sources: (a) pre and post-retrospective surveys; (b) focus groups or interviews with students, teachers, coaches and principals; (c) observations of classrooms where ADM was being used; and (d) informal feedback during our school visits. The team used different qualitative methods to (1) connect with teachers and students and (2) request their feedback, allowing the team to gather important information that would later be used to make sense of quantitative data (e.g., platform data). Further, it allowed the team to relay relevant information to ADM coaches based on teachers' feedback and classroom observations. Importantly, these research efforts also supported **real-time adjustments to the PL plan**. For example, researchers learned from teachers that there were features they didn't know how to use, and that they didn't know they could revise ADM lessons. Researchers brought these challenges to ADM coaches, who were then able to address these issues with their teachers. NYCPS also developed the summer institutes in response to feedback from teachers that additional support was needed. Each of these activities highlighted the partnership's **accountability for change and improvement** by using data to refine their strategies.

The PL offered by the NYC Partnership for Math Equity, with its **combination of introductory sessions, ongoing coaching, opportunities for planning and on-demand support, and collaborative learning** through the summer institute, incorporated several key features of the evidence-based PL. The focus on **direct application of the tool in instructional settings, personalized support through coaching, and opportunities for collaboration** align with the principles of improving teacher practice and ultimately student outcomes. Their practitioners highlighted the importance of coaches' prior classroom experience in building strong relationships with teachers and supporting uptake of the tool.

Conclusion and Call to Action

The snapshots of practice of EBRPSS and the NYC Partnership for Math Equity reveal critical insights into effective PL for integrating digital math tools. Both initiatives demonstrate that successful implementation hinges on a blend of **coherence, flexibility, sustained support, and strong partnerships**. Consistent PL facilitators, varied formats of PL, and mechanisms for feedback are essential for meeting teachers where they are and addressing their specific needs.

Districts and R&D teams must recognize the value of investing in robust PL infrastructure, including financial resources, measurement for improvement, and continuous feedback loops. Practitioner expertise, particularly coaches with classroom experience, plays a significant role in teacher buy-in and successful implementation.

Based on our conversations with EBRPSS and the NYC Partnership for Math Equity, as well as our reading of the evidence base for PL, the following emerged as salient recommendations for PL designers, district administrators, PL researchers, and product development teams:

- **Prioritize sustained PL:** Commit to long-term professional development initiatives that adapt to evolving teacher and student needs.
- **Foster strong partnerships:** Cultivate collaborative and consistent relationships between districts, PL providers, and research teams to ensure alignment and shared goals.
- **Implement feedback mechanisms:** Regularly collect and analyze feedback from teachers and students to inform and refine PL strategies.
- **Invest in practitioner expertise:** Recognize the value of coaches with classroom experience and leverage their knowledge to support teachers.
- **Offer flexible PL formats:** Provide a variety of learning opportunities, including in-person, virtual, coaching, and collaborative sessions, to cater to diverse teacher preferences and needs.

By embracing these actions, we can ensure that teachers are effectively supported in integrating digital tools, ultimately leading to improved math instruction and student outcomes.