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The effects of school culture and climate on student achievement

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The purpose of the study was to investigate whether Exemplary, Recognized and Acceptable schools differ in their school climates, as measured by the 10 dimensions of the Organizational Health Inventory. Significant differences were found on all 10 dimensions of the Organizational Health Inventory, with Exemplary schools out-performing Acceptable schools. No statistical significance was found between Exemplary and Recognized schools. Statistical significance was found, with Recognized schools out-performing Acceptable schools on the Organizational Health dimensions of Goal focus and Adaptation. The findings of this study suggest that students achieve higher scores on standardized tests in schools with healthy learning environments.

Introduction

Organizational theorists have long reported that paying attention to culture is the most important action that a leader can perform. Educational theorists have likewise reported that the principals' impact on learning is mediated through the climate and culture of the school and is not a direct effect (Hallinger and Heck 1998). Watson (2001) warned us that if the culture is not hospitable to learning then student achievement can suffer. Fink and Resnick (2001) reminded us that school principals are responsible for establishing a pervasive culture of teaching and learning in each school.

A closer look at the relationship of specific aspects of school culture to student learning is needed, however. This study identified three categories of schools based on academic achievement of students. These categories are 'Exemplary' schools, 'Recognized' schools and 'Acceptable' schools, as measured by the State of Texas Accountability Rating System. These three categories of schools are then compared on the 10 dimensions of school climate as measured by the Organizational Health Inventory (OHI).

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There is substantial evidence in the literature to suggest that a school principal must first understand the school's culture before implementing change (Leithwood *et al.* 2001). Bulach (1999) stated that a leader must identify a school's existing culture before attempting to change it. Leonard (1999) studied the dynamics and complexities of a school culture when teacher values were compatible or in conflict with school culture, with predictable results. Mortimore (2001) warned us that we should concentrate on establishing more knowledge about the complex interactions between culture and schooling. Lakomski (2001) studied the claim that it is necessary to change an organization's culture in order to bring about organizational change and concluded that there is a causal relationship between the role of the leader and organizational learning. Taylor and Williams (2001) argued that as accountability through tests has become a threat, school principals need to work on long-term cultural goals in order to strengthen the learning environment. Fullan (2001) contended that the concept of instructional leader is too limited to sustain school improvement. He promoted the idea that school principals serve as change agents to transform the teaching and learning culture of the school.

Testimony from successful school principals suggests that focusing on development of the school's culture as a learning environment is fundamental to improved teacher morale and student achievement. Nomura (1999) advised that school principals' understand their school's culture. Reavis *et al.* (1999) explored how a new school principal at a historically low performing high school brought about changes in the school culture and how it positively affected student achievement. Kytle and Bogotch (2000) examined school reform efforts through a 'reculturing', rather than a 'restructuring', model. They found that real and sustained change is more readily achieved by first changing the culture of the school, rather than by simply changing the structures of the way the school operates and functions.

School principals who choose to lead rather than just manage must first understand the school's culture. It is important to realize that culture is complex because it has very unique and idiosyncratic ways of working. When an organization has a clear understanding of its purpose, why it exists and what it must do and who it should serve the culture will ensure that things work well. When the complex patterns of beliefs, values, attitudes, expectations, ideas and behaviours in an organization are inappropriate or incongruent the culture will ensure that things work badly. Successful school principals comprehend the critical role that the organizational culture plays in developing a successful school.

Relationship between culture and climate

Organizational culture and climate have been described as overlapping concepts by theorists (Miner 1995). Hoy *et al.* (1991) offered a distinction between climate and culture, with school or organizational climate being viewed from a psychological perspective and school culture viewed from an anthropological perspective. Differences between school climate and culture are highlighted in organizational studies. Often the climate is viewed as

behaviour, while culture is seen as comprising the values and norms of the school or organization (Hoy 1990, Heck and Marcoulides 1996). Lunenburg and Ornstein (2004) described organizational climate as the total environmental quality within an organization and believe that the recent attention to the effectiveness of public schools and their cultures has shed more interest on the importance of climate. The relationship between culture and climate was supported by Schein (1985, 1996) when he stated that norms, values, rituals and climate are all manifestations of culture. In addition, the relationship of culture and climate is further supported by McDougall and Beattie (1998), as well as by the early studies of Schneider and Reichers (1983).

Even though the conceptual distance between culture (shared norms) and climate (shared perceptions) is small, it is nonetheless real (Hoy and Feldman 1999). Hoy and Feldman believed that this difference is meaningful and crucial because shared perceptions of behaviour are more readily measured than shared values. They described climate as having fewer abstractions than culture (more descriptive and less symbolic) and concluded that climate presents fewer problems in terms of empirical measurements. Climate is the preferred construct when measuring the organizational health of a school.

Climate

Freiberg and Stein (1999) described school climate as the heart and soul of the school and the essence of the school that draws teachers and students to love the school and to want to be a part of it. This renewed emphasis on the importance of school climate was further reinforced by a meta-analysis study performed by Wang *et al*. (1997), which found that school culture and climate were among the top influences in affecting improved student achievement. Their study also found that state and local policies, school organization and student demographics exerted the least influence on student learning.

According to Hoy and Tarter (1997), unhealthy schools are deterred in their mission and goals by parental and public demands. Unhealthy schools lack an effective leader and the teachers are generally unhappy with their jobs and colleagues. In addition, neither teachers nor students are academically motivated in poor schools and academic achievement is not highly valued. Healthy schools that promote high academic standards, appropriate leadership and collegiality provide a climate more conducive to student success and achievement (Hoy *et al*. 1990). The overwhelming majority of studies on school climate in the past have focused on teachers and leader–teacher relations and subsequent issues of job satisfaction. Miller stated 14 years ago that school climate has rarely been studied in relation to its effect on student achievement (Miller 1993). In recent years the emphasis on climate has shifted from a management orientation to a focus on student learning (Sergiovanni 2001). The reform efforts of the last 30 years have failed to improve student achievement in schools because they failed to adequately address the importance of the culture and climate of schools (DuFour and Eaker 1998). The first major purpose of a school is to create and provide a culture that is hospitable to human learning (Barth 2001).

Structural changes made to improve schools without addressing the culture and organizational health of schools have predictably not been successful (Sarason 1996).

Since the culture and climate of the school affects student achievement (Maslowski 2001, Hoy *et al*. 1990, 2006) and the school principal directly influences the culture and climate (Hallinger and Heck 1998, Leithwood *et al*. 2004), the question should be asked: what characteristics of school climate should the principal address in order to most effectively encourage and increase student achievement?

Importance of the school principal

There is substantial evidence concerning the importance of leadership in creating good schools (Freiberg 1999, Blase and Kirby 2000, Donaldson 2001, Sergiovanni 2001, Snowden and Gorton 2002). Ultimately, the relationships that shape the culture and climate of the school are strongly influenced by the school principal. 'In schools where achievement was high and where there was a clear sense of community, we found invariably that the principal made the difference' (Boyer 1983: 219). Hallinger and Heck (1998) proposed that the principal does not directly effect student achievement, but rather indirectly effects learning by impacting on the climate of the school.

> This perspective on indirect effects also occurs in more recent and more complex models for research into principal leadership. Leadership is no longer proposed as having a direct influence on learning outcomes but as having an indirect influence through the way it has an impact on school organization and school culture. (Witziers *et al*. 2003)

Current research has additionally suggested that the principal's influence has an indirect effect on learning and is mediated by their interactions with others, situational events and the organizational and cultural factors of the school (Hallinger and Heck 1998, Hoy *et al*. 2006, Leithwood *et al*. 2004). Leithwood (1992) referred to principals as 'change agents' and suggested that they impact on the school through transformation of the school culture. Maslowki (2001) further stated that an association exits between leadership values and behaviours and school culture and that different school cultures can be identified with different consequences for student outcomes. Furthermore, research studies exploring the indirect effect of principal leadership on student outcomes have suggested that educational leadership is related to the organization and culture of the school, which is related in turn to student achievement (Witziers *et al*. 2003).

Fairman and McLean (1988), in their work with dimensions of organizational health, believed that diagnosing the climate or health of schools in order to capitalize on existing leadership strengths and to identify improvement priorities should be the goal of every school principal. Deal and Peterson (1999) defined symbolic leadership as the ability to understand and shape the culture of the school. A school principal that creates a culture that promotes and encourages learning is absolutely essential in order to improve student achievement in schools (Freiberg 1999, Sergiovanni 2001). Successful leaders have learned to view their organizations' environment in

a holistic way. This wide-angle view is what the concept of school culture offers school principals. It gives them a broader framework for understanding difficult problems and complex relationships within the school. By deepening their understanding of school culture, these leaders will be better equipped to shape the values, beliefs and attitudes necessary to promote a stable and nurturing learning environment which impacts student performance (Bossert *et al*. 1982). The connection between effective school cultures and leadership is supported by educational research (Leithwood and Jantzi 1990, Leithwood 1992, Hallinger and Heck 1998, Freiberg 1999, Sergiovanni 2001, Leithwood *et al*. 2004).

Focus on climate

School principals who care and focus on the specific aspects of the dimensions of school climate that affect the culture of the school promote student achievement (Pellicer 2003). As stated by Fairman and Clark (1982) in more precise and descriptive language, healthy schools are schools that exhibit the following types of cultures, also know as dimensions of organizational health: goal focus, communication, optimal power equalization, resource utilization, cohesiveness, morale, innovativeness, autonomy, adaptation and problem-solving adequacy.

In addition, there are specific aspects or dimensions of the climate that significantly influence student achievement in schools (Busch 2003, McLean *et al*. 2005).

Comparisons between school climate and student achievement can help school principals' focus their efforts to improve student achievement. Saranson (1996) stated that if we want to change and improve the outcomes of schooling for both students and teachers, there are features of the school culture that must be changed. The efforts of policy-makers and school principals to improve student learning in American schools have had less than the expected results education leaders need to reframe and refocus their leadership efforts. Simply altering the structure and expectations of schools has failed over the last 50 years. Schlechty (1997) suggested that structural change that is not supported by cultural change will fail because it is in the culture that any organization finds meaning and stability. Educational studies of school change have isolated the organizational culture of schools as a critical factor to the successful improvement of teaching and learning (Fullan 2001). Deal and Peterson (1999) stated that study after study has confirmed that the culture of the school and its resulting climate must support reform or improvement will not occur. Improvements in student achievement will happen in schools with positive and professional cultures that reflect a positive school climate.

Summary

Strong school cultures have better motivated teachers. Highly motivated teachers have greater success in terms of student performance and student outcomes. School principals seeking to improve student performance should

focus on improving the school's culture by getting the relationships right between themselves, their teachers, students and parents. Measuring school climate and using these assessments to focus the school's goals on learning is important for the process of improving the school's academic performance.

Method

Participants

The sample comprised 29 schools located in a large suburban school district in southeast Texas. The Texas Education Agency assigned one of three ratings to the schools based on student performance on the Texas Assessment of Academic Skills (TAAS). Test results from 24,684 students were used as the basis for these ratings. Teachers in each of the schools rated the organizational health of their respective unit using the OHI. A total of 1727 teachers completed the survey. The individual school was used as the unit of analysis for the study.

Instrumentation

Organizational Health Inventory. Organizational health as conceptualized by Matthew Miles (1971) consists of 10 key internal dimensions: Goal focus, Communication adequacy, Optimal power equalization, Resource utilization, Cohesiveness, Morale, Innovativeness, Autonomy, Adaptation and Problem-solving adequacy. These 10 dimensions characterize aspects of climate that address the successful interaction among the members of the organization as well of the organizations's ability to deal with stress from the environment. They also provide diagnostic data that can assist leaders in recognizing the effectivenss of the organization (McLean *et al*. 2006). The dimensions provide important data that inform the leadership styles of principal in addressing the aspect of climate that need improvement.

- Goal focus is the ability of persons, groups or organizations to have clarity, acceptance and support of goals and objectives.
- Communication adequacy is when information is relatively distortion free and travels both vertically and horizontally across the boundaries of an organization.
- Optimal power equalization is the ability to maintain a relatively equitable distribution of influence between members of the work unit and the leader.
- Resource utilization is the ability to involve and coordinate the efforts of members of the work unit effectively and with a minimal sense of strain.
- Cohesiveness is when persons, groups or organizations have a clear sense of identity. Members feel attracted to membership in the organization. They want to stay with it, be influenced by it and exert their own influence within it.
- Morale is when a person, group or organization has feelings of well-being, satisfaction and pleasure.

- Innovativeness is the ability to be and allow others to be inventive, diverse, creative and risk-takers.
- Autonomy is when a person, group or organization can maintain ideals and goals as well as meet needs whilst managing external demands.
- Adaptation is the ability to tolerate stress and maintain stability while being responsive to the demands of the external environment.
- Problem-solving adequacy is an organization's ability to perceive problems and solve them using minimal energy. The problems stay solved and the problem-solving mechanism of the organization is maintained and/or strengthened.

Recognizing a need to operationally define these dimensions, a 3 year research and development study was done which resulted in the development of the Organizational Health Instrument (OHI) (Johnstone 1988). The OHI consists of 80 items, 8 for each of the 10 dimensions, with each being rated on a 5 point Likert-type scale. The instrument has been widely used to provide data about the internal working of schools and other organizations. The OHI has been proved to be a reliable measure. The overall split-half reliability coefficient of the OHI was 0.98 for the 40 item split. The highest reliability coefficient was 0.95 for Goal focus and the lowest was 0.72 for Adaptation. The overall alternative form reliability for the OHI was 0.76 (Johnstone 1988).

After administration of the OHI a percentile score is assigned to each of the 10 dimensions. The percentile scores are determined from the raw scores gathered from administration of the OHI. For statistical analysis the percentile scores were converted to normal curve equivalents (NCE).

The Texas Assessment of Academic Skills (TAAS). This was used as the basis for assigning an accountability rating to schools. Schools are rated as Exemplary, Recognized Acceptable or Low-performing. The TAAS has been used in the state of Texas for the past 10 years. It is a criterion-referenced test that is used to measure the academic skill levels of students in reading, mathematics and writing. Students' performance on the TAAS in the different demographic subgroups, White, Hispanic, African-American and Low socio-economic, are used to assign one of the following accountability ratings: Exemplary, Recognized, Acceptable or Low-performing. Every government funded school in the state receives an accountability rating.

TAAS test reliabilities are based on internal consistency measures, in particular on the Kuder–Richardson Formula 20 (KR-20). Most KR-20 reliabilities are in the high 0.80 to low 0.90 range (Texas Student Assessment Program Technical Digest 2000).

Procedure

The accountability rating for all schools in Texas was announced during the spring semester of the school year. The standards for school accountability ratings are as follows.

- Exemplary—at least 90% of the students who were tested passed and 1% or fewer of students dropped out in Grades 7–12.
- Recognized—80–89% of the students who were tested passed and 1.1–3% of students dropped out in Grades 7–12.
- Acceptable—50–79% of the students who were tested passed and 3.1–5.5% of students dropped out in Grades 7–12
- Low-performing—less than 50% of the students who were tested passed and over 5.5% of students dropped out in Grades 7–12.

The Texas Education Agency publishes this data each year.

The OHI was administered to all 1727 teachers in the 29 schools within the district. Sixteen of the schools were rated as Exemplary, seven schools were rated as Recognized and six were rated Acceptable. None of the 29 schools in the district was classified as Low-performing. Percentile scores on each of the dimensions were converted to NCEs for analysis purposes.

Analysis

The three categories of schools were compared across the 10 subtests of the OHI using a multivariate analysis of variance (MANOVA). When warranted, post hoc comparisons using Tukey's Honestly Significant Differences (HSD) were made.

Results

Descriptive statistics, based on NCE scores, were used to report the means and standard deviations on each of the 10 rating scales across the three types of schools. These are reported in Table 1. The results of the MANOVA indicted significant differences between the Exemplary, Recognized and Acceptable categories of schools across each of the 10 subtests of the OHI. The MANOVA yielded a significant main effect ($F = 3.22$, df = 2, 34, $p < 0.001$) using Wilks' λ. Results for the MANOVA, subsequent univariant ANOVAs and post hoc comparisons using Tukey's HSD are also shown in Table 1.

For each of the 10 dimensions of organizational health statistical significance was found at $p < 0.05$ α, indicating that Exemplary schools (superscript a) out-performed Acceptable schools (superscript b) on student achievement, as measured by the TAAS. In other words, each of the schools that demonstrated higher student achievement as shown by their Exemplary rating also demonstrated healthier climates than schools with Acceptable ratings. The Exemplary schools consistently demonstrated higher scores on each of the 10 dimensions of organizational health than Acceptable schools. The schools with higher student achievement consistently exhibited healthier school climates.

However, post hoc comparisons using Tukey's HSD indicate that statistical significance was not found between Exemplary schools and Recognized schools or Recognized schools and Acceptable schools. Two exceptions to the pattern emerged in the data analysis: In the organizational health

Table 1. **Differences between exemplary, recognized and acceptable schools on 10 dimensions of organizational health**

Variable	Exemplary	Recognized	Acceptable	F
Goal focus	68.60 ± 9.75^a	61.19 ± 15.93^a	39.10 ± 16.43^b	11.49^c
Communication	70.66 ± 15.45^a	62.17 ± 21.14^{ab}	48.97 ± 18.23^b	3.43^d
Power equalization	65.29 ± 13.46	54.71 ± 19.39^{ab}	43.93 ± 16.75^b	4.30^d
Resource utilization	70.46 ± 13.97^a	64.77 ± 22.15^{ab}	42.40 ± 16.00^b	6.29^c
Cohesiveness	66.91 ± 13.34^a	58.91 ± 23.95^{ab}	35.77 ± 18.45^b	7.04^c
Morale	70.33 ± 16.21^a	61.17 ± 24.89^{ab}	43.28 ± 23.40^b	4.01^d
Innovativeness	75.19 ± 16.28^a	67.61 ± 26.29^{ab}	$43.6.55 \pm 22.19^b$	4.40^d
Autonomy	67.21 ± 12.64^a	65.66 ± 22.87^{ab}	463.77 ± 18.78^b	4.49^d
Adaptation	71.71 ± 9.93^a	60.96 ± 24.15^a	33.75 ± 19.56^b	11.87^c
Problem solving	67.30 ± 14.84^a	60.93 ± 20.29^{ab}	43.13 ± 17.54^b	4.54^d

[a,b]Means $\pm$ SD sharing a common superscript are not significantly different by Tukey HSD comparison.
[c]$p < 0.001$.
[d]$p < 0.05$.

dimensions Goal focus and Adaptation Recognized schools did out-perform Acceptable schools (note the absence of a superscript b). While the standard deviations, particularly for the Acceptable schools, were quite large, the estimated effect sizes for group differences ranged from 1.11 to 1.80, indicating substantial across-group variability

These findings suggest that the dimensions Goal focus and Adaptation describe aspects of school health and culture that are crucial to the academic success of students within the school. The ability of persons, groups or organizations to have clarity, acceptance, and support (Goal focus) and the ability of organizations to tolerate stress and maintain stability while being responsive to the demands of the external environment (Adaptation) represent dimensions of the school climate that show the greatest variance when looking at differences between the climates of Recognized and Acceptable schools.

Discussion

Exemplary schools were found to possess healthier climates than Acceptable schools, which reported lower organizational health scores. The OHI survey measures organizational health by asking questions that relate to various aspects of the school environment. Eleven of the 80 questions comprising the OHI refer directly to the effective performance of the principal as rated by the teachers of the school.

Recommendations and limitations

The study found that Exemplary, Recognized and Acceptable schools varied with regard to organizational health. The organizational dimensions Goal focus and Adaptation were most effective in discriminating between the cultures of Recognized and Acceptable schools. Since these were the only

two dimensions that exhibited statistical significance between these categories of school cultures, it follows that Goal focus and Adaptation justify special attention when developing a healthy school climate.

Since Goal focus and Adaptation accounted for the greatest variance between schools rated Recognized and Acceptable on student achievement, how do these dimensions affect the climate of the school and how are they affected by leadership? First, research suggests that one of the most important actions that a principal initiates within a school is to promote a strong vision for the organization (Leithwood *et al*. 2004). When the principal supports clear goals for the school that are accepted and supported by the staff, then organizational health scores will be higher, reflecting his/her leadership influence on the climate. Likewise, when the principal develops and supports structures within the school that allow the organization to tolerate stress and maintain stability while at the same time effectively coping with the demands of the environment, he/she has effectively improved the school's ability to adapt. It is through the principal's ability to interact with the climate of the school in a manner which improves Goal focus and Adaptation that the learning environment is improved. The findings of this study suggest that when principals interact with the climate of the school in ways that increase Goal focus and build structures that support Adaptation the climate will more effectively enhance learning for students.

More study is needed to address the associations between principal leadership behaviours and Goal focus and Adaptation within schools. What aspects or styles of leadership are most closely related to improved Goal focus and Adaptation? This question is significant because, as stated earlier, it is through their interactions with the climate that principals most effectively have an impact on students' achievement (Hallinger and Heck 1998). Hackman and Wageman (2007) suggested that different leaders can behave in their own unique manner and still achieve effective leadership results. Therefore, is it the principals' specific leadership style or his/her use of deliberate strategies that significantly improve the climate of the school? The answer to this question requires further study that has the potential to significantly affect and change our views of leadership.

Since this study used OHI scores as the measure of school health, more study is recommended to examine the meaning of improved OHI scores. Comparisons between school climate and student achievement can help school principals focus their efforts to improve student achievement. This study supports the notion that healthy schools will achieve higher ratings on the TAAS.

This study is limited in that the sample is small (29 schools) and that there were no Low-performing schools in the sample. In addition, the sample was composed of high schools and middle schools, as well as elementary schools. A larger sample which includes one level of school may reveal data that strengthens the findings of this study.

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