

Perceptions of Teacher Leadership within the New Tech High School Model

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This study examines teacher leadership within the framework of a specific school reform model, focusing on an empowered school culture, including teacher involvement in curriculum and instruction, school policy decisions, and professional development activities. Using a concurrent triangulation mixed methods design, data were collected through a teacher survey and teacher and administrator interviews. Findings show that reform implementation affects teachers' perceptions of teacher leadership activities and opportunities.

Background about New Tech

Implementation of the New Tech school model in Indiana started in 2007. This model consists of three key elements. First, New Tech schools utilize a project-based learning instructional approach with an emphasis on technology integration, rigorous projects that are both relevant and address state academic standards, and links to the schools' local community. Second, these schools develop an empowering culture of "trust, respect, and responsibility" whereby students and teachers make meaningful contributions to school policy, administration, and learning. Finally, New Tech schools integrate technology through a one-to-one computing ratio, internet access, and a learning management system which allow all students to be self-directed learners and all teachers to be effective facilitators of learning.

Indiana adoption of the model has taken one of three implementation formats: whole school, autonomous school, or small learning community. Schools that chose to implement the model across their whole school are characteristically smaller high schools with around 400-600 students, often located in rural communities. Autonomous schools typically operate as if they were magnet programs that draw students from across the district to a campus separate from the local high school. These schools are often located in small cities. Small Learning Communities (SLC) are run as magnet programs that are part of a large district high school. They are different from autonomous schools because they share a campus or building with other SLCs, and sometimes have courses outside of their SLC. These are typically located in urban areas. This study examines teachers' perceptions of teacher leadership in all three formats of the New Tech model.

Teacher Leadership and School Reform

The definition of teacher leadership that frames this study is embedded in the survey instrument we utilized for quantitative data collection, the Teacher Leadership Inventory (TLI). The TLI, created by Angelle and Dehart (2010), is a seventeen-statement instrument that measures teachers' perceptions of teacher leadership in their schools. According to Angelle and Dehart (2010), teacher leaders are individuals who share their expertise of content, instruction, and classroom management with their colleagues; who are ready to tackle leadership opportunities and challenges dispersed to them by their principal; and who readily perform activities "beyond the prescribed roles" of a teacher (p. 19). These attributes of teacher leaders are measured on the TLI through the following scales: Shared Expertise, Shared Leadership, and Supra Practitioner. In addition, a fourth scale, Principal Selection, measures the ways that principals control who among teachers participates in leadership activities.

Opportunities for teachers to engage in leadership activities as defined through the TLI are embedded in the New Tech model. As early as two years into New Tech implementation in Indiana, there was evidence that New Tech teachers engaged in school policy development; teacher-led feedback; the use of data and colleague critique to develop rigorous curriculum and engaging instruction; and teacher-led professional development (Bradley-Levine, Romano, & Perkins, 2010). These types of activities produce a professional culture where teachers are fully engaged in the life of the school. Many researchers have linked this kind of professional culture to successful school reform (Creemers, 2002; Herbert & Hatch, 2001; Hopkins & Reynolds, 2001; Potter, Reynolds, & Chapman, 2002). Others have argued that effective school reform, including improved teaching and learning, hinges on full teacher engagement and ownership of the change process (Harris & Jones, 2010; Monroe-Baillargeon & Shema, 2010).

The four TLI scales include items describing specific activities that Angelle and Dehart (2010) identified as the work in which teacher leaders engage. In order for teachers to participate in these types of activities, however, there must be supportive structures in place. Such structures have also been found essential to successful reform. To develop effective reforms that change teacher practices and improve student outcomes, Waldron and McLeskey (2010) found structures that support teacher leadership necessary, including those that develop a collaborative culture among teachers and administrators.

Truly collaborative cultures involve shared decision-making during each step of the reform process (Griffin, 1995; Hulpia, Devos, & Rosseel, 2009; Waldron & McLeskey, 2010). In addition, they require that teachers be involved in all aspects of professional development, including the determination and delivery of topics to be addressed (Waldron & McLeskey, 2010). The establishment of a collaborative culture empowers teachers to share responsibility for the implementation and outcomes of reform (Angelle, 2010; Griffin 1995; Waldron & McLeskey, 2010). It depends on building positive relationships among teachers to improve their sense of empowerment and increase their confidence and job satisfaction (Angelle, 2010; Hulpia, et al., 2009). Finally, collaborative cultures cultivate the development of shared purpose and culminate in an atmosphere where informed risks can be carried out and their effectiveness evaluated (Angelle, 2010).

Research Design

For this study, we utilized a concurrent mixed methods design (Creswell, 2012) where quantitative and qualitative data were collected simultaneously over the course of one academic year. The study was guided by the following research question: How are teachers' perceptions of teacher leadership affected by the context of the New Tech school model?

Quantitative Methods

The online survey we administered included the items from the TLL, as well as profile questions about the teachers' instructional experience and New Tech school implementation type (e.g., whole school, autonomous school, and small learning community). The respondents scored their answers on a scale from 1 to 5, with 1 signifying they "strongly disagree" and 5 indicating that they "strongly agree." All of the teachers who were working at one of the Indiana New Tech schools when the study was conducted were sent an invitation via email to participate in the study by completing the survey. The response rate for the survey was 67.7%; 105 of the New Tech teachers responded out of a possible 155 total Indiana New Tech teachers. Although there were 16 New Tech schools in Indiana when the survey was administered, eight of these were in their first year of implementation, which means they only had 9th grade students. Indiana implementation has typically followed the pattern of adding a grade level each year until the school is fully populated with four grades. Therefore, it takes four years for the school to reach full capacity, which means that about half of the Indiana New Tech schools whose teachers participated in the study had only four or five teachers while others had as many as 20 teachers.

Descriptive profile of survey respondents. Table 1 shows the profile for the survey respondents. Most of the respondents were white (95.2%) and female (58.1%). The largest proportion of respondents had between 11 and 25 years of teaching experience (35.2%), followed by 2 to 5 years (22.9%), and 6 to 10 years (21.9%). A majority of respondents reported only a few years of experience teaching in the New Tech model since there was a larger response rate among teachers at schools in their first and second years of implementation (see Table 1).

Table 2 categorizes respondents by school implementation type. Most of the respondents taught at schools that were in their first year of implementation (36.2%), followed by schools that were in their third year of implementation (30.5%), then schools that were in their second year of implementation (17.1%), and finally schools that were in their fourth year of implementation (16.2%). By implementation type, most respondents teach at whole school implementation sites (53.3%), followed by small learning community implementation sites (27.6%) and then autonomous implementation sites (19.0%). By locale, most respondents teach at schools in rural areas (40.0%), followed closely by those who teach at schools located in large or mid-size cities (38.1%), then those who teach at schools in large or small towns (15.2%), and those who teach at schools in the urban fringe of large or mid-size cities (6.7%). In other words, the largest number of respondents represented teachers who teach at rural schools that have chosen to implement the New Tech model across the whole school within the last two years.

Table 1
Summary of Teacher Characteristics (N=105)

Characteristic	N	%
Gender		
Female	61	58.1
Male	44	41.9
Race/Ethnicity		
American Indian	1	1.0
Black (not of Hispanic origin)	0	0.0
Asian/Pacific Islander	2	1.9
Hispanic	1	1.0
White (not of Hispanic origin)	100	95.2
Multiracial (2 or more races)	0	0.0
Missing	1	1.0
Years of Overall Teaching Experience		
Less than 1 year	5	4.8
2-5 years	24	22.9
6-10 years	23	21.9
11-25 years	37	35.2
More than 26 years	16	15.2
Years of New Tech Teaching Experience		
Less than 1 year	63	60.0
2-4 years	41	39.0
5-6 years	0	0.0
7-10 years	0	0.0
More than 11 years	0	0.0
Missing	1	1.0

Table 2
Teachers' School Characteristics (N=105)

	N	%
Year of Implementation		
4 th year ^a	17	16.2
3 rd year ^a	32	30.5
2 nd year ^b	18	17.1
1 st year ^c	38	36.2
Implementation Type		
Whole school	56	53.3
Autonomous school	20	19.0
Small learning community	29	27.6
Locale of School		
Large/mid-size city	40	38.1
Urban fringe of large/mid-size city	7	6.7
Large/ small town	16	15.2
Rural	42	40.0

^a 3 schools

^b 2 schools

^c 8 schools

Quantitative analysis. For survey analysis, we utilized Angelle and Dehart’s (2010) four scales measuring teacher leadership: Sharing Expertise, Sharing Leadership, Supra-Practitioner and Principal Selection. For development of an additional scale called Overall Teacher Leadership, scores from these four scales were combined and averaged. When creating the Overall Teacher Leadership Scale, scores for the three items in the Principal Selection Scale were reversed because low scores corresponded with a more positive rating as New Tech teachers perceived principal selection of teacher leaders as a negative occurrence that was not supportive of all teachers having equal or equitable opportunities to lead. However, when considered on their own, the scores for items in the Principal Selection Scale were not reversed. Table 3 presents the descriptive results for these variables.

Table 3
Dependent Variables Used in the Analysis

	<i>M</i>	<i>SD</i>
Sharing Expertise Scale	4.13	0.66
Sharing Leadership Scale	3.82	0.82
Supra-Practitioner Scale	3.87	0.79
Principal Selection Scale	2.53	0.65
Overall Teacher Leadership Scale	3.82	0.57

Note. Each scale ranged from 1.00 as the minimum score to 5.00 as the maximum score. N=105.

Similar to Angelle and Dehart’s (2010) finding, the entire instrument had a Cronbach alpha of 0.848. The five items included in the first scale, Sharing Expertise, were (1) “Teachers ask one another for assistance when we have a problem with student behavior in the classroom,” (2) “Other teachers willingly offer me assistance if I have questions about how to teach a new topic or skills,” (3) “Teachers here share new ideas for teaching with other teachers such as through grade/department meetings, schoolwide meetings, professional development, etc.,” (4) “Teachers discuss ways to improve student learning,” and (5) “Teachers stay current on education research in our grade level/subject area/department.” This scale was found to be highly reliable (Cronbach’s alpha=0.874) and consistent with Angelle and Dehart (2010) who found a 0.840 alpha reliability.

For the second scale, Sharing Leadership, the following six items were combined: (1) “Teachers are involved in making decisions about activities such as professional development and cross-curricular projects,” (2) “Teachers are actively involved in improving the school as a whole,” (3) “The principal responds to the concerns and ideas of teachers,” (4) “Teachers plan the content of professional learning activities at my school,” (5) “Teachers have opportunities to influence important decisions even if they do not hold an official leadership position,” and (6) “Time is provided for teachers to collaborate about matters relevant to teaching and learning,” and found to be reliable as well (Cronbach’s alpha=0.880) and similar with Angelle and Dehart (2010) who found an alpha of 0.84.

The three items in the third scale, Supra-Practitioner, included (1) “Teachers willingly stay after school to work on school improvement activities,” (2) “Teachers willingly stay after school to help other teachers who need assistance,” and (3) “Teachers willingly stay after school to work with administrators, if administrators need assistance.” These were found to be reliable

as well (Cronbach's $\alpha=0.852$) and consistent with Angelle and Dehart (2010), who reported an alpha of 0.85.

For the fourth scale, Principal Selection, the following three items were included: (1) "Administrators object when teachers take on leadership responsibilities," (2) "The principal consults the same small group of teachers for input on decisions," and (3) "Most teachers in leadership positions only serve because they have been principal appointed." These items were found to be not as highly reliable as the other three factors, (Cronbach's $\alpha=0.251$). Though Angelle and Dehart (2010) noted a lower alpha score for this item (0.56), the reliability score found in this data set are much lower. Nevertheless, the Principal Selection scale is utilized in the study, since the researchers wanted to remain consistent with Angelle and Dehart's (2010) four factor modeling of teacher leadership.

In addition, we collected demographic data including school names, which were categorized by first year of implementation of the model, implementation type (whole school conversion, autonomous school, and small learning community) and school locale.¹ When reporting school locale, we combined the Census categories to protect the identity of the participating teachers since only 16 schools were included in the study. We combined them as such: large/mid-size city and urban fringe, and large/small town and rural.

We used SPSS Statistics, version 18 for data analysis. In order to test for specific group differences within each of the five scales we conducted independent t-tests. For analyzing differences among three or more groups, we computed one-way ANOVA tests, with post-hoc analyses performed using Tukey's HSD (Honestly Significant Difference) to identify specific differences between groups. To better substantiate the results of the t-tests and ANOVA tests, we also calculated effect sizes (Cohen's d), which measure the size of the difference between means, divided by the pooled standard deviation; the correlation effect size (r) was also calculated. We used linear regression for finding significant associations among teacher experience teaching in the model, years of implementation of the model, school implementation type and school locale, and the teacher leadership scale items.

The National Center for Education Statistics' guidelines on effect sizes and statistical significance were utilized (Seastrom, 2002). Only statistically significant results that are practically relevant are reported, since statistical significance can be found among variables, but provide no important and applicable evidence toward the research questions.

Qualitative Methods

Qualitative methods included interviews with 16 teachers and 7 administrators at the eight New Tech schools that had been implementing the model for more than one year. Table 4 shares a summary of participant characteristics. We made the decision to interview only teachers and administrators with at least one full year of experience working in a New Tech school because we had found through prior research that teachers and administrators new to the model focused primarily on classroom-level implementation including teaching specific content through engaging instructional methods, creating a positive classroom culture, and integrating multiple content areas through co-teaching. Conversely, during the second year of implementation and beyond, teachers and administrators were more likely to focus on schoolwide implementation, which included activities related to or identified as teacher leadership, such as school policy formation and professional learning.

We invited all of the administrators from the eight schools to participate in an interview; each school only had one administrator. An email was sent to each administrator, and seven responded to the message to set up an interview. We recruited teachers for interviews through snowball sampling (Creswell, 2012) whereby administrators were asked to provide the names of two to three teachers they would like interviewed. Those teachers were invited to participate in an interview and then asked to provide the names of additional teachers who were then invited to participate in an interview. As such, the participants did not comprise a representative sample. A total of two to three teachers from each school participated in an interview. We conducted interviews over the phone or at the school and they each lasted approximately 30-45 minutes. We followed a semi-structured interview protocol. Sample interview questions included, “Describe teacher collaboration at your school?” and “Describe the leadership structure at your school?”

Table 4
Summary of Interview Participant Characteristics (N=23)

Characteristic	N	%
Position		
Teachers	16	69.6
Administrators	7	30.4
Implementation Type		
Whole school	8	34.8
Autonomous school	6	26.1
Small learning community	9	39.1
Content Area Taught (n=16)		
English Language Arts	6	37.5
Mathematics	4	25.0
World Languages	3	18.8
Other	3	18.8

Qualitative analysis. We followed a systematic approach for analysis of interview data. First, we transcribed interview audio recordings verbatim. We uploaded all data to NVivo 9™ qualitative research software for analysis. Second, we conducted Preliminary Exploratory Analysis (PEA) to attain an overall knowledge of the data (Carspecken, 1996; Creswell, 2012). During PEA, we read all interview transcripts and open responses completely, and created a list of potential codes. Third, we read each transcript a second time, and labeled text segments with codes including some of the following: shared leadership, taking initiative, helping colleagues, collaboration, policy-making, leadership roles, buy-in, and autonomy. Fourth, we read all coded data once more to make sure that any codes that we added towards the middle or end of initial coding were also applied to the data we had read and coded earlier in the coding process. Finally, we read the text segments for each code to determine how data were related and to develop overarching themes. Themes were then summarized, and compared to survey results.

We conducted several checks to ensure reliability and validity during the qualitative analysis process. We shared interview transcripts and thematic summary documents with participants for member checking. Colleagues who were unfamiliar with the schools or the model also peer edited the analysis processes (e.g., coding and theme development) and summary documents. Finally, we used negative case analysis to identify conflicting data (Carspecken, 1996).

Findings

The findings show that three factors specific to the implementation of the New Tech model make a difference when measuring perceptions of teacher leadership. First, the longer a teacher had been teaching in a New Tech school, the more likely he or she was to report positive perceptions of teacher leadership activities and opportunities at their school. Second, teachers working in New Tech autonomous schools and small learning communities reported more positive perceptions of teacher leadership than those working in schools where the model was implemented across the whole school. Finally, teachers at New Tech high schools located in large/mid-size cities and at the urban fringe reported more positive perceptions of teacher leadership than teachers teaching at schools located in small/large towns or rural areas.

Teacher Leadership and Experience in the Model

Teachers who expressed the strongest agreement with the teacher leadership items were those who had more years of teaching experience in the New Tech model. A statistically significant difference was found in group means between those with zero to one year(s) of New Tech teaching experience and those with two to four years of New Tech teaching experience for the Sharing Leadership Scale ($t=-2.752, p=0.007$), as shown in Table 5. Thus, teachers with two to four years of New Tech teaching experience, which was the longest experience any teacher who participated in the study could have, reported more positive perceptions of shared leadership at their New Tech schools. Further, a medium effect size² was found between those with two to four years of New Tech teaching experience and those with zero to one year of experience for this scale (Cohen's $d=0.570, r=0.274$).

Table 5
Differences in Dependent Variables by New Tech Teaching Experience

Dependent Variable	Mean		t	df
	0-1 Years ^a	2-4 Years ^b		
Sharing Expertise Scale	4.08	4.23	-1.16	102
Sharing Leadership Scale	3.65	4.09	-2.75*	102
Supra-Practitioner Scale	3.84	3.95	-0.72	102
Principal Selection Scale	2.60	2.42	1.41	102
Overall Teacher Leadership Scale	3.74	3.96	-1.97	102

Note. N=105. t = t -score statistic; df = degrees of freedom

^a n=63

^b n=41

*= $p \leq .05$, two-tailed

Interview findings provided context for these survey results. Although the New Tech model requires that one teacher serves in the role of "teacher advocate" for their colleagues, other shared leadership structures appeared to take more time to develop. For this reason, teachers at schools that had been implementing the model for longer periods had greater opportunities to lead than teachers who were at newer schools. For example, a world languages teacher at a third-

year school and a principal at a fourth-year school described protocols used to make decisions democratically. The teacher described the process used at her school:

When we have decisions to make, we keep a list on the board of things that we'd like to talk about...With recent scheduling changes, we are in the process of making some tough decisions. We broke into smaller groups and had some discussion about a topic on the things we have for seniors. One is Senior Project, another is Web Portfolio, and then Internships. So we each took some of that and collaborated ideas and thought about some changes we need to make. Then we came together as a large group and shared. That's kind of our basic process. We have other types of protocols as well, like open discussions. Right now we're getting ready to talk about scheduling so that's another one that we'll have to come to some decision about.

Teachers at third- and fourth-year schools also had multiple opportunities to influence instruction by leading professional development. One principal at a school in its fourth-year of implementation shared that teachers lead all of the professional development workshops at his school. An electives teacher at a third-year school named her many responsibilities working with colleagues:

I'm involved with scheduling, setting up clubs, decision-making, editing the curriculum guide, etc. A lot of the things come about just because of my computer skills. I get pulled into projects and I suppose that can be both a curse and a blessing. I'm always in the know of what's going on but it also means I have extra tasks and duties on top of my teaching assignments. I really don't mind using what talents I do have in those areas to benefit the school.

However, it was clear that the principal's leadership style also influenced shared leadership structures at New Tech schools. A principal in a second-year school described his approach to shared leadership:

We really now have a team of professionals, a team of experts, who are...now able to go out and actually do some teaching and instructing with other teachers. They run our professional development...They are kind of putting me out of a job in some ways, which is good and that's exactly what I tell them. I tell them, "I'm going to handle steering the ship here and those kinds of things, communicating with you, doing my observations, having meetings, and giving feedback. You've got to start to see yourself as a teacher in a leadership role."

A teacher leader at this particular second-year school noted that some teachers struggle with the principal's shared leadership approach. He said that these teachers are comfortable working for a principal who tells them what to do:

They don't know how to handle situations...They can't problem solve, just like our kids. So we have a lot of freedom and a lot of input...You realize you're making decisions that directly impact what you're doing...We discuss real issues and we discuss leadership things. We come up with proposals and we are listened to.

So at this second-year school, the principal had implemented shared leadership, but some teachers had difficulty taking on greater responsibility than they had in the past.

Teacher Leadership and School Implementation Type

New Tech school implementation type also had an effect on teachers' perceptions of teacher leadership activities and opportunities at their school. A statistically significant difference was found between groups based on the implementation type for the Sharing Leadership Scale items ($F=12.520, p=0.000$), the Principal Selection Scale items ($F=5.303, p=0.000$), and the Overall Teacher Leadership Scale ($F=2.518, p=0.000$), as shown in Table 6.

Table 6
Differences in Dependent Variables by School Implementation Type

Dependent Variable	Mean			F	df
	Whole School Conversion ^a	Autonomous Site ^b	Small Learning Community ^c		
Sharing Expertise Scale	4.01	4.43	4.17	3.07	104
Sharing Leadership Scale	3.49	4.32	4.12	12.52*	104
Supra-Practitioner Scale	3.78	4.26	3.78	3.04	104
Principal Selection Scale	2.79	2.51	2.05	16.48*	104
Overall Teacher Leadership Scale	3.62	4.12	4.01	8.94*	104

Note. N=105. F= F ratio; df=degrees of freedom

^a n=56

^b n=20

^c n=29

*= $p \leq .05$, two-tailed

Specifically, teachers from New Tech schools where the model had been implemented across the whole school reported statistically significantly stronger disagreement with items on the Sharing Leadership Scale than teachers from autonomous schools (mean difference=-0.830, $p=0.000$) and small learning communities (mean difference=-0.637, $p=0.001$). In other words, teachers at schools where the model had been implemented across the whole school had more negative perceptions when asked whether shared leadership structures were in place at their New Tech school. Conversely, when controlling for all other variables, teaching at an autonomous school or a small learning community was a statistically significant predictor of more positive perceptions of collective leadership as reported through items on the Sharing Leadership Scale ($t=2.202, p=0.030$; $t=2.135, p=0.035$).

Interview data provided some explanation for these results. Teachers from schools where the model was implemented across the whole school explained that students were forced to attend a New Tech school. This was unlike the autonomous schools or small learning communities, where students could opt into the model. As a result, teachers and administrators found themselves in a position where they had to persuade students, their families, and the community that the model was positive for students. A world languages teacher at a whole-school New Tech high school shared, "We're in a selling mode with people who don't even

really have a chance to buy the product. They're forced into the product." Nonetheless, this teacher noted that this challenge had united teachers at his school:

I would say that what makes us unique is that we have to persevere through some of that stuff. Our teachers have bonded together stronger than ever and many of our students that we have been able to get buy-in from have bonded more strongly. That adversity has built a lot of character within not only our faculty, but also our student body.

However, at other whole-school New Tech high schools, some teachers were frustrated that they had not been included in the initial decision to adopt the model. As one math teacher explained:

We needed more buy-in from the beginning. It just happened so quickly and without the total support or the staff feeling like they were involved in that decision. It created resentment not only with the staff, but with the community as well. It's been an uphill battle for a long time to try and overcome that.

These struggles caused some teachers to feel less engaged and committed to the implementation of the model and appeared to negatively affect their perceptions of whether administrators at their schools shared leadership with teachers.

In response to items on the Principal Selection Scale, teachers from small learning communities reported statistically significantly stronger disagreement than those teaching at schools that had implemented the model across the whole school (mean difference = -0.745, $p=0.000$) and autonomous schools (mean difference = -0.462, $p=0.017$). Because a lower score for this scale indicates a more positive perception of teacher leadership activities and opportunities, this finding means that teachers at small learning communities perceived that teacher leadership opportunities were more equitable. Conversely, teachers at schools where the model was implemented across the whole school and teachers at autonomous schools perceived that teacher leadership opportunities were dependent on a teacher's relationship with the principal. In addition, when controlling for all other variables, teaching at a small learning community was a statistically significant predictor of more negative perceptions concerning a principal's control over which teachers are given the opportunity to participate in leadership activities, and how selected teachers are allowed to participate, as reported through items on the Principal Selection Scale ($t=-4.158$, $p=0.000$). In other words, teachers at small learning communities were more likely to believe that teacher leadership opportunities were offered to all teachers, and not just to the principal's favorite teachers.

Again, interview data provided context for these results. Two of the three principals of small learning communities who were interviewed stated that they have a shared leadership approach. One explained, "I try and let a lot of my teachers kind of take sole ownership of multiple programs...I just try to find what their strengths are and push them towards leadership in that particular area." Teachers from these two small learning communities concurred with their principals. An English teacher noted that their principal "gives us a lot of autonomy" and "trusts our judgment." An English teacher working in another SLC said, "Leadership is looked at as a shared role. We work collaboratively as a team to help [the principal] make decisions and bring issues to light." She went on to say that even the position of teacher advocate is shared between two teachers at her school:

We don't think that one person should have to carry all of that. I just think it works better to have multiple people involved. That's something that we're very transparent and very comfortable with. Lots of input and lots of ideas and strengths/weaknesses are brought to the table.

A circumstance that may have negatively affected overall teacher perceptions of teacher leadership at autonomous schools was due to district budget cuts and the elimination of an alternative program, where 50% of the teachers at the New Tech had been replaced with teachers who had been teaching in the alternative program the year before. These teachers did not feel welcomed by their colleagues or students at the school, and this had negatively affected overall morale at the school. The principal was working to improve the situation by implementing team-building activities across the whole school.

When combining all items to create the Overall Teacher Leadership Scale, the differences based on school implementation type were consistent with those for the individual scales. Teachers working at schools that chose to implement the model across the whole school reported statistically significantly stronger disagreement with the survey items than those in autonomous schools (mean difference= -0.500, $p=0.001$) and small learning communities (mean difference= -0.385, $p=0.006$). Overall, these findings demonstrate that New Tech teachers' perceptions of teacher leadership activities and opportunities at whole-school implementation sites were more negative than New Tech teachers' perceptions of teacher leadership at autonomous schools and small learning communities. Additionally, large effect size² was found among the three school implementation types for all of these scales, as shown in Table 7.

Table 7

Standardized Differences (Effect Sizes) in Dependent Variables by School Implementation Type

Dependent Variable	Group 1	Group 2	Effect Size ² : <i>Cohen's d</i>
Sharing Leadership Scale	WSC	AS	-1.32
Sharing Leadership Scale	WSC	SLC	0.78
Principal Selection Scale	WSC	SLC	1.34
Principal Selection Scale	AS	SLC	0.74
Overall Teacher Leadership Scale	WSC	AS	-1.17
Overall Teacher Leadership Scale	WSC	SLC	-0.65

Note. N=105. WSC=Whole School Conversion, AS=Autonomous Site, SLC=Small Learning Community.

Teacher Leadership and School Location

Additionally, teachers' perceptions of teacher leadership activities and opportunities varied based on the location of their school. A statistically significant difference was found in group means between teachers teaching at schools located in large/mid-size cities or in urban fringe areas and teachers working at schools situated in small/large towns or rural areas for all five of the scales, as shown in Table 8. Teachers from schools in large/mid-size city or urban fringe locales reported more positive perceptions of teacher leadership activities and opportunities than teachers from schools in small/large town or rural locales as measured through items on the Sharing Expertise Scale ($t=3.350$, $p=0.001$), the Sharing Leadership Scale ($t=4.162$,

$p=0.000$), the Supra-Practitioner Scale ($t=2.639$, $p=0.010$), and the Overall Teacher Leadership Scale ($t=4.379$, $p=0.000$). Teachers teaching at schools located in large/mid-size cities or urban fringe areas also reported stronger disagreement with the Principal Selection Scale ($t=-3.051$, $p=0.003$). This means that they believed all teachers have opportunities to be leaders at their schools, not just teachers who the principal likes. In addition, medium-to-large effect size² was found between teachers from schools in large/mid-size city and urban fringe locales and teachers from schools in small/large town and rural locales for these scales, as shown in Table 9.

Table 8
Differences in Dependent Variables by School Locale

Dependent Variable	Mean		<i>t</i>	<i>df</i>
	Large/Mid-size City & Urban Fringe ^a	Small/Large Town & Rural ^b		
Sharing Expertise Scale	4.36	3.95	3.35*	104
Sharing Leadership Scale	4.17	3.54	4.16*	104
Supra-Practitioner Scale	4.09	3.70	2.64*	104
Principal Selection Scale	2.33	2.70	-3.05*	104
Overall Teacher Leadership Scale	4.07	3.62	4.38*	104

Note. N=105. *t* = *t*-test; *df*=degrees of freedom

^a n=47

^b n=58

*= $p \leq .05$, two-tailed

Table 9
Standardized Differences (Effect Sizes) in Dependent Variables by School Locale

Dependent Variable	Group 1	Group 2	Effect Size ² : <i>Cohen's d</i>
Sharing Expertise Scale	City & Urban Fringe	Town & Rural	0.67
Sharing Leadership Scale	City & Urban Fringe	Town & Rural	0.82
Supra-Practitioner Scale	City & Urban Fringe	Town & Rural	0.52
Principal Selection Scale	City & Urban Fringe	Town & Rural	-0.60
Overall Teacher Leadership Scale	City & Urban Fringe	Town & Rural	0.86

Note. N=105.

Statistically significant linear relationships also were found between teachers' perceptions of teacher leadership and the location of the New Tech schools where they taught. Teaching at a school located in a large/mid-size city or urban fringe area was a statistically significant predictor of more positive perceptions of teacher leadership as measured by items on the Sharing Expertise scale ($t=2.126$, $p=0.036$), when controlling for all other variables in the model.

Interview findings as shared above illuminate teachers' perceptions of principal selection and shared leadership at their schools. First, teachers and students at whole-school

implementation sites may not have felt they had a choice to opt out of the New Tech model. Second, school morale at one of the autonomous schools had been low as a result of the district's decision to close their alternative program and replace 50% of the New Tech teachers with the teachers who had been teaching in the alternative program.

Additionally, interview data provided some explanation for the survey results regarding SLC teachers' positive perceptions of leadership as measured by the Sharing Expertise Scale. At almost every school, teachers reported that they collaborated more with colleagues about curriculum and instruction than they had in the past. For example, several teachers pointed out that because they are often teaching integrated courses with another teacher in the New Tech model, they are forced to co-plan. As one math teacher at a whole-school site said, "Since we're in the same room, we have to collaborate." Using specific collaborate structures such as a critical friends protocol to review project ideas and allocating time in the schedule specifically for collaboration were also popular among most schools. An autonomous school principal said:

Our [teachers] collaborate every Monday...at 3:15, and they do Critical Friends Group on project proposals. This is not unique to our school because I think other schools require and encourage it but we've kept it very alive in our school.

However, something that set the SLC teachers apart was the intensity and frequency of collaboration. An SLC teacher explained that in addition to a common preparation period, he and his partner teacher stayed after school several days per week and also met during an early-release time every Monday. Collaboration at SLCs also seemed to be more intense. An English teacher described how she went beyond what was expected to support her colleagues by sharing what she designed: "It's nice to have that kind of support and I think that's the way education should look—collaborative." The principal at her SLC described how deeply he and teachers worked together:

What we're talking about right now as a staff is looking at our schoolwide learning outcomes again. When we first started this, we had seven outcomes and we've revised that down to four. So we've spent the last six months revising our definitions, piloting and implementing, and piloting certain rubrics that teachers have developed within their classroom. Today we will be leading a workshop with the teachers where we do a gap analysis of the skills seen across the community, using the different rubrics. Then we try to determine whether the rubrics are making those gaps, if the rubrics were effective, or if they were inconsistent.

Unlike at these SLCs, teachers and principals at two whole-school implementation sites and one autonomous school admitted that collaboration was an area where they struggled or where they have regressed over the last year.

The New Tech model also supports behaviors measured through the Supra-Practitioner Scale. Teachers and principals from most schools described colleagues who invest time beyond the school day or what was required by the teacher contract. Interview data indicated that behaviors such as coming in early or staying late are common across all three implementation types despite the survey results. For example, an English teacher at an SLC and a principal at a whole-school implementation site both cited teachers who stay until 6 or 7 at night. During this time, teachers co-plan and reflect as describe above. They also help students through tutoring.

An SLC principal said, “Tutoring is not required by us, but the teachers are available for kids.” A world languages teacher shared that his colleagues came during the summer break to “try to evaluate and make things better.”

Discussion and Implications

The findings reported here provide evidence that patterns are emerging in teachers’ perceptions of teacher leadership activities and opportunities at the New Tech schools in Indiana. It is not surprising that teachers who have been teaching in the New Tech model longer reported more positive perceptions of teacher leadership than those who were relatively new to the model. The New Tech model emphasizes opportunities for teachers to become involved in leadership, including data-driven decision-making to craft rigorous curriculum and engaging instruction, school-level policy formation, and teacher-led professional development (Bradley-Levine et al., 2010). As such, teachers who have worked in New Tech schools longer have experienced more opportunities to engage in teacher leadership even if they are teaching at schools that have traditionally been led from the top down. Additionally, at schools that have implemented the New Tech model longer, administrators have had more time to integrate a shared leadership approach, giving teachers even more responsibility within the school. This finding provides evidence that teachers from older New Tech schools experience a stronger sense of sharing knowledge and tasks, and taking responsibility to improve their school, practices that lead to more successful school reform, according to the literature (Angelle, 2010; Griffin, 1995; Waldron & McLeskey, 2010).

The findings related to school implementation type and school locale are also significant. It seems more than a coincidence that most of the schools that implemented the New Tech model across the whole school happened to be located in rural communities or small/large towns. They were smaller schools of about 600 students located in areas where external pressures from industry, local government, or the state drove reform (Bradley-Levine et al., 2010). In these settings, reform happened *to* teachers; they were not engaged in every step of the reform process, leading to a seemingly less collaborative culture (Griffin, 1995; Hulpia et al., 2009; Waldron & McLeskey, 2010). These findings also point to the possibility that existing professional culture within a school may impede successful reform, and that a significant amount of re-culturing may be necessary to create a truly collaborative teacher culture.

Additionally, some teachers in schools that implemented the New Tech model across the whole school reported feeling forced to adopt the model. As shown through the qualitative findings, these teachers did not feel they had a voice, and therefore did not feel as responsible for or engaged in its implementation (Angelle, 2010; Griffin, 1995; Waldron & McLeskey, 2010). As such, they did not appear to perceive teacher leadership activities and opportunities positively in this study. Alternately, many teachers in schools that had implemented the New Tech model as a small learning community or autonomous school were given a choice about whether to join the New Tech school. These teachers would have had the opportunity to buy into the idea that the New Tech model would benefit their students (Harris & Jones, 2010; Hopkins & Reynolds, 2001; Potter et al., 2002). As a result, it appears that when implementing a broad reform such as the New Tech model, it is essential to engage teachers in all steps involved in the implementation process, a finding supported by the literature.

These findings add to the literature on school reform in that they demonstrate not only the need for structures supportive of collaborative professional cultures, but also the need for full

teacher engagement in the reform process, whether it is the New Tech model or other reforms. Even though structures supportive of a collaborative professional culture are embedded in the New Tech model, when teachers have not been engaged in adoption and implementation, such as those at schools where the model was implemented across the whole school, the reform may not succeed. This work also highlights that the school setting and individual teacher or administrator disposition influence perceptions of teacher leadership activities and opportunities.

Recommendations for Further Research

Further research is needed to explore individual circumstances of reform at the schools where the New Tech model was implemented across the whole school. It is unclear whether this reform implemented across a whole school will find success over time as more teachers buy in, or whether initial teacher resistance will bring an end to the reform. An examination of how locale affects education reform is also needed in order to determine whether implementation type or school location have a stronger influence on perceptions of teacher leadership. In addition, research to explore the patterns of collaborative cultures at New Tech small learning communities and autonomous schools would be beneficial. Findings would illuminate how teachers negotiate teacher leadership opportunities within the construct of collaborative culture. This knowledge could give insight into how teachers at these schools are engaged in creating an environment of positive teacher leadership and promote the school reform process.

Notes

¹ Locale was assigned using the U.S. Census categories, which are also utilized by the Indiana Department of Education. They are Urban Fringe of Large City - Place within a MSA of a Large City and defined as urban by the Census Bureau; Urban Fringe of Mid-size City - Place within a MSA of a Mid-size City and defined as urban by the Census Bureau; Large Town - Town not within a CMSA or MSA, with a population greater than or equal to 25,000; Small Town - Town not within a CMSA or MSA with population less than 25,000; Rural, outside MSA - A place not within an MSA defined as rural by the Census Bureau; Rural, inside MSA - A place within an MSA defined as rural by the Census Bureau (National Center for Education Statistics, n.d.).

² Guideline 5-1-4F of the NCES Handbook on Statistical Standards deems Cohen *d* effect sizes of .2 as small, .5 as medium and .8 large. For correlations (*r*), .1 is small, .3 is medium and .5 is large (Seastrom, 2002).

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