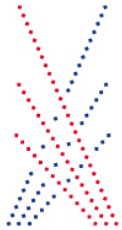

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Spanning one boundary while enforcing and/or enacting the other(s): A multi-level study of design and implementation of an inter-professional change initiative

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ABSTRACT

Multi-level studies that focus on both design of inter-professional collaborative change to address barriers of collaboration and its implementation by change participants remain somewhat limited. In this paper, we examine a multi-project, inter-professional collaborative change program — involving University School of Education faculty (FAC), graduate students (GS), and public school teachers (PST) — at the end of program's tenth year. Based on the analysis of archival data and interviews, related to the change initiative and its 14 projects, we found that to address the barriers that she perceived in inter-professional collaboration, the dean designed the change to include initiatives aimed at activating team boundaries, addressing the needs and benefits of all involved, and providing FAC and PST a level playing field. Although change design aimed at providing FAC and PST a level playing field, change participants' implementation involved engaging across professional boundaries and, at the same time, maintaining task boundaries (with different groups doing different primary tasks) and authority/status boundaries (with FAC, who had domain expertise, having higher authority/status). This was facilitated by two-tier collaboration set up by FAC together with GS, with GS being brokers for day to day matters. Thus, both design and implementation involved spanning inter-professional boundary and at the same time, activating and/or maintaining other boundar(ies). Eventually, the change initiative succeeded in achieving its goals. Taken together, the findings have implications for design and implementation of change with multiple groups, inter-professional collaboration, and boundary spanning.

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INTRODUCTION

Change interventions often require collaboration between people belonging to different professions. Such collaboration is fraught with potential conflict, which may impede collaborative performance and change (Ramirez and Bartunek, 1989, Brown and Covey, 1987, Moch and Bartunek, 1990). Akin to other contexts (e.g., Bechky, 2003, Majchrzak et al., 2012, Dougherty and Dunne, 2012, Carlile, 2004, Abbott, 1981, Huq et al., 2017), inter-professional and interdisciplinary collaboration in the educational context too marked with variety of barriers (Brabeck et al., 1997, Kenny et al., 2007). For instance, there could be barriers associated with different levels of educational attainment, training, knowledge bases, perceived prestige and status associated with university educator and public school teacher, and pressures on time and lack of incentives (e.g., Kaplan et al., 2017, Kenny et al., 2007).

While awareness of likely challenges associated involving multiple professional groups is high, studies on planned organizational change typically do not incorporate ways of creating change initiatives that acknowledge and address these barriers. Similarly, change is eventually implemented by participants, and studies that focus on the conduct of inter-professional collaboration focus on one or the other barrier and not on all aspects (see Kaplan et al., 2017 for an exception). As Srikanth et al. (2016) noted, research on how diverse groups work tends to focus on motivating cooperation through aligning incentives but not on how they coordinate to work together effectively, something that may be difficult due to differences in training and knowledge bases. All in all, multi-level studies that focus on both design of inter-professional collaborative change to address barriers of collaboration and also its implementation by change participants remain somewhat limited.

In this paper, we examine how inter-professional collaborative change initiatives are designed (by the leader) and, eventually, implemented (by the change participants). We explore this question in a study of a change intervention — a "Joint Partnership Program" (JPP) — established by the Dean of a School of Education (SOE) in a major university in the United States to support the SOE faculty (FAC), SOE graduate students (GS), and public school teachers (PST) to collaborate with each other in action research projects in the public schools (PS), with an overall goal of improving both PS and SOE. We examined the program at the end of its tenth year; 14 different projects were funded by that time. In particular, we analyzed the archival data about the program and projects and 71 interviews with key participants including the founding and current deans, key administrators, and participants of different change projects, we examined both the design and implementation of the change program.

Our findings reveal that the leader (i.e., the Dean) perceived barriers — related to understanding and time and resources — in inter-professional collaboration. She addressed these barriers in the change design by activating team boundaries, addressing the needs and benefits of all involved, and providing all parties a level playing field. While change design included initiatives to provide all parties a level playing field, change participants' (FAC, PST, GS) change implementation involved engaging across professional boundaries and, at the same time, maintaining task boundaries (with different groups doing different tasks) and authority boundaries (with FAC, who had domain expertise, having higher authority/status). Further, this was carried out via two-tier collaboration set up by FAC together with GS, with GS being brokers for day to day matters. Thus, both design and implementation initiatives involved spanning inter-professional boundary and activating and/or maintaining other boundar(ies). Finally, we found that the change initiative was successful in achieving its goals.

Taken together, the findings contribute to literature on planned change with regard to the design and implementation of multi-group collaborative change. Further, it also sheds light on the inter-professional collaboration in two ways. First, it suggests that spanning one boundary and, at the same time, maintaining other boundaries may be important for working together effectively. Second, it points to the role of two-tier collaboration with third group being brokers in spanning and maintaining boundaries and facilitating such inter-professional collaboration.

THEORETICAL BACKGROUND

Inter-professional Collaboration in the Educational Context

Inter-professional and inter-disciplinary collaboration has been identified as a means for bringing together multiple perspectives to solve complex educational problems in the educational context. However, this endeavor is often characterized by a variety of obstacles (Brabeck et al., 1997).

First, there are differences in the levels of educational attainment and training of university faculty and public school teachers (Kenny et al., 2007). As such, they may not speak the same language and have a different perspective and understanding of the phenomena (e.g., Dougherty and Dunne, 2012, Kaplan et al., 2017, Carlile, 2004). Thus, collaboration may require not just transfer of knowledge but also translating to make it understandable to the other group (e.g., Bechky, 2003).

Further, there are different levels of perceived prestige associated with university faculty and school teacher. Status and prestige differences between professions have been found to have a bearing on interactions and how knowledge is shared (Anthony, 2018) and how decisions are made in inter-professional collaboration (Huq et al., 2017). Effort is rarely taken to address this issue and projects are carried out neglecting the voices of teachers. Thus, teachers frequently feel

excluded from academic and policy level discussions of education or take steps to protect themselves from outsiders telling them what to do (e.g., Wood, 2007, Vescio et al., 2008).

Finally, building relationships requires time and resources (Edmondson and Nembhard, 2009) and there may be lack of incentives to do so (Kaplan et al., 2017). People may also have different interests (Carlile, 2004) and such endeavors may not always benefit everyone.

Addressing these different barriers maybe important to reap the benefits of inter-professional collaboration and focusing on one or the other may not be enough (Kaplan et al., 2017). For instance, even when goals and incentives are aligned and hence people are motivated to cooperate with each other, they may not be able to work together as differences in understanding and lack of common ground may lead to coordination problems (Srikanth et al., 2016, Kaplan et al., 2017, Carlile, 2004). As such, it may be important that design and implementation involves initiatives to address both cooperation and coordination issues (Srikanth et al., 2016). Thus, a key question is how change initiative can be designed to address these barriers and how such inter-professional collaborative change is eventually enacted by change participants?

Organizational change with multiple groups

There has been some evolution in how planned organizational change has dealt with (potential) conflict among groups of change participants. In the 1970s and 1980s, the planned organizational change literature included an emphasis on the likelihood of differing and conflictual groups within organizational settings and the ways their differences could negatively influence change (e.g., Bartunek and Moch, 1987, Brown and Covey, 1987, Legge, 1984, Pettigrew, 1985). Later, there started to be more attention to what needed to be done to facilitate change in conflictual settings, especially on the team level and in terms of processes. For

example, Barrett and Cooperrider (1990) suggested that it might be possible to intervene at tacit, indirect levels by means of generative metaphors that would enable participants to move beyond conflict. Edmondson (1999) described the need for safe psychological spaces, and others emphasize the needs for containers for dialog among differing people and groups (e.g., Corrigan, 2015). In the large groups literature such as Future Search, the expectation is that areas that are deeply conflictual will not be addressed (Weisbord et al., 2000).

Though often unrecognized, one way of managing collaboration between multiple groups in organizational change: how the initiative is designed. Senge (1990) expressed this well. He asked the following question of many groups of managers:

> "Imagine that your organization is an ocean liner and that you are 'the leader.' What is your role?" (The managers) listed many possibilities such as captain, navigator etc. However, they neglected the most important leadership role: the *designer* of the ship". Senge asked, "What good does it do for the captain to say, "Turn starboard 30 degrees," when the designer has built a rudder that will only turn to port, or which takes six hours to turn to starboard?"

In other words, the designer of a change initiative sets structural parameters that both constrain and enable what it is possible to do afterwards. The structural design pieces support or negate purpose, vision, and values.

While many of the large group interventions offer illustrations of particular design efforts (e.g. Future Search (Weisbord and Janoff, 1996); and the Conference Model (Axelrod, 1999)), there is less talk of overall design to facilitate collaboration between multiple groups in organizational change more generally, except, perhaps, in occasional discussions of its link with design science (Bate, 2007). The change initiative — JPP — we studied is important as we

found that practices to address barriers of inter-professional collaboration were built into its overall structural design.

Cross-boundary collaboration, Boundary spanning

Implementation of inter-professional change, by its nature, involves engaging in relationships and interactions across boundaries of one's group (Kaplan et al., 2017). Such work often gets carried out in cross-boundary teams, which refers to a "newly formed temporary group, with fluid membership, which need to develop into a high-performing unit" (Edmondson and Harvey, 2018). While cross-boundary teams can potentially offer benefits such as exchange of different perspectives, merely getting people with diverse knowledge is not enough for the success of teams (Faraj and Sproull, 2000); as noted, there could be barriers to inter-professional collaboration.

Past research has identified aspects pertaining to interaction that may help manage the challenges of inter-professional collaboration. For instance, status differences in inter-professional collaboration can be addressed by promoting equality of both parties, strengthening the weaker party, and focusing on desired outcomes (Huq et al., 2017). Further, other actions include reflecting on progress to get clarity around roles and developing a sense of belonging to the team (Marks et al., 2001), team learning interactions such as "asking questions, seeking feedback, experimenting, reflecting on results" (Edmondson, 1999), talking about problems (Carmeli and Gittell, 2009), discussing goals and outcomes, back and forth dialogue (Tsoukas, 2009), and probing each other about their perspective and views (Hargadon and Bechky, 2006).

Above research emphasizes that to understand how diverse individuals can form high performing teams, it is important "to look at what they do" (Edmondson and Harvey, 2018). Specifically, there have been recent calls to examine how people from different backgrounds and

occupations are not only motivated to cooperate but also find common grounds and to coordinate and work together effectively (Srikanth et al., 2016). In particular, there is a need to examine, in addition to communication, how they could possibly "establish common ground" to work with each other (Srikanth et al., 2016).

A separate body of research has looked at the role of boundary spanners in connecting people from different domains and facilitating cooperation and coordination (see Halevy et al., 2019 for a review). While, earlier research regarded boundary spanners or brokers as those who promote ties between those who are not linked to each other (Burt, 2004), recent research recognizes that boundary spanning can happen in closed networks and boundary spanners or brokers can potentially augment relationship between previously linked individuals (Kaplan et al., 2017, Obstfeld et al., 2014, Lingo and O'Mahony, 2010, Halevy et al., 2019). Recently, there is an increased interest in what boundary spanners do and how they facilitate boundary spanning (e.g., Lingo and O'Mahony, 2010, Quintane and Carnabuci, 2016, Kaplan et al., 2017). For instance, recent study on instrument intensive context of nanotechnology revealed how boundary spanners interacted with objects symbiotically to address both political and cognitive barriers of interdisciplinary work (Kaplan et al., 2017). Majority of this research focuses on how boundary spanners affect the relationship between actors from different domains (Obstfeld, 2005, e.g., Lingo and O'Mahony, 2010), paying relatively less attention on how boundary spanners and an actor could work to facilitate collaboration between the actor and individuals(s) from the other domain. In our study, we found how GS engaged in boundary spanning with FAC to facilitate collaboration between FAC and PST.

RESEARCH METHODOLOGY

Setting

The JPP began when the then Dean of SOE (the "founding dean") received a substantial gift from an anonymous donor to establish a program that would provide support to faculty at SOE and PST to partner with each other in projects in the neighborhood public schools to impact changes in curriculum, improve educational practice, and foster scholarly outputs. The JPP has continued very actively for more than a decade, including under the leadership of a new dean who began work at SOE five years after the initiative began.

At the time of data collection, after the initiative had been in place for 10 years, a total of 14 projects had been funded. These projects focused on a range of topics including bilingual education, racial and gender intolerance, aiding urban youth in the successful transition into adult life, reading while listening to improve bilingual students' ability to read and understand textual materials, providing academic and social support for recently immigrated teenagers, and implementation of a comprehensive health curriculum for elementary school children. Each project was a collaborative effort involving one or more FAC, PST, and GS.

Data collection

Archival data. We began by gathering documents including communications from the founding Dean, the initial outline/goals of the JPP, internal documents related to review of project proposals and annual reports, initial proposals submitted while applying for the grant, and annual reports of the funded projects (see Table 1 for the list of archival data).

Insert Table 1 about here

Interview data. Once we consolidated the archival data about the program, we interviewed the founding and current deans, SOE administrators, a representative from the funding agency, and participants from the projects that had been funded to date and also faculty from SOE who did not participate in the change program to understand their perspective (see Table 2 for information about interview participants).

Insert Table 2 about here

The interview protocols were primarily semi-structured, with open-ended questions on project goals, design, coordination, and impact. For instance, we asked the founding dean to describe the origins of the program, its challenges, and its design.

Similarly, we also interviewed participants from the projects that had been funded to date. These included 15 FAC who were Principal investigators for the 14 projects, 24 GS, and 18 PST. We asked them to describe their projects, the steps and initiatives they took, how they coordinated, how their projects evolved over time, the challenges, and the impact of the projects on them and the involved organizations.

Majority of interviews were conducted face to face. Only in a few cases, when this was not possible, we conducted the interviews over phone. We recorded each interview and had it transcribed.

Outcome measures. The Dean had established several criteria for the program. These included: foster curriculum improvement at SOE; foster curriculum improvement in the PS involved; generate new knowledge about teaching and learning; enhance the relationship between SOE and the partner schools; accomplish systemic change in partner schools; and

enhance team members' professional knowledge. We asked FAC, PST and GS to evaluate their projects on these criteria using a five-point scale (1 = poor; 2 =reasonable; 3 =good; 4 = very good; 5 = excellent).

We also counted the number of scholarly publications and presentations at the time of our data collection. Finally, we explored the extent to which the projects continued over time.

Data analysis

Interviews and archival data about the change program. We began our data analysis by reviewing our archival data on the JPP, especially the initial goal statements and proposals for the change program and the Dean's communication with the funder and letter to the University faculty introducing them to the program. Together with our interview with the founding dean, administrators and the representative from the funder, these enabled us develop an understanding of the rationale and design of the JPP.

Interview and archival data about projects. Next, we analyzed project proposals and change participants' (FAC, GS, PST) responses to semi-structured questions. Initially, our analysis was more descriptive; through an iterative analysis, we consolidated them into more theoretical codes and finally, codes conveying similar larger idea were consolidated into aggregate codes (Locke, 2001, Miles and Huberman, 1994, Strauss and Corbin, 1990, Charmaz, 2006). Figure 1 depicts the data structure.

Insert Figure 1 about here

FINDINGS

We begin by describing the leader's understanding of the challenges of inter-professional collaboration, followed by her initiatives to design the change, change participants' implementation of their respective projects, and finally, outcomes of the project. Figure 2 depicts the framework, Tables 3, 4, 5, and 6 include illustrative evidence from interview data.

Insert Figure 2 about here

Insert Table 3, 4, 5, 6 about here

Leader's perception of barriers of inter-professional collaboration

The founding Dean thought that while FAC and PST, public schools, university and lager community may benefit from collaboration, it may involve barriers of understanding and time and resources.

Regarding the barriers related to understanding, the Dean sensed *antipathy and lack of interaction* between the FAC and PST. For instance, she noted that they worked in silos and, in fact, people in some departments at SOE did not "think that they have anything to do with schools"; their professional focus was their scholarship. The Dean commented on "how divorced education researchers (i.e. university faculty) are from the realities of (public) schools and how the research projects from the education scholars in her school arose from the interests of the scholars and not out of the needs of the schools." Further, there was *lack of understanding of each other's perspectives*. It was "difficult for researchers to think like practitioners and for

practitioners to think like researchers". She recognized that it would not be easy to get FAC to go "out there" to PS and talk with PST about issues that the children were facing; she foresaw a resistance among both the FAC and the PST. One reason from the perspective of the FAC was what she called the "fear in practice link." PST could keep the University faculty "honest" about what the key issues were for them, and this might be threatening to the university faculty. Finally, there were *differences in levels of training and education of FAC and PST*. While PST were close to the real world of their students, but did not have the skills or resources to respond to some of their needs. For example, they were not skilled in asking the right questions, collecting data, interpreting results or writing grant proposals using rigorous methodologies in order to respond to difficult student issues.

As for barriers of time and incentives, the Dean realized that collaboration with FAC would *increase the responsibilities* of PST. They were already over-worked and it would also place pressure on their time. Further, there was a *lack of incentives* to support such collaboration. Such problems had, in the past, resulted in the teachers refraining from involvement in these collaborative activities.

In sum, as also noted in past research on inter-professional and interdisciplinary collaboration (Kaplan et al., 2017, Carlile, 2004, Huq et al., 2017), the Dean perceived that collaboration between FAC and PST may involve barriers of understanding and time and resources.

Leaders' design of inter-professional collaborative change

The JPP was "tailored to address obstacles to school-university partnerships." Our analysis revealed that the Dean took the following steps to address these barriers in the design

phase of the JPP: 1) Activating project team boundaries; 2) Addressing needs and benefits of all involved; 3) Providing both parties a level playing field.

Activating project team boundaries. This refers to actor's efforts to create a distinct identity for team and "demarcate its activity space" from others and in the process increase team cohesion (Faraj and Yan, 2009). Under the JPP, approximately three joint partnership projects would be funded each year. The dean hoped that the critical mass of these projects would, over time, impact the culture of the public schools in which the projects were carried out and also influence the University curriculum. The following initiatives were taken to activate team boundaries.

First, the Dean provided *guidelines regarding participation of different groups* in the team. Each project would have at least one FAC, one GS, and one PST. The teams could also expand to include faculty members from other areas such as Arts and Sciences or other schools.

Second, CFP provided *time for nurturing relationship*. Each project would be renewable for up to three years, contingent upon demonstration of successful progress toward completing the project goals. The three-year time period was expected to give participants enough time to develop a collaborative relationship and achieve the identified goals.

Finally, the Dean *set expectations regarding joint accountability*. Within the scope of the specified broad objectives, each collaborative team had the freedom to focus on the topic that seemed closest to their interests and field of work. However, each team of participants was expected to submit an annual report, which would include the updates on the project, steps taken, and progress made. The Dean would share this report with other project participants, public school administrators, SOE department chairs, and the finder.

Addressing needs and benefits of all involved. The leader ensured that all participants and organizations involved in the program benefit from it. Her formal statement for the change initiative was "collaboration for mutual good." This was done in two ways.

First, one of the *necessary criteria for participation was benefit for all involved*. That is, the selection criteria for the projects included their potential to have an impact on the educational practice at the PS and the SOE, as well as enhance participants' professional knowledge. To elaborate, selection criteria for JPP projects included their potential to impact local public schools, through increasing the academic and social competence of the students, bring about systemic changes in schools, improve teaching and learning, and generate new information about teaching and/or learning. Further, the dean expected that the initiatives would also impact SOE. Among other things, she said in her proposal to the foundation that, for SOE, "collaborations must yield new information about a teaching and learning issue that results from the school/university collaboration" and foster curriculum change in the SOE. Further, the projects were expected to impact research and produce publications such as published journal articles, professional papers in edited volumes, research grants that extend some aspect of research, or books based on the projects.

Second, the one of the impediments to the collaboration was that it created extra work for them. Therefore, JPP *provided resources and incentive* to both FAC and PST to build collaborative relationships. Each partnership project was awarded $45,000 every year of the project. Some of this amount would cover tuition remission and stipend of at least one GS and would provide compensation to PST for their time and efforts.

Providing all parties a level playing field. Finally, the Dean took actions to give participants from both PS and SOE a level playing field.

To begin, the Dean *involved people from both organizations for initial brainstorming and program leadership*. Before setting up the program, the Dean convened faculty from SOE and PS together informally to discuss the collaboration so as to initiate a conversation between them where they could gain familiarity and share each other's perspective. She also involved people who had ties with both the groups to talk to both and help in facilitating a conversation between them. These people could act as bridges, as they had an access to both sets of faculty. Further, the Dean created an advisory committee that included leaders and senior members from both the PS and the SOE. Its main purpose was to evaluate project proposals and annual reports. This was done to facilitate understanding of each other's perspectives at a policy making level.

Next, one of the essential selection criteria for the projects was *involvement of all parties in decision making and implementation of the project*. As noted, there were differences in levels of training and education of FAC and PST. Specifically, PST lacked training in research and domain expertise; however, they could provide perspectives based on their experience in schools. JPP expected them FAC and the PST to arrive at the question together, i.e., they were expected to share their expertise and experience to arrive at "mutually defined problems." In particular, in the project proposal submitted while applying for the grant, they were asked to explicitly comment on the involvement of both FAC and PST in the identification of the research question. Thus, FAC were expected to apply for the grant in partnership with the PST.

In sum, to address the barriers of inter-professional collaboration, JPP's design included initiatives aimed at activating team boundaries, addressing needs and benefits of all involved, and providing both groups a level playing field.

Participants' implementation of their inter-professional collaborative projects

Next, we discuss how the participants collaborated to accomplish their project goals. Our analysis revealed the following themes. First, within their projects, they took initiatives directed towards engaging across professional boundaries. These included: articulating shared team vision, developing new and existing inter-organizational relationships, establishing regular communication modes, and engaging in team learning interactions. Second, along with taking initiatives to engage across inter-professional boundary, participants also enacting task boundaries (i.e., different groups were doing different primary tasks and authority boundaries) and authority/status boundaries (with the group (i.e., FAC) with domain expertise was leading and had higher authority/status). Thus, although change design facilitated providing FAC and PST a level playing field, change implementation involved maintain task and status/authority boundaries. Finally, spanning and maintaining boundaries was facilitated by FAC and GS working in a two-tier collaboration with PST – while GS had a more frequent but more intensive interaction with the PST, FAC had a relatively less frequent but more widespread interaction. Further, GS engaged in brokering between FAC and PST for day to day matters.

Engaging across professional boundaries. To begin, we found that projects participants carried out several activities to engage across professional boundaries. We found evidence for these activities in all 14 projects.

First, participants engaged in *articulating a shared vision.* As noted, JPP required participants to work on mutually defined problems. The project proposals submitted for grant application required explicit mention of the involvement of PS personnel in defining the research question. Our analysis of accepted project proposals revealed that in all projects, FAC involved PS to articulate the questions. This was confirmed in interviews with participants who discussed

how they arrived at common goals. In a few projects, FAC approached the PS personnel and sought their input to design the study. In others, PS administrators approached FAC; for instance, a FAC suggested that "the principal got in touch with me" with the problem. For instance, a PST mentioned about engaging in "proposal development together" with FAC.

Next, all participants worked towards *nurturing new and existing relationships*. This refers to participants efforts towards developing relationships. In some cases, FACs already knew the school principals, administrators, and teachers and in others, they initiated a new relationship. For instance, a FAC mentioned, "they knew me and I knew them and I felt I could invite them" to join the project. In other cases, FACs approached the school personnel to discuss the potential of working together. These relationships seemed to have helped in setting the tone of collaboration. Similarly, GS developed relationships with PST as they implemented the project.

Further, participants *established regular communication modes*. They engaged in frequent communication with each other through face to face meetings, emails and phone calls. This was done both to chart the course of the projects (e.g., for the purpose of planning, evaluating how the project was going, providing feedback to each other), implementation of the projects (e.g., collecting and analyzing data, conducting observations), and training (e.g., professional development workshops). In almost all projects, the participants met bi-monthly or monthly and sometimes even weekly for planning; these interactions were even more frequent during implementation.

Finally, the participants engaged in *learning interactions*, which refers to activities that the team carry out to share information and adapt to others' needs and may include activities such as "seeking feedback, sharing information, asking for help, talking about errors, and

experimenting" (Edmondson, 1999). In our study, we found that they were sharing information, asking questions, and learning from each other. The participants made efforts to learn from each other about how things work in the other domain. One of the inputs expected from the FACs was their guidance based on expertise. Both GS and PST mentioned that they learned from working with the FAC. In addition, GS helped PSTs with skills related to doing research and activities related to class. Finally, PSTs provided input based on their experience of working with children at school; their input was very important in shaping the projects. FAC and GS often mentioned that they sought PST's opinion and made changes in plans and actions accordingly. For instance, a GS commented, "the teachers were encouraged to talk about what was going on in their classroom."

Thus, JPP participants took various initiatives towards engaging across professional boundaries.

Enacting task and authority boundaries. In addition to engaging across professional boundaries, they also enacted task and authority boundaries. Task boundaries refer to how people "divide up the work" and pose the question "who does what?" (Hirschhorn and Gilmore, 1992); we found that different groups took up relatively different primary tasks. Authority boundaries, which refer to who takes up the leading role and provides direction and who plays a role in execution (Hirschhorn and Gilmore, 1992); our analysis revealed that group (i.e., FAC) with domain expertise seemed to be the leader and had higher authority/status. We found evidence for these themes in all 14 projects.

First, we found that *different groups seem to take up relatively different primary tasks*. FACs designed the projects, shaped project goal, and methodologies based on the information from PST. PST shared their knowledge of the context and ground realities with FAC and GS.

They also helped in identification of needs and helped in revising the methods of research and suggested what strategies would or would not work with school children. GST visited PS regularly and worked hand in hand with PST on aspects such as finalizing logistics and specifics at the ground level (when to meet, what information is needed), getting feedback from PST and transferring relevant information from FAC to them, and helping PST with their learning and training.

Next, *the group (i.e., FAC) with domain expertise had higher authority/status.* Specifically, we found that while FAC seem to be leading the projects, PST and GS were involved in project implementation. FAC were the principal investigators and their input in the projects was based on their expertise in research and that subject area. They used this expertise to formulate the goals and strategies and making key decisions. They were treated as experts too and both GS and PST deferred to them, often addressing them using "professor" and not their first names. Thus, FAC were spearheading the projects and were considered as the drivers of the project. For instance, all the project material — e.g., proposals, annual reports — were something that we could get only from FAC.

In sum, implementation of inter-professional collaboration involved JPP participants engaging in enacting task and authority boundaries.

Setting up two-tier inter-professional collaboration with one group (GS) engaging in day to day brokering. Finally, FAC and GS engaged in two-tier boundary inter-professional collaboration with PST. Specifically, GS engaged in relatively specific/intensive and FAC engaging in relatively widespread interaction with PS personnel. Further, GS also engaged in relatively more frequent and FAC engaging in relatively less frequent interaction with PST. Finally, GS engaged in brokering between FAC and PST for day to day matters. GS did not

initiate a relationship between FAC and PST; in fact, FAC worked with GS to establish a two-tier collaboration with PST. This seem to have facilitated participants' engagement across professional boundaries and maintain of task and status boundaries, discussed above. We found evidence for these themes in 11 out of 14 projects.

First, we found that *GS engaging in relatively specific/intensive and FAC engaging in relatively widespread inter-professional interaction*. Specifically, each project had several GS and sometimes the GS changed every year. Their work entailed working on specific aspects of the project or interacting with one or two PST during the course of their involvement in JPP. On the other hand, FAC had a more widespread interaction with a lot of people from PS during the entire duration of the project. For instance, a GS mentioned, "FAC may have had more wide spread interaction with PST, but mine was limited to just Mrs. Harrison." In effect, FAC had assigned GS with responsibility to handle specific aspects of the project. As such, while they had an overall understanding, GS' understanding and involvement was often limited in terms of their duration of involvement and the number of people they interacted with.

Second, *GS engaging in relatively more frequent and FAC engaging in relatively less frequent interaction with PST*. GS had a much more frequent interaction with PST. In several projects, GS went to PS several days in a week and worked closely with PST. For instance, a GS commented, "During our waves of data collection, I went into the schools almost every day and visited with the teachers." FAC, on the contrary, had relatively less frequent interaction with PST. For instance, they met with the PST at regular intervals in scheduled meetings (e.g., bimonthly or monthly meeting). Thus, the projects, in effect, were carried out via frequent interaction between GS and PST.

Finally, *GS engaged in brokering between the other two groups (FAC, PST) for day to day matters.* In general, in most projects, GS were the link between FAC and PST for day to day matters. As noted, FAC met with PST relatively less frequently and GS spoke with PST about their needs and inputs and communicated this information to the FAC. In this sense, GS played a role of connecting FAC and PST for day to day matters. For instance, a GS commented, "we had formal meetings with FAC every two weeks. We identified goals…and then we visited schools." Similarly, another GS mentioned "I was really the touch person…FAC was quite busy at the university at the time." In some cases, while FAC had regular check-ins with the PS principals, GS interacted with teachers.

Thus, FAC and GS engaged in two-tier boundary inter-professional collaboration with PST with GS engaging in relatively specific and more frequent interaction while FAC engaging in relatively widespread and less frequent interaction with PS personnel, and GS being brokers between FAC and PST for day to day matters. As noted, three out of 14 projects, did not involve two-tier boundary spanning although GS were a part of these groups. In two of these projects, FAC and one of the PST had been collaborating for several years, and in fact, co-wrote a book. This PST worked with FAC to collaborate with other PSTs. In the third project, FAC had a longstanding relationship with PSTs and, in addition, a consultant also helped in facilitating the project.

Outcomes of the inter-organizational change program

Table 6 includes the mean scores of participants' ratings of their respective projects on the success criteria established by the founding dean; as evident, on the whole, the participants rated their projects highly on these criteria. This was also apparent in our analysis of participants' interview responses (see Table 7). All three — FAC, GS, PST — saw themselves as

learning from their projects in ways pertinent to their professional lives. Further, they all saw their projects benefitting the SOE, involved PS, PS students, as well as their collaboration with the other groups.

Insert Table 7 about here

Moreover, the JPP projects have led to abundant scholarly work. At the time of our assessment, there were over 60 scholarly articles, many times more conference presentations, student dissertations, and two books. Finally, 10 (out of 14) projects had a life after the grant was over — they expanded to other schools and led to national grants.

DISCUSSION

We began with suggesting that inter-professional collaboration is fraught with barriers associated with different levels of educational attainment, training, perceived prestige and status, pressures on time, and lack of incentives (e.g., Kaplan et al., 2017, Kenny et al., 2007). Our understanding of how planned organizational change can be designed to address these barriers as well as how such change is implemented is somewhat limited. In this paper, we, therefore, examine how inter-professional collaborative change initiatives are designed (by the leader) and, eventually, implemented (by the change participants). We found that both design and implementation initiatives involved spanning inter-professional boundary and at the same time, activating and/or maintaining other boundar(ies), which seems to have facilitated collaboration. Specifically, to address the barriers of collaboration, the leader designed the change to include the following initiatives: activating team boundaries, addressing the needs and benefits of all involved, and providing FAC and PST a level playing field. However, participants' (FAC, GS,

PST) implementation involved engaging across professional boundaries and, at the same time, maintaining task boundaries (with different groups doing different tasks) and authority boundaries (with FAC, who had domain expertise, having higher authority/status). Further, this was carried out by two-tier collaboration set up by FAC together with GS, with GS being brokers for day to day matters. Taken together, our findings have several theoretical and practical implications.

First, our setting provided us an opportunity to examine how multi-group change initiatives can be designed. As discussed, the leader perceived certain barriers to collaboration and took initiatives to address them. These include: activating team boundaries, addressing needs and benefits of all involved, and providing both parties a level playing field. Thus, it supports the central role of management in shaping a change initiative and suggests how change design can possibly address barriers of inter-professional collaboration.

Next, the study sheds light on such change is implemented and specifically what high performing cross-boundary teams do. Past research has identified several aspects associated with interactions that may facilitate cross-boundary collaboration (see Edmondson and Harvey, 2018 for a review). We found that the teams in our study not just engaged in such interactions across professional boundaries but also maintained task and authority boundaries via two-tier inter-professional collaboration set up by FAC and GS. Thus, despite the Dean's efforts to providing both FAC and PST a level playing field, we found that implementation was carried out maintaining some of these boundaries. Future studies on inter-professional collaboration might focus on not just boundary spanning activities but also boundary maintaining activities that characterize such teams.

Relatedly, past research suggests that status differences influence interaction and may come in way of coordination and knowledge sharing (Okhuysen and Bechky, 2009, Anthony, 2018). In particular, when status differences are salient, lower status members may refrain from asking questions and giving feedback and may accept suggestions without questioning, which may come in the way of producing new knowledge (Anthony, 2018, Okhuysen and Bechky, 2009). In our study, we found that not only that the participants maintained authority and status boundaries, they also seemed to be at ease in communicating with other group members. One explanation for the same could be involvement of GS in working closely with PST. GS were included by the dean so that they could learn about research and also about working at PS. Perhaps, they acted as status spanners between PST and FAC. For instance, in three projects that were not characterized by two-tier collaboration, FAC and PST were working closely with each other and perhaps did not need such boundary spanning. Future research could dig deeper into how status differences could be dealt in way that they facilitate inter-professional collaboration.

Finally, there has been an increased interest in understanding how boundary spanners and brokers broker (see Halevy et al., 2019 for a review). This research typically points to the role of boundary spanner in changing or initiating relationship between two actors. Our study contributes to this research by providing an alternate view of how brokering may happen. We found that the actor (i.e., FAC) worked with the boundary spanner (GS) in setting up two-tier collaboration whereby GS was a broker for day to day work. Future research could consider the role actor may play in actively shaping brokering activities.

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FIGURE 1
DATA STRUCTURE: DESIGN AND IMPLEMENTATION OF INTER-PROFESSIONAL COLLABRATIVE CHANGE

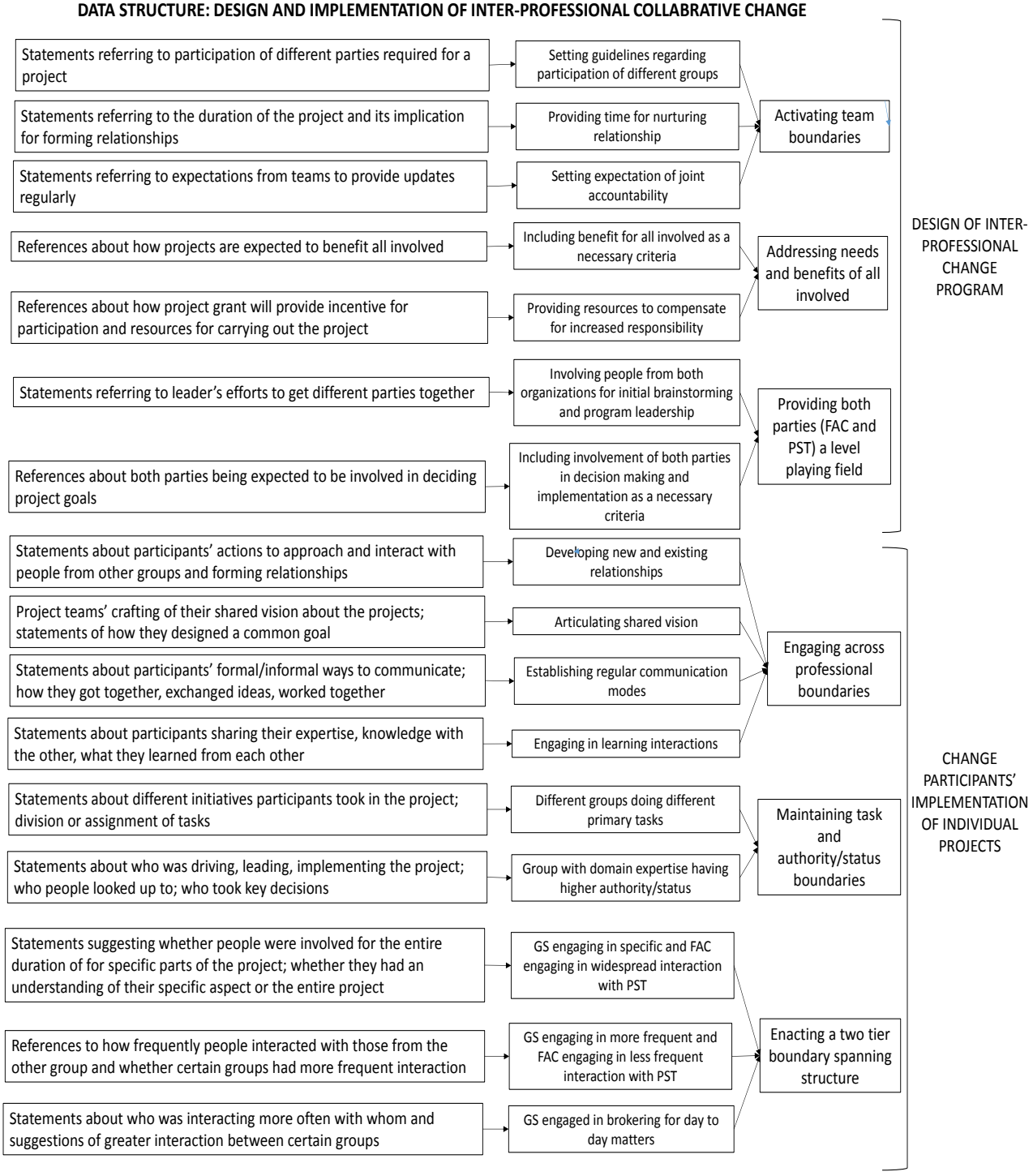

FIGURE 2
Design and implementation of inter-professional collaborative change initiative

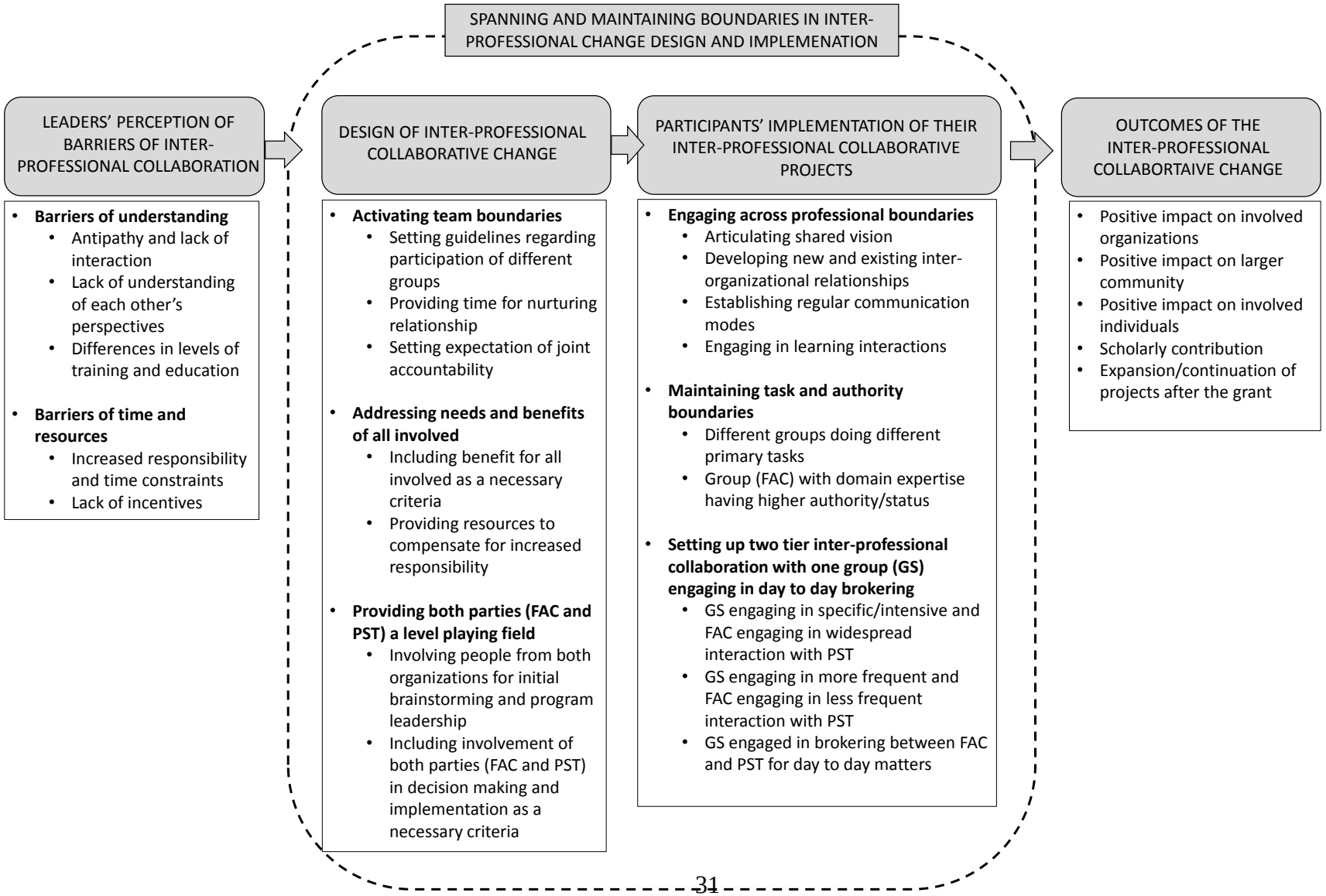

Table 1
Archival data

- Communications with the funder
- Change program proposal sent to the funder – includes history of the organization, description of the change initiative, process and criteria of selection of projects, budget, evaluation criteria and deliverables
- Dean's letters to the faculty of SOE
- Initial change program document with goals of the program, guidelines and process of submitting proposals, and criterial for evaluating proposals
- Summary of proposal activity
- Planning grant application form
- Planning goals for SOE-PS partnership
- SOE-PS partnership mission vision, and goals
- Change program budget narrative
- Project proposals of all 14 projects

Table 2
Interviews

- Founding dean: 1
- Current dean: 1
- Funder: 1
- Advisory committee: 4
- Financial coordinator of the program: 1
- SOE faculty who were the principal investigators (FAC): 15
- PS teachers who collaborated on the projects: 18
- SOE graduate students who collaborated on the projects: 24
- Consultant to the project: 1
- SOE faculty who did not participate in the change program: 5

TABLE 3
Participants' implementation of their projects: Engaging across professional boundaries

Articulating shared vision	The specific goals of this proposal are to partner School of Education faculty and students in counseling psychology and teacher education and administrators, teachers and parent representatives from each of the culturally and socioeconomically diverse elementary schools, as well as agencies, such as the YMCA. Partners will collaborate in efforts to apply the curriculum to the local setting in a culturally sensitive manner and to the processes of formative and summative evaluation. The evaluation data will be used to tailor the intervention in order to maximize the academic and psychosocial/behavioral development of students. (Project proposal) Our project is intended to enhance all students' recognition of the critical connection between school and work. The goals of our project are in accord with the goals of the public school…Specifically, we seek to strengthen students' connection to their education in order to help them develop high levels of academic skills. The intervention will be integrated into a required ninth grade class when students are at a high risk for dropping out of school. (Project proposal)
Developing new and existing relationships	Well it was basically coming in and initially establishing a relationship with the teacher and talking about the different things that we were going to do with doing some professional development individually with the teachers that we were working with. (GS) We already had a relationship with the school. And so we approached the school and said would you be interested in doing this. (FAC) The project was already being developed in a sense with BC faculty and the schools. Plus, some of the other projects where the initial piece might have been developed as part of the grant, and the work was being done to develop it. (FAC) What happened was that the principal of the school asked me to come and do some professional development …. And then over the course of that semester while working in the school, it occurred to me that a lot of really interesting things are going on and the administrator wanted (me to do) research and do some actions around some focal areas. So, that was how I decided to apply for the grant. (FAC) Liz (the co-principal investigator) and I are excited about it. We believe in it. The mentors, once they went onsite, they loved it. They would talk it up. The teachers loved it. As a result of that -- we've even gone into elementary schools and gotten some of those arts and sciences professors involved in working with elementary school teachers to develop this love of literature -- to develop this pedagogy. I mean it's kind of exciting. (FAC)

Establishing regular communication modes	We, of course, had regular meetings with Dr. Smith who was the principal investigator, where we would plan and keep track of all facets of the project. I also worked with other doctoral students both collecting data, developing tasks, and analyzing data. With the PS teachers, we had, I would say monthly at least -- monthly meetings between myself, the principal investigator. (GS) We were working with the science specialist at Garfield. We would come in to the fifth grade science class, which met twice a week for a half an hour. (GS) She's just a wonderful person and was really onboard, and we all had e-mail exchanges. I would think nothing of e-mailing Renee (the PS principal) or e-mailing any of the teachers who were very good about e-mailing us back so if we ever needed more information, or we had a question about something, or we needed copies of the curriculum for them. (FAC)
Engaging in learning interactions	So, it was wonderful because we got to learn that the ideologies were different, that the way we operated was very different. It also showed us that on the other side of the fence, things are done a little bit differently that might help us and vice versa.(FAC) When we had these findings, we went to the school. We were talking to (the teachers) about the data -- how it would be collected. They were very instrumental in helping us revise some of the methods for the basic research. So, they had a real contribution there. (FAC) I met some wonderful graduate students and wonderful PhD students who were also working with Professor Lucy Barnes (the FAC) so I learned from them. I helped them and I learned from them so it was mutually supportive. I learned certain skills from them, but I also learned about just what graduate school is and how I can get into graduate school. I learned a lot from Professor Lucy Barnes. She structured certain learning activities for me that were helpful toward the project, just certain things I could help with but they were great opportunities for me and I'll always be appreciative for that. (PST) (The FAC) used the expertise of teachers to deal with kids on an everyday basis in a classroom. So, she used them sort of as a guide and create the tool, the evaluation design and all of it as a whole. So, we would get together. We would try different things. … We'd modify them. We'd talk about what the next step would be…and they had props, and they would create those and come together and just give different input. (PST)

TABLE 4
Participants' implementation of their projects: Maintaining Task and Authority Boundaries

Different groups doing different primary tasks	We meet once a week, sometimes twice a week, with the principal investigator (FAC). In the classrooms, we observed, and we were also participant observers. We talked with the teachers about what's going on, and we planned for further units -- or planned for further teaching activities -- things like that. So, we were working somewhat closely with the teachers when we were there. (GS) So we started to give [the teachers] training on shelter English instruction, which is one way of teaching students through English literacy development, but in English. So the last half of the third year of the collaborative, we gave training to teachers, bilingual teachers who knew how to teach in two languages. Now we gave training for them to teach only in English. (GS) Myself and my collaborating teacher would actually sit down and grade those assignments; we would be looking at things like content (GS) We had facilitators in the room, the teachers were also there, and they did a part of the curriculum. So, they were actively involved in the preparation and in the training for implementing the project over. (GS)
Group (FAC) with domain expertise having higher authority/status	We wanted to kind of help to internalize [a particular] connection for the students. So, we developed a very detailed curriculum that we implemented in the schools, and we evaluated it in the schools. And the faculty from the Public Schools and administrators helped us to design the curriculum (FAC) Because I'm a techie. We just really wanted to see, can kids learn science from Lego robotics and videogames? And we wanted to figure out, can we develop a relationship with the school in terms of the science methods course. And it was really because we wanted to make the methods course better. (FAC) (The FAC) works with the health educators, and she heads up the whole data collection with us. So, if we need any help with implementing lessons, one of her graduate students kind of works with us and helps us do that. (PST)

TABLE 5
Participants' implementation of their projects: Setting up two tier inter-professional collaboration with one group (GS) engaging in day to day brokering

GS engaging in relatively specific/intensive and FAC engaging in relatively widespread interaction with PST	I usually had one or two doctoral students, and all three years, I had at least one from Brazil. The first year, I had one, but then she graduated, and the second and third year, I had another. I think that's the way it divided. And then I had another student who was part of the time associated with this project (FAC) My experience was sort of isolated to my four sites of the high school (the PS GS worked at) and ore specifically to my classroom where I was actually receiving my practicums. (GS) I was only a part of the project from January to the end of the school year, which was May. So, over the course of a couple of months. Before I was on the project, there was another student who was also receiving her practicum experience. (GS) Each year was a different grad student. That student also worked with me as a grad assistant. (FAC) We actually were in the schools two or three days a week. It was a very intensive experience. (GS) We would have meetings once a month. Now I'm referring to the portion of the project that I've been involved in because obviously they've maybe done other things in the previous years but this year what I've been involved in is we've had meetings every Saturday (GS)
GS engaging in relatively more frequent and FAC engaging in relatively less frequent interaction with PST	We were there a long period of times in the schools. So we would go to the schools very regularly in terms of conducting observations and talking to teachers. Then FAC would come - it would be like every two weeks or every three weeks or every month, and she would meet with the two research assistants plus the teachers, there would be more formal professional activities.(GS) (GS) spent like 15 hours or 12 hours at the PS. They worked two days a week. I only had one grad student at a time over there. They went two days a week, and we had a great big book card -- in an elevator, and they went around to the classrooms, and children could exchange their books once a week. (FAC) It was me working individually with the classroom teachers. So it was really pretty much just me, my schedule and the classroom teachers' schedule. (GS)

	The doctoral students--there is two here that are here almost all the time. Well not all the time but they are here very often. They have become part of our community. I actually work really, really closely with one of the doctoral students who has become kind of like a star here. He has really been able to make incredible connections with students and with faculty. So he attends our staff meetings, comes to some of our common planning times. (PST)
GS engaged in brokering between the other two groups (FAC, PST) for day to day matters	The principals actually were very important because that got the buy-in at the school level. And then the graduate student that was hired on the project did all the day-to-day details - we would have to run professional development sessions for the teachers, and so she would run that. So she would be in the classroom to implement the projects working alongside the teachers. (FAC) We would have regular meetings with the principals to let them know what we were up to, what was going on, and then the graduate students would set up times to implement the projects in the classrooms and then run the professional development workshops for the teachers. (FAC) FAC works with the health educators, and she heads up the whole data collection with us. So, if we need any help with implementing lessons, one of her graduate students kind of works with us and helps us do that. (PST) I'm (at PS) a lot so that if people need to bring up an issue that we can talk during the break. So, this grant has allowed me to spend time there. So, meetings are not usually formal. (GS)

TABLE 6
Implications of the inter-organizational change program

Benefits for the participants	It had a professional impact on me in terms of having being able to implement my ideas …in [my] book for program change. (FAC) I met some wonderful graduate students and wonderful PhD students who were also working with the FAC so I learned from them. I helped them and I learned from them so it was mutually supportive. (PST) It has assisted me in my professional development in how I work and interact with (our other) teachers to support (our) learning. It has helped me in looking at action research in moving forward the academic goals and the curriculum for the school. (PST) My project was a very positive experience, and I learned a lot. As a doctoral student, my role was very much involved – I was collecting data and being in those schools. It was just a very good learning experience for me as a doctoral student. (GS) My project is supportive. I felt very supported as a teacher in an urban school district. I felt like there was a large amount of support provided from the FAC as well as from the other members that were participating in the group. And by support, I mean we talked about some issues that were happening in the classroom and able to get feedback and advice, and people were able to share their experience. (FAC)
Benefits for involved organizations and community	(The JPP program) speaks to our teacher education themes and our overarching theme is one of teaching for social justice. And we don't just talk about it. We actually do things. And the schools that we work with tell me that they see the difference and that our students are more prepared and committed than some others, and they value that. (FAC) The project was a great way to build teacher proficiency and teacher knowledge about developmental milestones and developmental psychology and to then apply that back into their teaching practice. (PST) Many students, probably who would have maybe chosen to drop out of high school, didn't. Huge impact, huge. The students learned through that program that some barriers that they thought they would have, they would be way out, that there were opportunities there for them, that they learned there were resources for them, that there were adults that they could go to. Huge impact. (PST) It's given me more confidence in articulating what our vision for our school is, in terms of having a second language program. I think we no longer find that we have parents, who come in and say what about the English? That may have happened anyway but I that it was helped by this project for us to be able to articulate what the benefits of a second language are. (PST)

TABLE 7
Mean Scores of the groups on ratings of the intended outcomes of the JPP

Outcome	FAC (SOE faculty)	GS (SOE students)	PST (PS teachers)	Total
Fostered curriculum improvement in SOE	3.86	4.00	(N/A)	3.92
Fostered curriculum improvement in the school you worked with	4.36	4.20	4.23	4.26
Generated new knowledge about teaching and learning	4.31	4.52	4.27	4.39
Enhanced the relationship between SOE and partner school	4.66	4.63	4.10	4.49
Resulted in systemic change in partner school	3.67	3.97	3.71	3.79
Enhanced team members' professional knowledge	4.59	4.76	4.37	4.61

(1=poor; 5=excellent)