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Developing district-level infrastructure that honors local control while emphasizing collaboration

Lisa Lundgren
Utah State University

David Todd Campbell
University of Connecticut

Jonathan L. Hall
California State University San Bernardino, jllhall@csusb.edu

Mark Ruede
Tolland Public Schools

Jonathan Simmons
University of Connecticut

See next page for additional authors

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Authors

Lisa Lundgren, David Todd Campbell, Jonathan L. Hall, Mark Ruede, Jonathan Simmons, Alberico Rossi, Liz Cole, Nicole Bay, Holly Hollander, and Tracy Stockwell

Second, the team at AAES would like to provide support to current mentor teachers by providing tools and tips they can use during mentorship. For example, the team will reinforce the use of mentoring language, introduce mentor observational tools, and share best practices for curriculum, instruction and assessment. Intentionality will be achieved by surveying current mentors to identify their needs. In the upcoming school year, mentoring teacher candidates will most likely look different due to modified instructional methods, due to the COVID-19 pandemic. The team at AAES is committed to support mentor teachers within their school so the PDS partnership can be sustained during this time of uncertainty. Bailey, Galam, Ragmat, and Ige's next steps are to work on a school-level professional development plan which they will present to their faculty to help mentor teachers develop their skills in mentoring teacher candidates through distance communication.

Third, mentor teacher recruitment and retention is a priority. Educators in the UH MEdT PPNL Cohort 1 designed a digital recruitment campaign. In this campaign, they shared information about the PDS partnership, the benefits of mentoring, mentor teacher best practices, and supplied resources to support mentor teachers as they are working with teacher candidates. The team will be using this campaign to encourage involvement in the PDS and recruit and retain mentors.

Conclusion

PDS partnerships are a win-win for teachers and schools, UH-COE PDS, and the students of Hawaii. All the stakeholders within the UH-COE PDS partnership, together, play an integral part in preparing and mentoring teacher candidates.

The first win is for teachers and schools that are within the PDS. These stakeholders are offered access to professional development in mentoring, leadership, and community-based understanding. It also offers an opportunity for teachers and schools to network with teacher candidates, other teachers within the complex-area, and educational practitioners and leaders at our state's university.

This partnership encourages learning, growth and critical reflection for all parties.

The second win is for the UH-COE, as they develop teacher leaders and retain effective mentor teachers, so their teacher candidates can grow and flourish. The partnership enables liaisons to openly communicate and set intentional mentor and teacher candidate placements. The ultimate winners are the keiki, the children of Hawaii, who benefit the most from this complex-wide PDS.

AAES and the UH-COE PDS are optimistic about their partnership and what else may emerge from this win-win, complex-wide PDS partnership.

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- Janelle Bailey is a first grade teacher at August Ahrens Elementary School, has mentored for UH-Manoa's College of Education for 2 years, and is a graduate of the first PPNL MEdT cohort. Jennifer Galam is a fourth grade teacher at August Ahrens Elementary School, has mentored for UH-Manoa's College of Education for 2 years, and is a graduate of the first PPNL MEdT cohort. Judelyn Ragmat is a fifth grade teacher at August Ahrens Elementary School, has mentored for UH-Manoa's College of Education for 5 years, and is a graduate of the first PPNL MEdT cohort. Shane Ige is a fourth grade teacher at August Ahrens Elementary School, has mentored for UH-Manoa's College of Education for 2 years, and is a graduate of the first PPNL MEdT cohort. Stephanie Furuta (furutas@hawaii.edu) is an Associate Specialist at the University of Hawai'i College of Education, and a liaison for August Ahrens Elementary School in the Waipahu Complex Professional Development Schools partnership. ♦*

Developing district-level infrastructure and partnerships that honor local control while emphasizing collaboration

Lisa Lundgren, Utah State University
 David Todd Campbell, University of Connecticut
 Jonathan Hall, University of West Florida
 John Duffy, Professional Development Facilitator (CT)
 Mark Ruede, Tolland Public Schools (CT)
 Jonathan Simmons, University of Connecticut
 Alberico Rossi, Manchester Public Schools (CT)
 Liz Cole, Ellington Public Schools (CT)
 Nicole Bay, Charles H. Barrows STEM Academy (CT)
 Holly Hollander, Connecticut Science Center
 Tracy Stockwell, Hamden Public Schools (CT)

Across the United States, school district administrators and teachers must implement common, external, state-mandated educational standards. This article examines the development of district level partnerships to support the implementation of reform-based science standards yet honoring local control for various school districts. This collaboration aligns to the NAPDS 9 Essentials (NAPDS, 2008), with a focus on the broad impact of a partnership that extends in outreach and scope beyond that of any one group (Essential 1), a shared commitment to

innovative and reflective practice (Essential 4), and ongoing reciprocal professional development guided by participants' needs (Essential 3).

As of 2020, there were approximately 16,800 individual school districts in the United States (National Center for Educational Statistics, 2020). Many of them argue that local control of state-mandated standards offers districts the ability to implement such standards in ways that are appropriate to and contextualized within their specific districts and communities. However, local

control can produce issues, including the waste of personnel time as districts independently create solutions that may have been implemented effectively and concurrently elsewhere. This can be understood as the silo effect: individual school districts implement externally-mandated standards in isolation, meaning that implementation beyond the district-level lacks coherence and tends towards disparate or even repetitive designs instead of collaborative innovation. Often, the mandated standards are misunderstood by individuals that are working in this type of isolation, leading to the incoherent and disconnected application of familiar past curriculum rather than carefully unpacking and synthesizing new standards. This siloing is especially apparent within school districts in the state of Connecticut. Though diminutive in size—it's the 3rd smallest state—it boasts more than 200 individual school districts (CTREAP, 2020). By comparison, Utah, a state with a similar population to Connecticut, includes just 41 school districts.

This siloing effect can be mitigated through jointly negotiated and developed infrastructure: a process of collapsing silos by cross-district collaboration, while continuing to recognize and value local control. For many states, externally-mandated standards are the *only* consistent component of infrastructure districts can use to guide their decision-making and day-to-day work. However, these standards do not provide enough guidance in terms of policy, professional development, curriculum, pedagogy, or district interim- and classroom-level assessments that might lead to coherently positioning districts to support cross-district collaborations. In this article, we use the state of Connecticut as a case study for understanding best practices in creating multi-district infrastructure to diminish silo effects related to implementing externally-mandated standards. We share to highlight the value of developing cross-district collaborations, as well as identify and share possible mechanisms for developing these collaborations through the lens and use of infrastructure. Specific components help to support the infrastructure process: when districts share standards, curricula, assessments, instructional techniques, policies, and organizational routines and engage in joint teacher professional development (Penuel, 2019). We see this as a valuable framework for supporting educational administrators and specialists, especially as they seek support and collaborations for providing leadership in implementing externally-mandated standards. For context, we describe our group next.

Addressing siloing through a district-level collaborative working group

We established a working group in which district administrators and specialists, university teacher educators, and researchers met in-person in monthly increments to develop cross-district collaborations. Within this working group, people from five districts in Connecticut were focused on supporting their local districts in the

implementation of the Next Generation Science Standards (NGSS), adopted in Connecticut in November 2015. This adoption signaled a dramatic shift in science teaching and learning (Reiser, 2013); it necessitated that districts make immediate decisions about how to best support teachers, and subsequently students, with, among other things, curriculum, assessments, and professional development.

District administrators and specialists within our working group were especially challenged by the rapidly-approaching state-level assessment deadline. Additionally, independent decision-making by districts led to separate and unique implementation strategies. As an example, some districts prioritized purchasing externally developed curriculum aligned with particular ways of thinking about supporting NGSS-aligned instruction, while other districts engaged their teachers to develop their own curriculum based on different ways of thinking about supporting NGSS-aligned instruction. In this context, throughout the 2018-2019 school year, district administrators and specialists met with the aim of identifying ways to learn with and from each other to support improvement in their district's NGSS implementation efforts, even though their district-level implementation plans had been unfolding as early as 2015 when it became apparent that Connecticut would adopt the NGSS. Within these meetings, district specialists examined research literature, engaged in conversations, and synthesized their readings and conversations to identify a common framework (i.e. infrastructure) for NGSS implementation. Specifically, district specialists sought to establish cross-district improvement efforts that eventually could lead to jointly developed, curated, or shared curricula, assessments, instructional techniques, and teacher professional development. District specialists were purposeful in their actions as they wanted to honor the work that each district had accomplished to date while providing a focus for future collaborative improvement efforts. What resulted from the 2018-2019 academic year meetings was a set of principles members of the working group could use to focus on knowledge-building priorities of the NGSS as a guide for framing cross-district decision-making. The principles were¹:

1. Learning experiences are anchored in phenomena or problems that are relevant to students (i.e. phenomenon-based instruction); that elicit initial ideas and explanations; and that set the problem space for learning.
2. The purposeful use of investigation (broadly construed), discourse (whole class and small group), and argumentation can be implemented to develop a central model or explanatory account that is incrementally revised over

time to explain the phenomenon or solve the problem.

3. The intentional use of routines and tools to facilitate sensemaking and making student thinking visible for incrementally building and refining the central model or explanatory account of the phenomenon or problem (i.e., the problem space for learning).

These principles were specific enough to provide the infrastructural framework for district specialists to focus their collaborative work, especially related to how best to support teachers in NGSS implementation, while at the same time being broad enough to support districts in continuing to build on work that they had previously undertaken that would also support the maintenance of local control. Furthermore, the principles make district work more efficient as they identify high-leverage areas to focus on when building and strengthening science curricula and professional development.

Next steps: Additional infrastructure work fostering cross-district collaborations

For the 2019-2020 school year, the working group has continued to build on the previous year's work, meeting monthly to collaborate. New members have been invited to join the group, which has allowed for the group members to revisit their previous work and infrastructural framework to orient newcomers. Subsequently, in a discussion at the beginning of the year, all members recognized a common priority across their districts: focusing on the professional learning of their elementary teachers (i.e., Grades 3-5). Additionally, since it was recognized that these teachers already had access to curriculum that was anchored in phenomena or problems (i.e., Principle 1) and that teachers at this level had previously struggled engaging students in investigations in ways that fostered productive sensemaking, the group decided to focus their efforts on supporting their elementary teachers in purposefully using investigations (i.e., Principle 2) as part of incrementally refining students' explanations of phenomena or problem solutions. The district group also recognized that the focus on investigations had the potential to support elementary teachers in their intentional use of routines and tools to facilitate sensemaking and making student thinking visible (i.e., Principle 3). Consequently, the team identified an investigation framework based on the work of Manz (2019) which could be used by district specialists, teachers, or mixed groups of both to scaffold the design and implementation of lessons. This framework was appealing since it foregrounded spaces of productive uncertainty that could foster student engagement in sensemaking, an important priority of NGSS implementation.

Next, district leaders and specialists identified lessons within their teachers' curriculum that could be collaboratively refined to incorporate the investigation framework for use as a form of educative curriculum (Davis & Krajcik, 2005). The idea was to support the Grade 3-5 teachers in

¹These principles were negotiated after reading, listening to, and discussing three key pieces of literature: Windschitl, Thompson, & Braaten (2018), Ko and Krist (2019), and the NGNavigators podcast featuring Dr. Eve Manz (O'Sullivan, 2019).

learning about the investigation framework and improving their purposeful use of investigations as part of refining explanatory accounts of the phenomenon that anchored the unit. In the end, it is expected that these investigation lessons and the overall investigation framework will become the next important part of the group's infrastructure, especially since they support some of the infrastructure process described by Penuel (2019) whereby districts share standards, curricula, and instructional techniques.

Conclusion and implications: Revisiting collaboration in the context of local control

Local control is part of the very fabric of the U.S. educational landscape. While a case can be made for its importance, the silo effect that results in wasting personnel time replicating efforts concurrently being undertaken or already accomplished in other districts creates a dilemma that we believe can be solved as infrastructure is jointly negotiated as a foundation for cross-district collaborations. In our own work reported in this article, we exemplified, as part of our district administrators and specialists' efforts, the importance of infrastructure for supporting collaborative cross-district work. More specifically, the early infrastructure consisted of jointly-negotiated principles of implementation capable of focusing our group's work while also allowing for the maintenance of local control. During the 2019-2020 academic year, we have extended this early work by focusing on an investigation framework that further extends the reach of our infrastructure into curricular and instructional techniques. While our case study is set in the context of recent reform efforts in science education, we believe that the notion of collaboration around negotiated infrastructure is applicable to work in other disciplines (e.g., ELA, mathematics) and national- or state-level initiatives that ultimately are enacted locally in school districts with the support of educational leaders as part of local control. Further, individuals and organizations may benefit from

examining how multi-district partnerships that include educators from universities could support teaching and learning in their context.

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- Lisa Lundgren (lisa.lundgren@usu.edu) is an Assistant Professor at Utah State University in the Department of Instructional Technology and Learning Sciences. Todd Campbell is the Department Head of Curriculum and Instruction and a Professor of Science Education in the Neag School of Education at the University of Connecticut. Jonathan L. Hall is the Curriculum Specialist and Activity Director for the STEM Success Program at the University of West Florida. John Duffy has been teaching, writing curriculum and providing professional development to teachers for the past 35 years and is an NGSS professional development facilitator throughout the state of Connecticut. Mark Ruede is currently the Curriculum Supervisor of Science for Tolland Public Schools in Tolland, CT. Jon Simmons is a PhD student at the University of Connecticut in the Neag School of Education. Alberico Rossi is the Science Instructional Specialist for Manchester Public Schools in Manchester, Connecticut. Liz Cole is a former high school science teacher and has spent six of the last seven years focused on K-12 STEM Education as the Curriculum Supervisor for Ellington Public Schools. Nicole Bay is the STEM Coach for a K-8 STEM Magnet School in Eastern Connecticut. Holly Hollander serves as the Director of the Mandell Academy for Teachers at the Connecticut Science Center. Tracy Stockwell is the K-12 Director of Science at Hamden Public Schools in Connecticut. ♦*

A Ripple Effect: Transforming Teachers into Leaders Through a Professional Practice Non-Licensure Program

Jeselle Bassingthwaite, Kapolei High School
Kathleen Burch, Pearl City/Waipahu Complex Area
Jami Nielsen, Waipahu Intermediate School
Stacy George, University of Hawai'i at Mānoa

Have you ever dropped a pebble into a pond and noticed the perfect patterns the pebble has made? It is always amazing to watch beautiful concentric circles cascade and expand from a single pebble. Teaching is like a ripple effect; when we focus on teacher leaders and their impact, we create a ripple effect inspiring the lives around us. While many studies have focused on fostering

and developing teacher leaders (Barth, 2001) through a PDS partnership (Washell, McCracken, & Whitney, 2020; Carpenter & Sherretz, 2012), this article explores how experienced professional educators found opportunities to explore their teacher identity and could thus add to the understanding of teacher as leaders in PDS.

Collaborative partnerships are instrumental in nurturing and challenging teacher leaders to break down barriers and foster relationships (York-Barr & Duke, 2004). As educators that serve various Professional Development Schools (PDS), we understand that partnerships between

universities and PK-12 schools are meaningful. However, at the start of the Master of Education in Teaching (MEdT) Professional Practice Non-Licensure (PPNL) program at the University of Hawai'i at Mānoa, our understanding of these partnerships had been to simply find opportunities that supported schools and students. We placed little thought on the type of value a university/PK-12 partnership could play in developing our abilities as teacher leaders. As the first PPNL cohort, the journey we experienced in the MEdT program transformed our view of our PDS partnerships and what it means to be a teacher leader.