Sustaining induction teachers through partnerships: action research as a catalyst for change within complex contexts

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Abstract

Purpose – The purpose of this action research study was to design, implement and evaluate interventions that enhanced the induction program for new teachers in a P-12 school district. At the outset, we hoped the study would provide new teacher support resulting in improved teaching practices, increased job satisfaction and/or increased teacher retention among the target population. With this in mind, our research question was: What structures and supports from a school-university partnership facilitate capacity-building among university teacher education faculty, school and district leaders, mentor teachers, and new teachers in the context of an induction program?

Design/methodology/approach – This study used an intervention-centered mode of action research methodology that aims to make systems-level change. This type of action research intends to solve real organizational problems with a focus on conducting "research in action" rather than "research about action" (Coghlan and Brannick, 2014, pp. 5–6). This approach necessitates that data collection and analysis are iterative processes, occurring throughout the research process, instead of solely at the end stages of the research

NAPDS "Essentials" Addressed in the Manuscript (NAPDS, 2021):

4) A PDS makes a shared commitment to reflective practice, responsive innovation and generative knowledge.

5) A PDS is a community that engages in collaborative research and participates in the public sharing of results in a variety of outlets.

8) A PDS creates space for, advocates for, and supports college/university and P-12 faculty to operate in well-defined, boundary-spanning roles that transcend institutional settings.

process. Our action research process used Coghlan and Brannick's (2014) action research cycle model. The cyclical four-step process includes constructing (verifying the problem in the local context), planning action, taking action and evaluating action. Facilitated by the interim director of a Professional development schools (PDS) partnership in the Southeastern United States, a team of co-researchers which included three university teacher education faculty and four school district administrators used action research methodology to create systemic change that enhanced the district's induction program. We collected data through multiple qualitative methods, including surveys, focus groups, observations and interviews during the course of three action research cycles. These data and our theoretical framework (complex adaptive systems theory and social network theory) informed two major interventions that supported new teachers during the challenging first year of the coronavirus disease (COVID-19) pandemic.

Findings – The interventions and the research process were mutually beneficial for both institutions and contributed to professional learning and growth at the individual, group and system levels. The three major findings described include: (1) engaging in collaborative action research is mutually beneficial for both schools and universities; (2) induction programs benefit from university resources; (3) learning communities build all educators' professional capacity.

Research limitations/implications – Our research recommendations are: (1) more research is needed on the benefits of school-university partnerships to induction programs; (2) school-university partnerships should leverage action research to improve systems; (3) within school-university partnerships, the connection between collaborative leadership and sustainability requires further research. One limitation was that this study was conducted in a single school-university partnership context involving a large public university and a mid-sized public school district that had a well-established partnership. More induction-centered research is needed in different types of school-university partnership contexts that have varying levels of longevity and partnership structures.

Practical implications – Our recommendations for practice include (1) school-university partnerships should leverage collaborative learning communities to catalyze individual, group and systems-level learning and change, and (2) school-university partnerships must prioritize induction support to strengthen the teaching profession.

Originality/value – Since Hunt's (2014) literature review on induction support in PDS partnerships, very few empirical studies have been conducted in this research area. This study, which examined induction support in a PDS partnership over a two-year period, makes a significant contribution to the scholarly literature on induction teacher support in school-university partnership contexts. Facilitated by the interim director of a PDS partnership, a team of co-researchers, which included three university teacher education faculty and four school district administrators, used action research methodology to create systems-level supports that enhanced the district's induction program.

Keywords Induction, Action research, Professional Development Schools (PDS)

Paper type Research paper

A well-known reality among those of us in school-university partnerships is that new teachers often struggle. Left to "sink or swim" (Ingersoll, 2012, p. 47), they are given challenging assignments and expected to teach effectively and do so under pressure to improve student outcomes. As a result, teachers are leaving the profession at alarming rates; between 40% and 50% of new teachers quit within the first five years of entry into teaching (Ingersoll *et al.*, 2018), a trend that has been exacerbated by the coronavirus disease (COVID-19) pandemic. A RAND Corporation survey (Steiner & Woo, 2021) showed that one in four teachers were expected to leave the profession at the end of 2020–2021 as compared to one in six before the pandemic. Further, in a 2022 survey of Georgia teachers, 29% indicated that they were likely to leave the profession by 2027 (Professional Association of Georgia Educators, 2023). School districts have received federal pandemic relief funding to hire additional staff, yet open positions have often had no applicants (Gecker, 2021). In addition, high teacher turnover contributes to the pre-existing inequities in education for students of color and students from low-income communities. Teacher turnover rates are 50% higher for teachers in Title 1 schools than in more affluent schools (Carver-Thomas & Darling-Hammond, 2017; Ingersoll *et al.*, 2019), and in schools that serve concentrations of students of color, teacher turnover is 70% higher. As the Alliance for Excellent Education (2014) noted, "inequities in the distribution of quality teaching lay waste to historic promises of equal

education opportunity" (p. 2). How can we begin to address these monumental challenges related to teacher attrition and retention?

Given this untenable context, it is critical that educators focus attention on how to support teachers in the induction phase of teaching. While induction programs have increased over the last 30 years (Ingersoll, 2012), there is wide variation in the quality of new teacher support (LoCascio *et al.*, 2016; Sutcher *et al.*, 2016). High-quality comprehensive induction programs include "strong administrative support, consistent teacher collaborations and regular and meaningful professional development" and, as a result, help keep teachers in the profession (Nguyen *et al.*, 2019, p. 34). A review of research on induction concluded that induction programs have a positive effect on job satisfaction and retention (Ingersoll & Strong, 2011). The review also revealed that teachers who participated in induction programs performed better at various aspects of teaching, and some studies showed higher student achievement for students of teachers who participated in induction programs than those who did not. The amount of time spent between new teachers and mentors also has a positive impact on new teacher retention (Caven *et al.*, 2021). For the increasing number of teachers who enter the field through alternative routes, LoCascio *et al.* (2016) found there is also a need for induction programs that address the particular needs of nontraditional teachers.

While there are calls for higher education to be involved with induction support (Goldrick, 2009), universities have not traditionally been involved in new teacher induction (American Association of Colleges for Teacher Education, 2018a, b; Hunt, 2014). Teacher education programs often provide clinically based experiences that help prepare pre-service teachers for the realities of teaching; however, they cannot address every component necessary for in-service teacher success. Yet, over twenty years ago, Feiman-Nemser (2001) asserted that learning to teach should be a continuum that extends after college into the first few years of teaching. She argued that by aligning their efforts around induction, P-12 schools and higher education could "provide a forum for school and university educators to think together about the learning needs of teachers and P-12 students. . .[and] provide a basis for designing coherent forms of ongoing professional development" (p. 1038). Some state Departments of Education also encourage higher education institutions to "collaborate with school districts to design, support, and enhance the induction process" (Georgia Department of Education, 2018, p. 5), and Professional Development Schools (PDS) have increasingly played a role in intensive induction support (Hunt, 2014). The study described here, which is situated within a PDS context, aims to contribute to the scholarly literature on school-university partnerships as a vehicle for supporting induction teachers' experiences.

Literature review: induction support in school-university partnerships
Studies within the field of school-university partnership research primarily focus on pre-service teachers within partnerships, thus leaving a lack of empirical research specifically focusing on induction support within school-university partnerships. A review of the literature related to partnership induction support shows that induction programs benefit from university involvement in different areas, such as strengthening mentoring (Evertson & Smithey, 2000; Gilles *et al.*, 2009; Stanulis & Ames, 2009; Stanulis & Floden, 2009), university fellowship models (Gilles *et al.*, 2009; Hartman *et al.*, 2016; Helfeldt *et al.*, 2009; Helfeldt *et al.*, 2015) and professional learning provided by university faculty (Luft *et al.*, 2003; Van Zandt Allen, 2013). A national study on university-supported teacher residency models showed that while support for new teachers was high during residency programs, over a third of the programs did not offer formal support or only offered support for one year (Wasburn-Moses, 2017). While there is evidence that partnerships benefit induction programs broadly speaking, there is little research on how universities support novice teachers directly and few studies related to the effects of partnerships on school districts (Hunt, 2014). This study was

conducted within a PDS partnership model and focused on the needs and experiences of school district educators with attention to the complexity of this kind of partnership support.

We operationalized our collaborative study within the concept of boundary-spanning leadership (Ernst & Chrobot-Mason, 2011; Weerts & Sandmann, 2008, 2010). Leaders of community-engaged programs are often considered boundary spanners; they bridge organizations and "act as conveners, problem solvers and change agents who negotiate the wants and needs of parties in the process of creating and disseminating knowledge" (Weerts & Sandmann, 2008, p. 79). These leaders must also negotiate power and balance between organizations to achieve mutual goals. In the context of the school-university partnership at the center of this study, our boundary-spanning roles gave us perspective on fostering results that were mutually beneficial for both the university and the school district. This shift in roles and the sharing of responsibilities reflects National Association for Professional Development Schools (NAPDS) Essential 8: Boundary-Spanning Roles (NAPDS, 2021), as working across institutional boundaries allowed for innovations and informed actions to be more generative and responsive to the needs of local induction teachers.

Theoretical framework

In the context of school-university partnerships, complexity theory on "multi-dimensional relationships and dynamic interactions among agents and elements" (Cochran-Smith *et al.*, 2014, p. 106) offers innovative and divergent ways to analyze partnership work. Strom and Viesca (2021) encourage incorporating complexity theories into educational research, asserting that, "generating a complex theory of teacher-learning practice is nothing short of an ethical imperative" (p. 1). In this study, we used complex adaptive systems (CAS) theory, a sub-theory of complexity theory, to guide our research.

CAS, such as political parties and school systems, comprise multiple systems that interconnect and affect one another in non-linear patterns. CAS are often graphically depicted as circles within circles that illustrate the "nested system" concept (Davis & Sumara, 2006, p. 6). Each circle represents a system, and systems are often embedded within other systems. In our context, the teacher induction program is the center of a circle surrounded by layer after layer of nested systems, such as teachers' classroom dynamics, school culture, district priorities, state-mandated tests and COVID-19. In addition, other systems just outside the nested system, such as family and community dynamics, affect students' lives, and, thus, also impact new teachers' experiences.

Complexity theories, such as CAS theory, are relevant to induction support, as myriad factors influence novice teachers' learning and development. Studies related to induction support in school-university partnerships frequently reference the multiple factors and forces that influence new teachers and the complexities to consider when designing induction programs. For example, Chubbuck *et al.* (2001) argued for considering the complexity of new teacher support as an interactive process that includes the person, school context, support context and interaction between persons.

While CAS is a helpful theory for understanding the complexity of the teaching profession, we selected social network theory to guide the development of our induction programming. Social network theory examines how relational networks affect individuals' lived experiences within organizations. Daly (2010) defined a social network as "a group of actors who are connected to one another through a set of different relations or ties" (p. 4). According to Daly (2010), a growing body of network research suggests "relationships within a system matter in enacting change" (p. 2). Lasting change occurs through the participants' interaction, and change processes are maintained through interpersonal relationships. Daly argued that the analysis of the network of social relations in any organization can be important in determining appropriate change strategies.

Education researchers are increasingly using social network theory to understand how teacher relationships impact teaching and learning and facilitate educational change (Moolenaar, 2012). These studies often focus on "how patterns of relationships among educators within schools or districts affect teachers' instructional practice, student learning, or the implementation of reforms" (Moolenaar, 2012, p. 12). Baker-Doyle (2010) reviewed much of the literature related to social networks and teacher attrition and argued that a social network perspective can help scholars and policymakers analyze complex social factors related to attrition. Further, our social network theory literature review showed that characteristics of teachers' social networks directly influence novice teachers' decisions to teach, their ability to cope with change, their sense of support and their students' achievement (Fox & Wilson, 2015; Le Cornu, 2013; Moolenaar *et al.*, 2012; Thomas *et al.*, 2019; Thomas *et al.*, 2019). These factors are all important aspects of workplace satisfaction, which ultimately affect teacher retention.

To summarize our theoretical framework, social network theory complements CAS because the concept of inter-connectivity is central to both theories: complex personal interactions within schools and districts affect the larger CAS in which educators work.

Research design

Research question
The purpose of this action research study was to design, implement and evaluate interventions that enhanced the induction program for new teachers in a local school district. At the outset, we hoped the study would provide new teacher support resulting in improved teaching practices, increased job satisfaction and/or increased teacher retention among the target population. With these goals in mind, our research question was: *What structures and supports from a school-university partnership facilitate capacity-building among university teacher education faculty, school and district leaders, mentor teachers and new teachers in the context of an induction program?* [1]

Methodology
This study used an intervention-centered mode of action research methodology that aims to make systems-level change. This type of action research intends to solve real organizational problems with a focus on conducting "research *in* action" rather than "research *about* action" (Coghlan & Brannick, 2014, pp. 5–6). This approach necessitates that data collection and analysis are iterative processes, occurring throughout the research process, instead of solely at the end stages of the research process.

Our action research process used Coghlan and Brannick's (2014) action research cycle model. The cyclical four-step process includes constructing (verifying the problem in the local context), planning action, taking action and evaluating action, as illustrated in Figure 1. This article describes three cycles of our action research process. By collaboratively engaging in cycles of reflection about the data being collected and actions to support induction teachers, this study embodied NAPDS's Essential 4: Reflection and Innovation (NAPDS, 2021).

Participants
Because the study aimed to make a change at the systems-level of the organization, it included a large number of participants, totaling 700 educators from multiple levels of the Atlantic County School District (ACSD) [2] system, as well as University of the Atlantic (UA) faculty (see Table 1). Over the course of the two-year study, 637 ACSD teachers participated in surveys, observations and/or focus groups to capture their experiences as induction

Figure 1.
The action
research cycle
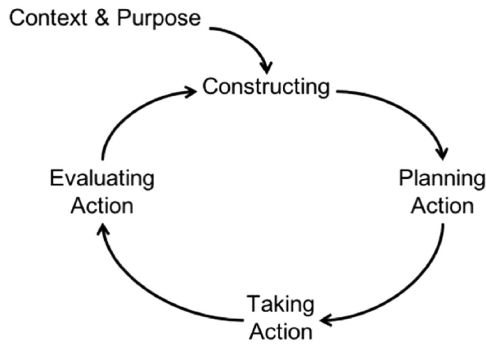
Source(s): Figure courtesy of Coghlan and
Brannick, 2014

Participant group	Number	Data methods
2018–19 1st, 2nd, 3rd year teachers	258	Survey
2019–20 New Teachers	178	Two surveys, observation
2020–21 New Teachers	201	Two surveys, observation, focus group
ACSD Lead Mentors	5	Focus group
ACSD New Teacher Orientation (NTO) facilitators	25	Observations, surveys, documents
ACSD NTO Design Team Members not captured in other participant groups	2	Meeting notes, recordings, handouts
ACSD IST members not captured in other participant groups	21	Meeting notes, recordings, handouts
Action Research Team (3 ACSD and 4 UA members)	7	Interviews, meeting notes, recordings, written reflections
Additional UA faculty not on the action research team	2	Interviews, documents
UA Lead Researcher	1	Research journal, reflection memos
Total # of ACSD and UA educators	700	

Table 1.
Action research study
participants

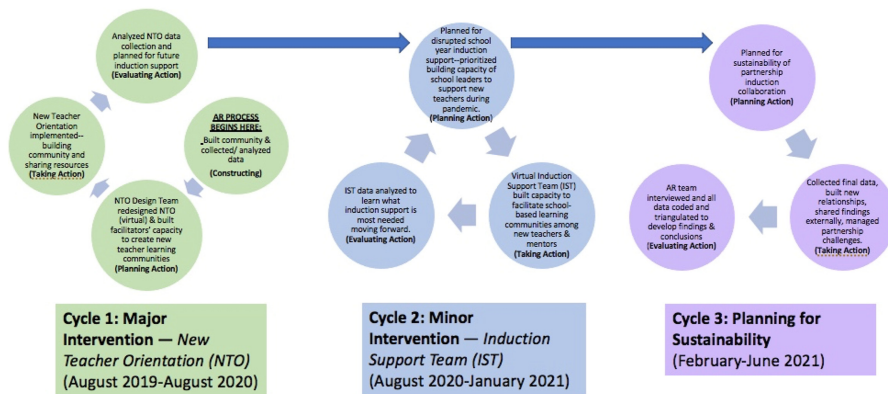**Source(s):** Table created by authors

teachers. Action research team members agreed to audio-recorded meetings and participated
in interviews at the end of the study.

Our action research journey
Here, we outline our action research journey as it unfolded over the course of the two-year
study. We begin by describing the research context, then we provide detail about our three
action research cycles (see Figure 2) in which we planned and implemented change
interventions. Data collection methods and processes are embedded in the narrative
description of these cycles.

The context for this action research study is a school-university partnership between the
UA School of Education (SOE) and the ACSD. Located in the Southeastern United States, UA
is a large, public university with more than 30 teacher preparation programs. The ACSD is
the only public school district in Atlantic County and serves a population of approximately
13,300 students. The district is designated as a federal Title 1 district and has a racially
diverse population, including 48% Black students, 25% Hispanic, 22% White, 2% Asian and

Source(s): Figure created by authors

4% students of two or more races. While the ACSD had provided UA with many site-based learning opportunities for teacher preparation progams during the last decade, the partnership lacked systematic programming that supported ACSD teachers' growth and development.

After speaking with many stakeholders at both institutions about how the partnership could support ACSD teachers' growth, the lead researcher decided to focus this action research study on new teacher support. This focus came at a critical time, as the previous year saw 16% of ACSD teachers and staff leaving the district, which was double the rate of the prior year. The ACSD administrators expressed concerns about the limitations of their current induction program and how the lack of support might be impacting teacher retention. Concurrently, some UA faculty expressed interest in improving teacher preparation programs to better equip pre-service teachers for challenges they were likely to face in their first few years of teaching.

With the understanding that a focus on induction support would be boundary-spanning and mutually beneficial for both partners, our eight-person action research team was born. Importantly, our team included equal representation from both sides of the partnership. University members include three UA teacher education faculty: Kate, Nina, and Mary, as well as the lead researcher, Erica, who was interim director of the PDS partnership. The ACSD members included Matthew, the Director of Induction and Retention; Elizabeth, a middle school assistant principal; Sharon, a middle school principal; and Ann, ACSD's Director of Strategic Partnerships. All team members believed that working to achieve equity for all students was central to how we approached, conducted and implemented our research. Over the course of the study, the action research team met a total of 20 times. Importantly, our work spanned two school years: pre-pandemic (August 2019) through the first full school year of teaching during COVID-19 (June 2021). The timing of the study was fortuitous as Matthew was just beginning to launch ACSD's new induction program.

Action research cycle 1: New Teacher Orientation (August 2019 to August 2020)
Constructing phase: community building and data collection. During the first phase of an action research cycle, the constructing phase, teams verify the problem within their local context through initial data collection (Coghlan & Brannick, 2014). The teams also build

relationships, set norms, define their purpose and envision a desired state (Coghlan & Brannick, 2014). From the outset of the six-month constructing phase, our action research team invested time in building a trusting, inquiry-oriented learning community. Guided by NAPDS Essential 4 (NAPDS, 2021), we committed to ongoing, reflective practice together. We developed norms and built relationships by getting to know one another and our motivations for investing time and energy in the issue of new teacher support.

To verify the problem we were investigating, our action research team collected data that would inform our quest to impact the ACSD teacher induction program. Two surveys served as initial baseline data regarding induction teachers' perspectives on needed support for teachers, challenges they experienced and the school district's professional learning opportunities. Two focus groups with the ACSD lead mentor teachers were also conducted. Together, the surveys and focus groups affirmed the complexity of new teachers' challenges that required dedicated collaborative time with one another for peer-to-peer support.

The action research team also used system mapping to analyze open-ended questions from the induction teacher surveys. Our team read through the survey results, honing in on challenges that novice teachers described, and then identified themes, categories and connections using sticky notes, chart paper and markers (see Figure 3). From this process we generated a set of key themes and insights, as described in Table 2.

Overall, this process confirmed that the new teachers' challenges were complex and interrelated within the complex adaptive system of the school district. Guided by our data and theoretical framework, our challenge was to design school-university partnership induction interventions that would build strong social networks to help educators more effectively navigate the complex challenges they faced.

Planning action phase: designing a virtual New Teacher Orientation. In the planning phase of an action research cycle, teams use the data gathered in the constructing phase to design one or more impactful interventions (Coghlan & Brannick, 2014). Just as our team was gaining momentum and meeting with middle school principals to discuss our top

Figure 3.
System mapping data analysis

Source(s): Figure created by authors

intervention ideas related to induction programming, the COVID-19 pandemic hit. We recognized that we needed to attend to the unique challenges that would face the new teachers who would be starting to teach in the ACSD in 2020–2021 in the middle of a global health crisis. The data we had collected thus far, combined with our pandemic context, resulted in two areas of focus: (1) building social networks among new teachers and mentors and (2) creating supportive school-based learning communities. Thus, it was decided that our action research team's first intervention would be to redesign the July 2020 New Teacher Orientation (NTO) into a virtual format, incorporating all that we had learned from our data collection to guide the process.

We formed an NTO Design Team that included some members of the action research team, as well as additional school district administrators and university faculty. This team developed asynchronous online learning modules that would help new teachers engage with induction concepts prior to the virtual synchronous NTO. To be responsive to the challenges of teaching during COVID-19, the modules focused on how to create equitable, engaging and structured online learning environments. We workshopped the modules together to ensure that the online learning experiences were interactive, engaging, reflection-oriented and equity-centered.

We also designed a three-day virtual synchronous NTO experience, which involved collaboration between the NTO Design Team, NTO facilitators and the action research team (see Figure 4). Nina and another UA faculty member, Rachel, designed synchronous "Online Community Building and Facilitation Workshops" to build facilitators' capacity to create effective new teacher learning communities in virtual spaces. These communities would be the NTO's most essential component, as our data, informed by social network theory, showed that new teachers need dense social networks of peer support and ongoing, collaborative learning opportunities to build self-efficacy and experience job satisfaction.

Lack of time for planning, collaborating, professional learning, induction activities is a major issue
Lack of support and communication from school administration and/or district's central office is a major issue
School administrators' instability affects school cultures, leading to problems in
- Curriculum and instruction
- Student behavior and classroom management
- Lesson planning
- Relationships with students, administrators, colleagues

Source(s): Table created by authors

Table 2.
Induction teachers' survey: System mapping analysis key themes and insights
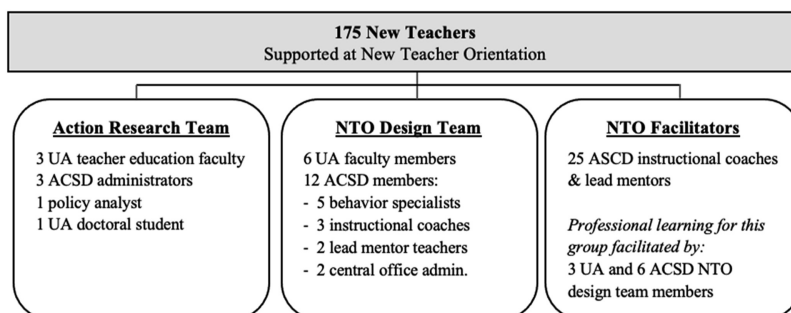
Source(s): Figure created by authors

Figure 4.
Three learning communities that impacted ACSD NTO in the ACSD

Taking action phase: building new teacher learning communities. In the "taking action" phase, teams implement interventions through programming that has been informed by the data collection (Coghlan & Brannick, 2014). For our action research intervention, we implemented the three-day NTO in late July 2020 via Zoom. The design focused on building social network connections among the new teachers. A UA faculty member kicked off the event with a whole group session focused on educational equity. Throughout the three days, NTO facilitators led small school-based learning communities called "coaching conversations" in Zoom breakout rooms. These conversations provided dedicated time and space for new teachers to build relationships with one another, discuss reflections from the asynchronous modules, set goals, share challenges and gain access to instructional resources. The virtual NTO was a high-energy environment, as the new teachers engaged in small group discussions, offered support to one another and expressed their appreciation for the relationships they were building among each other.

Evaluating action phase: learning and planning for the next cycle. The final phase in an action research cycle is the evaluating phase (Coghlan & Brannick, 2014), in which teams analyze the data collected during and after their intervention to learn and inform the next action research cycle. In our study, NTO planners and facilitators were involved in analyzing data, which included a New Teacher Survey, NTO facilitator survey and observations from NTO coaching conversation sessions. Three themes emerged during the analysis of data collected on the NTO intervention: (1) Community building was prioritized in all facets of the NTO; (2) Inquiry and dialogue created trust among all teachers in learning communities; and (3) NTO leaders were relationship-builders who made all participants feel valued. The New Teacher Survey results showed that new teachers had overwhelmingly positive NTO experiences, with 99% of the respondents agreeing that the NTO's tools/resources would ensure success in their first year of teaching in the ACSD. The majority of survey comments expressed appreciation for the community building and networks that had formed during the NTO.

Action research cycle 2: creating an Induction Support Team for induction leaders (August 2020 to January 2021)

The data collected in the cycle 1 evaluation phase led us directly into the planning phase of our second action research cycle. Due to the pandemic, schools were primarily closed and classes were taught online. Amidst this unprecedented start to the school year, we designed our second major intervention - a district-wide virtual Induction Support Team (IST) co-facilitated by Nina, Matthew and Rachel (UA faculty). The IST included the district's 50 lead mentor teachers and instructional coaches from 21 ACSD schools. The virtual learning community met monthly and focused on sharing strategies for sustaining the new teacher-learning communities formed during NTO and for effectively coaching both new teachers and mentor teachers. The IST created a new social network across schools and grade levels that provided social-emotional support for lead mentors during a particularly challenging time and facilitated idea-sharing throughout the system. With the support of a network, educators were better equipped to manage the complexities that COVID-19 presented. Throughout this second research cycle, the action research team collected data through documents, meeting recordings and facilitators' written reflections. Data collected during this cycle informed our final cycle – planning for sustainability.

Action research cycle 3: planning for sustainability (February to June 2021)

During our final research cycle in the spring of 2021, we collected end-of-year survey and focus group data from new teachers to gather insights into what to consider in planning the induction programming for 2022–2023. Survey results showed induction teachers' positive experiences with 2020–2021 school-based induction support. Approximately 75% agreed or

strongly agreed that they received ongoing support from the IST, and 93% agreed or strongly agreed that they felt comfortable asking for help from other teachers. Erica also conducted individual interviews with all action research team members to gain overall insights and learning from the research process. Unfortunately, school district leadership changes in spring 2021 and a reduction in UA-ASCD partnership activities affected our plans for sustaining the induction support initiative in 2021–2022. As a result, the collaboration was stuck in a holding pattern when the study concluded. However, now, more than a year later in the 2023–2024 school year, induction activities are being revived by many of us who were involved in this study. These circumstances reflect the complexity inherent in school-university partnerships and the need for partners to be responsive to ever-changing dynamics that shape both the school district and the university.

Findings

For the purpose of this article, we highlight the three findings most relevant to understanding the structures and supports from the UA-ACSD partnership that facilitated capacity-building in the context of ACSD's induction program.

Engaging in collaborative action research is mutually beneficial for both schools and universities

NAPDS Essential 5 encourages PDS partnerships to engage in "collaborative research," and, ideally, this research should reflect another core PDS value: it should be mutually beneficial for both institutions such that both partners "share the work and benefit from the collaboration" (NAPDS, 2021, p. 13). This study found that both the action research process and its outcomes benefited both the school district and the university systems. One faculty member described the benefits of using action research as a structure to create positive change within partnerships:

> This action research team makes so much sense as a mechanism to be doing better things inside of school-university partnerships. It is a critical learning community that has shared commitment, shared discourse, and a norm structure to it that has practices and rituals of belonging. It has a cycle that you're following through and has shared trust.

Benefits to the Atlantic County School District (ACSD). Just as Nguyen *et al.* (2019) found that comprehensive induction programs include multiple opportunities for teachers to collaborate, the ACSD educators experienced significant benefits from structures developed by the collaborative action research team that facilitated teacher collaboration. The study's major intervention, the virtual NTO, was intentionally designed to welcome new teachers into a learning environment that valued teacher collaboration from their first day in the district. Survey results showed that the NTO new teacher-learning communities gave teachers an immediate opportunity to make connections with other new teachers and build relationships with experienced educators in their schools who were well-prepared to answer their questions, offer advice and emotional support, and provide them with instructional resources. Positive outcomes from this study include the following:

(1) Survey data showed that new teachers built social networks during NTO that gave them a sense of community and belonging that helped with the isolation caused by COVID-19. They also gained new knowledge and skills that prepared them to be more successful in their first year of teaching in the district.

(2) New teachers received instructional and emotional support from a diverse team of educators through ongoing school-based induction learning communities, increasing their social ties and level of support within their schools.

(3) Lead mentors and instructional coaches learned how to facilitate induction learning communities effectively to meet the needs of adult learners, including in virtual settings.

At the end of NTO, one new teacher commented in the survey, "It is important to have a network of connections—teachers you can learn from and gain support." The new teacher-learning communities provided a reliable structure for which this network of connections could be made for new teachers.

The study's second intervention, the IST professional learning, resulted in positive outcomes for educators who supported new teachers and mentor teachers, including:

(1) Participants developed as teacher leaders who were more adaptive and flexible in the type of support they provided to new teachers to be responsive to the complex system challenges they faced.

(2) IST members became a dense social network among themselves - they built group social capital across schools, including offering one another resources and emotional support that helped them to navigate unprecedented challenges and complexity.

Findings from this study reinforce other social network studies showing that the more teachers were connected to a supportive social network, the higher their job satisfaction (Marz & Kelchtermans, 2020; Sikma, 2019; Struyve *et al.*, 2016; Thomas, Devos *et al.*, 2019; Thomas *et al.*, 2019).

Benefits to the University of the Atlantic (UA). Though the action research interventions focused on the district side of the partnership, the study found that UA faculty's involvement in the process also benefited the university:

(1) The study's focus on induction brought more induction conversations into the UA teacher education programs. For example, when the UA SOE formed an induction working group to develop a five-year plan to support induction teachers, data from this action research study was used to inform the proposal.

(2) Survey data from the study was used by university administrators and teacher education faculty to learn more about recent UA graduates' perceptions of their teacher preparation program experiences.

University teacher education faculty described how the research also influenced the design of their master's programs for induction teachers and the design of teacher preparation courses. A faculty member described the impact on UA teacher preparation programs, "That work changed all of us who were in teacher education. It impacted how we were working in our [UA] methods classes, guarantee it. And how we were thinking about student teaching..." Similarly, Nina described how the action research project led her program to redesign a summer graduate-level course for UA master's students beginning their first year of teaching.

Though difficult to capture the enhancements to their practice that each university faculty member experienced as a result of their participation, it became evident across the action research team that deliberate attention to induction teachers cannot fall to school districts alone. The onus for the effort required to support induction teachers also belongs within teacher preparation institutions. Some of the UA faculty involved in this action research team had "clinical practice units" reserved within their contracted time to advance their engagement with school-university partners locally, statewide and/or nationally. In these cases, faculty with clinical practice units had time set aside within their week to participate in school-university partnership work, like the induction work happening in this study (though none had units related to participating on this action research team). A clinical practice unit was equated with one instructional or teaching unit. For some readers, referring to this as a

"course release" would be helpful to understand the structures that facilitated university faculty's involvement in this research. It is worth noting that faculty joined the university with clinical practice units as a part of their contract, not associated with grants or course "buy-outs."

Induction programs benefit from university resources
Comprehensive induction research shows that teachers who have access to "induction packages" of support, that include both mentoring and group induction activities, are less likely to leave their teaching positions (Smith & Ingersoll, 2004, p. 706). Our study demonstrated that school-university partnerships can be an effective component of these supports, especially in districts that lack the resources to implement comprehensive induction programs. The structure of the action research study gave our partnership the opportunity to gather feedback directly from new teachers and mentors through surveys and focus groups, which guided the design of all induction supports created during the research process. University faculty expertise in equity issues in schools, classroom management, and online facilitation and community building significantly enhanced new teachers' experiences in all components of ACSD's induction program. Although the new teachers may not have known the extent to which UA faculty supported the design of the induction program, they reaped the benefits of the partnership's support structures. One teacher commented in a survey, "NTO provided me with the opportunity to be challenged, to think about very important aspects of teaching and learning, to plan for practical applications of what was taught during this time, and for collaboration and community building." The induction support structures provided through our partnership contribute to existing studies that demonstrate how university involvement in induction programs can benefit school educators (Chubbuck *et al.*, 2001; Hartman *et al.*, 2016; Helfelt *et al.*, 2009; Luft *et al.*, 2003).

Learning communities build all educators' professional capacity
A key finding of this study was that educators at all levels who were involved in induction programming (university faculty, school district administrators, mentor teachers and new teachers) expanded their professional capacity through collaborative learning communities. We define capacity-building as gaining new knowledge, as well as building instructional and social-emotional skills. In answer to our research question, learning communities were the most essential structures that facilitated capacity-building in our study's context. Our study found that when learning communities became dense, tightly connected social networks, each individual benefited from ongoing collaboration that had a clearly defined purpose. The individual learning sparked team learning that resulted is what NAPDS Essential 4 describes as "responsive innovation" and "generative knowledge" that benefited both institutions (NAPDS, 2021). Thus, the study contributes to research on the benefits of Professional Learning Communities (PLCs) for facilitating individual and group learning and organizational change (Tam, 2015; Thompson *et al.*, 2004). Educators in three different types of learning communities built their professional capacity, as described below.

New teacher learning communities. The 175 new teachers who engaged in the virtual NTO learning communities reported gaining new knowledge that prepared them to be more successful classroom teachers. In the NTO survey, many teachers reported that they had increased their professional capacity in areas of equity, classroom management, instructional rigor and digital learning. For example, one teacher shared in a survey comment, "[This] orientation provided me with the opportunity to be challenged, to think about…teaching and learning, to plan for practical applications…, and for collaboration and community building." Another commented, "The tools in NTO will put me on the path to creating innovative lessons to challenge my students."

Induction Support Team (IST) learning community. Throughout the school year, ACSD educators involved in the Induction Support Team (IST) learning community (lead mentors, instructional coaches and behavior specialists) also built their professional capacity (knowledge and skills) to lead effective school-based induction programs. Ongoing dialogue and individual and group reflection during monthly half-day professional learning sessions contributed to their growth as teacher leaders. In a reflection about the study, Matthew said, "...[W]e broke down the silos and allowed members to be vulnerable in a safe space where we could all learn and grow–the techniques used allowed each member of the IST to feel valued, heard, and seen." Evidence from our data suggests that both of the study's interventions were not only beneficial to induction teachers, but also to mentors and teacher leaders, as well.

Action research team learning community. Finally, the eight members of our action research team built significant professional capacity through frequent engagement with one another throughout the two-year study, including building research skills and learning from each other's diverse perspectives. In interviews, some members described transformational learning that continues to significantly impact their professional practice. One team member shared, "I was given space to be my authentic self and to show my true leadership style and share my voice in a way that I have always believed leadership should be like. . .It definitely helped me grow." Though the impact on our team was an unintended outgrowth of our collaboration, our individual learning illuminates how action research can shape participants from multiple institutions in unforeseen and positive ways.

Recommendations for research and practice
This action research study has several implications for research and practice. Our first three recommendations relate to research and the second two relate to practice.

More research is needed on the benefits of school-university partnerships to induction programs
Since Hunt's 2014 literature review on induction support in school-university partnerships, very few empirical studies on this topic have been published in peer-reviewed journals. This study makes a significant contribution to the literature but much more research is needed, especially as university teacher preparation programs are increasingly called on to play an active role in supporting novice teachers (Feiman-Nemser, 2001; Fulton *et al.*, 2005; Goldrick, 2009; Hunt, 2014). Partnership leaders need more research-based induction models and programs they can adapt to their contexts. Research could also provide evidence that leaders need to advocate for more institutional resources for induction support, such as dedicated time for university faculty members to engage with school district induction programs. As more teachers leave teaching due to stress and burnout (Georgia Department of Education, 2022), it is imperative that induction support be given increased attention and resources to ensure new teachers feel supported, experience job satisfaction and remain in the profession.

Research within partnerships can also further explore how complexity and social network theories can assist educators in tackling common systemic challenges and redesigning systems. Recent studies that show how induction teachers' social networks influence their job satisfaction (Marz & Kelchtermans, 2020; Sikma, 2019; Struyve *et al.*, 2016; Thomas, Devos *et al.*, 2019; Thomas *et al.*, 2019) are encouraging, but much more research is needed to spur change, including how universities can participate in and facilitate the growth of social networks within partnerships.

School-university partnerships should leverage action research to improve systems
This study also demonstrates that school-university partnerships can leverage action research to create systems-level improvement for schools and universities. Action research has great potential to assist school-university partnerships with tackling common complex challenges, such as induction support. Three earlier studies also found that collaborative action research can be used to generate systemic change in school-university partnership settings (Burns *et al.*, 2020; Catelli & Carlino, 2001; Kirschner *et al.*, 1996). For example, Catelli and Carlino (2001) described how collaborative action research teams conducted studies that resulted in improved pre-service teacher program design and professional learning in their partnership contexts. Action research can make a significant impact on practice, and school-university partnerships should help districts expand beyond P-12 classrooms, where the methodology is currently most common in school districts, to leverage it for systems change.

Within school-university partnerships, the connection between collaborative leadership and partnership sustainability requires further research
This study found that leaders at all levels of school-university partnerships must value collaborative engagement for change efforts to be sustainable. Boundary-spanning leadership competencies, such as building trusting relationships, negotiating compromise, prioritizing teamwork and having an inquiry-oriented mindset, facilitate productive partnership work. University leaders could benefit from using Weerts and Sandmann's (2010) research-based model showing the multiple boundary-spanning roles needed at public research universities to engage effectively with community partners. They found that boundary-spanning is not just the work of individuals, but that broader institutional engagement strategies must include principles such as community-based problem-solving and building capacity for engagement work. These researchers also stressed that "institutional leaders must recognize that building relationships with community partners is complex" (Weerts & Sandmann, 2010, p. 651).

Our research reinforced the importance of trusting relationships between school-university partners. We prioritized building trust in our action research team that laid the groundwork for developing trusting learning communities to design and implement effective induction programming. Educators involved in the change process also valued boundary-spanning leadership qualities throughout the research cycles. Smedley's (2001) literature review of impediments to school-university partnerships found that mutual respect among partners is a prerequisite for partnerships, in addition to trust and a sense of being valued. The studies she reviewed also confirmed the importance of ongoing dialogue and collaborative goal setting. When leaders at all levels of a school-university partnership value collaboration, positive organizational change is more likely to be sustained. However, more research is needed on the connection between collaborative leadership and the sustainability of partnerships and partnership programs. This recommendation also includes research on how partnership leaders build their capacity for effective boundary-spanning and how to create conditions that build social networks across schools and universities involved in partnerships. Studies that examine the conditions under which school-university partnerships sustain impactful programming are also needed.

School-university partnerships should leverage collaborative learning communities to catalyze individual, group and systems-level learning and change
The learning communities in this study were not officially called PLCs, but they were structured much like typical PLCs in P-12 settings, which focus on collaborative inquiry to improve practice among small groups of educators (Vescio *et al.*, 2008). Promising research on PLCs in schools shows how these communities can facilitate individual and group learning

and organizational change (Tam, 2015; Thompson *et al.*, 2004). Our study recommends that induction programs include school-based new teacher communities of practice that are co-facilitated by a university faculty member and a school leader. Increasingly, studies have found that PLCs embedded within induction programs can have a positive effect on new teacher development (Fresko & Nasser-Abu Alhija, 2015; Lovett & Cameron, 2011) and that induction teacher learning communities supported by school-university partnerships benefit new teachers (Chubbuck *et al.*, 2001; Hartman *et al.*, 2016). Related to the virtual nature of the learning communities in this study, research also shows that online PLCs and social networks have positive effects on educators' learning (Baker-Doyle & Yoon, 2010; Lieberman & Pointer Mace, 2010; McConnell *et al.*, 2013; Xue *et al.*, 2021).

School-university partnerships should also consider using collaborative learning communities to further educators' growth and development and generate innovative programming. As this study showed, learning communities can cultivate social networks that also help educators more effectively navigate complex challenges within their systems. In a three-year study of PLCs within a school-university partnership network, Hoffman *et al.* (2009) found that PLCs "served as a catalyst for synthesizing best-practice research, contextualizing complex issues, and developing strategies for proactive change" (p. 42). Partnership PLCs can be structured in many different ways for cross-institutional dialogue, such as university teacher education faculty and teacher PLCs, or pre-service teacher and teacher PLCs.

School-university partnerships must prioritize induction support to strengthen the teaching profession

Our study found that a school-university partnership made a positive impact on induction support programming. To sustain such work, partnership leaders at the highest levels of both schools and universities must prioritize collaborative induction support and dedicate resources to induction programming. We recommend that school-university partnership structures include one university educator and one school district educator, who both have significant allocated time for induction collaboration. These personnel need to have ongoing trust and support of institutional leaders and must have financial resources for induction work, including funds to buy out faculty members' time to support induction. As mentioned earlier, as an indirect support for this study, university faculty had "clinical practice units" dedicated to supporting school-university partnership work. Our findings also reinforce the importance of building professional capacity (knowledge and skills) among all educators, especially mentor teachers, who support new teachers. Working collaboratively, school district administrators and university faculty played an important role in developing and implementing professional learning that built mentoring and facilitation skills among teacher leaders.

Further, we recommend that university faculty collaborate with district partners to develop and implement impactful professional learning for induction teachers, as other studies have shown (Chubbuck *et al.*, 2001; Luft *et al.*, 2003; Stanulis & Ames, 2009; Van Zandt Allen, 2013). Our study found that new teachers are interested in continuing professional learning related to equity and diversity, as well as subject-specific pedagogical content knowledge. Our partnership played a key role in developing equity-centered professional learning for induction teachers, and partners agreed that equity issues must be addressed throughout all areas of professional learning, such as instructional strategies, classroom management and content-centered learning. As school-university partnerships reimagine the ways they operationalize their work following the COVID-19 pandemic, they are, thankfully, also renewing their attention to the unjust and inequitable ways schooling has harmed children from marginalized communities. Equity-centered professional learning in partnership settings can strengthen this commitment (NAPDS, 2021).

Conclusion

We hope that our action research journey inspires other school-university partnerships to consider how this methodology can be leveraged to develop impactful interventions to support new teachers. Action research could also be used within partnerships to tackle other common problems and create organizational change at the individual, group and systems levels. Collaborative research that combines multiple qualitative data collection methods with powerful theories, such as complexity and social network theories, can be mutually beneficial for educators in both school districts and teacher education programs.

Feiman-Nemser (2001) emphasized that learning to teach should be seen as a continuum that begins in pre-service preparation programs and then extends into the first few years of teaching. Whereas boundary-spanning within school-university partnerships has largely been conceptualized as school and university educators who support pre-service teachers' education (AACTE, 2018; Burns & Baker, 2016), our study echoes Feiman-Nemser's call by encouraging boundary-spanning educators to span the preservice-to-induction divide in order to support new teachers in the field. Working collaboratively with school district partners, partnerships can create innovative layers of support that help new teachers stay, grow and thrive in the teaching profession. As the effects of the COVID-19 pandemic continue to be felt in schools across the United States, including students' learning loss, disengagement with school and increasing mental health challenges, we cannot afford to lose our induction-level educators. This moment calls for school-university partnerships to coalesce energy and efforts around novice teachers by creating collaborative learning organizations that prioritize building teachers' pedagogical knowledge, sense of self-efficacy and excitement for their students' learning. In the spirit of NAPDS Essential 5 (NAPDS, 2021), we share our research journey as a call to school and university leaders to change mindsets, design support structures and commit resources to induction support for the benefit of all educators and students.

Notes

1. The study was part of a larger study used for Erica Gilbertson's (Author 1) doctoral dissertation (Gilbertson, 2022).

2. Pseudonyms of places, action research partners and participants are used throughout the manuscript.

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