



Question: How does school climate relate to academic achievement in AISD, and what can we learn from these relationships?

Response:

Background

Research suggests that school climate contributes to a variety of factors including student achievement, reduced violence, and higher morale (Marshall, 2003; Perkins, 2006; Stover, 2005). However, few studies have examined the relationship between climate and achievement in multiple school settings. It is not uncommon for students in elementary school to report more positive school climate than their secondary school counterparts (Jefferson County Public Schools, 2004; Missoula County Public Schools, 2001; Miami-Dade County Schools, 2004). This is not surprising due to the differences between elementary and secondary schools, most notably single vs. multiple classes and developmental differences between elementary and secondary students. The possibility arises that school climate may be more or less related to academic achievement depending on the school setting. Consequently, this study examines the relationship between climate and achievement separately for elementary and secondary schools.

Methodology

School climate surveys of students and staff were implemented in AISD to monitor recent efforts to improve campus environments and positive behavioral support systems. The annual student survey was piloted and pretested in the fall of 2003 and has been conducted in grades 3-11 on every campus each spring since 2004. The 41-item survey is comprised of three main factors (Behavioral Environment, Adult/Student Interactions, and Academic Environment), which consist of a total of seven smaller subscales (*Peer Behavior, Behavioral Expectations, School Safety & Cleanliness, Teacher Support & Engagement, Adult Fairness & Respect, Academic Standards, and Academic Self-Confidence*). The staff survey has been conducted each spring since 2005, and consists of the Organizational Health Inventory (OHI-E and OHI-M) (Hoy, Tarter, & Kottkamp, 1991) and additional items designed to assess *Safety* and *Positive Behavior/Behavioral Supports*. The OHI-E and OHI-M are comprised of five and six dimensions, respectively. These include *Institutional Integrity, Collegial Leadership, Resource Influence, Teacher Affiliation, and Academic Emphasis* for elementary staff, and *Institutional Integrity, Collegial Leadership, Principal Influence, Resource Support, Teacher Affiliation, and Academic Emphasis* for secondary staff.

The student and staff surveys were administered anonymously on every campus; therefore, analyses in this study were limited to school-level data. In addition to climate subscale results, school-level demographic data also were included as independent variables, such as the percentage of students identified as low-income, percentage of students identified with limited English proficiency, and average years of teacher experience on the campus. The dependent variable, academic achievement, was represented by the percentage of students who met the passing standard on the Reading portion of the Texas Assessment of Knowledge and Skills (TAKS).

Results

Initial correlations indicated strong inverse relationships between the percentage of low-income students and the percentage of students passing TAKS ($r = -.82, p < .001, n = 74$ for elementary; $r = -.97, p < .001, n = 28$ for secondary). However, scatter plots revealed that the relationship between income and academic achievement dissipated once elementary campuses reached a threshold of 80% low-income. Thus, elementary campuses were divided into Highest Need (>80% low-income) and Less High-Need (<80% low-income) campuses.

Correlations between the percentage of low-income students and the percentage of students passing TAKS were much different ($r = -.73, p < .001, n = 43$ for Highest Need and $r = -.16, ns, n = 31$ for Less High-Need). Due to the differential relationship of income and academic achievement at elementary schools, separate regression models were created for Highest Need EL and Less High-Need EL campuses. Final regression models to account for academic achievement revealed some common contributing factors across Highest Need EL, Less High-Need EL, and Secondary schools.

Despite the strong correlation between income and achievement for Less High-Need ELs, income was not a significant predictor of academic achievement once climate variables were included in the model. The two strongest predictors of academic achievement for Less High-Need ELs were student perceptions of *Peer Behavior* and staff perceptions of *Positive Behaviors/Behavioral Supports*. Together, these two variables accounted for over 74% of the variance in academic achievement (Adjusted $R^2 = .744, SE = 2.894$). Additional predictors could have contributed additional value to the model, but the small sample size necessitated that the model be limited to only two predictor variables.

The final model for Highest-Need ELs was not as strong, accounting for only 20% of the variance in academic achievement (Adjusted $R^2 = .203, SE = 5.360$). Once again, staff perceptions of *Positive Behaviors/Behavioral Supports* were important, along with staff perceptions of the *Academic Emphasis* on campus. No other campus demographic or climate variable was related strongly enough to academic achievement to further enhance the model.

The initial model for Secondary schools accounted for 92% of the variance in academic achievement (Adjusted $R^2 = .921, SE = 3.436$) with three variables: Percentage of students with limited English proficiency (*LEP*), staff perceptions of *Academic Emphasis*, and student perceptions of *Teacher Support & Engagement*. However, due to the small sample size ($n = 28$), the final model includes only *LEP* and *Academic Emphasis* (Adjusted $R^2 = .913, SE = 3.603$).¹

¹ Although the correlation between campus LEP percentage and academic achievement ($r = -.95, p < .001$) was slightly less than the correlation between campus low-income percentage and academic achievement ($r = -.97, p < .001$), the inclusion of LEP, rather than low-income percentage, into the Secondary model allowed climate to be significant in the model. LEP and low-income percentages were positively related with a correlation of $r = .91 (p < .001)$. Future research will address whether climate may serve to moderate the relationship between income and achievement.

Discussion

This research suggests that climate is indeed an important predictor of academic achievement, and that the most important aspects of school climate are the positive student behaviors and positive behavioral supports that exist on a campus, along with staff perceptions of the extent to which a school is driven by a quest for academic excellence.² For this reason, AISD's initiatives to promote Positive Behavior Supports, Character Education, and the "Four R's" may be critical components of long-term academic improvement efforts.

However, results suggest that the relationship between climate and achievement may be less important at elementary schools with very high percentages of low-income students. While climate variables were related more strongly to academic achievement than other school-level factors thought to influence academics, such as teacher experience, principal experience, student mobility, and students per teacher, the model could only account for 20% of the variance in achievement at elementary schools with highest need. Future research should examine additional school characteristics to identify other factors that may relate strongly to academic achievement at those elementary schools.

Future research also should examine the potential moderating effects of school climate on the relationships between achievement and campus low-income and LEP percentages.

References

- Hoy, W., Tarter, C., & Kottkamp, R. (1991). *Open schools/healthy schools: Measuring organizational climate*. Beverly Hills, CA: Sage.
- Jefferson County Public Schools (2004). 2004-2005 comprehensive school survey results. (Retrieved on November 28, 2005 from <http://www.jefferson.k12.ky.us/Departments/AcctResPlan/SurveyResultsPreface.htm>).
- Marshall, M. (2003). *Examining school climate: Defining factors and educational influences*. Research summary for the Center for Research on School Safety, School Climate and Classroom Management, Georgia State University.
- Miami-Dade County Schools (2004). *School climate survey 2003-04 districtwide data*. (Retrieved on November 28, 2005 from http://drs.dadeschools.net/ClimateSurvey/2003-04/DISTRICT_SUMMARIES_3-4.htm).
- Missoula County Public Schools (2002). *MCPS district-wide student survey results*. (Retrieved on November 28, 2005 from <http://www.mcps.k12.mt.us/DistrictProfile/elemstudentsurvey.htm>).
- Perkins, B. (2006). *Where we learn: The CUBE survey of urban school climate*. National School Boards Association. Alexandria, VA.

² Student perceptions of *Academic Standards* were not significantly related to academic achievement; however, the range of responses to these items was restricted, such that most campuses received very high ratings in this area. Due to the restricted range of responses on this subscale, correlations were not significant.

Stover, D. (2005). Climate and culture: Why your board should pay attention to the attitudes of students and staff. *American School Board Journal*, Vol. 192, 12.