

Leadership Actions Informed by Faculty and Team Collective Teacher Efficacy

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Abstract: This article explores the use of a strong inverse relationship between Collective Teacher Efficacy and Transformational Leadership as a means to promote success in underperforming schools. Leaders aware of the strong inverse relationship of specific transformative practices can elevate student success through strengthening collective teacher efficacy of the faculty as whole as well as individual teams. The Nature of Leadership Scale (Leithwood & Jantzi, 1995) and Collective Efficacy Scale (Goddard, 2002) were used for correlations between perceived collective teacher efficacy and perceived leadership behaviors within elementary schools. The Collective Efficacy Scale (Goddard, 2002) was modified to determine whether teachers viewed teachers at their grade level team's efficacy differently than within their school.

Key words: transformational leadership, efficacy, teams

1. Introduction

School leaders continue to search for the most powerful and effective practices to implement as a means to improve schools and promote higher levels of student achievement. Although the topic has been researched for years; questions still remain about the most effective leadership practices to employ to meet the challenges in schools today. A recent meta-analysis by Leithwood and Sun (2013) emphasizes transformational leadership as the most widely used and tested model of leadership with proven effects on schools, teachers and students, yet cannot predict the behaviors of members within the organization and shows only small direct effects on student achievement. Today research supports leaders employing effective practice rather than focusing on a single model (Leithwood & Sun, 2013). Using the strong inverse relationship found in the quantitative study designed to articulate leadership traits to increase collective teacher efficacy within schools and at grade level teams, this study provides direction for leaders to employ today.

A great deal of similarity exists in the literature reviewing effective leadership practice (Leithwood & Sun, 2013; Marks & Printy, 2003; Marzano, Waters, & McNulty, 2005; Printy, Marks, & Boyer, 2009) and many of the actions described, overlap with Leithwood's (2006) early findings on transformational leadership emphasizing the importance of holding high expectations for students and staff, establishing a common goal, and providing intellectual stimulation, also found in the study being reviewed. Recent attention has focused on the importance for leaders to recognize the power of social networks as a means to improve schools (Coburn & Russell, 2008).

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Professional Learning Communities have emphasized teacher collaboration as a means for improving student achievement (Dufour, Dufour, & Eaker, 1998) and some studies go as far as to suggest teacher networks as a means for improving student achievement (Moolenaar, Slegers, & Daly, 2012); yet state little empirical evidence exists to support this claim.

The Nature of Leadership Scale (Leithwood & Jantzi, 1995) and Collective Efficacy Scale (Goddard, 2002b) were used for correlations between perceived collective teacher efficacy and perceived leadership behaviors within elementary schools. The Collective Efficacy Scale (Goddard, 2002b) was modified to determine whether teachers viewed teachers at their grade level team's efficacy differently than within their school. The study looked at the perceived collective teacher efficacy of 62 teams within 16 schools and measured the correlation between the teams and perceived transformational leadership behaviors. The strong inverse relationship provides direction for leaders to consider as they develop networks within schools. Behaviors have been identified that directly relate to student performance due to the link between high efficacy and high student achievement (Goddard et al., 2000; Goddard & Goddard, 2001; Ross & Gray, 2004).

This information would prove useful for building principals as collective teacher efficacy has been shown to have a positive effect on student achievement (Goddard, Hoy, & Woolfolk Hoy, 2000). The study delineates actions a leader would consider as a means to enhance the level of efficacy within his/her school and deliberate action utilizing the strengths of the faculty, employing more transformational leadership practices. An intuitive leader would respond to the level of efficacy within his/her school and deliberate action utilizing the strengths of the faculty, at times employing more distributive leadership practices and at other times employing more transformational leadership practices. The information would guide leader's actions in empowering and developing strong social networks at the level of faculty and team as a means of improving schools.

2. Analysis of the Collective Efficacy Scale

Table 1 shows the correlations between teacher ratings on the modified Collective Efficacy Scale (Goddard, 2002b) and the Nature of Leadership Survey (Leithwood & Jantzi, 1995). The correlation between the two scales was $-.281$ which was significant at the ($p < .05$). The negative correlation between transformational leadership and collective teacher efficacy and also consistently between the categories of the Nature of Leadership Scale and the Collective Teacher Efficacy Scale suggests that when collective efficacy is perceived to be high, teachers reported that the leader exhibited transformational leadership behaviors to a lesser degree than when efficacy is perceived to be low. Conversely, when teachers perceived collective efficacy within their school or grade to be low, teachers reported that they perceived the leader to exhibit specific transformational leadership behaviors to a greater degree. The correlation coefficients did show that the teachers who perceived lower efficacy, scored the leader higher on the scale, and when efficacy was higher, the perception of the leader to exhibit the transformational leadership behavior was lower. Lewandowski (2005) reported similar findings when comparing the perceptions of teachers' reliance on the principal in schools with lower teacher efficacy. Schools where the teachers reported low self-efficacy rated their principal higher for exhibiting effective leadership characteristics (Lewandowski).

The strongest correlation in this study is seen between the transformational leadership behavior of modeling behaviors and collective efficacy at the grade level team with a correlation of $-.356$ which is statistically significant at $p < .01$. "Model behaviors" was defined (Leithwood, Jantzi, & Fernandez, 1993) as actions of the leader that exemplifies for others, behaviors consistent with the values the leader espouses. The negative

correlation coefficient of -.356 suggests that the higher teachers' collective efficacy within a grade level team, the less teachers perceive the leader to model behavior. The lower collective efficacy in a school or within a grade level team, the more teachers perceive leaders to model specific behaviors.

Table 1 Correlation between Means of the Collective Efficacy Scale and the Eight Categories of the Nature of Leadership Scale

School Leadership Categories	CTE Total	CTE School	CTE Grade Level
Develops Shared Vision	-.182	-.259*	-.285*
Builds Consensus Goals	-.155	-.213	-.265*
Holds High Expectations	.013	-.050	-.070
Models Behaviors	-.259*	-.334**	-.356**
Provides Individual Support	-.157	-.237	-.257*
Provides Intellectual Stimulation	-.144	-.220	-.242
Nurtures Strong Culture	-.196	-.276*	-.308*
Builds Collaborative Structures	-.115	-.170	-.186

* significant at the 0.05 level (2-tailed); ** significant at the 0.01 level (2-tailed)

Four additional categories of perceived leadership behavior had a significant correlation with perceived collective efficacy at the grade level team. The four categories determined to be significant ($p < .05$), were building a strong culture (-.308), developing a shared vision (-.285), building consensus to goals (-.265) and providing individual support (-.257). The correlation coefficient between collective efficacy at the grade level team and the perception of the leader's overall ability to build strong culture was -.308 and found to be statistically significant at $p < .05$. Again the negative correlation suggests that the higher the perceived collective efficacy of the teacher's grade level team the less the teacher perceives the leader to exhibit behaviors that build a strong culture or the less the perceived efficacy of the team the greater teachers notice the leader's effort to build a strong culture.

Given that the data analysis between the Nature of Leadership Scale and the Collective Efficacy Scale provided consistently strong negative correlation coefficients, this study suggested that principals need to be aware of the collective efficacy within their buildings. If the teachers' collective efficacy is low, the data would suggest the leader employ transformational leadership behaviors, but when efficacy is high the leader would take an approach to sustain that high sense of collective efficacy, possibly using the strengths of the teachers to build further capacity, thus enhancing the collective efficacy of teams within the school as well as the entire faculty.

To determine whether or not individual teachers viewed the perceived collective efficacy for their individual grade level as they do for the perceived collective efficacy for the entire school, a comparison was made between the means of collective teacher efficacy at the school level and for the grade level teams within each school using Goddard's (2002b) Collective Efficacy Scale. Collective teacher efficacy was defined by Bandura (1993) as the group's belief in their ability to impact student learning in a positive way. This belief in the ability to effect positive change in student achievement promoted group motivation toward greater commitment to mission, resilience under pressure or adversity, and increased performance as a whole (Bandura, 2000).

To calculate the means for each grade level team's perception of the teachers within their school, the twelve questions which were on Goddard's scale pertaining directly to the respondent's perceptions of the teachers in his/her school were totaled. Twelve questions were also totaled to determine the grade level team's perception of their team's efficacy. Six of these questions were added to Goddard's Collective Efficacy Scale to gather data

specific to the teachers' perceptions of their grade level teams. Participants responded to statements on the Collective Efficacy Scale with a Likert scale ranging from 1 to 6, one stating "strongly disagree" and 6 being "strongly agree." Six parallel items were added to the original Collective Efficacy Scale to compare the teachers' perceptions of all teachers in their school with teachers at their grade level. The correlation coefficient between the total score for the original six questions pertaining to teachers' perceptions about the teachers in their school compared with the total score for the six questions specifically about the teachers within their grade level team was .866 ($p < .05$). This result indicated that perceptions about teachers in the school were strongly related to perceptions about teachers in grade level teams.

The means for the teachers' perception of their grade level team's efficacy (CTE group) was compared to the teachers' perception of the teachers within their school's efficacy (CTE school). The results of this comparison are presented in Table 2 which also shows teachers' ratings compared to the total score of all of the questions on the Collective Teacher Efficacy Scale. All comparisons were made by grade level teams within the sixteen schools. The mean for teachers' perceptions of collective efficacy at the grade level was 4.86. The mean for the teachers' perceptions of collective efficacy for all the teachers in the school was 4.82. Although the difference between the means does not appear large a comparison of the modes for these same two indicators suggests a greater variance between all data collected. The mode for perceived collective efficacy at the grade level was 5.23 and the mode for the perceptions of collective efficacy for the teachers within the school was 4.97 respectively.

Table 2 Differences in the Means Between Teacher's Perceptions of Collective Efficacy at the Individual and Team Level Compared with the Total Collective Efficacy Rating

	N	Mean	S. D.	Minimum	Maximum	Mode
CTE Total (12 items)	62	5.0029	.42123	3.96	5.69	5.43
CTE School (6 items)	62	4.8278	.49662	3.79	5.58	4.97
CTE Grade Level (6 items)	62	4.8682	.51109	3.56	5.65	5.23

To answer the question as to whether or not the difference between the means of the perceived efficacy of the respondents' school and their grade level team was significant a paired t -test was conducted. The results showed that while the difference between the means was statistically significant, $t(61) = -3.383$, $p < .05$, it is very small. The relationships between teachers within a building had been shown to influence teacher efficacy and collective teacher efficacy (Goddard et al., 2000). Recognizing the potential differences between the grade level teams' efficacy and the efficacy of the entire schools, an intuitive leader may skillfully vary the leadership behaviors to nurture increased efficacy for all as a means of promoting increased commitment to goals and improved student achievement. The difference between the means of teachers' perceptions of their grade level team's efficacy and their perception of the collective efficacy of the entire school was very small. The paired t -value suggests a difference in the frequency of scores supporting and encouraging further study.

Paired t -tests were also made to test for significance between the six pairs of individual items that asked the respondent to rate their perception of the teachers in their school and their perceptions of their grade level team. Items one and two of the Collective Efficacy Scale are worded similarly, but item one asks the respondent his/her perception of the teachers in the school's belief that every child can learn compared to the respondent's perception of teachers at his/her grade level team's belief that every child can learn which was item two. For these two items, the respondents reported their perception between their grade level team's belief that every child could learn and the team's perception for the teachers in their school had a significant difference.

Table 3 shows the comparisons between the means of the six paired items. Only items 1/2 and items 9/10 had significant t -values ($p < .05$). Items nine and ten ask the respondent to state whether they strongly disagree or strongly agree that teachers in the school are able to get through to the most difficult of students compared with the ability of teachers at their grade level to get through to the most difficult of students. A paired-samples t -test showed a significant difference between the teacher's perceptions of the efficacy of his/her grade level team and his/her perception of the teachers in his/her school, $t(61) = -2.434$, $p < .05$. The teachers' perceptions of the collective efficacy of their grade level had only a very slightly higher mean (4.8682) than the mean (4.8278) which represented the teachers' perceptions of teachers for the entire school and was not significant when the data was not aggregated by groups.

Table 3 Paired Samples t-Test

	Mean Difference	SD	SEM	t	df	Sig.(2-tailed)	Concept
CTE items 1/2	-.13349	.32585	.04138	-3.226	61	.002	Every child can learn
CTE items 3/4	-.06437	.35761	.04542	-1.417	61	.161	Confident can motivate to learn
CTE items 5/6	.03371	.20302	.02578	1.308	61	.196	Child doesn't want to learn teacher perseveres
CTE items 7/8	-.07652	.47712	.06059	-1.263	61	.211	Has skills to meaningful produce learning
CTE items 9/10	-.11495	.37186	.04723	-2.434	61	.018	Teachers get through to most difficult student
CTE items 11/12	-.06240	.37514	.04764	-1.310	61	.195	Has skills to deal with discipline problems
CTE Item School	Mean	SD	CTE Item Grade Level	Mean	SD		
1	5.4857	.37568	2	5.6192	.34959		
3	5.1701	.42772	4	5.2344	.46515		
5	5.4654	.53646	6	5.4317	.53798		
7	5.6263	.61655	8	5.7028	.48662		
9	4.8095	.44502	10	4.9245	.47884		
11	5.1102	.69139	12	5.1726	.67598		

A second comparison of means for the individual items on the Collective Teacher Efficacy Scale ranks which of the means of the paired items was higher and the results are reported in Table 3. Teachers' perceptions of the group's belief that every child can learn, with a mean of 5.61, is higher than the perception of the teachers within their school, which has a mean of 5.48. The significance reported for items one and two, combined with the actual means reported in Table 3 demonstrate the grade level teams in this study rate the perception of their grade level team significantly higher than that of the teachers within their schools. Similar results are evinced for items nine and ten. The mean for the teachers' perception of their grade level has a mean of 4.92 while their perception of teachers in their school has a mean of 4.80. The paired t -test significance with a p value of 0.018 shows the teachers rate the grade level team's ability to get through to the most difficult students higher than their perception of the teachers within the school to get through to the most difficult students.

A review of teachers' responses to all items on the Collective Teacher Efficacy Scale (Goddard, 2002b) showed that teachers rated the following three items highest: CTE (5.70). At my grade level, teachers don't have skills needed to produce meaningful learning. This is a reverse scored item and thus suggests teachers perceived

grade level peers to have the ability to produce meaningful learning. CTE (5.46) Learning is more difficult at this school because students are worried about their safety. This too is reversed scored and evinced teachers perceived learning not be impacted by concerns about safety. CTE (5.17) Teachers at my grade level don't have skills to deal with disciplinary issues was also a reverse scored item. The perceptions of teachers responding for this study showed teachers believed their grade level peers to have the skills to deal with disciplinary issues. It may be of interest to note that the three means noting the items rated highest, were all reverse scored.

The greatest range of scores on individual items on the Collective efficacy were seen in items CTE #18 with a standard deviation of 1.2018 with 4.00 as the mean and CTE #14 with a standard deviation of 1.19155 and a mean of 4.17. These items addressed teachers' perceptions about the effect students' home lives have on learning. Item # 18 addresses whether or not teachers feel strongly about the effect drug and alcohol use has on learning and whether or not students' home lives promote learning. The third greatest variance, CTE # 16, related to perceptions about the opportunities in the community offered to students to promote learning with a standard deviation of .92832 and a mean of 4.17. Statements on the Collective Teacher Efficacy Scale #13-18 relate more to the students' home environment. The variance in range for these three items may relate directly to demographics and vary based on the location of the school in the state. This study does not delineate the responses to validate this concept. The information did show that teachers' perceptions for items CTE #1-12 have higher means with less deviation than items CTE #13-18, thus suggesting teachers perceived their team and teachers in their school to have more control and greater ability to impact learning for the first twelve items. Overall, teachers reported feeling more efficacious, with regards to motivating students, handling difficult situations, producing meaningful learning and getting through to the most difficult students, when rating both the teachers in their school as well as on their teams. The greater range of scores pertaining to the perceptions about students' home lives preparing the students for learning, and the teachers' ability to overcome the effect of drug and alcohol's impact on learning, showed the variance in teachers' beliefs to impact these areas.

3. Implications

Goddard et al. (2000) reported that the four sources for personal efficacy defined by Bandura (1986); mastery experiences, vicarious experience, social persuasion, and affective states, also promote collective teacher efficacy. In a later study, Goddard (2002) noted that affective state is under researched. None of the statements asked on the Nature of Leadership related to teacher perceptions of a leader establishing an environment that promoted anxiety, excitement or joy. Although one category, building culture, asks teachers to rate whether or not the leader exhibits behaviors that support trust and encourages a comfortable learning environment, the concepts of encouraging joy, excitement and delight are often overlooked. Goddard's study did show the negative effect of anxiety. One variable for anxiety within an elementary school in Connecticut relates to Mastery Testing. These tests would have an effect on teachers both at the level of team and school. One possible explanation for the negative correlation between perceived leadership behaviors and collective teacher efficacy may relate to the external pressures outside the control of the building principal. The pressures of Smarter Balance or new guidelines for teacher evaluation may well shift the efficacy of the faculty.

Although this study did not empirically substantiate behaviors for leaders to employ to directly impact collective efficacy, it raised several conditions for leaders to ponder, such as; the importance of recognizing the efficaciousness of their faculty and realizing that one grade level team might be less or more efficacious thus

requiring more leadership direction and involvement than others. This information would prove useful for promoting discussions among instructional leaders committed to school improvement. Although the negative correlation does not negate the practices of transformational leadership, it causes a leader to question the premise that transformational leadership is good in all situations. An intuitive leader would respond to the level of efficacy within his/her school and deliberate action utilizing the strengths of the faculty, employing more distributive leadership practices. For example, a principal with very high collective teacher efficacy within the school would utilize the expertise of the faculty to further school improvement while a principal with varying degrees of collective efficacy among grade level teams may consider a more distributive leadership approach. Yet, a building principal with a faculty less efficacious would want to employ the traits of transformational leadership emphasizing modeling behaviors, building a strong culture, developing a shared vision, and providing individual support, all indicators that demonstrated a high correlation with collective teacher efficacy.

The implications of the strong inverse relationship between collective teacher efficacy and transformational leadership, although speculative, as the realm of this study was solely correlation, provide direction for educational leaders to consider. One possible explanation for the inverse relationship is that leaders in schools where efficacy is high may have employed the traits of transformational leadership in a less apparent manner, more subtly facilitating change. As perceived collective teacher efficacy increases, both at the grade level team and at the level of the entire faculty, the leader needs to be less demonstrative as a transformational leader. Teachers with high collective efficacy do not perceive their leaders to exhibit transformational leadership behaviors as strongly. This could be a result of the leaders in the study already employing a more distributive or participative style of leadership which may include: Encouraging their faculty members to take on leadership roles such as lead teacher, goal manager or committee chair; utilizing the experience and expertise of the teachers to model and facilitate best instructional practices; guiding faculty through the analysis of student performance and development of improvement plans; highlighting or acknowledging the work and achievement of individuals or groups of teachers in school improvement initiatives; coaching and nurturing teachers to establish challenging goals or pursue higher levels of personal achievement, i.e., college courses in educational leadership, language arts consultant, or a higher college degree. Conversely, when perceived collective teacher efficacy is not as high, teachers reported the perception of the leader to exhibit transformative leadership behaviors to a higher degree. Thus, a leader would model behaviors more often, nurture a collaborative culture guiding the team or faculty more closely, and facilitate the building of common purpose more directly.

Another possible explanation for the inverse correlation between collective teacher efficacy and transformational leadership may suggest that leadership needs to be redefined for professionals in education. Teacher may perceive a leader that employs a participative or distributive approach to not be exhibiting behaviors of transformational leadership as often because their belief or definition of a leader varies from the concepts defined by Leithwood and Jantzi (1995). Although modeling behaviors as a transformative practice is measured by actions, such as leads by doing, sets a respectful tone, demonstrates a willingness to change, models problem solving techniques and is open and genuine; teachers may not recognize them as explicit behaviors exhibited by the principal or leader because it is more the nature of the individual. Similarly, the leader empowering faculty to collaboratively develop consensus to goals or identify a common vision, using efficacious individuals to lead the groups, may not be recognized for his/her leadership style. Connecticut teacher certification requires a mentor be assigned to beginning teachers. Most often this mentor is a peer. This encourages teachers to look to one another for direction and assistance. It is very possible that this collaborative structure shifts the locus of support from the

principal to the mentor. Further study would need to be completed to substantiate this belief but the consistency of the inverse correlation encourages further investigation.

The tight inverse relationship reported in this study would suggest that a leader should be responsive to both the collective efficacy as well as external and internal negative effects on the efficacy. External threats to efficacy may include low mastery scores or a negative public newspaper article. A responsive leader would recognize a need to be more deliberate with faculty, guide through analysis more directly, and provide encouragement, positive feedback and direction. Conversely, a responsive leader also recognizes when collective efficacy is high, rather than employing the transformational leadership traits, might consider a response that includes facilitation, feedback, encouragement and empowerment. The leader may help the group or individual teacher recognize their own potential, highlighting a specific talent or ability and encourage the teacher or group of teachers to select higher personal goals that will promote efficacy to an even higher level. Maintaining high collective teacher efficacy includes ensuring the goals are challenging yet attainable.

An intuitive leader would respond to the level of efficacy within his/her school at both the team and school levels, and deliberate action utilizing the strengths of the faculty, at times employing more distributive leadership practices and at other times employing more transformational leadership practices. This might truly be referred to as responsive leadership.

This information would prove useful for building principals as collective teacher efficacy has been shown to have a positive effect on student achievement (Goddard, Hoy, & Woolfolk Hoy, 2000). The study delineates actions a leader would consider as a means to enhance the level of collective teacher efficacy within his/her school and deliberate action utilizing the strengths of the faculty, employing more transformational leadership practices. An intuitive leader would respond to the level of efficacy within his/her school and deliberate action utilizing the strengths of the faculty, at times employing more distributive leadership practices and at other times employing more transformational leadership practices. The information would guide leader's actions in empowering and developing strong social networks at the level of faculty and team as a means of improving schools.

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