Exploring the Impact of Collaboration on Native Student Outcomes in New Mexico and Oklahoma Public Schools

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Abstract

Policy networks support an exchange of information, ideas, and resources that is critical to successful policy implementation in the 21st century. Such multi-organizational arrangements accompany expectations that collaboration will lead to improved policy outcomes and organizational performance that would not otherwise be possible in more hierarchical settings. However, our knowledge of how collaborative partnerships contribute to actual outcomes remains limited. The following study explores how collaboration between public school officials and stakeholders in the external environment impacts both actual and perceived improvements in organizational performance. Using data from a survey of 150 Indian education officials in New Mexico and Oklahoma combined with secondary data from the National Center for Education Statistics (NCES), I explore the relationship between collaboration and improved native student retention and graduation rates in public schools. This research makes meaningful contributions to our understanding of the impacts of collaboration, and the degree to which the exchange of information and resources contributes to more positive outcomes in public education.

Exploring the Impact of Collaboration on Native Student Outcomes in New Mexico and Oklahoma Public Schools

The education of American Indian students in the public school system requires the coordinated effort of officials and actors at multiple levels of government including tribal, local, state, and federal. With more than 90% of American Indian students served in public schools in the United States, the strength of these relationships are argued to be critical in meeting the unique needs of Native students (Demmert 2001; Lomawaima and McCarty 2006; Freemen and Fox 2005). Unfortunately, of these students less than half will graduate and continue on to college compared to 76.2% of white students, with American Indians falling well below national averages on a number of factors including proficiency, student retention, and graduation in the public school system (EPE 2007). In fact, according to a recent study by the National Center for Education Statistics (NCES), American Indian children attending public schools experienced higher dropout rates and lower rates of college preparedness than any other race or ethnic group in the country, with some referring to the current state of Indian education as a "quiet crisis" in the education system (U.S. Commission on Civil Rights 2003; Freeman and Fox 2005). Scholars and practitioners suggest that stronger partnerships and improved collaboration between tribes and local schools can have a positive impact on Native student outcomes, and enhance the quality of Indian education programs that help Native students succeed (DeVoe and Darling-Churchill 2008).

However, we know very little about what these relationships look like between tribes and public schools in the United States, and what impact partnerships may have on Native student success. Literature suggests that policy networks support an exchange of information, ideas, and resources that is critical to successful policy implementation in the 21st century. Such multi-organizational arrangements accompany expectations that collaboration will lead to improved

policy outcomes and organizational performance that would not otherwise be possible in more hierarchical settings. Impacts attributable to collaboration can manifest in a number of both direct and indirect ways that students of collaborative management continue to try and understand.

The following paper builds upon this work and explores the direct and indirect impacts of collaborative partnerships between tribes and public schools in New Mexico and Oklahoma, two of the largest states in the nation with regards to Native student enrollment in public schools. Using a unique survey of Indian education directors in public school districts, I examine how tribal-local partnerships impact perceived improvements in Native student success as well as other more indirect consequences of collaboration such as building trust and joint-problem solving capacities. The paper is divided into several parts. The first section surveys the existing literature on Native student success and the expected outcomes of collaborative arrangements including challenges associated with measurement in this area. The next section introduces the data and methods followed by a discussion of the results assessing the impact of collaboration across a number of measures of performance in Indian education. The manuscript concludes with a discussion of the larger implications of the analysis in advancing our understanding of collaboration and impacts on policy outcomes.

The State of Indian Education in Public Schools

Numerous studies have highlighted the challenges that face primary and secondary schools with regards to Indian education and Native student success (U.S. Commission on Civil Rights 2003; Freemen and Fox 2005; Lomawaima and McCarty 2006). To say that the performance of our nation's K-12 schools for Native students is in a state of disrepair is perhaps an understatement. As previously mentioned, performance and persistence rates are the lowest

among Native American students compared to all other populations in the public school system. Reports suggest that American Indian students are 237 percent more likely to drop out of school by their senior year in secondary education and 207 percent more likely to be expelled as compared to Caucasian students (National Caucus of Native American State Legislators (NCNASL) 2008). In fact, according to a study by Education Trust (2001), out of every 100 American Indian kindergartners in public schools, only 71 will graduate from high school compared to 94 of white kindergartners. Furthermore, only 30 American Indian kindergartners will complete at least some college and 7 will attain a bachelor's degree.

Native American students also fall behind non-Native students on various other indicators important to national assessments of student performance including reading and math proficiency that can have a direct impact on college readiness. Figure 1 shows the average scores by race on the National Assessment of Educational Progress (NAEP) tests in public schools, which has long been considered the standard for assessing large-scale educational progress in the United States. The average scores reported for 2007 demonstrate the rather substantial achievement gap that exists between Native and non-Native students who perform well below national averages on both reading and math.

[Figure 1 about here]

In 2007, the average score for American Indian/Alaskan Native students in grade eight reading on the NAEP according to Figure 1 was 248 compared to a national average for non-Native students of 263. A similar gap can be seen with regards to scores on math proficiency with a difference of 18 points between Native American and all other eighth graders in public schools. Such achievement gaps can have a substantial impact on the readiness of Native

American students for higher education and the ability to pursue opportunities for rewarding careers.

A number of factors contribute to this achievement gap including the grinding effects of poverty that persist in many Native communities, low self-esteem among Native students in educational environments that lack cultural relevancy, and other social and individual factors that serve as barriers to success (Freeman and Fox 2005). One of the primary contributing factors discussed at length in the literature is the fact that American Indian and Alaskan Native students are simply not prepared to learn when they walk through the doors of their school (NCNASL 2008). In addition, poor economic conditions, lack of adequate health care, and other factors in many Native communities create challenges that contribute to these disparities in the education system.

Closing this achievement gap and improving Indian education and Native student success is of key importance to federal, state, and tribal officials as 9 in 10 Native American students are enrolled in public schools across the nation. Scholars and practitioners have referred to such distressing conditions and widening achievement gaps between Native and non-Native students as a "quiet crisis" in the public school system (U.S. Commission on Civil Rights 2003). With a majority of Native students enrolled in public schools, it is important for school districts to find new and innovative ways to meet the unique cultural and academic needs of Native students. Many argue that greater collaboration between tribes and public schools can have a positive impact on Native student success and overall academic achievement. More specifically, tribal-school partnerships can help local education agencies improve the overall educational experience of Native students through the joint creation of language and other cultural enrichment programs that stand to benefit all children in primary and secondary education.

The federal government has responded to this need for greater involvement from members of tribal communities through the creation of various federal grants. Such policies include the Johnson O'Malley (JOM) Act of 1934 and the Indian Self-Determination and Education Assistance Act of 1975. Grant programs under each of these laws provide financial assistance to states and local school districts to subsidize the costs of educating Native students and supporting the development of various cultural programs. More importantly, however, these grants include mechanisms that encourage collaboration and coordination of efforts between state public school districts and Indian nations with the expectation that joint-problem solving and representation of the Native community will lead to positive impacts on Native student success (NCAI 2007; Sharpes 1979). Schools that receive Indian education grants are expected to actively involve members of the Native community in decisions concerning Indian education in the district, which varies substantially across school districts. However, our understanding of how greater collaboration between tribes and public school districts translates into actual outcomes in Indian education policy remains greatly limited. A rich body of literature has explored the impacts of collaboration in public administration that suggest some possible avenues to explore with regards to Native student success.

Understanding the Outcomes of Collaboration

In the past decade, students of collaborative governance and networks have thrown down the gauntlet and issued calls for greater attention paid to understanding the outcomes of collaborative arrangements (Innes and Booher 1999; Gray 2000; O'Leary and Bingham 2009; Koontz and Thomas 2006; Thompson, Perry, and Miller 2008). These calls are premised on the belief that collaborative network structures can lead to outcomes that would not happen in hierarchical settings (Agranoff and McGuire 2001). Furthermore, Rogers and Weber (2010),

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argue that, "we need to think harder about, and pay more attention to the kinds of outcomes being produced, or not produced, by such new governance efforts" (546).

Several scholars have answered this call, demonstrating the complexity involved in linking collaborative processes to actual outcomes (Gray 2000; Kettl 2002; Meier and O'Toole 2003; Nicholson-Crotty, Theobald, & Nicholson-Crotty, 2006; Thomson et al. 2008). The biggest questions from these efforts are how we should measure outcomes and what outcomes should be measured? Given the complexity of the policy problems networks are intended to solve that cannot be solved easily by a single organization (Leach & Sabatier, 2005), it should come as no surprise that such difficulties exist with regards to what outcomes should be considered in an evaluation of the benefits attributable to collaboration (Ingraham, 2005; Nicholson-Crotty, Theobald, & Nicholson-Crotty, 2006). Bardach (1998) argues that we should focus on the idea of added "public value" in collaborative arrangements, which is a product of making use of each participant's strengths while also attempting overcome inherent weaknesses that help to collectively achieve goals. However, Bardach (1998) does not provide a clear path for demonstrating if and under what conditions impacts on "public value" can be expected or how best to measure gains from cross-sector collaboration.

Others have focused on direct substantive impacts of collaboration on policy outcomes, which might include a focus on improved environmental quality (Emerson 2009), arrest rates in law enforcement (Nicholson-Crotty and O'Toole 2005), or student achievement (Hicklin, O'Toole, Meier 2008) which is directly relevant to expected impacts of collaboration in Indian education. Perhaps most referenced for its contribution to understanding the substantive impacts of collaborative governance is the work of Meier and O'Toole (2001; 2003; 2005) who focus on the impact of networking behavior on student success in Texas public school districts. Meier and

O'Toole (2003) find evidence to suggest that network governance and collaborative public management has a positive effect on student test scores. In this instance, networking behavior is shown to increase the impact of resources and reduce the influence of constraints on organizations, helping them achieve goals more effectively and efficiently than they would alone (Meier and O'Toole 2003).

Studies in the education literature have explored similar effects with regards to community and parent involvement (Fan 2001; Gordon and Louis 2009; Jeynes 2003; 2007). These studies suggest mixed results regarding the influence of such groups as parent committees on program decisions and outcomes in public schools, with some viewing the involvement of these individuals as merely symbolic while others find meaningful impacts in other areas such as improved decision making processes and overall capacity (Gordon and Louis 2009). Scholars in these areas call for more systematic research on the effectiveness of community partnerships using large n approaches to identify important causal relationships.

However, more recent work suggests that a focus on only direct substantive impacts of collaboration, such as improved water quality or declining dropout rates in public schools, misses the larger picture in determining the effectiveness of collaborative arrangements that can lead to incomplete evaluations of their success (Gray 2000; Kettl 2002; Thomson et al. 2008; Rogers and Weber 2010). Rogers and Weber (2010) argue that scholars should cast a wider net with regards to how they evaluate the performance of networks. The authors suggest a stronger focus on the way partnerships can help improve the capacity of actors to solve difficult problems and the development and application of innovative strategies to collective decision making. Furthermore, Bingham et al. (2003) warn against labeling any collaborative arrangement a "success or failure" without properly evaluating the full range of possible outcomes which may

include more subtle qualities such as improved trust and decline of conflict among stakeholders. Building from these concerns, scholars have distinguished between two types of collaborative effects including "process" outcomes which Gray (2000) describes as the improved functions of a multi-organizational arrangement such as getting semi-autonomous actors to make jointly agreed upon and binding decisions (see also Thomson et al. 2006), and "social" outcomes which include such positive effects on network participants as improved social capital, creation of shared meaning, and increased trust among participants (Leach & Sabatier 2005; Lubell and Fulton 2008). Both sets of outcomes are argued to be at the very core of any effective network.

Along similar lines, Innes and Booher (1999) distinguish between three types of possible outcomes of collaborative governance including first-, second-, and third-order effects that has been especially influential in the literature on collaborative outcomes. Innes and Booher (1999) describe first-order effects as those that are immediate and clearly a result of the partnership which might include the creation of social, political, and intellectual capital, high quality agreements, and other innovative strategies to solving problems. Elusive "second- and third-order consequences" as Innes and Booher (1999) refer to them are those effects that consist of new norms of interaction, relationships, and practices that develop over a longer period of time and are more indirect in nature. Second- and third-order effects include outgrowths of collaboration that extend beyond substantive impacts such as joint learning, collective problem solving and greater problem solving capacity, stronger and more stable partnerships, increased trust among participants, and changes in perceptions (Bryson et al. 2006). These "higher order" consequences of collaboration can be just as important as direct impacts on policy outcomes as they provide the foundation for long term growth and innovation within a collaborative network of actors (Kettl 2002; Koontz and Thomas 2006).

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While this debate continues, scholars have made considerable progress in untangling and exploring how collaborative governance contributes to improved outcomes in a number of ways that capture both direct and indirect effects. However, while considerable work has outlined the numerous types of outcomes that may emerge from collaborative arrangements, little research has systematically explored which appear to be most influenced by actual interactions with external stakeholders. In the following section, I consider the impact of such interactions on outcomes spanning both substantive policy outcomes and social/process-oriented effects based on the perceptions of Indian education directors in New Mexico and Oklahoma public schools. I explore what perceived impacts of collaboration appear to be present with regards to tribal-school partnerships, and how collaborative behavior influences these perceptions. I investigate not only direct measures of performance such as Native student success, but also on second- and third-order effects of collaboration including trust, mutual understanding, and cross-cultural learning that act as the more indirect ways tribal-local partnerships add "public value." I expect that more frequent interactions with these particular stakeholders will positively influence perceptions equally across all types of potential impacts.

Data

To test the impact of collaboration on perceptual outcomes, I use data from an original mail survey of 428 Indian education directors in New Mexico and Oklahoma public schools. Indian education directors were selected for the following study given their central role in Indian education in the public school system. First, Indian education directors oversee and manage Indian education programs in public school districts receiving federal Indian Education Improvement formula grants under Title VII of the Elementary and Secondary Education Act of 1965 (Wilkins and Stark 2010). Title VII grants not only provide financial support to public

school districts serving large numbers of Native students, but also accompany expectations that public schools will actively collaborate and build relationships with surrounding Indian nations. Indian education directors represent the school district in its relationship with Native communities, and play a pivotal role in building and maintaining partnerships with tribes as expected under federal Indian education grants. Thus, Indian education directors are among the most knowledgeable and active participants in the public school system with regards to managing tribal-school partnerships.

Only public school districts in New Mexico and Oklahoma receiving federal Indian education grants under Title VII were included in the following analysis. Charter, private, and tribally controlled schools have been excluded from the analysis given the focus on public school districts. Furthermore, the study only includes public school districts in New Mexico and Oklahoma that receive federal grants for Indian education programs given that these services accompany expectations that schools will actively involve and partner with tribes on decisions concerning Indian education. This comprises 428 of the 626 public school districts in the two states. Of these 428, 32 districts are in New Mexico and 396 reside in Oklahoma.

The mail survey was conducted in two waves, the first in May 2011 and the second in January 2012.[1] Of the 428 directors surveyed, a total of 150 responded representing approximately 35% of the entire population. Directors were asked a battery of questions related to the perceived quality of relationships between public school districts and tribes, the frequency of interaction with external stakeholders, and questions concerning each director's individual background and attitudes towards tribal involvement in decision making. A test of response bias

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[1] Participants were chosen from the U.S. Department of Education Grant Awards Database (http://wdcrobcolp01.ed.gov/CFAPPS/grantaward/start.cfm) that provides a list of all school districts receiving federal funds for Indian education programs (Title VII), the name of each district's Indian education director, and contact information.

was conducted by comparing public school districts that did participate in the project to those that did not on a number of dimensions including student and financial characteristics. Upon conducting a difference of means test, no significant differences were found between respondents and non-respondents.

Survey responses were then paired with secondary data collected from a number of sources for each school district in the dataset for the 2008-09 school year. Enrollment data and financial characteristics for each school district were drawn from the U.S. Department of Education's Elementary/Secondary Information System database (USDE 2011). Community characteristics, including poverty within each district, were collected from the New Mexico Public Education Department (NMPED) website as well as the Office of Accountability in Oklahoma.

Measuring outcomes of collaborative governance are both numerous and diverse which present unique challenges in capturing the full scope of effects. I use eleven measures of potential outcomes of collaboration as shown in Table 1. Respondents were asked to indicate their level of agreement with several statements related to perceived impacts of partnerships with surrounding tribal communities ranging from 1 (strongly disagree) to 7 (strongly agree). These perceptual measures included the impact of collaboration with tribes on the ability of public schools to meet the academic and cultural needs of Native students, improving and strengthening Indian education programs, building trust and strengthening partnerships with Native stakeholders, and promoting joint problem solving and cross-cultural learning between tribes and schools. This eclectic set of measures are designed to capture both the direct substantive impacts on policy outcomes discussed at length in the literature as well as social and process-oriented effects as represented by trust and comprehensive problem solving capacity.

[Insert Table 1 here]

The analysis proceeds in essentially three steps. First, I begin by exploring where Indian education directors perceive the greatest returns or benefits of collaboration with Indian communities, followed by an exploration of how these attitudes are structured (or not structured) that may reveal important insight into the way that public officials categorize expected returns on large investments in tribal-school partnerships. The final step in the analysis investigates how collaborative behavior influences the perception of Indian education directors concerning outcomes, comparing both direct substantive impacts and second-and third-order consequences of collaboration.

Step 1: Perceived Outcomes of Collaboration

In what areas of Indian education do directors perceive the greatest impacts of collaboration with Indian nations? Figure 2 shows the mean responses on each of the eleven perceptual measures of collaborative outcomes. Overall, attitudes towards the value added of tribal-school partnerships tend to be positive while there are several notable differences that emerge across types of outcomes. As demonstrated by the graph, the greatest perceived impact of collaboration with tribes appears to be with regards to improving Indian education programs in public schools, an example of a more direct substantive impact. This is not surprising when considering the literature on Indian education that stresses the importance of tribal-school partnerships in strengthening academic and cultural programs that serve as the primary building blocks to improving Native student achievement in public schools (Fan 2001; Gordon and Louis 2009; Lomawaima and McCarty 2002).

[Figure 2 about here]

Along similar lines, the perceived benefits of collaboration between tribes and public schools appears to be most promising with regards to building a strong cultural environment for Native students which is also consistent with the literature on Indian education that stresses the need for greater cultural integration in public schools (Shotton 2007). In fact, when examining the distribution of responses, approximately 40% of respondents said they agreed or strongly agreed that partnerships with surrounding tribes improved their ability to meet the unique cultural needs of Native American students served in the district. Indian education directors' also ranked educational development (5.03), improved stakeholder partnerships (4.99), and, to a lesser extent, the improved ability to meet the academic needs of Native children (as opposed to cultural needs) relatively high with regards to perceived outcomes of collaborative arrangements. It should be noted that all but one of these measures reflect more substantive impacts on policy outcomes discussed in the literature (Ingraham, 2005; Nicholson-Crotty, Theobald, & Nicholson-Crotty, 2006).

However, such elements of collaborative outcomes as improved program implementation (4.91), trust between school officials and tribes (4.88), improved teacher performance in working with Native students in the classroom (4.86), and ability to serve the broader Native community (4.78), while still slightly more positive, ranked lower than most other items. Perhaps unexpectedly, the perceived ability of intergovernmental collaboration to promote cross-cultural learning (4.49) and joint-problem solving between tribes and public schools (4.49) appeared to receive the least support among Indian education directors, suggesting the presence of greater barriers to achieving this particular set of outcomes.

Step 2: Mapping the Dimensions of Collaborative Outcomes

The previous section presented descriptive statistics demonstrating where Indian education directors perceive the greatest impacts of collaboration on Indian education and partnerships that suggested some structure to the way public officials think about collaborative outcomes. There are several potential ways that respondents may think about the impacts of collaboration. First, we might expect that respondents think about the impacts of collaboration along a single dimension, with impacts ranging from student achievement to problem solving being treated as a similar issue. On the other hand, it might also be the case that public schools officials, Indian education directors in particular, may perceive improvements attributable to partnerships with tribes in a more sophisticated fashion that may reveal multiple dimensions of collaboration more along the lines of first-, second-, and third-order effects as discussed in the literature (Innes and Booher 1999; Leach & Sabatier, 2005; Lubell, 2005). It is also possible that Indian education directors have little structure at all with regards to how they perceive impacts of partnerships, with responses largely random in nature.

To explore this issue further, I use factor analysis to investigate how many dimensions (factors) emerge in perceived outcomes. Two factors emerge with eigenvalues above 4.0. As captured in Figure 3 which plots the loadings of the 11 survey items using principal-component analysis with varimax rotation, it is clear that perceived outcomes of collaboration fall rather cleanly on one factor related to student achievement and Indian education programs (i.e. substantive effects and policy outcomes), and another representing more process oriented and social outcomes of collaboration (i.e. second- and third- order effects). As demonstrated by the graph, collaborative outcomes related to meeting the cultural and academic needs of Native students, improving education development, and the implementation of Indian education

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programs load relatively high on factor 1 as represented by the x-axis, while questions related to more indirect impacts of collaboration, or second- and third-order effects, load fairly well on the second factor as represented by the y-axis. Three outcome measures related to improving teacher effectiveness, strengthened programs, and the ability to serve the broader Native community did not load neatly on any of the factors suggesting that these particular variables capture somewhat distinct and unrelated concepts.

[Insert Figure 3 about here]

These two dimensions of outcomes follow directly with categories of collaborative impacts found in the literature concerning first-, second-, and third-order effects (Innes and Booher 1999; Gray 2000; Leach & Sabatier, 2005; Lubell, 2005; Bryson 2006). More importantly, this reveals the sophisticated and structured way in which Indian education directors think about and classify the potential outcomes of collaborative partnerships which may have different implications for understanding the impact of collaborative behavior. Using these two dimensions to organize different types of outcomes, the next step in the analysis demonstrates how actual collaborative behavior influences perceptions across these two classes of impacts.

Step 3: Exploring the Impact of Collaboration on Perceived Outcomes

Next, I explore how collaboration influences perceptions of policy and program outcomes discussed in the previous sections. Based on the literature, we might expect that greater interaction with tribal communities will influence perceptions of outcomes in positive ways including improvements in Native student achievement, ability of the school to meet the needs of Native students (both academic and cultural), and greater trust and problem solving capacities among schools and tribes. However, these impacts may differ when considering the various types of outcomes that are suggested to be an important outgrowth of collaborative partnerships

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such as those demonstrated in the factor analysis related to substantive policy outcomes versus process-oriented and social outcomes.

To explore this relationship, I focus on eight measures of collaborative outcomes. Based on those survey items captured in the two dimensions of collaborative effects shown in Figure 3 which include direct substantive impacts (i.e. educational development, ability to meet academic and cultural needs, and program implementation), and indirect effects on more long term values including trust, joint problem solving, stronger partnerships, and cross-cultural learning.[2] The primary independent variable in the analysis is the frequency of interaction with tribal stakeholders as measured on a 0 to 5 scale ranging from no interactions with tribes (0) to weekly (5). While this is a rather blunt instrument with regards to collaboration, it is the most direct measure of behavior that has been widely used in the networking and collaboration literature (i.e. Meier and O'Toole 2003; Hicklin, O'Toole, Meier 2008). Thus, the focus in this final step of the analysis is on collaborative behavior as measured by the frequency of interaction with tribal officials as the primary independent variable of interest in predicting perceived outcomes of tribal-district partnerships.

Several additional control variables are also included in the analysis and summarized in Table 2. First, I include several measures of district level characteristics including student-teacher ratio, percent of students who are American Indian in the district, and whether the district is in a Census defined rural area. I also consider the impact of several individual level characteristics of Indian education directors including age, gender, and the perceived strength of

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[2] The three measures excluded from the final analysis included the impact of collaboration on serving tribal communities, improved effectiveness of teachers in the classroom, and strengthening Indian education programs. Collaboration had a positive and significant impact on two of the three variables at a liberal .10 level of significance.

the district's existing or preexisting relationships with surrounding tribal communities.[3] I use Ordinary Least Squares (OLS) regression to predict perceived outcomes of collaboration across each of the eight dependent variables.

[Table 2 about here]

Table 3 summarizes the results of the analysis concerning the impact of collaboration on perceived policy outcomes and second- and third-order effects. Overall, collaboration has a positive impact on most of the outcome measures, with six of the eight coefficients significant and in the expected direction. However, the overall fit of the models is rather poor and range from an adjusted R-Square of .08 to .20.[4]

[Table 3 about here]

Upon closer inspection, the results in Table 3 reveal several interesting observations. First, there appears to be an important difference in the impact of collaboration across the two dimensions of outcomes. According to Table 3, the impacts of collaboration would appear to be most prominent with regards to actual policy outcomes which include effects related to the educational development of Native students in the public school system, the ability of schools to meet the cultural and academic needs of Native students, and implementation of programs and policy more generally. In fact, all four of the measures related to direct impacts on Indian education in public schools were significant and positive suggesting the particularly strong influence of interactions with tribes on perceived improvements in meeting the needs of Native students. Thus, higher levels of collaboration with surrounding tribes translated to greater

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[3] The latter control variable was included to control for differences across school districts in the strength of existing (and pre-existing) relationships with tribal communities that may have a meaningful and independent effect on perceived outcomes outside of individual collaborative behavior. This survey item asks Indian education directors to grade the performance of their school district with regards to their relationship with surrounding Indian communities.

[4] An omitted variable test reveals little concern for the potential that there are important variables missing from the models.

perceptions of direct substantive policy outcomes as expected. Each of these areas are discussed at length in the Indian education literature as being primary areas where collaboration and partnerships between school officials and tribes are argued to benefit the greatest (Demmert 2001; Lomawaima and McCarty 2006; Freemen and Fox 2005).

However, there appears to be less support for the impact of collaboration on second- and third-order consequences of partnerships. Surprisingly, interaction with tribal stakeholders is significant for only two of the four measures related to process-oriented and social outcomes of tribal-school partnerships suggesting the more limited impact of collaboration on this particular dimension. We see that, according to Table 3, there is a significant and positive relationship between higher levels of self-reported interaction and perceived improvements in the level of trust between the district and surrounding indigenous communities which is consistent with existing literature (Kettl 2002). The results also suggest that greater collaboration leads to perceptions that tribal-school partnerships are growing stronger and more stable, with an increase of .32 for every 1 unit increase in collaborative behavior.

Yet, there appear to be several aspects of process oriented and social outcomes that higher levels of actual engagement with tribes have little effect. For instance, with regards to perceived improvements in comprehensive and joint-problem solving, collaboration appears to have no significant impact on perceptions; a finding that runs contrary to expectations. Furthermore, interactions also have no significant impact on perceptions towards improved cross-cultural learning and mutual understanding between tribes and schools. This naturally begs the question of what could explain such differences in impacts. Overall, it would appear that collaboration is having the greatest effect on actual policy outcomes from the perspective of

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directors, which include improved student achievement and educational development as opposed to more long term social outcomes such as cross-cultural learning and joint-problem solving.

The control variables in the analysis also bear mention. First, there are few control variables that have any appreciable effect on the dependent variables in the analysis.[5] Perhaps the most influential predictor of perceived outcomes in the models other than collaborative behavior is the strength of district relationships with surrounding tribes. Directors were asked to grade their district's relationship with surrounding Native communities on a scale from one representing a failing grade to 9 representing exceptional performance. This self-reported measure is significant and positive in all eight models spanning both direct impacts on the school's ability to meet the academic and cultural needs of Native students, and second- and third- order effects including trust, problem solving, and better partnerships between tribes and schools. In fact, when comparing beta coefficients in each of the models, strength of district relationships has the greatest impact on the more process-oriented and social outcomes of collaboration especially as it relates to both joint-problem solving and promoting cross-cultural learning and mutual understanding between tribes and schools. This finding is consistent with the literature which argues that much of the success of collaborative partnerships is contingent on prior relationships among involved parties and the degree of past conflict or cooperation (Tett, Crowther, and O'Hara 2003). In this instance, it proves to be especially influential in garnering trust and cross-cultural understanding among tribes and school officials.

Other control variables in the analysis also emerge with regards to this second dimension of perceived collaborative outcomes. In particular, district level characteristics such as student/teacher ratio, average experience of teachers in the district, and percent American Indian

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[5] To test for potential multicollinearity in the model I used Variance Inflation Factor (VIF) analysis which revealed no problems in the analysis.

are significant predictors of perceptual outcomes related to trust, strength of partnerships, and comprehensive problem solving abilities.

Conclusion

In summary, collaboration can and does have an impact on perceived policy outcomes associated with the ability of public schools to meet the academic and cultural needs of Native students from the perspective of Indian education directors. There are also perceived improvements to Indian education programs including Title VII and Johnson O'Malley (JOM) that are intended to support the educational development and achievement of Native students. However, on more process-oriented and social outgrowths of collaborative arrangements such as comprehensive problem solving and cross-cultural learning, the presence of more macro level factors such as the strength of relationships between tribes and the school district appear to have a greater impact on perceptions than individual level interactions. This is not meant to undermine the importance of collaboration in leading to real change between networked actors, only that it may have more immediate and observable effects on perceptions concerning direct outcomes involving student achievement and the quality and strength of Indian education programs than more long term effects between actors.

There also appears to be considerable structure to the way in which public managers think about and weigh the different types of outcomes that may be expected from collaboration. These span two dimensions including direct policy outcomes and what Innes and Booher (1999) refer to as second- and third-order effects of collaborative arrangements. More research needs to be done on how these different dimensions of impacts are influenced by different types of network structures and collaborative activities, as well as the different personalities and players involved in collaborative partnerships. Also comparing how perceptual impacts translate to

actual outcomes such as improved retention and graduation rates would be especially revealing

in understanding the perceived benefits of collaboration.

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**Figure 1. 2007 National Assessment of Education Progress on Reading and Math in Grade 8**
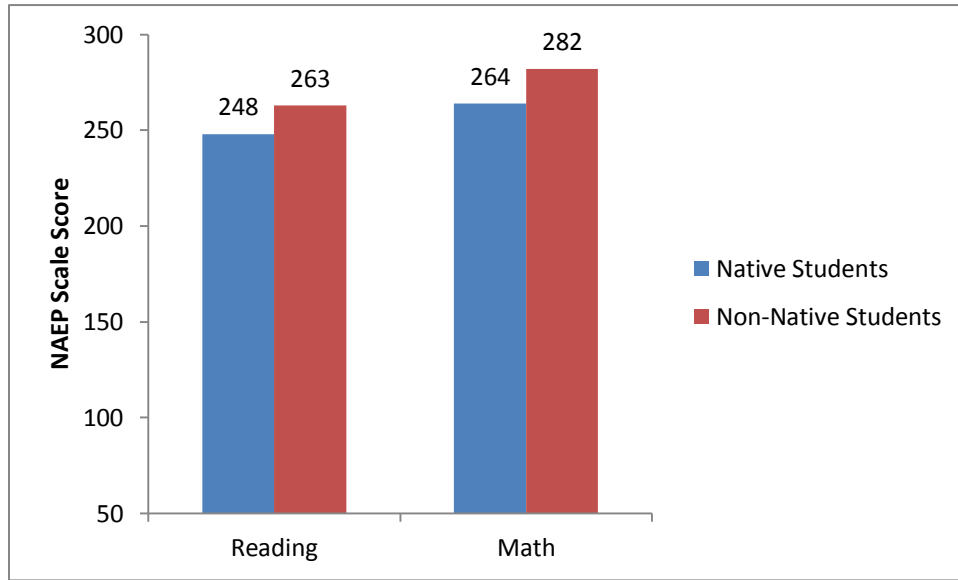

Source: NAEP Data Explorer, 2007.

Table 1. Eleven Collaboration Outcome Variables Operationalized

Outcome	**Question:** *Please indicate your level of agreement with the following statements. In general, current levels of collaboration with the Indian community:*
Educational development	Aid in the school's ability to improve the educational development of Native students. Strongly Disagree Strongly Agree 1 2 3 4 5 6 7
Student cultural needs	Improves the school's ability to meet the unique cultural needs of Native students. Strongly Disagree Strongly Agree 1 2 3 4 5 6 7
Student academic needs	Improves the school's ability to meet the academic needs of Native students. Strongly Disagree Strongly Agree 1 2 3 4 5 6 7
Program implementation	Improve program implementation more generally. Strongly Disagree Strongly Agree 1 2 3 4 5 6 7
Service to community	Improve our ability to serve tribal communities and Indian parents. Strongly Disagree Strongly Agree 1 2 3 4 5 6 7
Trust	Help build trust between school officials and tribes. Strongly Disagree Strongly Agree 1 2 3 4 5 6 7
Partnerships	Strengthen partnerships between tribes and public schools. Strongly Disagree Strongly Agree 1 2 3 4 5 6 7
Indian education programs	Strengthen Indian education programs offered by the school. Strongly Disagree Strongly Agree 1 2 3 4 5 6 7
Teacher effectiveness	Improve teachers' overall performance in regards to working with Native students in the classroom. Strongly Disagree Strongly Agree 1 2 3 4 5 6 7
Joint problem solving	Promote comprehensive and collaborative problem solving with local tribes. Strongly Disagree Strongly Agree 1 2 3 4 5 6 7
Cross-Cultural Learning	Promote cross-cultural learning and understanding between tribes and schools. Strongly Disagree Strongly Agree 1 2 3 4 5 6 7

Figure 2. Mean Differences in Perceived Impacts of Collaboration
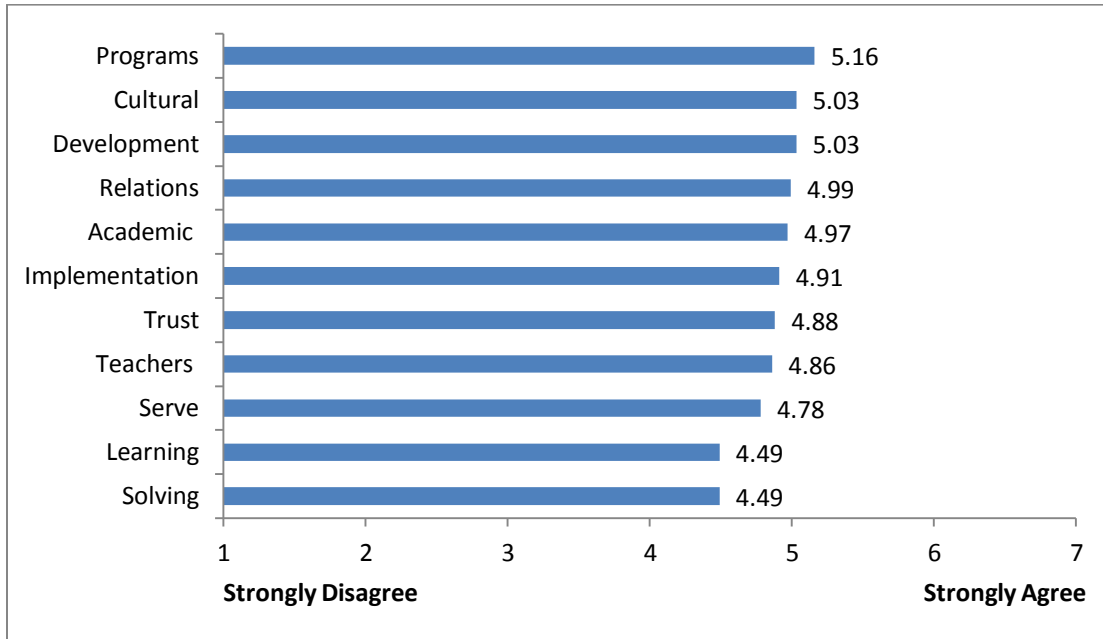
Figure 3. Factor Loadings of Perceptual Impact Measures
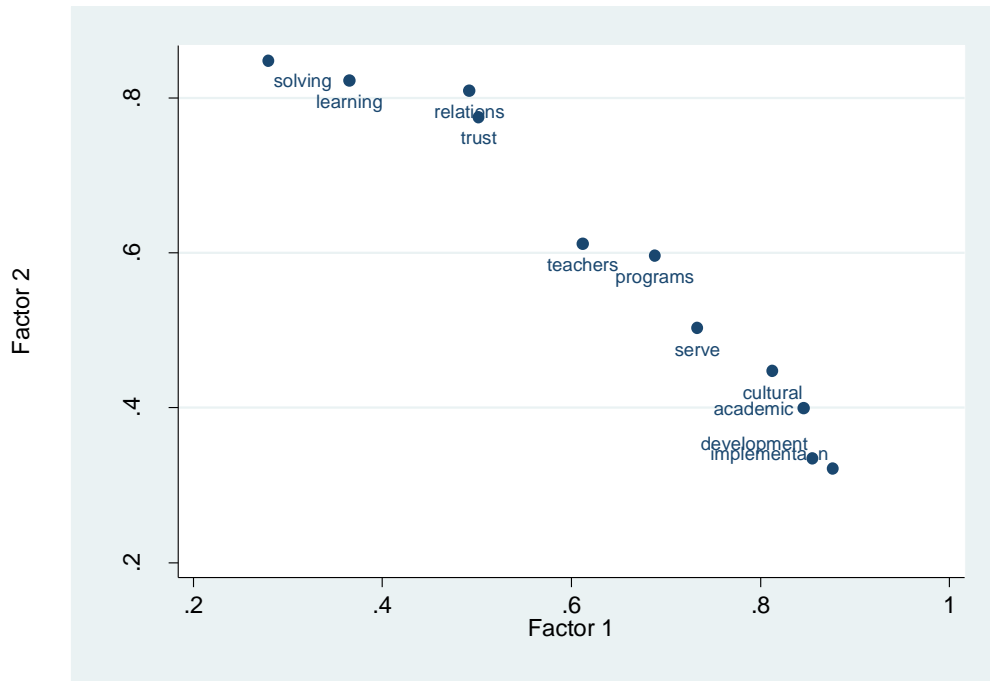
Table 2. Descriptive Statistics for Control Variables Predicting Outcomes

Variables	Mean	Std.	Range
Student-Teacher Ratio	14.40	1.84	8 - 18
Teacher Experience	13.28	2.57	5 - 24
Percent American Indian	34.87	19.91	3 - 91
Rural District	0.69	-	0 - 1
Age	52.75	9.13	31 - 78
Female	0.48	-	0 - 1
Strength of Relationships	7.41	1.54	2 - 9

Table 3. The Impact of Collaboration on Perceptual Outcomes

	Substantive Policy Outcomes				Process-Oriented and Social Outcomes			
	Educational Development	Cultural Needs	Academic Needs	Programs	Trust	Relationships	Problem Solving	Cross-Cultural Learning
Collaboration	0.326***	0.245**	0.272**	0.232*	0.278**	0.316***	0.086	0.179
	(0.11)	(0.11)	(0.12)	(0.12)	(0.12)	(0.11)	(0.12)	(0.12)
Student/Teacher	-0.002	-0.033	-0.034	-0.048	-0.135*	-0.148**	-0.016	-0.025
	(0.07)	(0.07)	(0.08)	(0.08)	(0.07)	(0.07)	(0.08)	(0.08)
Experience	0.047	0.014	0.041	0.029	0.094*	0.090*	0.128**	0.101*
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Percent Indian	-0.005	-0.006	-0.011	-0.008	-0.012*	-0.012*	-0.005	-0.008
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Rural District	-0.099	-0.42	-0.084	-0.161	-0.145	-0.355	-0.056	0.123
	(0.30)	(0.30)	(0.32)	(0.32)	(0.30)	(0.29)	(0.32)	(0.31)
Age	0.011	0.001	0.014	0.018	0.000	-0.005	-0.019	-0.001
	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.02)
Gender	-0.183	-0.223	0.049	-0.195	0.174	0.078	0.115	-0.132
	(0.26)	(0.26)	(0.27)	(0.27)	(0.26)	(0.25)	(0.27)	(0.27)
District Relat.	0.178*	0.234**	0.237**	0.245**	0.304***	0.324***	0.404***	0.403***
	(0.09)	(0.09)	(0.10)	(0.10)	(0.10)	(0.09)	(0.10)	(0.10)
Constant	2.233	3.690**	2.318	2.52	3.275**	3.903**	1.071	0.777
	(1.59)	(1.59)	(1.69)	(1.70)	(1.62)	(1.55)	(1.68)	(1.68)
Observations	122	121	122	121	121	121	121	121
Adjusted R^2	0.09	0.08	0.08	0.08	0.15	0.20	0.14	0.16

* $p < 0.10$, ** $p < 0.05$, *** $p < .01$