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PD in PJs: Building a Sustainable, Collaborative Professional Development Approach to Address Teachers' Affective and Technological Needs

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Abstract: The pandemic changed how we viewed professional development. Our teachers reported needing support in the affective domain in addition to traditional professional development. To address this, we piloted Professional Development in Pajamas (*PD in PJs*) that focused on sharing peer-to-peer technological pedagogical knowledge and added "wellness pedagogical knowledge" that addressed teachers' affective wellness needs. This approach reflects a significant change in our understanding of useful professional learning. We share the structure of our approach in the hope that other educators and administrators may adapt it to support teacher and teacher candidates in a variety of post-pandemic contexts at their institutions.

Introduction

More than ever before, educators need relevant and efficient professional learning opportunities that address rapidly changing teachers' needs. When the Covid-19 pandemic caused us to shift to remote learning, we responded by altering both the content and delivery of traditional professional development activities. This was to support both teachers' affective needs and their pedagogical needs as they found themselves in virtual classrooms. We altered the delivery method by creating a *Professional Development in Pajamas* (*PD in PJs*) format that concentrated technological pedagogical content to focus on a few educational technology tools, and we added nontraditional PD content that focused on teachers' personal wellness and affective domain needs, which we call "wellness pedagogical knowledge." To address these needs, PD workshops addressed such topics as navigating personal stress, coping with student anxiety, mindfulness for mental health, and personal finance for educators. We altered the delivery of the PD by opting for synchronous remote professional learning workshops for teachers, allowing teachers to converse with each other.

The delivery of these professional learning sessions was sustainable, synchronous, informal, and collaborative in approach.

Teachers who participated in our first *PD in PJs* session in 2020 reported that the format worked well for them and met their needs, so we continued and expanded our PD structure once schools returned to traditional instruction. Based on teacher feedback, we replicated and increased *PD in PJs* sessions to area STEM teachers throughout 2021 and 2022. We plan to continue such PD offerings for our teachers in post-pandemic classrooms. This article shares the structure and content of this approach in the hope that other educators and administrators may adapt it to support teachers in a variety of post-pandemic contexts at their institutions.

Our Theoretical Approach

Our theoretical approach to PD reflects not only pandemic-imposed changes to the structure of education but also a significant change in our understanding of what constitutes useful professional learning. Hascher and Waber's (2021) systematic review on teacher well-being (TWB) shares pivotal information about this critical construct that unveils the burdens that are teachers carry. Fostering a community where our educators can feel empowered through PD sessions that can be a solution to burnout, stress and financial freedom deems as an appropriate avenue that is often overlooked in PD.

New approaches to learning lead to new organization of PD initiatives for teachers, developing a non-hierarchical community. The move from an acquisition to a participation format brings changes to the ways in which the PD is conceived and implemented (Remillard, 2005). In contrast to the deficit training model of professional development, where teachers are viewed as needing updating (Little, 1993), we characterize our practice-based format as focused primarily on expanding teachers' participation in what constitutes teaching (Matos et al., 2009) and what constitutes instructional support (Schwier & Balbar, 2002).

In our redesign we followed the research on the common features of effective professional development content, namely: content focus, active learning, collaboration, effective pedagogy format, mentoring/coaching emphasis, feedback, and sustained duration (Darling-Hammond, Hyler, & Gardner, 2017; Desimone, 2009; Luft & Hewson, 2014; Johnson et al., 2017; Penuel et al., 2007). Traditional PD topics include content knowledge (knowledge about subject matter), pedagogical knowledge (general methods and processes of teaching), pedagogical content knowledge (teaching practices blending content and pedagogy specific to the content area), and technological pedagogical knowledge (integrating technology into teaching) (Schmidt et al., 2009; Shulman, 1987). We added an additional area that we are calling "wellness pedagogical knowledge." This area of "wellness pedagogical knowledge" included sessions specifically addressing educators' wellbeing and interests, as well as teachers' affective domain needs (Asim et al., 2021).

The technological pedagogical content originated with our teacher presenters and was delivered in a peer-to-peer educational setting, including five-minute *STEM Slam* presentations in which teachers demonstrated just one tool that helped them navigate remote teaching needs. We see that many effective professional development formats are also the most participatory, hence the need to be synchronous (Asim et al., 2020). The short *STEM Slam* presentation topics were chosen by our teacher-presenters based on the applications they found useful for virtual teaching with their own students. We planned to

use this "bottom-up" approach. To select the focus of the PD, we polled our teachers, asking "What tools excite you and are helping you right now?"

PD in PJs—like Professional Learning Networks and Professional Learning Communities—has a more meaningful, relevant, and relatable continuing education experience than traditional forms of in-service PD (Asim et al., 2021; Hunter & Back, 2011). We hoped that *PD in PJs* encourages educators to reimagine learning opportunities. The rapid adjustments by our teacher-presenters to the remote teaching environment allowed their fellow teachers to see exciting, new learning opportunities—and to see their peers thrive, not just survive, during the chaos of the pandemic.

Along with shifting the focus of the content of professional development, pandemic restrictions caused us to shift the delivery. Different structures and contexts of professional development can result in different types of professional learning (Sturko & Gregson, 2008). Geijsel et al., (2009) say that institutional leaders who provide educators with the security to experiment, make mistakes, and exchange expertise and experiences can affect professional development for positive sustainability. We designed *PD in PJs* to create a culture of learning (Assunção Flores, 2004; Van Veen et al., 2012) – a cultural environment where teachers feel safe to communicate openly, make mistakes, trust one another, and collaborate. An event like *PD in PJs* can lead to repeated, self-sustaining collaboration that supports and strengthens professional peer relationships beyond one particular PD topic.

PD in PJs Design

The first series of *PD in PJs* was designed for middle and high teachers in STEM fields. We invited teachers from eleven local school districts representing rural, suburban, and urban schools, as well as a nonprofit adult education center focused on GED completion. *PD in PJs* used a casual peer-to-peer approach – sharing conversation online on a Saturday morning, having coffee in a relaxed home environment – to support educator self-efficacy.

The first session was delivered in fall 2020 during the height of the pandemic. Depending on their district, participating teachers were teaching either entirely remotely, were in a classroom teaching some students in person and some on a screen simultaneously, or were teaching in a flipped classroom setting in which some students would be in person one day and remote the next day, and another group of students would follow the reverse schedule. Given those challenges, we planned the first *PD in PJs* session to focus on educational technology applications that educators found helpful in their sudden move to remote teaching. Our teacher presenters chose what tools to share and how to share them. The focus of this professional learning opportunity was increasing teachers' technological pedagogical skills (Schmidt et al., 2009) in response to the needs created by the pandemic.

In our first *PD in PJ* Saturday morning session, we invited teacher-presenters to share five-minute presentations on Zoom on a specific technology tool or pedagogy strategy that they found useful in their virtual teaching. We called these quick demonstrations *STEM Slams.* Our presenters focused on how to thrive, not merely survive, in online teaching environments. We also had a keynote speaker deliver a longer 20-minute presentation. In anonymous feedback responses collected after the session, participants reported positive reactions to the *PD in PJs* experience. In particular, the educators expressed feelings of support and reassurance by learning from peer role models.

In response to feedback, we planned three more *PD in PJs* experiences in 2021 and decided to feature a wider variety of presentations beyond the five-minute *STEM Slams.* We also decided to expand the content we addressed in these Saturday morning PD sessions. We added sessions specific to addressing student anxiety and teacher wellbeing; we call this focus "wellness pedagogical knowledge." This is a change from the traditional PD topics of content knowledge (knowledge about subject matter), pedagogical knowledge (general methods and processes of teaching), pedagogical content knowledge (teaching practices blending content and pedagogy specific to the content area), and technological pedagogical (integrating technology into teaching) (Schmidt et al., 2009; Shulman, 1987).

We continued offering five-minute *STEM Slam* presentations where teachers could share their favorite classroom technology tools. Topics addressed in subsequent *STEM Slams* included creating educational digital escape rooms and connecting STEM with pixel art. We also expanded topics to address pedagogical content knowledge in creative ways by inviting some university faculty in various disciplines to share 20-minute interactive presentations. Topics included engaging students through science fiction, teaching through outdoor field work, helping students identify fake science news through information literacy tools, and leading classroom discussions on STEM ethics.

STEM Slam Presentations Supporting Teacher Technological Pedagogical Knowledge

Among the first four categories of traditional PD topics – content knowledge, pedagogical knowledge, pedagogical content knowledge, and technological content knowledge –we focused on the last category during our first two *PD in PJs* sessions. These sessions were offered during the early months of our community's shift to remote schooling.

As mentioned before, we concentrated pedagogical content to focus on a few technological tools for our STEM teachers. This was a deliberate decision in response to teachers' stress amidst the demands of remote teaching. Teachers reported receiving a "scattershot" menu approach to technology tools during the sudden shift to remote learning during the pandemic. Our local institutions tried their best to deliver PD on relevant technological tools, but some teachers felt overwhelmed with presented with many new technology tools in the space of one in-service learning day (or one tech app per week, in some districts.) The educators were grateful to work in institutions that offered many tools, but they described feeling intimidated by "information overload." Several teachers reported preferring to learn about just a few tools that their peers had used successfully. Additionally, we saw the expected wide range in teacher comfort with new technology. Some teachers were hesitant to learn new educational technology apps, some knew of relevant apps but did not know how to utilize them effectively, and some knew the results they wanted but not what apps to use. Asking teachers who were more comfortable with technology to present short demonstrations to others inspired more teachers to try new tools. It also allowed peer-to-peer modeling of how educational technology tools could be integrated into new ways of teaching.

We began by recruiting three highly qualified local STEM teachers as our presenters. The first *STEM Slam* addressed tools which are used widely now, but they were not adopted widely by teachers in our area prior to the pandemic. First, a high school biology teacher demonstrated ways she used Jamboard (www.jamboard.google.com), a virtual whiteboard space that supports real-time student collaboration. She shared several examples from her

own classes including 1) digital sticky notes that students used to create punnett squares for a genetics classroom, 2) a drawing tool that students used to draw atoms with their valence electrons, and 3) a table on which students could match correct codones.

Second, a high school earth science and physics teacher demonstrated the Google add-on Pear Deck (https://www.peardeck.com) and how she paired it with Google Slides for responsive polling and sharing of content with embedded assessments. The immediate formative assessment data guided her virtual teaching in real time. Her examples included using a draggable response T-chart to assess students' knowledge of stars' temperature and size.

Finally, a physical science teacher shared how she uses ArcGIS (https://www.esri.com) for problem-solving, collaborating, mapping, and analyzing data. Her students used the tool to complete a "pandemic project" about the geographic spread of COVID-19 on an interactive map displaying current rates of infections and deaths. She also demonstrated the Environmental Systems Research Institute as a source for helping students analyze scientific data and story-maps to understand patterns.

Each of these presentations was only five minutes long and was specific to the immediate needs of the teachers invited to attend. Following these five-minute *STEM Slams*, university faculty held discussions on how each of the apps presented integrate with common learning management systems such as Canvas and Microsoft Teams. Participants then asked questions of the presenters and shared experiences and suggestions. Based on the feedback of the first virtual in-service, we offered three more *PD in PJs* sessions in 2021. These three additional sessions each featured new *STEM Slam* presentations from local STEM educators sharing additional educational technology applications and tools. Those topics included making Google Slides interactive, creating pixel art review sheets, using an iPad as a digital whiteboard with a video switcher, and using MathJax in HTML for remote teaching.

Addressing Wellness Pedagogical Knowledge

The focus on wellness topics came from polling the interests of our attendees. In order to provide PD on these non-traditional, non-curricular topics, we invited experts outside STEM fields. For example, a licensed clinical social worker who is a staff member from the university's counseling services discussed dealing with student anxiety. She presented the activities and steps she does when counseling students and addressed building strong connections by showing empathy within the restrictions of a public-school classroom.

In a later session, we asked the counseling service staff member to return and do a session on dealing specifically with stress among teachers. She addressed teacher burnout including physical and emotional exhaustion, detachment, pessimism, forgetfulness, anger, and ineffectiveness. She emphasized the importance of self-care – doing exercise, sleeping on a schedule, engaging in activities that one enjoys, reconnecting with friends and family. She pointed out the importance of teachers asking for help and seeking support and discussed when that was appropriate and necessary.

The most popular non-curricular *PD in PJs* session was done by a faculty member in the School of Business on what teachers need to know about personal finance. He discussed the common errors teachers make, and creative ideas for their personal finances. For example, there is a public service federal college loan forgiveness program if teachers do not

miss monthly payments for 10 years, but only if teachers do not refinance their loan. In the area of investments, teachers can buy Series I Savings Bonds directly from the Treasury Department paying the current inflation rate (over 9%). He recommended educators have three to six months of emergency money reserves. He also suggested educators consider establishing Revocable Living Trust that avoids probate and gradually releases assets to beneficiary children. Many reported not being aware of this personal finance information previously, and one teacher remarked that participating in the session felt like getting personal asset management service for free.

Plan for Sustainability in Professional Development

As educators and administrators plan for professional development within P-12 schools, we would encourage them to consider the sustainability of their PD approaches. We believe professional learning opportunities can be made more sustainable in at least five ways with 1) peer-to-peer sharing of expertise, 2) a format that can be quickly and easily replicated with new topics, 3) informal and flexible location options, 4) synchronous scheduling for real-time collaboration, and 5) lower costs by hiring in-house teacher experts rather than high-priced outside presenters.

Allowing teachers to share their learned expertise and develop their leadership skills through professional learning opportunities is one form of sustainability in professional development. Administrators know the value of developing education leaders, both for retention and for future talent development. When administrators (and university educators, in our case) give high-quality teachers opportunities to deliver professional development sessions, we are showing our respect for and confidence in local educators' skills and expertise. This approach contributes to creating a sustainable system of leadership and talent development.

When we piloted the *PD in PJs* approach, we didn't know it would garner so much interest. After our first session, we found that the format was easier for us to continue – and therefore more sustainable – because it can be extended easily into future sessions with new topics based on need and interest. For example, we offered our first synchronous *PD in PJs* session on a Saturday during the school year. Based on participant feedback and continuing requests for more and different focal topics, we refined the approach and continued hosting *PD in PJs* events throughout 2021 and 2022. The delivery format was easily adaptable to a variety of topics (in our case, a focus on teacher wellness.) We did not have to exhaust our own time and resources organizing traditional events because the *PD in PJs* structure was easy to replicate with new topics.

The ability to participate informally and virtually from home added to the sustainability of the activity. Feedback emphasized appreciation for the option to engage actively in professional learning that teachers found restorative rather than exhausting. Most teachers in our area were accustomed to passive PD activities where they might be sitting passively, and they appreciated engaging from their own homes. While our university-affiliated activities were held on a Saturday, institutions could schedule *PD in PJs* sessions allowing teachers to avoid commuting on that day.

While our teachers appreciated the option to participate in PD from remote locations, they still wanted the full experience of collegiate engagement and collaboration. *PD in PJs* sessions were made more useful—and therefore more sustainable in their value for

professional learning—by being collaborative in two ways. Collaboration is easier when virtual PD consists of synchronous online sessions, as opposed to asynchronous formats that use discussion boards or digital bulletin boards or other flexible media. Teachers wanted a structure that would allow real-time verbal sharing of questions and suggestions among themselves. *PD in PJs* was also collaborative in that most of the topics addressed were both sourced from their input and delivered by peer educators.

PD in PJs is also more financially sustainable than some other popular PD approaches. Institutions can use their own preexisting online tools (such as Google Meet or Zoom) to host synchronous virtual meetings. We provided an honorarium to each teacher presenter, but the total cost was much lower than using an outside paid consultant. Instead, this participatory approach revolves around inviting teachers to serve as PD leaders – ideally respected educators from the same institutions or professional organization. Finally, the *PD in PJs* approach allows smaller or less resourced institutions to partner with others at much less cost than holding traditional events together over a great distance. The format allowed educators to make valuable professional connections with peers in other institutions and share expertise with others who had fewer professional resources.

Broader Impact of *PD in PJs*

Teachers face challenges from increased post-pandemic student needs, decreased resources, political demands on curriculum and instruction, multiple rounds of standardized testing, and seemingly endless paperwork. Amid pressure from a variety of sources, educators still are expected to hone their skills and continue their professional development. As educators, we seek innovative approaches to provide more effective professional learning opportunities that address the actual needs of our teachers. In response to the ever-increasing constraints on their time, we shifted our approach to professional development programming to alter the content, adapt the delivery, increase collaboration, and address additional educators' concerns (Swanson, 2014) as part of a university-school STEM education partnership.

The *PD in PJs* collaborative professional learning highlighted teacher expertise (rather than outside consultants) and supported community building – all important elements of nurturing educators' efficacy (Wong et al., 2022). Asking teachers to present their successes to fellow educators resulted in a more congenial PD environment where educators feel more comfortable sharing ideas and asking for support. This low-pressure environment communicated the message "we're all in this together" and supported teachers' efficacy as all educators involved worked toward a common purpose.

To paraphrase Donohoo, Hattie and Eells (2018), when teams of educators believe they can make a difference, exciting things can happen. At our institutions, we faced unprecedented challenges in improving student learning even before the pandemic. These challenges have only intensified. *Professional Development in Pajamas, PD in PJs,* was an exciting opportunity to collaborate professionally toward our shared purpose.

Our *PD in PJs* was a STEM professional development for mathematics and science teachers. However, this format can be used for any subject or level PD. As we well know, there are teachers in a variety of subjects who need specific guidance in using e-teaching to retain a focus on student learning. Utilizing short topics with actual student examples, while stressing student learning, is a non-threatening approach for hesitant teachers to expand

their pedagogical knowledge base, especially if we want teachers to integrate content into the regular curricula. Finally, educators sometimes just need environments to support each other.

Our advice to anyone planning professional development is to see three reasons our teachers accept and adopt recommendations in professional development (Maher & Zollman, 2021). First, there are teachers that enjoy learning new ideas and are interested in incorporating new educational technologies and learning new apps. Second, there are teachers that incorporate ideas from professional development because they are asked to do so by administrators they trust and respect. In contrast, we see some teachers reject the same ideas when they do not respect administration. Our ultimate goal of making an impact is a third reason: Instructors accept and utilize professional development ideas as they see a positive impact on student learning—the goal of all educators.

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