Table of Contents

Board of Editors ................................................................. 2

Research Articles

Examining Variability in Superintendent Community Involvement ......................... 3
   Theodore J. Kowalski, PhD; I. Phillip Young, PhD; and George J. Petersen, PhD

The Accuracy of Perceptions of Education Finance Information: How Well Local Leaders Understand Local Communities .......................................................... 17
   Barbara M. De Luca, PhD; Steven A. Hinshaw, PhD; and Korrin Ziswiler, MBA

Superintendent Perceptions of Multi-tiered Systems of Support (MTSS): Obstacles and Opportunities for School System Reform ............................................. 30
   Shannon K. Dulaney, EdD; Pamela R. Hallam, EdD; and Gary Wall, EdD

In What Ways Is the New Jersey County Vocational School Admissions Criteria a Predictor of Student Success on State-Mandated Tests? .............................. 46
   Scott Rubin, EdD and Soundaram Ramaswami, PhD

Mission and Scope, Copyright, Privacy, Ethics, Upcoming Themes, Author Guidelines & Publication Timeline ................................................................. 61

AASA Resources ...................................................................... 65
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Examining Variability in Superintendent Community Involvement

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Abstract

This study examined the extent to which four independent variables (age, gender, education level, and district type) accounted for variability in superintendent community involvement. Two covariates associated with levels of community involvement (disposition toward community involvement and district enrollment) were infused to assess the impact of the independent variables. Analysis revealed that the model accounted for 8% of the variance as indicated both by $R^2$ and by adjusted $R^2$. Given the number of respondents (1,867), this is considered a medium effect having practical implications in the applied setting. Among the four independent variables, only a single main effect (district type) was found.

Key Words

community involvement, democratic localism, education leadership
School district superintendents have a broad range of responsibilities, but they are typically categorized as either management-related or leadership-related. The former require decisions about how to do things; they commonly encompass actions such as controlling resources, supervising personnel, and organizing operations (Hanson, 2003).

The latter require decisions about what needs to be done to improve a district and the schools in it; they commonly encompass actions such as inspiring others, building coalitions, and facilitating collective reform efforts (Yukl, 2005). Research on superintendents has established that managerial functions have been more pervasive and uniform than leadership functions, largely because the former stem from laws and policies and the latter stem from professional norms (Johnson, 1996).

Over the past few decades, the focus of school reform has shifted more toward the local level. Specifically, most states now require districts to engage in inclusive strategic planning so that reforms can be tailored to real student and community needs. Stakeholder participation in pivotal activities, such as visioning and goal setting, presents new challenges for superintendents, especially in the realm of direct community involvement. As examples, the success of locally-driven reforms usually depends on factors such as coalition building, political support, and sufficient economic resources (DuFour, 2012; Duke, 2008).

Despite the espoused importance of community involvement in extant literature, studies of superintendents conducted since 1990 (e.g., Glass, 1992; Glass, Björk, & Brunner, 2000; Rutherford, Anderson, & Billig, 1997) have reported considerable variability in this activity. Unfortunately, little effort has been made to account for this inconsistency.

This study, deploying selected data from a national study of superintendents (Kowalski, McCord, Petersen, Young, & Ellerson, 2011) addresses this void. The analysis was guided by the following research question: Do four independent variables (age, gender, district type, and level of education), individually or in combination, account for variance in a single dependent variable, community involvement? In answering this query, two covariates (dispositions toward involvement and district enrollment) were infused to more accurately determine the possible influence of the independent variables.

First, a theoretical framework, addressing civic engagement, dispositions and behavior, and superintendent involvement, is provided. Second, the study methods are explained and findings reported and discussed.

Theoretical Framework

**Justifications for community involvement**

Superintendent involvement in the local community has been advocated for philosophical, professional, and political reasons. Philosophically, public schools, as democratic institutions, should allow citizens to pursue individual and group interests (Levin, 1999). Prior to 1950, this was accomplished by stakeholders having a direct voice in important decisions (e.g., via town hall meetings).

Such participation, known as democratic localism (Levin, 1999), was valued because public school policy was forged at the point where societal rights—the experiences, influence and values society wants reproduced through a common public school curriculum— intersected with individual rights—the experiences, influence and values parents want expressed to their children in local schools (Gutmann, 1987).

In this governance structure, superintendents had no choice but to be
immersed in community activities. After 1950, however, democratic localism gave way to representative democracy, a governance structure in which boards of education, preferably guided by superintendents, made decisions for the community.

The transition allowed many superintendents, especially those in larger and more urban districts, to limit direct involvement with stakeholders (other than board members and district employees). Considering the potential dark side of representative democracy, Melby (1955) advised superintendents and principals to not insulate themselves. Rather, they advised them to continue releasing “the creative capacities of individuals” by mobilizing “the educational resources of communities” (p. 250).

Professionally, the value of superintendent community involvement did not become apparent until research on systems theory was conducted in school administration approximately six decades ago. Previously, administrative behavior was analyzed in relation to internal operations only. Systems theory research produced a deeper understanding of how external legal, political, social, and economic systems affected organizations and the behavior of individuals and groups in them (Getzels, 1977).

Over time, systems thinking has required administrators “to accept that the way social systems are put together has independent effects on the way people behave, what they learn, and how they learn what they learn” (Schlechty, 1997, p. 134). Today, community involvement is normative in the education profession; scholars (e.g., Murphy, 1991; Schein, 1996) posit that the activity enhances assessments of and responses to evolving social conditions.

At a third level, community involvement has been promoted as a means for acquiring political capital, an asset allowing superintendents to project a positive image and to build relationships with a broad range of stakeholders. The need for political capital increased markedly after states adopted directed autonomy as a reform strategy (Baumann, 1996).

Beginning in the late 1980s, most states set broad state benchmarks, granted school districts leeway to determine how these goals would be met, and then held boards of education and superintendents accountable for the outcomes (Weiler, 1990). This revised strategy required superintendents to galvanize policymakers, employees, and other stakeholders (Howlett, 1993) in order to build political coalitions that would support proposed change (Leithwood, Begley, & Cousins, 1992).

Despite persistent philosophical, professional, and political justifications for community involvement, not all boards of education have required or even encouraged their superintendents to be highly involved in community activities (Björk & Gurley, 2005; Björk & Lindle, 2001). In urban and suburban districts, for example, it is not uncommon for superintendents to reside outside the employing district.

**Apprehensions about community involvement**

One reason why some superintendents have been apprehensive about community involvement are persistent and inevitable tensions between democracy and professionalism. According to Wirt and Kirst (2005), stakeholders expect public school administrators to be both professional leaders directing and facilitating school improvement and domesticated public employees subservient to the will of the people.
Recognizing the dissimilarities in the two roles, numerous authors such as DuFour (2012), Evans (1996), and Fullan (1993) have urged administrators to develop a culture of empowerment and collegiality, an ethos in which administrators encourage and guide democratic discourse intended to result in pivotal school-improvement decisions (Epstein, 1995).

Anxiety towards community involvement also has stemmed from concerns about excessive conflict. Cooper, Bryer, and Meek (2006) noted that citizens seek to influence public policy in three dissimilar ways; they categorized them as being antagonistic, communicative, or electoral.

Elections, the most obvious form of influence, are typically required by law and do not result in direct confrontations between citizens and school officials. The other two types of engagement, however, often produce tensions resulting in political or philosophical disagreements. Antagonistic approaches are based on the assumption that citizens can achieve their goals by aggressively confronting governmental officials. This behavior almost always had negative residual effects, such as destroying relationships (Feuerstein, 2002) and causing superintendents to avoid future community involvement (Kowalski, 2013).

The communicative approach to citizen involvement also entails open exchanges of ideas but for positive motives, such as school improvement (Kowalski, 2011). Commonly referred to as deliberative democracy, the process is characterized by joint action, shared commitment, and mutual responsibility (Cooper et al., 2006; Etzioni, 1993; Fishkin, 1991). This type of civic engagement, however, is difficult and time consuming. Moreover, superintendents must be prepared to facilitate discussions that inevitably expose dissimilar and often conflicting views about public education (Cooper, Fusarelli, & Randall, 2004).

Communication competence, although a widely-recognized standard for superintendents (e.g., Hoyle, 1994; Shipman, Topps, & Murphy, 1998), has received relatively little attention in relation to academic preparation and competence (Osterman, 1994). Communication scholars, such as Wiemann (1977), posit that competence and performance are entwined across professions; that is, a competent practitioner knows what constitutes appropriate behavior and he or she possesses requisite skills.

McCroskey (1982) added that dispositions, values and beliefs that trigger intentional behavior (Splitter, 2010), are critical. In the realm of district administration, apprehensions about personal competence logically affect dispositions toward communicative approaches for civic engagement (Kowalski, 2005).

Research on superintendent community involvement
The foci of studies on community involvement have varied. Some have sought to describe effective superintendent involvement. Ahillen (2010), for example, identified emergent themes and concluded that effective community engagement entailed (a) maintaining high visibility, (b) communicating with all stakeholders, (c) collaborating with stakeholder groups, (d) creating opportunities for dialogue, and (e) promoting inclusive decision making. Baxter (2007), found that a combination of effective communication, collaboration, and empowerment were associated with effective community engagement.

In her study of superintendents, Bolla (2010) found that both gender and the demographic nature of the district were
associated with levels of community involvement. Specifically, female superintendents and superintendents in urban districts were more likely to report higher levels of community involvement.

Hopper (2003), Jensen (1989) and Nguyen-Hernandez (2010) studied both the quantity of community involvement and possible associations between levels of involvement and selected independent variables. In all three studies, superintendents were found to have had dissimilar levels of involvement. Both Jensen (1989) and Nguyen-Hernandez (2010) found that a strong relationship between positive dispositions of community involvement and a high level of community involvement. Hopper (2003), on the other hand, found that levels of engagement varied even among those with positive or negative dispositions.

Superintendent Community Involvement
Extant literature extols the virtues of superintendent community involvement and verifies that levels of engagement vary substantially. Even so, the reasons underlying dissimilar behavior remains a debatable topic.

In this vein, this study was guided by the following research question: Can the variance in superintendent community involvement be accounted for by certain demographic characteristics (age, gender, and type of district), by a human capital endowment (level of education), or some combinations (interactions) of these variables.

Methods
The study population consisted of 1,867 public school superintendents who completed either an electronic or paper survey for a national study sponsored by the American Association of School Administrators. The instrument was developed by the authors and content validity was established by a panel of former superintendents, who at the time of the study were professors of school administration. Respondents were initially contacted via email. Data were compiled by a commercial research firm and then analyzed by the authors.

This article focuses on eight questions that were included on the national survey. Because some respondents did not answer all these questions, the number of responses to each question varied slightly. The dependent variable was level of community involvement and the analysis categories were considerable, moderate, limited, and none. Four independent variables (three demographic characteristics and a human capital endowment) were analyzed. To operationalize them, a dichotomized scoring scheme was used.

Categories were established as follows:

- Age (less than 50, 50 or older)
- Gender (female, male)
- District location (non-rural, rural)
- Education level (less than a doctorate, doctorate)

Two covariates were used to assess the impact of independent variables. One was superintendent disposition toward community involvement. This temperament was determined by responses to two questions. The first pertained to the perceived value of community involvement to the superintendent; the response options were major asset, minor asset, neither an asset nor a liability, minor liability, and major liability.

The second was the perceived value of superintendent community involvement to the school district; the response options were major asset, minor asset, neither an asset nor a liability, minor liability, and major liability. A composite score was computed by summing
responses to both items, and a reliability assessment for this composite score yielded a Chronbach’s Alpha coefficient of .84.

The other covariate was district size determined by student enrollment. According to Poppink and Schen (2003), rural school districts differ from non-rural school districts in many ways, especially from a cultural perspective but not necessarily from an enrollment perspective.

Many suburban school districts, for example, have enrollments similar to those in rural school districts. Moreover, size and location are distinct variables; for example, there are both large and small urban districts (Hentschke, Nayfack, & Wohlstetter, 2009). Therefore, district enrollment was treated as a covariate. The response categories were <300, 300-2,999, 3,000-24,999, and >24,999. By controlling these sources of variations \textit{a priori}, adjusted means for the independent variables were calculated.

To answer the research question, superintendent responses were cast into a 2x2x2x2 completely crossed factorial design. This factorial design permitted consideration to each main effect (\(n=4\)) as well as to all possible interaction effects (\(n=11\)). The statistical technique used in this study was an ANCOVA where a calculated value for community involvement and the size of a school district served as covariates.

**Findings**

The modal respondent in this study was a male between ages 50 and 60. The respondents were divided with respect to possessing a doctorate, with those not possessing the degree constituting a slight majority.

Likewise, respondents were divided with respect to being employed in a rural versus non-rural district with those in the former category constituting a slight majority. Data regarding the independent variables are in Table 1.
Applying the methods previously described, the ANCOVA was calculated and the resulting data are reported in Table 2. To interpret information contained in this table, a common statistical criterion was used to define a meaningful difference in this largely uncharted area. Although data in Table 2 are population parameters rather than sample estimates and thus, are not subject to sampling errors (e.g., Type I or Type II), a meaningful difference among population parameters was similarly defined. That is, a meaningful difference was equivalent in magnitude to one that would have been detected by an inferential sample using an alpha level of .05.

As can be observed in Table 2, the overall model accounts for 8% of the variance associated with a superintendents’ perceived level of community involvement as indicated both by $R^2$ and by adjusted $R^2$. This amount of variance is nontrivial, especially given the large number of respondents. By most statistical standards (see Huck, 2012), 8% is considered a medium effect having practical implications in an applied setting.
Table 2

ANCOVA for Superintendents’ Level of Community Involvement

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III sum of squares</th>
<th>df</th>
<th>Mean square</th>
<th>F</th>
<th>Sig.</th>
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<tr>
<td>Dispositions</td>
<td>21.768</td>
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<td>21.768</td>
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<td>Enrollments</td>
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<td>28.326</td>
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<td>Gender (A)</td>
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<td>.932</td>
<td>1.737</td>
<td>.188</td>
</tr>
<tr>
<td>Age (B)</td>
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<td>1</td>
<td>1.060</td>
<td>1.974</td>
<td>.160</td>
</tr>
<tr>
<td>Type of district (C)</td>
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<td>1</td>
<td>2.195</td>
<td>4.090</td>
<td>.043</td>
</tr>
<tr>
<td>Education level (D)</td>
<td>.005</td>
<td>1</td>
<td>.005</td>
<td>.010</td>
<td>.921</td>
</tr>
<tr>
<td>A x B</td>
<td>.064</td>
<td>1</td>
<td>.064</td>
<td>.119</td>
<td>.730</td>
</tr>
<tr>
<td>A x C</td>
<td>1.933</td>
<td>1</td>
<td>1.933</td>
<td>3.601</td>
<td>.058</td>
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<tr>
<td>A x D</td>
<td>.336</td>
<td>1</td>
<td>.336</td>
<td>.627</td>
<td>.429</td>
</tr>
<tr>
<td>B x C</td>
<td>.318</td>
<td>1</td>
<td>.318</td>
<td>.592</td>
<td>.442</td>
</tr>
<tr>
<td>B x D</td>
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<td>1</td>
<td>.007</td>
<td>.012</td>
<td>.912</td>
</tr>
<tr>
<td>C x D</td>
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<td>1</td>
<td>.002</td>
<td>.004</td>
<td>.950</td>
</tr>
<tr>
<td>A x B x C</td>
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<td>1</td>
<td>.852</td>
<td>1.587</td>
<td>.208</td>
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<tr>
<td>A x B x D</td>
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<td>1.219</td>
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<tr>
<td>A x C x D</td>
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<td>.092</td>
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<td>.678</td>
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<tr>
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<tr>
<td>A x B x C x D</td>
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<td>.041</td>
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<td>1783</td>
<td></td>
<td>.537</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>19091.000</td>
<td>1801</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. R Squared = .08
b. (Adjusted R Squared = .08)
Both the composite score for the value of community involvement and the composite score for school district enrollment were found to have a far smaller probability (i.e., $F = 40.56; \text{df} = 1, 1,783; p = \leq .00$ and $F = 52.76; \text{df} = 1, 1,783; p = \leq .00$, respectively) than is required by the traditional alpha level of .05. After controlling both superintendent dispositions (values placed on community involvement) and district size (enrollment) via adjusted means, only a single main effect was noted among the independent variables, school district type (i.e., rural versus non-rural).

Specifically, after the composite values for community involvement and for the size of a school district were infused as covariates and after consideration was given to the lack of interaction effects among all independent variables, superintendents employed in rural districts (mean = 3.28) were found to have reported higher levels of community involvement than did superintendents employed in non-rural districts (mean = 3.05).

**Discussion**

Research has repeatedly shown that superintendents do not involve themselves in community activities to the same degree. The reasons for this variability, however, remain largely unknown. In seeking to address this information void, this study examined the extent to which selected variables accounted for inconsistent levels of community engagement.

Although not a specific point of interest in this study, data reveal a positive association between the perceived importance of community involvement (both from personal and institution perspectives) and reported levels of involvement. This relationship is congruent with literature in other disciplines. Communication scholars (Dilenschneider, 1996; McCroskey, 1982; Spitzberg & Cupach, 1984), for example, contend that administrators who have positive dispositions toward interacting with persons outside the organization actually behave in this manner.

Moreover, several previous studies have reported higher levels of community involvement among superintendents who believed that the activity has a positive effect on student learning (e.g., Jensen, 1989 & Nguyen-Hernandez, 2010) or on community economic development (e.g., Thomas, 2002).

A single main effect for district type was found in this study; rural-district superintendents reported higher levels of community involvement than did non-rural superintendents. This finding is generally congruent with research by Jenkins (2007) that found rural superintendents had greater transparency locally and more exposure to community stakeholders than did other superintendents.

Conversely, the finding is inconsistent with Bolla’s (2010) research reporting that the most community involved superintendents were in urban districts. She concluded that social complexity and political activity inherent in urban settings accounted for the finding. Categorical definitions (rural versus non-rural in this study and using urban as a separate category in her study) may partially explain the inconsistent findings.

In seeking to expand the knowledge base on superintendent community involvement, several lines of inquiry are recommended.

Specifically, greater attention to dispositions is needed. For example, what causes superintendents to embrace dissimilar values and beliefs about civic engagement?
To what extent do boards of education assess dispositions when employing superintendents? Other recommended lines of inquiry include possible discrepancies between perceived and actual community involvement and the direct effects of independent variables on actual levels of community involvement.

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The Accuracy of Perceptions of Education Finance Information: How Well Local Leaders Understand Local Communities

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Abstract

The purpose for this research was to determine the accuracy of the perceptions of school administrators and community leaders regarding education finance information. School administrators and community leaders in this research project included members of three groups: public school administrators, other public school leaders, and leaders in the non-education public and private sectors of the community. Using a questionnaire, we asked the respondents to identify the top five school districts in the Dayton, Ohio area, out of 22 choices, based on their perceptions of four finance characteristics and one student achievement factor. Property tax rate and spending per student were the most misperceived factors.

Key Words

perceptions, finance, leaders
No two states fund public P-12 schools with the same combination of funding formula or procedural mechanisms. Even within states, there can be different procedures for school funding.

For example, voters in several school districts in New York must vote on an annual budget each year; if voters reject the budget, each district must revise and resubmit it for another vote.

Other states require local boards of education to make a formal request for additional operating money to the state board of education.

The state board then decides whether the district may collect more money from community members, the decision based primarily on the level of need.

In Ohio, the local school districts go directly to the community for permission to collect more money. In this case, the local district must put a tax levy on the ballot and voters determine whether the district will get more money, regardless of the level of need.

Ohio relies on voter approved tax levies to fund local school districts (Fleeter, 2007). With a well-stocked arsenal of tax levy options, public school districts in Ohio have the ability to place their any one or more of several different types of levies before their voters. Each type of levy is designed to address a different financial situation and need.

In the months leading up to school board and budget elections in Ohio, it is not uncommon to receive school levy campaign flyers, see campaign or advocacy signs in neighborhoods, or to read about proposed school initiatives in local newspapers.

Mixed Messaging
One newspaper in the city of Dayton, Ohio ran an editorial endorsing a local school district levy, touting that the district “Spending per-pupil is lower than most Dayton-area suburban districts, while the percent of the budget that goes toward instruction tops all other suburbs” (Dayton Daily News, 2010, para. 8).

This seemingly innocuous statement of support is actually a piece of misinformation. In 2010, the district discussed in this article was not lower in spending than most districts in the Dayton area; it ranked ninth highest in spending among 22 districts in this metropolitan area.

Although this erroneous statement favored the district in this particular situation, false information about school financial issues can potentially create harmful misperceptions that lead to false realities in the minds of voters about the operations and funding of schools in the minds of local voters.

Community members react to this type of information, whether it is false or accurate. Figure 1 illustrates the influence of perception on creating a false or real reality in the minds of community members. As the figure suggests, it is imperative that community members possess accurate perceptions of the financial reality within a school district in order to fully comprehend the tax levy initiatives.

From a consumer behavior standpoint, perceptions and awareness work together as people create beliefs about their surrounds (Mullen 7 Johnson, 1990). Beliefs inform future behavior and choices of individuals over time. When applied to school finance issues, perceptions can influence whether people view local school districts as thrifty or spendthrift.
Figure 1. The impact of perception on creating a false or real reality.
Problem and Question

Passing a school tax levy in Ohio is no easy task for school district administration. Between 2002 and 2009 there were 2,198 operating tax levies on the ballot, distributed among Ohio’s 614 public school districts. Of those 2,198 levies, 1,147, or 52.2% of the tax requests, passed (Ohio School Boards Association, 2010).

Johnson (2008) used a case study approach to analyze literature that identified strategies for conducting a successful public school levy campaign.

Johnson measured success by school district administrators receiving a majority of “yes” votes for the tax levies proposed. He found 21 strategies that could influence school tax levy passage rates. One was to “establish an ongoing school-community relations program” (p. 52). Another strategy required that districts “involve community leaders, staff, and media in planning the campaign” (p. 56), but only after “educat[ing] district staff and students” (p. 57).

In other words, building bridges with all community constituencies is critical to levy passage, but critical to building bridges is knowledge as illustrated in Figure 1.

Community members, including school staff and non-school representatives, must have accurate information about the proposed tax levy to effectively assist in “passing” a school budget proposal.

Our purpose for this research was to determine the accuracy of the information distributed by school and community leaders about their proposed school tax levies. The purpose was to determine how school administrators and community leaders perceived their local school districts with regard to key educational finance data used to promote and support public school district operating levies. We guided the study with the following research question: How accurate are the perceptions of school and community leaders regarding the information about proposed school tax levies?

Background

The complexities of school levies, bond issues, and their corresponding campaigns have been the focus of several school finance and policy authors in the past (Balsdon, Brunner & Ruben, 2003; Bauscher, 1994; Dolph, 2006; Funai, 1993; Holt, Wendt, Smith, 2006; Ingle, Johnson, & Petroff, 2011; Johnson, 2008; Joiner & German, 1993; Piele & Hall, 1973; Whitmoyer, 2005). Yet little is known about school leaders and public perceptions of education finance information often discussed during levy campaigns.

If school leaders have misperceptions about financial factors of their own and neighboring districts, it might not be possible for them to accurately portray the financial need of their own school district to the public.

School administrators are responsible for providing pertinent information to constituents and developing and maintaining relationships between their school personnel and the local community. They can work to create effective and continuous communication to increase public engagement ultimately to aid in enhanced community understanding of the importance of supporting and passing school funding levies (Arriaza, 2004; Ingle, Johnson, & Petroff, 2011; Schutz, 2006).

School administrators can provide information related to financial, demographic, and performance statistics of the school district, but also statistics about neighboring and comparable districts.
According to Kronley and Handley (2003) this [information dissemination] “result(s) in intimate knowledge of (the) community’s educational issues and engender(s) well-informed and strongly held ideas about education needs and how to meet them” (p. 9). Well-informed community and school administrators are more likely to support local school efforts, be they financial or programmatic.

One managerial duty of district superintendents is to disseminate information inside the education organization, as well as externally to outside stakeholders (Kowalski, 2006; Owen & Ovando, 2000).

Information dissemination is crucial to gaining community understanding of the financial state of local public schools, particularly concerning current budgetary constraints that might affect academic performance and programs.

Without the diffusion of information from school leaders, citizens are left piecing together information from various media and personal outlets, which can often lead to a skewed or biased perception of the current reality of their public schools. This skewed reality, in turn, can make passing school tax levy initiatives all the more difficult.

**Role of the Principal**

Principals of local schools often have the ability to connect more frequently with community members than do superintendents. Principals sometimes have a more personal connection to citizens residing near their schools. They often see parents on a daily basis. Because of this, Epstein (2001) explained that they [school principals] are very important in promoting good relationships with the community.

Principals who maintain relationships with parents of students, former parents, and local networks can give credence to and answer questions about financial issues that impact school operations in an effort to promote passage of school tax levies.

According to Drake and Roe (1999), the principal is a key component in the leadership of local public schools, and the most logical immediate contact for neighborhood community members concerned with educational issues. If principals do not possess accurate information, they could unwittingly spread misperceptions to the public.

Kowalski, Petersen, and Fusarelli (2007) stated that, “Unfortunately, many taxpayers now see their relationships with school districts as unbalanced … they provide financial support but receive little or no benefit in return. This perspective is understandably most prevalent among residents without children enrolled in the district” (p. 28).

With about 70% of residents not having children of school age (Thompson & Wood, 2001), the superintendents and principals of schools have a heightened responsibility as spokespersons of the district to communicate the returns on community members’ investment in education to residents without children in the schools (Dolph, 2006).

In summary, a commanding knowledge of surrounding district demographics and financial information can be used as an essential piece in a well-planned public relations campaign during school levy initiatives.

**Method**

We undertook a quantitative, descriptive study, using a questionnaire that requested the
respondents to rank the top five school districts, from a list of 22, based on their perceptions of
four finance characteristics and one student
achievement factor. These 22 school districts, all from one region, represent six of the seven
school district typologies (reflecting urbanicity,
income, and poverty level), identified by the
Ohio Department of Education. As a result, the
groups can serve as a basis for a representative
sample of districts in the state, but results
cannot be generalized to the entire state due to
the small sample size.

Data were collected from 141
participants representing three different types
of community leaders. One group consisted of
47 public schools administrators (mainly
superintendents and principals). Another group
consisted of 52 school administrators, primarily
curriculum directors and other central office
staff responsible for master teacher
credentialing. Forty-two local people identified
as, and in training to be, local civic and
business leaders made up the third group. Each
group was mutually exclusive.

The five variables studied were (a) Fiscal Year (FY) 2010 property value per
student (35% of market value), (b) Tax Year (TY) 2007 resident median income (as
reflected on Ohio income tax returns), (c) FY2010 property tax rate for schools (operating
mills for residential and agriculture property), (d) FY2009 spending per student (sum of
administrative, operations, instructional, and support dollars divided by district average daily
membership), and (e) FY2009 performance index score (ranges from 0-120 with the goal of
100). Data for each variable reflected the most
recent years available at the time of the study.

Because tax revenue is a function of the
relationship between the property value and the
tax rate, the survey included ranking the
highest property value per student, property tax
rate for schools, and spending per student.
Median income is a measure of the ability to
pay the levy, thus participants were asked to
rank the school district resident median income.
Performance index score is a measurement of
student academic performance on Ohio
Achievement Assessments.

Each participant was asked to rank
his/her perception of the top five school
districts (of the 22 districts provided) on each
of the five factors identified above.

It is important to note that participants
were asked to rank the districts based on
perception, not knowledge. Of course,
knowledge influences perception, but the
researchers emphasized that it was not critical
to have accurate knowledge of the districts
because it was perceptions that were being
sought.

We summed the number of times each
district in the study was ranked in the top five
for each factor included. The five districts
ranked in the top five the most frequently led
the discussion of our findings.

Results
Table 1 shows the real values for all variables
investigated in this study plus average daily
membership (ADM) for all 22 school districts.
The rank, from one to 22, is in the column after
the value for each factor.
Table 1

Descriptives and Ranks of District Characteristics

<table>
<thead>
<tr>
<th>District</th>
<th>ADM (FY09)</th>
<th>ADM Rank</th>
<th>Property Value per Student ($s) (FY10)</th>
<th>Property Value per Student Rank</th>
<th>Resident Median Income ($s) (FY07)</th>
<th>Resident Median Income Rank</th>
<th>Property Tax Rate for Schools (mils) (FY10)</th>
<th>Property Tax Rate Rank</th>
<th>Spend per Student ($s) (FY09)</th>
<th>Spend per Student Rank</th>
<th>Perf. Index Score (FY09)</th>
<th>Perf. Index Score Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jefferson Township²</td>
<td>717</td>
<td>22</td>
<td>143,391</td>
<td>8</td>
<td>28,261</td>
<td>17</td>
<td>33.65</td>
<td>9</td>
<td>13,596</td>
<td>1</td>
<td>75.4</td>
<td>21</td>
</tr>
<tr>
<td>New Lebanon²</td>
<td>1,772</td>
<td>16</td>
<td>90,794</td>
<td>19</td>
<td>29,836</td>
<td>15</td>
<td>24.89</td>
<td>20</td>
<td>8,771</td>
<td>20</td>
<td>93.8</td>
<td>14</td>
</tr>
<tr>
<td>Northridge³</td>
<td>1,729</td>
<td>18</td>
<td>111,774</td>
<td>16</td>
<td>21,985</td>
<td>22</td>
<td>36.69</td>
<td>6</td>
<td>11,428</td>
<td>4</td>
<td>85.9</td>
<td>19</td>
</tr>
<tr>
<td>Preble-Shawnee³</td>
<td>1,4912</td>
<td>20</td>
<td>108,966</td>
<td>18</td>
<td>32,428</td>
<td>13</td>
<td>22.04</td>
<td>22</td>
<td>9,820</td>
<td>13</td>
<td>92.1</td>
<td>17</td>
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<tr>
<td>Tri-County North³</td>
<td>1,106</td>
<td>21</td>
<td>119,238</td>
<td>11</td>
<td>32,005</td>
<td>14</td>
<td>32.24</td>
<td>13</td>
<td>9,296</td>
<td>18</td>
<td>96.6</td>
<td>11</td>
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<tr>
<td>Valley View³</td>
<td>2,021</td>
<td>15</td>
<td>112,730</td>
<td>14</td>
<td>36,375</td>
<td>6</td>
<td>26.79</td>
<td>19</td>
<td>9,790</td>
<td>14</td>
<td>98.3</td>
<td>10</td>
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<tr>
<td>Fairborn⁴</td>
<td>4,647</td>
<td>9</td>
<td>140,459</td>
<td>9</td>
<td>27,854</td>
<td>18</td>
<td>29.90</td>
<td>17</td>
<td>9,592</td>
<td>15</td>
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<td>18</td>
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<tr>
<td>Mad River⁴</td>
<td>3,910</td>
<td>10</td>
<td>68,475</td>
<td>22</td>
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<td>19</td>
<td>33.10</td>
<td>10</td>
<td>10,132</td>
<td>10</td>
<td>92.3</td>
<td>16</td>
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<tr>
<td>Trotwood-Madison⁴</td>
<td>3,689</td>
<td>12</td>
<td>80,294</td>
<td>21</td>
<td>24,634</td>
<td>20</td>
<td>35.89</td>
<td>7</td>
<td>10,823</td>
<td>6</td>
<td>81.1</td>
<td>20</td>
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<td>Dayton⁵</td>
<td>22,047</td>
<td>1</td>
<td>87,978</td>
<td>20</td>
<td>22,721</td>
<td>21</td>
<td>32.54</td>
<td>12</td>
<td>13,425</td>
<td>2</td>
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<td>22</td>
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<tr>
<td>Brookville⁶</td>
<td>1,581</td>
<td>19</td>
<td>121,829</td>
<td>10</td>
<td>33,364</td>
<td>11</td>
<td>31.25</td>
<td>16</td>
<td>8,351</td>
<td>22</td>
<td>102.1</td>
<td>5</td>
</tr>
<tr>
<td>Carlisle⁶</td>
<td>1,764</td>
<td>17</td>
<td>112,545</td>
<td>15</td>
<td>34,511</td>
<td>8</td>
<td>22.04</td>
<td>21</td>
<td>8,970</td>
<td>19</td>
<td>94.2</td>
<td>13</td>
</tr>
<tr>
<td>Huber Heights⁶</td>
<td>6,870</td>
<td>5</td>
<td>110,396</td>
<td>17</td>
<td>34,387</td>
<td>10</td>
<td>42.05</td>
<td>3</td>
<td>10,897</td>
<td>5</td>
<td>94.7</td>
<td>12</td>
</tr>
<tr>
<td>Kettering⁶</td>
<td>7,447</td>
<td>4</td>
<td>187,562</td>
<td>4</td>
<td>33,348</td>
<td>12</td>
<td>35.68</td>
<td>8</td>
<td>11,465</td>
<td>3</td>
<td>100.2</td>
<td>8</td>
</tr>
<tr>
<td>Miamisburg⁶</td>
<td>5,770</td>
<td>7</td>
<td>166,889</td>
<td>6</td>
<td>35,149</td>
<td>7</td>
<td>29.62</td>
<td>18</td>
<td>9,411</td>
<td>16</td>
<td>99.0</td>
<td>9</td>
</tr>
<tr>
<td>Northmont⁶</td>
<td>5,922</td>
<td>6</td>
<td>116,775</td>
<td>12</td>
<td>36,641</td>
<td>5</td>
<td>39.90</td>
<td>4</td>
<td>9,862</td>
<td>12</td>
<td>101.9</td>
<td>6</td>
</tr>
<tr>
<td>Vandalia-Butler⁶</td>
<td>3,488</td>
<td>13</td>
<td>192,267</td>
<td>3</td>
<td>34,389</td>
<td>9</td>
<td>39.44</td>
<td>5</td>
<td>10,764</td>
<td>8</td>
<td>101.0</td>
<td>7</td>
</tr>
<tr>
<td>West Carrollton⁶</td>
<td>3,817</td>
<td>11</td>
<td>114,197</td>
<td>13</td>
<td>29,772</td>
<td>16</td>
<td>43.10</td>
<td>2</td>
<td>9,915</td>
<td>11</td>
<td>92.3</td>
<td>15</td>
</tr>
<tr>
<td>Beavercreek⁷</td>
<td>7,809</td>
<td>3</td>
<td>216,997</td>
<td>1</td>
<td>47,670</td>
<td>3</td>
<td>33.05</td>
<td>11</td>
<td>9,348</td>
<td>17</td>
<td>103.1</td>
<td>4</td>
</tr>
<tr>
<td>Centerville⁷</td>
<td>8,293</td>
<td>2</td>
<td>206,383</td>
<td>2</td>
<td>45,270</td>
<td>4</td>
<td>31.65</td>
<td>15</td>
<td>10,799</td>
<td>7</td>
<td>105.4</td>
<td>2</td>
</tr>
<tr>
<td>Oakwood⁷</td>
<td>2,193</td>
<td>14</td>
<td>148,333</td>
<td>7</td>
<td>58,930</td>
<td>2</td>
<td>47.34</td>
<td>1</td>
<td>10,361</td>
<td>9</td>
<td>108.7</td>
<td>1</td>
</tr>
<tr>
<td>Springfield⁷</td>
<td>5,517</td>
<td>8</td>
<td>173,252</td>
<td>5</td>
<td>61,506</td>
<td>1</td>
<td>32.05</td>
<td>14</td>
<td>8,435</td>
<td>21</td>
<td>105.0</td>
<td>3</td>
</tr>
</tbody>
</table>

²Rural/Agriculture—small ADM, low poverty, low-to-moderate median income; ³Rural/Small Town—moderate-to-high median income, below average poverty; ⁴Urban—low median income, high poverty; ⁵Major Urban—large ADM; very high poverty; ⁶Urban/Suburban—low-to-above average poverty, high median income; ⁷Urban/Suburban—very high median income, very low poverty

Vol. 10, No. 2 Summer 2013  AASA Journal of Scholarship and Practice
For example, Dayton, the only large urban district in the study, ranks first in size with 22,047 students. The district ranked 20th for property value per student (column 5) and it ranked 21st for resident median income (column 7). It ranked second for spending per student (column 11).

Dayton had the 3rd lowest property value per student and the second highest expenditure per student, but ranked the lowest in student academic performance (column 13). The smallest school district in the group, Jefferson Township (717 students), had the 8th highest property value per student and the highest expenditure per student in FY2009, but the 2nd lowest academic performance.

Table 2 shows the results from the top five districts selected from all participant groups. The participants consistently ranked Beavercreek, Centerville, Kettering, Oakwood, and Springboro in the top five for each variable. A checkmark indicates the participants’ accurate perception of a particular district ranked in the top five.

Table 2

*Participants’ Perception of Top Five Districts*

<table>
<thead>
<tr>
<th></th>
<th>Oakwood</th>
<th>Centerville</th>
<th>Beavercreek</th>
<th>Springboro</th>
<th>Kettering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Property Value</td>
<td></td>
<td></td>
<td>3</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>❌</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Median Income</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>❌</td>
</tr>
<tr>
<td>Property Tax Rate</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>✔</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
</tr>
<tr>
<td>Spending Per Student</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
<td>✔</td>
</tr>
<tr>
<td>Performance Score</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>❌</td>
</tr>
</tbody>
</table>
For example, with respect to property value, Centerville was selected in the top five more frequently than any other district. The respondents accurately perceived property value, median income, and performance index score for four-out-of-the-five districts. In other words, they placed four school districts in the top five, when they were, indeed, in the top five based on available data.

An “x” indicates the participants’ misperception of a particular district being ranked in the top five. The participants misperceived property tax rate and spending per student for four-out-of-the-five school districts. In other words, they placed four school districts in the top five when they were not in the top five based on the available financial data.

The pattern of misperceptions is interesting to us. In two cases, median income and performance score, the participants accurately perceived the top four districts but misperceived the fifth, Kettering.

This means that the perception of Kettering was that residents had a higher median income than they actually had and that the students performed better than they actually did on state standardized tests.

Perhaps more interesting to us were the misperceptions regarding property tax rate and spending per student. Only one district in each case was perceived as correctly being in the top five. Note that Springboro received the 6th greatest number of votes for spending per student, when, in reality, Table 1 shows that it ranked 21st in spending of the 22 districts in the study.

Equally notable is that this was the only instance in which a district other than those listed in Table 2 (Dayton) was selected in the top five. Dayton received the 5th greatest number of votes for spending per student, which is an accurate perception.

Discussion
This study set out to determine the accuracy of the perceptions of school and community leaders regarding education finance information. Although the accuracy of the perceptions was noted, the patterns of the perceptions of these financial factors yielded interesting results. Ironically, five school districts were consistently perceived to be in the top five of every financial category.

So what is it about those five school districts (Beavercreek, Centerville, Kettering, Oakwood, and Springboro) that made them popular choices regardless of the variable?

Four-of-the-five school districts (Beavercreek, Centerville, Oakwood, and Springboro) identified for each variable are relatively wealthy (with respect to income and, to a slightly lesser extent, property value) and are academically successful as measured by the state standardized tests. The fifth school district (Kettering), identified in the top five for each factor, is geographically in the same cluster as the four other districts and until rather recently, had been a relatively wealthy and academically successful school district.

Perhaps it is the sheer size of the school districts and wealth of the communities that make them public relations fodder in regional and local newspapers and other media outlets, thus increasing awareness of these communities. Further research into this phenomenon would provide more insight into these patterns.

The misperceptions of certain financial factors could be troublesome for some districts in this study when their school administrators and school boards ask residents for increases in

Vol. 10, No. 2 Summer 2013

AASA Journal of Scholarship and Practice
the property tax levies to fund public education.

Overall, the participants misperceived Beavercreek, Centerville, Kettering, and Springboro to have high property tax rates. In the cases of Beavercreek, Centerville, and Springboro, the misperception continues with respect to high spending per student.

If this inaccurate perception exists among school and community leaders, then is it plausible to believe this inaccurate perception might exist among community members. Perceiving their districts to have high property tax rates and high spending per student could be inhibitors to approving tax increases.

This type of misperception might help explain why community members in Springboro have turned down five consecutive requests since 2008 for increased property tax rates to generate more local revenue to fund schools.

When it comes to personal spending (property tax rates) and school spending (spending per student), the results from this study suggests that school and community leaders’ perceptions of important finance information are not accurate, leaving one to wonder, if school officials are not clear on these facts, how can community members understand them and unmistakably comprehend the financial needs of public school districts.

Implications for Practice
This study indicates a need for the school district administrators to educate their staff and community members with respect to school finance issues.

If education professionals do not have a working knowledge of education finance facts, there is no one to educate the public. An uneducated public cannot be expected to vote in the best interest of school districts and their students.

Our findings are especially interesting in light of the results from another study undertaken to solicit what school principals considered “the three most important school leadership issues experienced over the past three years and anticipated over the next three years” (Morris, Chan, & Patterson, 2009, p. 173).

In that study, education finance issues ranked number two of the 10 most frequently mentioned concerns. As many states are having to rely more heavily on local support to fund P-12 schools, it is crucial that school administrators be armed with current information of the school district at all times as part of an effective public relations strategy, particularly when running a school levy campaign.

Although there is a plethora of rich and useful information found on state education and other websites concerning school finance, the information is not readily accessible in a practical format. In order to access potentially important financial information, users must have a working knowledge of where to find the information, how to interpret an array of education finance factors, and how to compare districts in geographic regions.

Furthermore, school administrators and taxpayers might not always have the luxury of retrieving school finance information from the Internet.

Because community members are likely unfamiliar with resources that provide accurate financial information, it is incumbent upon school administrators to inform the public, particularly community leaders, either formally or informally regarding school finance matters.
For example, school leaders could prepare an annual report including finance information such as that included in this study.

School administrators could show the comparison of their district with similar districts and they could disseminate that information among community leaders and community members.

Alternatively, school leaders could hold an annual meeting for community leaders to initiate a dialogue regarding the financial condition of their district with respect to districts in neighboring communities.

Whatever strategies school leaders choose, it is important to include accurate and easy to understand information.

Author Biography

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References


Superintendent perceptions of multi-tiered systems of support (MTSS): Obstacles and opportunities for school system reform

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Abstract

Interest in multi-tiered systems of support (MTSS) as a process for school system reform is gaining momentum nationwide. Confusion exists as to what MTSS is and how response to intervention (RtI) and professional learning communities (PLCs) are related to its implementation. This article seeks to reconcile these differences through a descriptive case study that examines superintendent perceptions regarding opportunities and obstacles inherent to MTSS implementation. Sixty-six percent of one state’s 41 superintendents completed a MTSS readiness survey and nine were purposively chosen to be interviewed based on their responses. The article discussion includes a description of MTSS concepts related to implementation, and the findings can help to inform districts that are looking to refine systems improvement efforts.

Key Words
systems improvement, multi-tiered system of supports, MTSS, professional learning communities, PLC, response to intervention, RtI
**Introduction**

Superintendents are charged with two equally important mandates: ensuring that all students learn at high levels and keeping their employees satisfied and improving professionally.

Within an environment of increasing accountability, U.S. school systems are examining research and policies surrounding multi-tiered systems of support (MTSS), now found throughout US state and local education agencies (Kovaleski & Black, 2010).

With the increasing influence of response to intervention (RtI) and the mandates of No Child Left Behind (NCLB), MTSS and RtI have been used interchangeably in the education arena (Torgesen, 2007).

Many are seeking to reconcile this ambiguity so that one system is in place to support school improvement and increased student achievement. This article will first seek to more clearly identify the purposes and promises of MTSS and the place of RtI and professional learning communities (PLCs) within the MTSS system, then examine superintendent perceptions of MTSS and current district practices.

Reconciling differences and similarities and bringing definition and clarity to school improvement system efforts can be messy; however in the hard work of this reconciliation, school systems can begin realizing sustainable improvement for both students and educators (Sharrat & Fullan, 2009). MTSS brings the practices and promises of RtI and PLCs together into one system: a system designed to support and serve everyone involved in continuous school improvement through ongoing collaboration.

Currently empirical evidence associated with MTSS is thin. Many state and local education agencies in the United States are evaluating existing programs, and some districts are beginning to implement components of MTSS, including RtI and PLCs, reported as critical to systems change (Buffum et al., 2009; DuFour, Eaker, & DuFour, 2005; Zirkel & Thomas, 2010). In their book *Pyramid Response to Intervention*, Buffum et al. (2009) articulate the importance of bringing RtI and PLC practices together:

The essential characteristics of a PLC are perfectly aligned with the fundamental elements of response to intervention. Quite simply, PLC and RTI are complementary processes, built upon a proven research base of best practices and designed to produce the same outcome—high levels of student learning. (p. 49)

Educators operating within MTSS become part of a system that supports high functioning PLCs that have at their core RtI practices of problem solving and data-driven decision making—practices which may become engrained in state, district, and school cultures.

To realize this potential, collaborative teams at all levels and in all environments must commit to collective inquiry, data-driven decisions, and ongoing professional development to obtain the needed results for all involved (Sharratt & Fullan, 2009).

A current evaluation of district leader knowledge, perceptions, and efforts regarding MTSS implementation can inform current practice as well as bring attention to capacity-building opportunities for sustained school improvement.
Implementation of State-Level MTSS

Several states have developed statewide MTSS plans. For example, Kansas defined its model in “Kansas Multi-Tier System of Supports (MTSS): Academic Structuring Guide” (2011):

MTSS is a set of evidence-based practices implemented across a system to meet the needs of all learners. The MTSS framework is broader than response to intervention or problem solving alone. It establishes a system intentionally focusing on leadership, professional development, and empowering culture within the context of assessment, curriculum, and instruction. (p. 1)

MTSS is focused on student and educator support as well as on service delivery to students (Kansas State Department of Education, 2011). Central to the Kansas definition is a concentration on building leadership and capacity through a culture of empowerment, shown by research as critical to both realizing and sustaining school improvement (DuFour & Marzano, 2011; Harris & Lambert, 2003; Sherratt & Fullan, 2009).

Leaders in the state where this study was conducted are considering the MTSS research and constructing a statewide plan for scaling up its implementation.

Adaptation for District-level MTSS

A few districts within this state have developed MTSS blueprints and have started implementing precepts based on them. Figure 1 depicts the MTSS conceptual framework that is being used to guide this effort.
Figure 1. District MTSS conceptual framework.

The MTSS framework outlines supports to improve learning for all students based on their specific needs: including English language learners and advanced learners. Foundational to this structure is Tier 1 instruction, which serves 100% of the students in the system. Data are collected and examined during collaborative team processes inherent in the PLC structure. Subsequently decisions are made and actions carried out to increase student achievement by strengthening Tier 1 instruction; providing supplemental interventions for students at the
Tier 2 level, usually 10-15%; and/or providing more intensive interventions at Tier 3 for 3-5% of students, as promoted by the RtI literature (Fuchs & Fuchs, 2006).

MTSS extends a system’s use of problem solving and data-driven decision making to include instructional strategies, classroom management, curriculum design, and professional development. These six foundational components are orchestrated through a collaborative PLC at district, school, and classroom levels.

The depicted MTSS structure moves beyond the traditional one-dimensional triangle and identifies four learner facets represented in a classic three-dimensional pyramid structure with a capstone over the top, signifying a unified organization in which all are empowered to learn through systematic school-wide support.

Facilitators key to MTSS implementation include teachers, administrators, specialists, support staff, parents/families, and community partners.

Recognizing the confusion surrounding MTSS, we wanted to examine superintendents’ perceptions of MTSS and their districts’ strengths and challenges regarding its implementation. The following research questions were examined during the course of this study:

- How do superintendents perceive their districts’ readiness to fully implement MTSS in an era of increased accountability?
- What are the districts’ opportunities and obstacles to MTSS implementation?
- What are districts doing to support and sustain MTSS?

Methods

Case study

MTSS is currently considered innovative, and the “case study has proven particularly useful for studying educational innovations, for evaluating programs, and for informing policy” (Merriam, 1998, p. 41). Thus a study seeking to investigate state superintendents’ perceptions of MTSS structures and practices can contribute to the current conversation. This study explored systems’ improvement efforts via MTSS in one state in order to inform practice for other state and local school leaders considering a comparable system.

Research context

This study was conducted in a state located in the southwest region of the US, with 41 districts, including 562 elementary schools and 306 secondary schools. District student enrollments range from 168 to 68,392, and reported student demographics show that 78.1% are Caucasians and 21.9% are from minority groups, with 15% Hispanic. These schools include approximately 26,000 licensed classroom teachers, 4,000 educator specialists, and 1,600 district and school administrators.

Data collection, sampling and analysis

In the spring of 2011, 66% of the state’s superintendents responded to a survey eliciting feedback on the presence and quality of district-wide MTSS implementation. The survey was divided into three sections: collaborative processes, data-based decision making, and evidence-based practices (see Table 1). Each section consisted of a series of statements or characteristics, and respondents answered whether their district always, often, sometimes, or never demonstrated that characteristic. Survey results were analyzed to discern superintendents’ perceptions of strengths and weaknesses of district MTSS implementation.
Table 1

*MTSS Readiness Survey Items*

<table>
<thead>
<tr>
<th>Collaborative Process</th>
<th>Data-based decisions</th>
<th>Evidence-based practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: Collaborative processes are embedded in routine practices.</td>
<td>1: Data management systems are available and accessed by teachers in their classrooms.</td>
<td>1: Curriculum is explicitly aligned with the state core curriculum.</td>
</tr>
<tr>
<td>2: Time for collaboration is built into school day and school calendar at all elementary schools.</td>
<td>2: Access to relevant data/information is readily available to teachers.</td>
<td>2: All students have high quality Tier I instruction.</td>
</tr>
<tr>
<td>3: Time for collaboration is built into school day and school calendar at all secondary schools.</td>
<td>3: Teachers use data to make team decisions.</td>
<td>3: Assessments are aligned with the state core curriculum.</td>
</tr>
<tr>
<td>4: Time for collaboration is built into school day and school calendar at all preschool facilities.</td>
<td>4: A school-wide data management system is used to monitor academic and behavioral progress.</td>
<td>4: Evidence-based best practices are actively identified and incorporated at the district level.</td>
</tr>
<tr>
<td>5: Products of collaboration are expected and developed (targets, common assessments, and intervention plans).</td>
<td>5: Universal behavioral screening is used to identify at-risk students.</td>
<td>5: Evidence-based best practices are actively identified and incorporated at the school level.</td>
</tr>
<tr>
<td>6: Written norms (operating principles) guide collaboration.</td>
<td>6: Universal academic screening is used to identify at-risk students.</td>
<td>6: Behavioral expectations are made clear to students and teachers.</td>
</tr>
<tr>
<td>7: Measurable and specific performance goals (SMART) are identified for each teacher/collaborative team.</td>
<td>7: Multiple intervention levels (three-tiered model), based on student risk classifications, prioritize student interventions and guide the school intervention process.</td>
<td>7: Parents receive reports on student progress based on level of progress with identified targets and state core.</td>
</tr>
<tr>
<td>8: A formal problem solving model guides collaboration.</td>
<td>8: A school-wide intervention schedule providing extra time and support is in place for each identified Tier 2 and Tier 3 student.</td>
<td>8: Parent involvement is actively sought in setting and reaching learning targets.</td>
</tr>
<tr>
<td>9: Faculty members formally share interventions, assessments, and research with team members.</td>
<td>9: Frequent and systematic progress monitoring is practiced for Tier 2 and Tier 3 students.</td>
<td></td>
</tr>
<tr>
<td>10: Collaborative team members share evidence to illustrate student progress.</td>
<td>10: Benchmark formative assessments are used to reassess and update learning targets for all students.</td>
<td></td>
</tr>
<tr>
<td>11: Collaboration among general ed, special ed, and other professionals is actively promoted.</td>
<td>11: School faculty members use data analysis strategies when reviewing classroom data.</td>
<td></td>
</tr>
</tbody>
</table>
From the survey responses, nine superintendents were selected to interview based on district readiness to implement MTSS and district size: small districts having 1,999 or fewer students enrolled, medium-small districts having 2,000 to 5,999 students, medium-large districts having 6,000 to 22,999 students, and large districts having 23,000 or more enrolled. Interview questions were constructed in the following four categories: (1) MTSS knowledge, culture, and implementation readiness, (2) MTSS capacity building, (3) MTSS implementation opportunities, and (4) MTSS implementation obstacles (see Table 2).

Table 2

**Interview Questions**

<table>
<thead>
<tr>
<th>MTSS Knowledge, Culture and Implementation Readiness</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is your understanding of the MTSS framework (PLC’s, RtI etc.)?</td>
</tr>
<tr>
<td>Do you have an MTSS plan in place?</td>
</tr>
<tr>
<td>Who is responsible for facilitating the implementation of the plan within your schools?</td>
</tr>
<tr>
<td>What kinds of support are provided for these facilitators?</td>
</tr>
<tr>
<td>What is the district’s role in building the structure to improve student achievement through MTSS?</td>
</tr>
<tr>
<td>Does your district provide early-release or late-start time for collaborative teaming?</td>
</tr>
<tr>
<td>What accountability measures are in place to ensure high-functioning collaborative teaming?</td>
</tr>
<tr>
<td>How do you see these efforts as a reflection of or shift in your district culture?</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>MTSS Capacity Building</th>
</tr>
</thead>
<tbody>
<tr>
<td>How prepared are your principals to implement MTSS/RtI?</td>
</tr>
<tr>
<td>What kinds of support are principals given through the district for implementation?</td>
</tr>
<tr>
<td>What do you see as the district’s role in building the structure to facilitate improved student learning?</td>
</tr>
<tr>
<td>Do you have processes in place to build leadership capacity for MTSS implementation? If so, what are they?</td>
</tr>
<tr>
<td>What are the expectations for principals as it relates to PLC team collaboration accountability?</td>
</tr>
<tr>
<td>Do your principals have the capacity to ensure the implementation of evidence-based practices?</td>
</tr>
<tr>
<td>How do you use your current resources (capital &amp; human) to improve instructional practices?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MTSS Implementation Opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>How have the departments in your district changed or evolved because of your MTSS efforts?</td>
</tr>
<tr>
<td>Can you give specific examples of these changes or evolutionary processes?</td>
</tr>
<tr>
<td>What do you see as the strengths of your district in regards to MTSS?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MTSS Implementation Obstacles</th>
</tr>
</thead>
<tbody>
<tr>
<td>How have accountability issues (NCLB etc.) affected your efforts in regards to systematic improvement?</td>
</tr>
<tr>
<td>What do you perceive the barriers to be to effective collaborative teaming at the elementary and secondary levels?</td>
</tr>
<tr>
<td>Can you give specific examples of these barriers?</td>
</tr>
<tr>
<td>What are the barriers to developing and implementing the products of collaboration?</td>
</tr>
</tbody>
</table>
**Data Analysis**

We used basic descriptive statistics in analyzing data from the survey and qualitative analysis for the textual data from the nine interviews, employing a grounded theory method (Glaser & Strauss, 1967) with both emic and etic coding strategies (Corbin & Strauss, 1998).

First, an emic strategy was used to draw descriptions and explanations of MTSS development across districts from themes and patterns that emerged directly from the data. In operationalizing the final analysis, etic codes were used to textualize data to participant perceptions of the following critical MTSS components as defined by current theory and research: (1) common language, (2) district MTSS framework, (3) accountability at the district and school level, (4) implementation obstacles and opportunities (5) PLC processes, and (6) capacity-building practices.

**Findings and Discussion**

Systems change and improvement require school districts to examine current practices and then move forward to build the consensus and infrastructure necessary to support implementation and ensure sustainable improvement.

Analysis of this study’s qualitative data yielded three major findings: (1) Districts must develop the MTSS framework and promote a common language based on this framework, (2) a district-wide culture of collaboration must exist, and (3) capacity of individuals and learning communities must be built at every system level so improvement is ongoing and sustainable.

**MTSS framework and common language**

If no state plan exists, superintendents and district-level leadership teams must establish a MTSS framework based on their understanding of its components and promote a language associated with MTSS to use consistently throughout the district. The language should be embedded in district goals, school goals and improvement plans at each system level.

Many of the interviewed superintendents were struggling to understand the MTSS language, likely due to lack of a statewide focus on MTSS that advocates for district plan development and implementation.

For example, only one of the superintendents was familiar with the initials MTSS. When the interviewers used the acronyms PLC and RtI, every superintendent was able to draw connections with current district practices. The following answer given by an administrator in a large district is typical:

I just wanted to make sure that our alphabet soup lingo is all the same. I see the PLC as more of the umbrella and RtI fitting under the umbrella as strategies and processes to help differentiate student learning styles.

A superintendent in a small district stated:

My understanding is that [it’s] a tool to be used to help differentiate instruction for individual students … collaborative teamwork, reviewing data, and using that data to help differentiate within the classroom.

This superintendent’s PLC definition describes a collaborative process applied to meet students’ differing needs: a perspective that includes the problem-solving and data-driven decision-making processes of RtI. These superintendents did not appear to understand systems improvement based on the foundational components of MTSS. A formal
plan or framework based on sound MTSS principles was found in only two districts.

However, a formal plan does not ensure a common language. A large district had a MTSS plan posted on its website, but the superintendent was unaware of it:

“I don’t know if there’s a written plan that says “This is the MTSS plan.” What I know is when I go into schools, I do see principals leading teachers through PLC’s … they’re directing how teachers are looking at data, they’re talking about individual students … [and] what they do for students.”

A superintendent of a large district that has no MTSS plan in place indicated:

“Some districts are probably much more prescriptive …. [They have] an edict out of the central office. From my observations, we have good conversations, we’ve given schools concept plans, and we do book studies. But … I don't think there's a chart I’ve got hanging on the wall in faculty rooms that says, ‘Here’s the district MTSS model; make sure you’re implementing that tomorrow.’”

This superintendent does not understand what the purpose of a district-wide MTSS framework is and how its implementation could unite a district through a common language and purpose.

In contrast to this superintendent’s perception of MTSS, a superintendent who has been involved with developing and implementing a district-wide MTSS framework offered the following insight:

“I’ve learned that the framework is very important because it is the common language. The culture of what you’re trying to create comes from the district level. We’ve tried to establish the guidelines, and then from within the culture of their own schools … [principals] use those guidelines to structure what they do. So we don’t control at the school level, but we create that framework for them to follow, and it seems to work quite well.”

Everyone involved in MTSS needs to understand the processes and language associated with school improvement in order to avoid confusion and promote a cohesive effort.

Collaborative culture
Our superintendents highlighted the importance of collaboration. Fullan (2009) suggested that effective reform requires active involvement from all levels of the system, continually interacting, communicating, and aligning resources to improve educational outcomes. A superintendent who has been facilitating district PLC implementation for the past decade noted:

“Everything has been reprioritized into supporting the PLC process … we believe in PLC’s because [the practice] is based on sound educational principles, and it is common sense … if you want student learning to improve, you have to draw on each other.”

This superintendent recognized the necessity for system-wide changes to accommodate PLCs and the importance of involving the leadership capacity of everyone in the district in producing new knowledge and new practices (Harris, 2010).
This type of interaction and collaboration requires focused efforts by both district and school leaders to eliminate structural and cultural impediments to thriving PLCs (Harris, 2010). Virtually all of the superintendents we interviewed recognized the importance of creating the appropriate conditions for PLCs to flourish:

“What you have to do is make sure there are no structural barriers to [improvement]. I always talk about ability and motivation … The district has to look at enabling people to accomplish what we want them to. Are we creating barriers?”

The districts we studied have either instituted a weekly district-wide late start or early out day for collaboration or have found funds to provide extra days in their teacher contract for this purpose. Larger districts have more resources, both human and financial, to fully implement PLCs. A superintendent from a small district lamented:

“[District teachers and administrators] have had very little professional development …. We send them to state workshops dealing with [PLCs], but as far as bringing professional development in … we just haven’t. Funds have not been there in [our state], and I’ll just be frank … it’s a financial issue.”

A statewide MTSS plan with the accompanying resources to support the PLC initiative would alleviate this problem, especially prevalent in smaller districts.

Most of our superintendents emphasized similar structural and cultural barriers to collaboration, including teachers of single courses, costs of funding additional days, busing issues, and teacher resistance—mostly not insurmountable issues. In spite of the resource disparities with smaller school districts, our superintendents seem committed to PLCs and are doing whatever they can with the resources available to facilitate collaboration.

Most of our superintendents admitted that high quality collaboration comes more naturally for elementary teachers than for secondary teachers. One superintendent reported:

“On the elementary level [collaboration] is less of a culture shock because of the reading program we’ve had here for six years: sharing already happens. On the high school level, it is more of a shock, more of a paradigm shift.”

Similarly, another confided:

“Frankly … you have more resisters at the high school level than any of the other levels …. They love their content; they’re still focused on kids … but they value their content more than they value getting on the same page as [those] teaching the same content.”

Harris (2010) found that in many secondary schools “this way of working is not welcomed because the professional divisions and subject demarcations are simply too strong” (p. 203). However, a superintendent who had been a high school teacher and principal suggested that the district is obligated to help secondary principals understand that “they’re not the knowledge keeper any more, but [a] facilitator of learning.”

The superintendents in our study mentioned their efforts to educate their boards
of education, district directors, and principals regarding the PLC process: laying out a clear vision for student learning, providing targeted professional development, and adopting accountability measures for compliance.

One superintendent described a cultural change in his district’s school board:

“It’s now part of our dialogue; our school board’s part of that culture, the terms that we’re talking about … aren’t new to them; they get it.”

All of the superintendents in our study believe PLCs have changed the culture of their districts. For example:

“I think it’s been happening over time … this focus on students … a shift from teaching to learning. We just don't work in silos. We are not independent contractors. A lot more people … aren't as concerned about how [they] compare to [their] colleagues. They’re more concerned about how students are performing and if they can learn from [each other].”

The superintendents in our study firmly believe that collaboration has impacted the culture of their district and shifted the focus from teaching as individuals to learning for all students: working together to increase their collective capacity for change.

For example:

“You cannot stay neutral. You've either got to be progressing or you’re regressing. That's the nature of an organization. You are either moving forward or you’re losing ground.”

For successful change to occur all parts of the system must collaborate to communicate, connect, and align efforts (Harris, 2010). Despite wide variations in the degree of implementation across districts, our superintendents saw collaboration at all levels of the system as a critical catalyst for increasing all participants’ leadership capacity.

Building capacity
The importance of building the capacity of individuals and learning communities to support MTSS implementation is central to this study’s findings. As Harris (2012) states: “The critical issue of implementation leads directly into the important consideration of capacity building …. However well-intentioned or well-funded the approach to system reform may be, it will be destined to fail without serious and sustained attention to building the capacity for change.” (p. 626)

Most of the superintendents in this study recognize the critical need to build the capacity in their district and school leadership teams to effect positive sustainable change.

Recent research indicates that principals who are strong instructional leaders are important to student success (Leithwood & Louis, 2012). However, many principals are placed in their roles with little attention to their instructional skills. Superintendents in this study recognized the need for developing the principals’ capacity to focus their work on improving instruction and other MTSS framework components. As one superintendent expressed:

“Our responsibility is to raise up the principals and make them more knowledgeable about their job ….

Much of what has gone on in buildings
has been management, not instructional leadership. So we teach them how to be an instructional leader … because I don’t think their teachers are going to “get it” unless they understand what it is [they] are supposed to be doing.”

Another superintendent observed:

“We’re working hard to build capacity with building administrators so they understand best practice and then saying ‘We’re expecting you to look at your own school’s needs [and] implement best practices.’”

We also found that the superintendents use similar capacity-building strategies to implement MTSS. One strategy is to provide a vision and direction for the process and then give schools the autonomy to work within that vision.

One superintendent argued that the first step to building capacity is “to create vision and direction; vision, direction, and leadership, that's what districts are for.”

Another effective strategy used by some superintendents in smaller districts is to initiate a district leadership team to build capacity in a broader group of school actors in an effort to carry out the vision of the district:

“We have a district instructional council that consists of the principal from every school, all of the instructional coaches, and district administration … you want to move away from the motive [that] you’re just out there dispensing information. This instructional council [is] where we’re setting our plans in concrete.”

Every district in our study has implemented focused professional development on most aspects of MTSS.

One superintendent stressed training for teachers:

“You have to provide the professional development for your teachers. You can’t just tell them ‘we’re doing this.’ They have to understand the why of it.”

One superintendent advocated capacity building by appointing and training teachers as collaboration team leaders (CLTs) for each school PLC team:

“[We] build that leadership capacity in the teachers and then rotate [leadership responsibility] around. They’re trained four to six times a year throughout the year.”

Often school improvement change efforts such as MTSS are undermined by staff cynicism or by a lack of buy-in that leads to a “this too shall pass” mentality.

As one superintendent expressed:

“Building capacity in teachers …[leads to] fewer resisters to change.”

Finally, the superintendents in the study agreed with educators across the nation who are embracing student performance data as a way to improve student achievement (Hallam et al., 2010).

The superintendents told us that data-based decision making and problem solving models should be the focus of professional development for MTSS. Most believe that the
accountability of No Child Left Behind and the concern for meeting Adequate Yearly Progress bring more attention to the importance of decisions based on data.

One superintendent stated:

“NCLB … forced [us] to be focused on data, subgroups, and individual children.”

Training principals and teachers to use data continues to be a high priority for districts, and teachers are expected to use student achievement data during team collaboration.

Superintendents in our study all believed this process strengthens their MTSS implementation. The following comment illustrates this belief:

“Strength comes from [educators] learning how to understand and use data to adjust their instruction to help kids learn.”

The superintendents we studied shared the belief that data are an essential component of instructional decision making for students. Through collecting and analyzing data, educators recognize student needs and when these needs are incorporated into an improvement plan, impact on achievement is not only possible, but likely (Jones & Mulvenon, 2003).

All the superintendents interviewed believe that unless capacity is built systems change will fail. Providing a district vision, supporting principals to become instructional leaders, and training and empowering data-focused teacher leaders are three critical elements to building capacity; as Levin (2008) put it, “Gradually we have come to learn that real change requires will, skill and capacity” (p. 81). Our superintendents have the will, and they believe they can help provide the skill and capacity in principals and teachers to successfully implement and sustain the principles of MTSS. As one superintendent asserted:

“We know more about educating a child than ever before. We have the phenomenal tools in order to do so. All we have to do is martial the human capital [and] create the capacity in people, and I don’t think it’s impossible. I think that there is every possibility.”

Conclusion

Systems change is a messy process. At times educational leaders must take their organizations to the edge of chaos to realize school improvement and bolster student achievement (Brown & Moffett, 1999; Sharratt & Fullan, 2009). One superintendent in our study summarized, “My task is to get the job done and keep the group together.”

With these two goals, how does a superintendent effectively initiate systems change? Should change percolate up from the bottom or move down from the top? “All school districts have great visions. What most don’t have is a systematic strategy for getting there” (Sharratt & Fullan, 2009, p. 242).

Most superintendents who participated in this study perceive that their districts are moving forward with improving schools and increasing student achievement. However, most have yet to articulate a systematic plan to support this improvement. The MTSS framework can provide the means for developing and implementing such a plan.

Our findings suggest that to realize sustainable improvement districts must (1) develop a common language and framework
for implementation, (2) work collaboratively within the PLC structure to meet the needs of all students, and (3) purposefully build capacity within the district organization.

Responses from superintendents participating in this study may inform and guide state and local education agencies, school boards and policymakers throughout the nation as these organizations examine their current systems improvement efforts.

Implications and Further Research
Data from this study reveal several areas within the MTSS implementation structure that deserve closer examination.

First, most districts are struggling to implement collaborative processes at the secondary level. Therefore, future research may focus on the complexities of PLC efforts in secondary schools.

Second, when MTSS processes are implemented in relatively small rural settings, inherent inequalities in resources, both human and capital, must be considered. Also more extensive study is justified concerning the implications on district MTSS implementation in the absence of a statewide plan.

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References


In What Ways Is the New Jersey County Vocational School Admissions Criteria A Predictor of Student Success on State Mandated Tests?

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Abstract

Vocational and Technical Education (VTE) at the secondary-school level has undergone transformation, especially in the last 25 to 30 years brought about by the implementation of the Carl D. Perkins Vocational and Technical Education Act of 1984. Earlier, the VTE education focus was to prepare students for entry-level jobs that did not require a baccalaureate degree. Now, VTE programs include preparing students for both work and college. This change in mission also brought about changes in vocational-technical education admissions policies. We add to the existing literature in this area by ascertaining the relative importance of admission criteria in predicting student success. Specifically, the major research question is: To what extent do the admission criteria of the NJCVTS (New Jersey County Vocational Technical-School District) predict student achievement on state mandated tests of Language Arts (LA) and Mathematics (M)?

Key Words

vocational-technical school admissions criteria, student success
Introduction
Vocational and Technical Education (VTE) at the secondary-school level has undergone transformation, especially in the last 25 to 30 years. A change occurred with the implementation of the Carl D. Perkins Vocational and Technical Education Act of 1984. Earlier, the VTE education focus was to “train students for entry-level jobs in occupations requiring less than a baccalaureate degree” (Brand, 2003, as cited by Mulcahy, 2007, pg. 15). Now, VTE programs include preparing students for both work and college. This change in mission also brought about changes in vocational-technical education admissions policies.

In New Jersey, public VTE schools function as magnet schools, “pulling” eligible students from within a county and, in some instances, from outside their county. According to the New Jersey Statutes Annotated, 18A:54-12, “any student, who is a county resident in an area where there is a vocational school, may make an application to the vocational school district, and upon acceptance, attend” (New Jersey Statutes Annotated, 2011). However, the criteria for acceptance are undefined, and it is the responsibility of each VTE School District Board of Education to establish the admissions criteria for a program of study.

The Facts about County vocational-technical School Admissions Standards (Admissions Policy Workshop, 2012, p. 1) states that VTE school admissions process “is designed to ensure student success, and career and technical education programs are specialized programs designed to prepare students for a particular career” (Admissions Policy Workshop, 2012, p. 1). Therefore, the intent of the admissions policy is to identify students who are academically qualified to handle the rigorous workload, preparing them for future careers and for post-secondary education.

Currently, available information in the area of secondary-school admissions criteria is limited. Two pertinent works, namely, Whinfield (1981) and Spera (2009) focus on the admission criteria of vocational-technical school districts. Whinfield (1981) determined that the best predictor of secondary school student achievement was the student’s middle school grades (Whinfield, 1981, as cited in Spera, 2009). The researchers used data from Connecticut’s Regional Vocational - Technical Schools for the 1977, 1978, and 1979 school years. Spera’s (2009) research was an extension of the research conducted by Whinfield (1981).

Research Questions
We add to the existing literature in this area by ascertaining the relative importance of admission criteria in predicting student success. Specifically, the major research question is: To what extent do the admission criteria of the NJCVTS (New Jersey County Vocational Technical-School District) predict student achievement on state mandated tests of Language Arts (LA) and Mathematics (M)? The analysis was operationalized through subsidiary questions that could be handled quantitatively using multivariate hierarchical regression.

1. To what extent do the NJCVTS admission criteria (middle school GPA, 7th grade NJ school choice of standardized examination, and the NJCVTS admissions examination scores in language arts and math) serve as predictors of High school quality point average (HSQPA) and SAT scores?
2. To what extent do different career academies impact HSQPA and SAT scores?

3. To what extent do the demographics (free/reduced lunch, gender, and ethnicity) influence HSQPA and SAT scores?

**Methodology**

**Data Collection**

The three full-time vocational - technical high school academies, which are part of the New Jersey County Vocational - Technical School District (NJCVTS) and form the subject of this study, are located on the same campus.

Though located in a suburban area, the NJCVTS schools pull from both urban and suburban districts. Each stand-alone school has its own specialization (Health, Information Technology and Engineering) and has its own principal presiding over the program.

The school day, which consists of six hours and two minutes of instructional time, is divided into four block-time instructional periods in an alternating A/B day schedule. All school requirements exceed those mandated by the New Jersey Department of Education (NJDOE).

Admission to the NJCTV schools is given on a competitive basis based on the student’s prior academic performance, performance in certain standardized national tests, and NJCTV-administered admission tests.

Specifically, a combined score is given to each applicant as follows. The student’s grade point averages (GPAs) for the seventh grade and the first marking period of the eighth grade based on scores in math, language arts, science and social studies are determined and then transformed to two scaled scores in the range 1-10.

An additional set of two scaled scores in the range 1-10 is then obtained from the percentile scores in language arts and mathematics on a NJ school choice of standardized examination. Furthermore, two scaled scores in the range 1-10 are obtained from the NJCVTS admission test in mathematics and language arts.

Finally, these six scores are added together. This process thus allows for a maximum score of 60. A minimum score of 40 is necessary for a student to qualify academically for admission.

All qualified applicants are identified and then arranged in rank order by municipality. All municipalities are guaranteed a minimum of two slots and allowed up to five spots for academically qualified applicants.

A correlation analysis of the variables showed that the correlation between the 7th and 8th grade GPAs was high (R=0.59). The measure of “tolerance” being less than 1 - R² =0.652 further confirmed this.

Furthermore, for the data at hand, VIF > 1.6, which also indicated multicollinearity by producing a number closer to 2.0 than to 1.0. See Table 1. Therefore, a new variable called Middle School GPA, which combined the 7th Grade GPA and the 8th grade GPA, was created.
Table 1

*Tolerance and VIF for independent variables revealing high multi-collinearity*

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST7</td>
<td></td>
<td>.886</td>
<td>1.129</td>
</tr>
<tr>
<td>7th Grade GPA</td>
<td></td>
<td>.605</td>
<td>1.654</td>
</tr>
<tr>
<td>8th Grade GPA</td>
<td></td>
<td>.622</td>
<td>1.608</td>
</tr>
<tr>
<td>Total Admissions Test</td>
<td></td>
<td>.822</td>
<td>1.217</td>
</tr>
</tbody>
</table>

Demographic information (Free/Reduced Lunch, gender, ethnicity, academies) was collected through the student management information system. Since these predictor variables were categorical, they were coded. Free/Reduced Lunch was coded as 0 (full pay) and 1 (free/reduced lunch), and Gender was coded as 0 (male) and 1 (female). Ethnicity was broken down into three groups (non-Hispanic White, Asian, and Other Minorities) and then dummy coded into dichotomous categories (Asian, Other Minorities) with White non-Hispanic being the reference category for comparison.

Career Academy contains three groups (Health, Technology, and Engineering), and this was also dummy coded into two dichotomous categories (Health, Technology) with Engineering being the reference category for comparison.

Two instruments were used to determine overall high school student achievement, High school quality point average (HSQPA) and the SAT Reasoning Test. A quality point average (QPA) is different from a grade-point average (GPA) in that a quality point average takes into account the amount of credits a course is worth; QPA was determined by multiplying each course grade by the credits received for each course.

The quality points in all the courses were added and divided by the total amount of credits earned to yield a combined measure HSQPA. The SAT Reasoning Test given by the College Board was the other assessment used in this study. Its scores range from 600 to 2400 and combines results from three sections, mathematics, critical reading and writing, each with a maximum score of 800.

The researchers used an ex-post facto, explanatory design. The main statistical method used is hierarchical regression. The additive regression models allowed us to look at variance explained by the demographic variables as well, even though the main concern was the admission criteria variables.

The rationale was to analyze how the NJCTVS admission score influences or predicts future performance, alone and in the presence of other relevant variables. The researchers also
examined whether middle school GPA, that has been found to be the strongest predictor of academic performance, continues to be the strongest predictor.

**Results and Discussion**

**Demographic Results**
The sample consisted of 492 students who graduated during the school years 2008-09, 2009-10, and 2010-11. These students were nearly equally represented in the three academies (Engineering 177, Health 167 and Information Technology 154). There were 231 males and 261 females. The ethnic breakdown showed that 53.6% were White s, 24.8% Other Minorities, and 21.5% Asian. Only 15.7% of the students were eligible to receive free and reduced lunch.

**Findings**
In order to understand the strengths of the predictors and their influence on student learning, two hierarchical regression analyses were conducted with HSQPA and SAT as outcome variables. Both regressions used 4 tiered models.

The first model contained three exogenous variables: Free/Reduced lunch, Gender, and Ethnicity.

The second model contained in addition, Middle School GPA and the 7th grade standardized test score (ST7).

In the third model the NJCVTS admissions test score was added. Recall from earlier discussion that the variable Middle School GPA was obtained by combining the 7th grade GPA and the 8th grade scores from the first marking period which were found to pose an issue of multicollinearity.

Finally, in the fourth model researchers added the career academy from which the student graduated. The intention was to understand, if middle school GPA and academic criteria explained more variance of future performance than did other demographic and vocational school affiliation variables.

The correlation coefficients between HSQPA and all the independent variables were significant and ranged from 0.54 (Middle School GPA) to 0.09 (Technology Academy).

Table 2 (see next page) provides regression model summaries for HSQPA.

Model 1 of the hierarchical regression analysis, with Free/Reduced Lunch, Asian, Other Minorities, and Gender as predictors yielded a $R^2 = 0.148$ explaining 14.8% of the variance in HSQPA.

Model 2, yielded a $R^2 = 0.352$ which indicated that 35.2 percent of the variance in HSQPA can be explained by all the demographic variables from model 1, ST7, and Middle School GPA. This model represented a 20.4% increase in the variance explained, and the change in $R^2$ was significant at the .000 level, with $F_{2,485} = 76.295$. I

In Model 3, the $R^2 = .373$ was obtained with all the aforementioned variables and NJCVTS admission examination. This model represented a 2.1% increase in the variance attributable to the addition of NJCVTS, and this $R^2$ change was also significant, $F_{1,484} = 16.253$, (p≤ .000).

In Model 4, ($R^2 = .472$), 47.2 percent of the variance in the HSQPA was explained by all the variables in model 3 along with Health,
and Technology. This model represented a 0.099 or 9.9% increase that was once again significant; $F_{2,482} = 45.050$ ($p \leq .000$).

All four regression models were significant.

Table 2

Hierarchical Regression Model Summaries for dependent variable HSQPA regressed on all the independent variables of the study

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>$R^2$</th>
<th>Adjusted $R^2$</th>
<th>Std. Error of the Estimate</th>
<th>$R^2$ Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.385a</td>
<td>.148</td>
<td>.141</td>
<td>4.9918251</td>
<td>.148</td>
<td>21.199</td>
<td>4</td>
<td>487</td>
<td>.000</td>
</tr>
<tr>
<td>2</td>
<td>.593b</td>
<td>.352</td>
<td>.344</td>
<td>4.3626793</td>
<td>.204</td>
<td>76.295</td>
<td>2</td>
<td>485</td>
<td>.000</td>
</tr>
<tr>
<td>3</td>
<td>.611c</td>
<td>.373</td>
<td>.364</td>
<td>4.2956562</td>
<td>.021</td>
<td>16.253</td>
<td>1</td>
<td>484</td>
<td>.000</td>
</tr>
<tr>
<td>4</td>
<td>.687d</td>
<td>.472</td>
<td>.462</td>
<td>3.9511501</td>
<td>.099</td>
<td>45.040</td>
<td>2</td>
<td>482</td>
<td>.000</td>
</tr>
</tbody>
</table>

As seen in Table 3 (page 53), all the variables in Model 1 were significant predictors of HSQPA. The beta for Asian and Other Minorities with White as the reference group was 0.213, ($t = 4.819$, $p \leq .000$) and -0.200, ($t = -4.395$, $p \leq .000$), respectively. Asian was the strongest predictor, and compared to White students, Asians were more likely to have a higher HSQPA.

The negative beta of Other Minorities indicated that they were more likely to have a lower HSQPA than White students. The beta for Gender was 0.143, ($t = 3.409$, $p \leq .000$), showing that females were more likely to have a higher HSQPA. The beta for Free/Reduced Lunch was -0.093 ($t = -2.131$, $p \leq .034$), and showed that students who qualified for Free/Reduced Lunch had lower HSQPA scores.

In Model 2, Asian, Other Minorities, and Gender, continued to be significant predictors of HSQPA, although the strengths of their betas were slightly decreased from Model 1 (see Table 3). The newly introduced variable (Middle School GPA) was the strongest predictor of HSQPA. This indicated that students with higher Middle School GPA were more likely to have higher HSQPA. Note, however, that Free/Reduced Lunch was no longer a significant predictor, and the newly-introduced variable of standardized test score (ST7) was also not a significant predictor of HSQPA.

In Model 3, NJCVTS researchers added students’ admissions exams. In this model, only Asian, Other Minorities, Gender, Middle School GPA, and NJCVTS admissions exam outcomes were significant predictors of HSQPA. The beta for NJCVTS admissions exam was 0.164, $t = 4.031$, $p \leq .000$.

Despite a 0.039 decrease in the beta from Model 2, Middle School GPA ($\beta = .426$) was still the strongest predictor of HSQPA.
Middle School GPA was 0.262 stronger than the next strongest predictor, the NJCVTS admission exam ($\beta = .164$). Although weaker than the Middle School GPA variable, the NJCVTS admissions exam beta still indicates that students with higher scores on the NJCVTS admissions exam were more likely to have a higher HSQPA. Although there were minor changes in beta with other variables, Free/Reduced Lunch and ST7 continued to be non-significant predictors.

In Model 4, Health and Technology scores were added with Engineering as the reference group. Other Minorities, Gender, Middle School GPA, NJCVTS admissions and the newly-added Health and Technology were all significant predictors of HSQPA.

The beta for Health in reference to Engineering was 0.360, $t = 8.672$, $p \leq .000$ and the beta for Technology in reference to Engineering was 0.335, $t = 7.903$, $p \leq .000$.

With an increase of 0.077 in beta from model 3, Middle School GPA ($\beta = .503$) continued to be the strongest predictor of HSQPA.
Table 3

Hierarchical regression results for HSQPA regressed on the independent variables of the study

<table>
<thead>
<tr>
<th>Model</th>
<th>Variables</th>
<th>B</th>
<th>std. Error</th>
<th>β</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Asian</td>
<td>2.786</td>
<td>.578</td>
<td>.213</td>
<td>4.819</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Minorities</td>
<td>-2.492</td>
<td>.567</td>
<td>-.200</td>
<td>-4.395</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Gender</td>
<td>1.541</td>
<td>.452</td>
<td>.143</td>
<td>3.409</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>Free/Reduced lunch status</td>
<td>-1.372</td>
<td>.644</td>
<td>-.093</td>
<td>-2.131</td>
<td>.034</td>
</tr>
<tr>
<td>2</td>
<td>Asian</td>
<td>1.690</td>
<td>.515</td>
<td>.129</td>
<td>3.283</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>Minorities</td>
<td>-1.594</td>
<td>.504</td>
<td>-.128</td>
<td>-3.166</td>
<td>.002</td>
</tr>
<tr>
<td></td>
<td>Gender</td>
<td>.912</td>
<td>.398</td>
<td>.085</td>
<td>2.289</td>
<td>.023</td>
</tr>
<tr>
<td></td>
<td>Free/Reduced lunch status</td>
<td>-1.011</td>
<td>.565</td>
<td>-.068</td>
<td>-1.790</td>
<td>.074</td>
</tr>
<tr>
<td></td>
<td>ST7</td>
<td>.115</td>
<td>.115</td>
<td>.038</td>
<td>.996</td>
<td>.320</td>
</tr>
<tr>
<td></td>
<td>Middle School GPA</td>
<td>3.390</td>
<td>.285</td>
<td>.465</td>
<td>11.894</td>
<td>.000</td>
</tr>
<tr>
<td>3</td>
<td>Asian</td>
<td>1.334</td>
<td>.514</td>
<td>.102</td>
<td>2.594</td>
<td>.010</td>
</tr>
<tr>
<td></td>
<td>Minorities</td>
<td>-1.492</td>
<td>.496</td>
<td>-.120</td>
<td>-3.006</td>
<td>.003</td>
</tr>
<tr>
<td></td>
<td>Gender</td>
<td>.983</td>
<td>.393</td>
<td>.091</td>
<td>2.503</td>
<td>.013</td>
</tr>
<tr>
<td></td>
<td>Free/Reduced lunch status</td>
<td>-.793</td>
<td>.559</td>
<td>-.054</td>
<td>-1.419</td>
<td>.157</td>
</tr>
<tr>
<td></td>
<td>ST7</td>
<td>-.009</td>
<td>.117</td>
<td>-.003</td>
<td>-.079</td>
<td>.937</td>
</tr>
<tr>
<td></td>
<td>Middle School GPA</td>
<td>3.110</td>
<td>.289</td>
<td>.426</td>
<td>10.755</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>NJCVTS</td>
<td>.485</td>
<td>.120</td>
<td>.164</td>
<td>4.031</td>
<td>.000</td>
</tr>
<tr>
<td>4</td>
<td>Asian</td>
<td>.485</td>
<td>.487</td>
<td>.037</td>
<td>.997</td>
<td>.319</td>
</tr>
<tr>
<td></td>
<td>Minorities</td>
<td>-1.894</td>
<td>.460</td>
<td>-.152</td>
<td>-4.122</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Gender</td>
<td>.740</td>
<td>.369</td>
<td>.069</td>
<td>2.003</td>
<td>.046</td>
</tr>
<tr>
<td></td>
<td>Free/Reduced lunch status</td>
<td>-.660</td>
<td>.515</td>
<td>-.045</td>
<td>-1.283</td>
<td>.200</td>
</tr>
<tr>
<td></td>
<td>ST7</td>
<td>.152</td>
<td>.109</td>
<td>.050</td>
<td>1.394</td>
<td>.164</td>
</tr>
<tr>
<td></td>
<td>Middle School GPA</td>
<td>3.671</td>
<td>.273</td>
<td>.503</td>
<td>13.427</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>NJCVTS</td>
<td>.774</td>
<td>.115</td>
<td>.262</td>
<td>6.734</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Health</td>
<td>4.128</td>
<td>.476</td>
<td>.360</td>
<td>8.672</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Technology</td>
<td>3.888</td>
<td>.492</td>
<td>.335</td>
<td>7.903</td>
<td>.000</td>
</tr>
</tbody>
</table>

B = Unstandardized Regression Coefficient
β = Standardized Regression Coefficient
Asian and Other Minorities are in relation to the reference group. White, Health, and Technology are in relation to the reference group Engineering. Middle School GPA was .143 stronger than the next strong predictor, the Health academy.

This beta showed that those students who attended the Health academy were more likely to have a higher HSQPA than those students who attended the Engineering Academy. Technology as compared to the Engineering Academy was the next strongest predictor with a beta of 0.335, indicating that students who attended the Technology academy were more likely to have a higher GPA than did those students who attended the engineering academy.

The NJCVTS admissions exam (β = .262) Gender, and Other Minorities showed slight increases in their betas. It is interesting to note that, once the academies were introduced Asian ceased to be a significant predictor. Free/Reduced Lunch and ST7 continued to be non-significant predictors of HSQPA (see Table 3).

Model 4 provided the best explanation of HSQPA (47.2% of variance explained) and identified the Middle School GPA, β = 0.503 to be the strongest predictor of HSQPA. Also the addition of ST7 and Middle School GPA contributed to the highest additional variance (20%) in HSQPA. This is in direct alignment with the studies of Whinfield (1981) and Spera (2009) that showed Middle School GPA to be the strongest predictor of student success.

The next set of analyses focused on SAT scores as the outcome variable; see Tables 4 and Table 5 (pages 55 and 56).

Once again a correlation study was used as a precursor to the regression analysis. Although all the correlations were significant, NJCVTS admissions exam had the highest correlation with SAT (0.576) followed by ST7 (0.467) and Middle School GPA (0.397). The variables were included in each model as before, and Model 1 with all the demographic variables explained 16.2% of the variance in SAT.

In Model 2, 40.2% of the variance in SAT was explained by all the demographic variables and ST7 and Middle School GPA. Once again, this model represented the highest (23.3%) change in variance and the R² change was significant, $F_{2,485} = 94.235, p \leq .000$.

In Model 3, with the addition of NJCVTS, the R² increased to R²=0.511 and the R² change was significant. However, the addition of 0.002 variance (Academies variables) to Model 4 was not significant (see Table 4).
Table 4

*Hierarchical Regression Model Summaries for dependent variable SAT regressed on all the independent variables of the study*

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R²</th>
<th>Adjusted R²</th>
<th>Std. Error of the Estimate</th>
<th>R² Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.411</td>
<td>.169</td>
<td>.162</td>
<td>204.167</td>
<td>.169</td>
<td>24.764</td>
<td>4</td>
<td>487</td>
<td>.000</td>
</tr>
<tr>
<td>2</td>
<td>.634</td>
<td>.402</td>
<td>.394</td>
<td>173.617</td>
<td>.233</td>
<td>94.235</td>
<td>2</td>
<td>485</td>
<td>.000</td>
</tr>
<tr>
<td>3</td>
<td>.715</td>
<td>.511</td>
<td>.504</td>
<td>157.137</td>
<td>.109</td>
<td>108.061</td>
<td>1</td>
<td>484</td>
<td>.000</td>
</tr>
<tr>
<td>4</td>
<td>.716</td>
<td>.513</td>
<td>.503</td>
<td>157.186</td>
<td>.002</td>
<td>.851</td>
<td>2</td>
<td>482</td>
<td>.427</td>
</tr>
</tbody>
</table>

Further analysis of the regression coefficients revealed that in Model 1, the beta for Asian in reference to White was .125, t = 2.856, p ≤ .004; and the beta for Other Minorities, as compared to White, was -.281, t = -6.245, p ≤ .000.

Other Minorities was the strongest predictor and showed that this group was more likely to have lower SAT scores than White Students. The beta for Gender was -.093, t = -2.252, p ≤ .025 (males had higher SAT scores). The beta for Free/Reduced Lunch was -.155, t = -3.604, p ≤ .000, and showed that those who were qualified for free and reduced lunch scored lower on the SAT.

In Model 2, when ST7 and Middle School GPA were added, all the demographic variables from the 1st Model continued to be significant (see Table 5). The beta for ST7 was 0.368, t = 10.113, p ≤ .000 and was the strongest predictor of SAT, indicating that students, who scored higher on the ST7, had higher SAT scores. The beta for Middle School GPA was 0.269, t = 7.175, p ≤ .000 and indicated that those students who had a higher Middle School GPA also had higher SAT scores.
Table 5

Hierarchical Regression results for SAT regressed on the independent variables of the study

<table>
<thead>
<tr>
<th>Model</th>
<th>Variables</th>
<th>B</th>
<th>std. Error</th>
<th>β</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
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<td>67.533</td>
<td>23.647</td>
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<td>2.856</td>
<td>.004</td>
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<td></td>
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<td>23.195</td>
<td>-.281</td>
<td>-6.245</td>
<td>.000</td>
</tr>
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<td></td>
<td>Gender</td>
<td>-41.629</td>
<td>18.486</td>
<td>-.093</td>
<td>-2.252</td>
<td>.025</td>
</tr>
<tr>
<td></td>
<td>free/reduced lunch</td>
<td>-94.954</td>
<td>26.344</td>
<td>-.155</td>
<td>-3.604</td>
<td>.000</td>
</tr>
<tr>
<td>2</td>
<td>Asian</td>
<td>47.054</td>
<td>20.481</td>
<td>.087</td>
<td>2.297</td>
<td>.022</td>
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<td>.000</td>
</tr>
<tr>
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<td>-.129</td>
<td>-3.637</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>free/reduced lunch</td>
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In Model 3, the variable NJCVTS admissions, was added. Other Minorities, Gender, Free/Reduced Lunch, ST7, Middle School GPA, and NJCVTS admissions exam were significant predictors of SAT in this model. The NJCVTS admissions exam, with a beta of 0.374, \( t = 10.395, p \leq .000 \) provided the strongest effect on SAT scores, indicating a positive impact.
It was stronger than the next predictor, ST7 which had a beta of 0.275. It is important to note that the Asian variable was no longer significant in this model (see Table 5 above).

Other Minorities, Gender, Free/Reduced Lunch, ST7, Middle School GPA, and NJCVTS admissions exam were significant predictors of SAT in Model 4, in which the academies were added. However, Health and Technology were not significant predictors in this model, and Asian continued to be non-significant.

The NJCVTS continued to provide the strongest effect of SAT scores (β=0.380) followed by ST7 (β=0.277). Once again, these results reiterated the impact of student grades (Whinfield (1981) and Spera’s (2009) in predicting student success.

**Conclusions**
The results from this study with two different outcome measures clearly indicated that grades were the strongest predictors of student achievement, in alignment with the previous studies of Whinfield (1981) and Spera (2009).

Although students who attended the NJCVTS came from many different municipalities in a very diverse county, middle school grades were the strongest predictors of future GPA, regardless of variance in courses, grading, and instruction within the county.

Perhaps, this is because the GPA measured a student’s ability to be a good student, i.e. someone who had good attendance records, knew how to complete projects, and homework, had the habits and skills to be successful as a student (Kiger, 2011).

A cumulative HSGPA “is considered by some to be an ideal predictor of college success since it is based on four years of work, measures both typical and maximal performance, and is [calculated from the] evaluations from multiple raters. Further, it reflects academic activities that mirror those of future college work (i.e. writing papers, taking tests, and time)” (Kiger, 2011, p. 2). In a similar vein, it would seem logical to infer that, middle school performance would be a good predictor of high school performance.

Student scores on the NJCVTS admissions exam were a relatively weaker predictor of HSQPA, compared to GPA, and explained only an additional 2.1% of the variance.

One could attribute this to the fact that the NJCVTS exam includes a content knowledge component as well as a reasoning component, while HSQPA, as a matter of routine, measures content knowledge only.

However, the strongest predictor of student success as measured by SAT was a student’s score on the NJCVTS admissions exam, followed by ST7 which was not a significant predictor of HSQPA. One logical conclusion may be that the SAT reasoning test measures a person’s ability to reason and problem solve.

As the NJCVTS admissions examination was created as a blend, in part to measure content knowledge and in part to measure reasoning ability, it might then explain why the NJCVTS admissions exam was the strongest predictor of SAT scores.

However, in both regression models, the academic criteria variables accounted for a considerable fraction of the variance: 22.5% for HSQPA and 34% for SAT.

In both regression analyses, other minorities were negatively correlated showing
that minorities’ performance was significantly lower than that of the white students. This, in part, affirms Geiser’s (2008) contention that the SAT “has a more adverse impact on poor (Free/Reduced Lunch) and minority applicants” (Geiser, 2008, p. 2). With regard to Gender, interestingly, males were more likely to score higher on the SAT, while females had a higher success on HSQPA.

These results indicate a need for further discussion and modification of the admission criteria of NJCVTS. As Middle School GPA proved to be a strong predictor of content knowledge, a discussion should take place about whether the NJCVTS exam should be revised to focus more on acquired aptitude.

Additionally, since ST7 was not a significant predictor of HSQPA scores and it was a weak predictor of SAT, it would appear that a conversation as to whether ST7 should continue to be a part of the admission criteria should ensue.

Students with lower middle school grades should be targeted for extra assistance early on. Grades can be examined as early as March, and extra support options can be implemented even before students enter the 9th grade.

Potentially, there are summer class options that a student could attend in order to bolster certain areas. Additionally, curricular activities can be designed to support students in sharpening logical and reasoning abilities.

It is important to examine teacher practices and to evaluate current curriculum materials in order to assess and eliminate any kind of bias towards certain populations, such as minorities and poor students. It could also be helpful to assign incoming students to a “Big Brother/Big Sister” who checks in with them periodically. In this way, upper classmen could serve as role models to provide structured help and tutoring.

Another area of focus would be to examine the Academies and their curricula. Although Health and Technology academies were both relatively weak predictors of HSQPA scores, students who attended these were more likely to have higher HSQPA scores than did those students who attended the Engineering Academy.

Since in this study, middle school GPA was a significant predictor of HSQPA, a future study should break down the GPA into particular subject areas and compare subject to subject, i.e., middle school math to high school math to see if there are any correlations in order to provide assistance earlier, as students enter high school. Additionally, researchers might examine whether individual admission criteria could predict success equally well for the various sub-groups.

Since there is little information on admissions criteria in general, this study should be beneficial to the District and other Vocational-Technical Schools, administrators and policy personnel and through them, the community at large.
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References


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<table>
<thead>
<tr>
<th>Issue</th>
<th>Deadline to Submit Articles</th>
<th>Notification to Authors of Editorial Review Board Decisions</th>
<th>To AASA for Formatting and Editing</th>
<th>Issue Available on AASA website</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring</td>
<td>October 1</td>
<td>January 1</td>
<td>February 15</td>
<td>April 1</td>
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<tr>
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<td>February 1</td>
<td>April 1</td>
<td>May 15</td>
<td>July 1</td>
</tr>
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<td>July 1</td>
<td>August 15</td>
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<td>October 1</td>
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<td>January 1</td>
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