

Editor's Note

I am pleased to present the Spring 2016 edition of *The Charter Schools Resource Journal*. We have three excellent articles in this issue:

Academic optimism, organizational citizenship behaviors, and student achievement at charter schools, is authored by Mustafa Guvercin of Zenith Learning and Gary Schumacher and Michelle Peters of the University of Houston—Clear Lake.

Teacher-student interactions during instructional read alouds in the elementary classroom is authored by Kristina Rouech.

Our third outstanding article for this issue is *An analysis of school climate and student growth in select Michigan charter schools* by Benjamin Jankens.

Thank you to our authors for considering this journal. We strive to make this online journal relevant and important in the field of charter school policy, research, and practice. Our goal continues to publish two high-quality issues per academic year. To that end, we ask all of our readers and contributors to please keep us in mind for your charter school-related research.

We must say good-bye to one of the founders of this journal and current Associate Editor, Dr. Diane Newby. Diane has served for many years at Central Michigan University before recently taking a well-deserved retirement. Her commitment, though, continued with her service on the editorial board among many other worthwhile endeavors. Her expertise, assistance, and support is duly noted and appreciated! This is the last edition that Diane will serve on and she will be missed.

Last but not least, I am happy to introduce Stephanie Mathson as a new member of our editorial board. Stephanie is a faculty librarian at Central Michigan University and her help has been invaluable, especially in pursuing indexing opportunities for our Journal and for her help in obtaining an ISSN number. Thank you and welcome aboard, Stephanie!

Thank you to all of our readers for your interest in this journal.

Respectfully,

David E. Whale, Ed.D.

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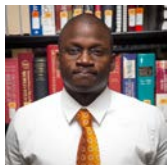


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Academic Optimism, Organizational Citizenship Behaviors,
and Student Achievement at Charter Schools

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Academic Optimism, Organizational Citizenship Behaviors, and Student Achievement at Charter Schools

Abstract

This study examines the dynamics between academic optimism, Organizational Citizenship Behaviors (OCBs), and school achievement. Results indicated that the level of a school's academic optimism influenced their level of OCBs and school Reading and Mathematics achievement. However, the level of a school's OCBs was not found to influence its school Reading and Mathematics achievement.

Keywords: academic optimism; charter schools; organizational citizenship behaviors; regression analysis; school achievement

Academic Optimism, Organizational Citizenship Behaviors, and Student Achievement at Charter Schools

Introduction

Determining how school properties contribute to student learning has been one of the greatest challenges of educational researchers. The Coleman Report (1966) posited that students' socioeconomic status is the greatest determinant of student success in schools. The report also suggested that school properties, such as per pupil expenditure, school facilities, or number of books in the library, had no or at best insignificant effect on student learning. Many researchers have looked for characteristics of schools that affect student achievement, controlling for socioeconomic status (Edmonds, 1979; Hoy, Smith, & Sweetland, 2002; Hoy, Tarter, & Woolfolk Hoy, 2006; Jurewicz, 2004; McGuigan, 2005; Purkey & Smith, 1983). Recently, academic optimism and Organizational Citizenship Behaviors (OCBs) have shown promising results in this area (Bogler & Somech, 2004; DiPaola & Neves, 2009; DiPaola, Tarter, & Hoy, 2005; Hoy et al., 2006; Kirby & DiPaola, 2011; McGuigan & Hoy, 2006; Smith & Hoy, 2007; Wagner & DiPaola, 2011). These encouraging results were the focus of this research.

Hoy (2012) suggests that most agree that socioeconomic status (SES) is a strong predictor of student achievement. The SES of a student is a composite variable including common indicators, such as income, educational level, and neighborhood residential stability, mostly referred to as the free or reduced lunch status of the student. The landmark study of Coleman et al. (1966) concluded, "Only a small part [of student achievement] is the result of school factors, in contrast to family background differences between communities" (p. 297). The Coleman methodology was criticized for being improperly modeled and limited choice of school characteristics (Aitkin & Longford, 1986; Cain & Watts, 1970; Cooley, Bond, & Mao, 1981).

Other researchers have confirmed the results of Coleman's study, concluding that a student's SES plays almost a regulating role on his or her academic achievement (Edmonds, 1979; Hoy et al., 2002; Hoy & Sweetland, 2001; Hoy et al., 2006; Jenks et al., 1972; Smith & Hoy, 2007; Wagner & DiPaola, 2011). These studies suggested to sociologists, educators, and practitioners that poverty, a social ill, should be cured in society. However, the same insight may have contributed to the notion that school context and school level organizational attributes cannot help students unless poverty is eliminated. Even though research supported that contribution of school characteristics to student achievement was minimal, educators could not believe that schools are not able to affect learning for students in poverty. Indeed, this contradicts the current national emphasis on bringing all students, including students in poverty, up to high standards.

Researchers have spent much time examining school characteristics to see which ones contribute to student learning. Effective school research has sought to show the importance of school leaders and those characteristics in improving student performance. Edmonds (1979) was the first to list characteristics of effective schools suggesting that they: (a) were led by strong principals; (b) set high expectations for students; (c) emphasized basic skills for everyone; (d) had a structured and an orderly environment; and (e) evaluated student performance frequently and systematically.

Recently two constructs, academic optimism and OCBs (see Appendix), encompassing most of the characteristics defined by Edmonds (1979), have been identified as two essential properties of effective schools in improving student success beyond SES (Hoy et al., 2006; Kirby & DiPaola, 2009; McGuigan & Hoy, 2006; Smith & Hoy, 2007; Wagner & DiPaola, 2011). Therefore, studying academic optimism and OCBs and their relationships to student learning may provide another way to improve student academic achievement.

Hoy et al. (2006) defined academic optimism as a “collective property of school” (p. 440) consisting of three dimensions as school properties: (a) faculty’s collective efficacy, (b) faculty trust in students and parents, and (c) the school’s academic emphasis. The student academic attainments, after taking into account intake differences, are positively correlated with each of these three dimensions: (a) the faculty’s collective efficacy (Goddard, 1998, 2001, 2002; Goddard, Hoy, & Woolfolk Hoy, 2000; Tschannen-Moran & Hoy, 2001; Tschannen-Moran, Hoy, & Woolfolk Hoy, 1998), (b) faculty trust in students and parents (Bryk & Schneider, 2003; Goddard, Tschannen-Moran, & Hoy, 2001; Hoy et al., 2006; Hoy & Tschannen-Moran, 1999; Tschannen-Moran & Hoy, 1998, 2000), and (c) the school’s academic emphasis (Bryk, Lee, & Holland, 1993; Goddard, Sweetland, & Hoy, 2000; Hoy et al., 2006).

Moreover, researchers posited that academic optimism as a unified construct has impacted student learning at any grade configuration of public schools outweighing SES and previous achievement (Hoy et al., 2006; Kirby & DiPaola, 2009; McGuigan & Hoy, 2006; Smith & Hoy, 2007; Wagner & DiPaola, 2011). However, academic optimism has not been tested at other types of schools, such as charter, private, or alternative schools. Even Wagner and DiPaola (2011) stated the need for research to be conducted on academic optimism and its effect on student achievement in other settings.

Relevant literature on school characteristics affecting student achievement also reveals that OCBs in schools correlate with student achievement as well (DiPaola & Hoy, 2005a; DiPaola et al., 2005; DiPaola & Tschannen-Moran, 2001; Wagner & DiPaola, 2011). Organ (1988) defined OCBs as “[i]ndividual behavior that is discretionary, not directly or explicitly recognized by the formal reward system, and that in the aggregate promotes the effective function of the organization” (p. 4). Organizational Citizenship Behaviors in schools are

described as “voluntary and assistive teacher behaviors above and beyond performance expectations of their official role that “go the extra mile” to help students and colleagues succeed” (DiPaola et al., 2005, p. 894). Volunteering for school committees, helping new teachers in their classroom management, or providing extra tutorial classes for students in the after-school period are all examples of OCBs in schools.

There are empirical studies showing the strong correlation between student academic achievement and OCBs (DiPaola & Hoy, 2005a; DiPaola et al., 2005; DiPaola & Tschannen-Moran, 2001). Wagner and DiPaola (2011) found a strong correlation between academic optimism and OCBs at the high school level and suggested that the same correlation could be shown in different school settings. Hoy (2012) acknowledged the promising results of the research on the relationship between OCBs and student achievement and suggested to replicate these studies. Understanding the effects of different constructs on student achievement could provide great knowledge for school and district leadership to influence student and school academic outcomes, even controlling for SES.

The enactment of the *No Child Left Behind* (NCLB) Act in 2001 heightened school leaders’ concern with ensuring that all students, including those in poverty, make steady progress towards state-determined proficiency standards (U.S. Department of Education, 2002). Since then, schools have been concerned with addressing those gaps between the academic achievement of students from poverty and their wealthier peers (Bergeson, 2006; Lacour & Tissington, 2011; Rowan, Cohen, & Raudenbush, 2006; Shannon & Blysm, 2002; Snell, 2003). Academic optimism and OCBs are two emerging properties of schools promising positive effects on student achievement. Therefore, school leaders should consider the organizational behaviors that affect student achievement and the relations between them in order to improve the skills of

teachers, and schools in general, and improve the achievement of all students (Hoy, 2012).

However, almost all studies on these two characteristics of schools, academic optimism and OCBs have been conducted in regular public school settings (Wagner & DiPaola, 2011).

Charter schools are publicly funded and privately ran public schools. They operate according to their charter proposals and state laws. Charter schools in most states, such as Texas, are not obliged to follow all state laws regulating public schools. In other words, they are exempt from some of those regulations, but do have to participate in statewide testing and be a part of a state's accountability system (Consolleti, 2011; Texas Education Agency [TEA], 2013). For this reason, charter schools, especially college preparatory schools that focus on student learning, are also looking for ways to improve student achievement. Improving academic optimism and OCBs among faculty may be an answer for charter schools as well. As a result, this study addressed the following research questions: (a) Does academic optimism influence Organizational Citizenship Behavior?; (b) Does academic optimism influence school achievement, controlling for SES?; and (c) Does Organizational Citizenship Behavior influence school achievement, controlling for SES?

Methods

Participants

A purposeful sample of 10 elementary college preparatory charter schools ($n = 228$ teachers) operated by a single charter holder in a large urban area of southeast Texas participated in this study. More than 80.0% of teachers were female and the majority of teachers ($n = 155$; 69.9%) were younger than 35 years of age. Most of the teachers were also inexperienced. More than three quarters of the teachers ($n = 160$; 76.2%) reported less than five years of total teaching experience counting the current school year as well, whereas that amount increased to 95.7%

($n = 198$) when it came to teaching in their respective schools. Only about 14.0% ($n = 29$) of teachers had been teaching in their current school more than three years and less than half of the teachers ($n = 94$; 44.8%) had more than three years of experience total. Approximately 90% of the teachers reported that they were certified in their teaching subject. Student data were also collected from the State of Texas Assessments of Academic Readiness (STAAR) test results of fifth grade students ($n = 782$). In all schools, the student body was mostly composed of African Americans, Hispanics, or both. Socioeconomic statuses of schools varied from 27.0% to 87.0%.

Instrumentation

Academic optimism. School Academic Optimism Scale (SAOS) was utilized in this study to determine the academic optimism level of schools. The SAOS, created by Hoy, has been shown to be a reliable and valid instrument (Hoy, 2005; Hoy et al., 2006; McGuigan & Hoy, 2006; Smith & Hoy, 2007; Wagner & DiPaola, 2011). The SAOS is a 30-item survey comprised of three parts: (a) sense of collective efficacy (CE); (b) faculty trust in students and parents (FT); and, (c) the school's academic emphasis (AE). Composites of each subscale were created per participant. The greater the composite score, the greater the academic optimism. Cronbach's alphas were calculated to be: .94 for the entire instrument, .85 for CE, .89 for FT, and .89 for AE.

Organizational citizenship behaviors. The citizenship behavior of each school was measured using the Organizational Citizenship Behavior scale (DiPaola & Hoy, 2004). This 12-item instrument measures the extent of voluntary and assistive teacher behaviors above and beyond the performance expectations of their official role that "go the extra mile" to help students and colleagues succeed on a 6-point scale (DiPaola & Hoy, 2005). Composites were calculated; the greater the composite score, the greater the OCBs. Cronbach's alpha was calculated to be .90.

School achievement. Student achievement was measured by each school's mean percent correct score on the Texas state-mandated assessment (STAAR) for reading and mathematics tests taken in the fifth grade. Fifth grade was selected since the Student Success Initiative's (SSI) grade advancement requirements apply to fifth grade students who take the reading and mathematics STARR tests (TEA, 2012) and it is a transition to middle school. The reliability of Texas assessment was established by using two internal consistency measures: (a) Kuder-Richardson 20 (KR-20) was used for tests with only multiple-choice items (reading = .42, math = .44) and (b) Stratified coefficient alpha was used for tests with a mixture of multiple-choice and constructed-response items (reading = .86, mathematics = .90).

Data Collection & Analysis

The charter school principals were contacted with a phone call to discuss the purpose of the study, the process for collecting the teacher surveys, and student achievement data. A representative from each school e-mailed an electronic survey, using SurveyMonkey, to all school teachers. The e-mail consisted of a survey cover letter and a uniquely coded direct hyperlink to access the electronic survey on the SurveyMonkey website. The coding allowed the researcher to match the responses to the schools, since teachers were embedded into schools. Upon receiving the survey responses, all data were downloaded into Excel and uploaded to SPSS for further analysis. Student performance data (percent correct scores in STAAR reading and mathematics tests for fifth grade students) for each participating school were collected from the schools and added to the SPSS database. All reverse coding was completed for all required items in both surveys before commencing data analysis.

Given that the teachers (Level 1) in this study were nested within 10 elementary schools (Level 2), a methodological dilemma concerning the unit of analysis was created. To address

this issue, initially a multilevel data analysis technique, hierarchical linear modeling (HLM), was utilized. To justify the use of a multi-level analysis, unexplained variation in the outcome or dependent variables (OCBs and student achievement) were examined across each campus. To do this, a one-way Analysis of Variance (ANOVA) with random effects model (unconditional model) was used. The one-way ANOVA model contained only an outcome variable and no Level 1 or Level 2 predictors. Given that unexplained variation was not found to exist ($p > .05$) across the 10 campuses for either outcome variable, a single level analysis (simple linear and hierarchical multiple regression) was employed to analyze the data. All variables (academic optimism, Organizational Citizenship Behaviors, and school achievement) were of continuous measurement.

Findings

Academic Optimism and Organizational Citizenship Behaviors

When examining whether or not teachers' perceptions of their school's academic optimism influenced their perceptions of their school's OCBs, simple linear regression techniques were used. Findings indicated that a school's academic optimism does have an influence on the school's OCBs, $F(1, 226) = 191.2$, adjusted- $r^2 = .458$, $p < .001$. The greater the academic optimism of a school the greater the level of that school's OCBs. Approximately 46% of the schools' level of OCBs can be attributed to their level of academic optimism.

In addition, the properties of academic optimism were also found to influence OCBs. Academic optimism consists of three properties – collective efficacy (CE), faculty trust in clients (FT), and academic emphasis (AE). Statistically significant findings were found to exist between: (a) CE and OCBs, $F(1, 226) = 153.72$, $p < .001$, adjusted- $r^2 = .405$, (b) FT and OCBs, $F(1, 226) = 123.03$, $p < .001$, adjusted- $r^2 = .369$, and (c) AE and OCBs, $F(1, 226) = 122.82$,

$p < .001$, adjusted- $r^2 = .352$. The three properties of academic optimism explained the variation in the level of a school's OCBs by 40.5%, 36.9%, and 35.2% respectively. Table 1 depicts the summary of these findings.

Table 1

Academic Optimism and Organizational Citizenship Behaviors

	N	F-value	r	adjusted- r^2	p -value
AO – OCB	228	191.17	.677	.458	<.001*
CE – OCB	228	153.72	.636	.405	<.001*
FT – OCB	228	123.03	.607	.369	<.001*
AE – OCB	228	122.82	.593	.352	<.001*

*Statistically significant ($p < .05$)

Academic Optimism and School Achievement

Hierarchical multiple regression techniques were used to examine whether or not the teachers' perceptions of their respective school's academic optimism influenced their school's average reading and mathematics achievement, controlling for school SES.

Reading achievement. The results of the hierarchical multiple regression analysis found statistically significant findings to exist between: (a) CE and school reading achievement, $F(1, 225) = 15.49$, $p < .001$, adjusted- $r^2 = .019$; (b) FT and school reading achievement, $F(1, 225) = 21.30$, $p < .001$, adjusted- $r^2 = .026$; (c) AE and school reading achievement, $F(1, 225) = 17.50$, $p < .001$, adjusted- $r^2 = .022$; and (d) AO and school reading achievement, $F(1, 225) = 22.31$, $p < .001$, adjusted- $r^2 = .027$, when controlling for school SES. As a school's academic optimism increases, so does its reading achievement. After controlling for school SES, academic optimism, and its three properties, collective efficacy, faculty trust in clients, and

academic emphasis, explained the variation in reading achievement by 2.7%, 1.9%, 2.6%, and 2.2%, respectively. Table 2 displays these findings.

Table 2

Academic Optimism and Reading Achievement

	N	F-value	adjusted- r^2	p -value
AO - Reading	228	22.31	.027	<.001*
CE - Reading	228	15.49	.019	<.001*
FT - Reading	228	21.30	.026	<.001*
AE - Reading	228	17.50	.022	<.001*

*Statistically significant ($p < .05$)

Mathematics achievement. The results of the hierarchical multiple regression analysis found statistically significant findings to exist between: (a) AO and school mathematics achievement, $F(1, 225) = 5.70$, $p = .02$, adjusted- $r^2 = .010$, (b) FT and school mathematics achievement, $F(1, 225) = 4.78$, $p = .03$, adjusted- $r^2 = .009$, and (c) AE and school mathematics achievement, $F(1, 225) = 5.94$, $p = .016$, adjusted- $r^2 = .011$, when controlling for school SES. After controlling for school SES, academic optimism and two of its properties, faculty trust in clients and academic emphasis, explained the variation in average school mathematics achievement by 1.0%, 0.9%, and 1.1%, respectively. Findings, however, did not conclude that the collective efficacy of the school had any influence on the school's average mathematics achievement, $F(1, 225) = 3.62$, $p = .058$. The findings are displayed in Table 3.

Table 3

Academic Optimism and Mathematics Achievement

	N	F-value	adjusted- r^2	p-value
AO - Math	228	5.70	.010	.018*
CE - Math	228	3.62	.007	.058
FT - Math	228	4.78	.009	.030*
AE - Math	228	5.94	.011	.016*

*Statistically significant ($p < .05$)

Organizational Citizenship Behaviors and School Achievement

In addition, it was imperative to determine whether or not the schools' level of OCBs had any influence on their average school achievement, after controlling for school SES. The findings of the hierarchical multiple regression analysis suggested that a school's level of OCBs does not influence the average school reading achievement, $F(1, 225) = .277, p = .599$, or mathematics achievement, $F(1, 225) = .039, p = .843$, after controlling for school SES. Therefore, insufficient evidence was found to support the rejection of the null hypothesis.

Discussion

Since the enactment of NCLB, schools have been even more concerned with addressing the gap between the academic achievement of students from poverty and their wealthier peers (Bergeson, 2006; Lacour & Tissington, 2011; Rowan et al., 2006; Shannon & Blysm, 2002; Snell, 2003). Academic optimism and OCBs, as school properties, have shown positive effects on student/school achievement in regular public schools (Hoy et al., 2006; Kirby & DiPaola, 2009; McGuigan & Hoy, 2006; Smith & Hoy, 2007; Wagner & DiPaola, 2011). However, it

was unknown if the same results could also be found in charter school settings. Therefore, the purpose of this study was to examine the relationship among academic optimism, OCBs, and school achievement in college preparatory charter schools.

Similar to previous research (Bryk & Schneider, 2003; Goddard et al., 2001; Hoy et al., 2006; Kirby & DiPaola, 2009; McGuigan & Hoy, 2006; Smith & Hoy, 2007; Wagner & DiPaola, 2011), the results of the regression analysis for this study indicated that a statistically significant relationship existed between: (a) academic optimism and OCBs; (b) academic optimism and school achievement, both in reading and mathematics; (c) collective efficacy and school achievement in reading; (d) faculty trust in clients and school achievement, both in reading and mathematics; and, (e) academic emphasis and school achievement in both reading and mathematics.

However, unlike previous research (Bogler & Somech, 2004, 2005; DiPaola et al., 2005; DiPaola & Neves, 2009; DiPaola & Tschannen-Moran, 2001; Goddard, 2002; Goddard et al., 2000; Jurewicz, 2004; Somech & Ifat, 2007; Tschannen-Moran & Hoy, 2001; Wagner & DiPaola) the results failed to find a statistically significant relationship to exist between: (a) collective efficacy and school achievement in mathematics and (b) OCBs and school achievement in both reading and mathematics. One reason for this could be that expectations of teachers in charter schools are higher than those of teachers in regular public schools. Teachers in charter schools may have different perceptions of OCBs. For example, providing extra tutorials to students or serving on school committees or at functions are among the formal duties of teachers in those sampled charter schools, whereas, these are among the OCBs in regular public schools. The years of experience teachers had may have been another way to explain this contradiction with findings from previous research. More than 50% of all teachers in the sampled

schools have three years or less experience. Therefore, they may still be more idealistic in their teaching and weren't able to distinguish their regular duties from the OCBs.

Implications

The implications of this quantitative study are not limited to only the college preparatory charter schools that participated in this research. Other charter and public schools may benefit from these findings as well. Findings from this research can be used by school administrators and teachers to improve student achievement. Charter schools, like traditional public schools, do not have control over the SES of their students. However, there are school properties that they can control to improve school achievement. The findings of this research suggest that academic optimism and its three properties influence student achievement, after controlling for SES, in charter schools. Therefore, principals may work on boosting the faculty's collective efficacy, teachers' trust in clients, and pressing for academic excellence. All of these components will increase the academic optimism of a school. According to current and previous research findings, student achievement will improve accordingly (Goddard, 2002; Hoy et al., 2006; McGuigan & Hoy, 2006; Smith & Hoy, 2007; Wagner & DiPaola, 2011).

Additionally, findings from this research support the relationship between academic optimism and school achievement, when SES is controlled. Schools or school districts, including charter schools, may want to consider administering the School Academic Optimism Scale (SAOS) to their faculty to determine deficient areas in collective efficacy, faculty trust in clients, and academic emphasis. Administrators may plan workshops and trainings according to the results of the survey to improve deficient areas so that high academic optimism can be established in their schools and as a result, school achievement can be expected to increase.

Despite the findings, which failed to find a correlation between OCBs and school achievement for these sampled schools, there is numerous research supporting their relationships (Bogler & Somech, 2004, 2005; DiPaola et al., 2005; DiPaola & Hoy, 2005a, 2005b; DiPaola & Neves, 2009; DiPaola & Tschannen-Moran, 2001; Jurewicz, 2004; Somech & Ifat, 2007; Wagner & DiPaola, 2011). Therefore, school administrators may want to consider looking for ways to improve OCBs in schools as well. Charter schools may consider redefining the OCBs for their campuses since each charter has different practices in defining roles and expectations of teachers. While one school defined tutoring in after school hours as regular duty of a teacher, another one may not but it may require its teachers to sponsor an after school club as a regular duty. This might be one of the reasons the current study couldn't find a relationship between school achievement and OCBs. The findings are valuable to the research on academic optimism, OCBs, and charter schools. Given that this is one of the first known studies examining correlations of academic optimism, OCBs, and school achievement in charter schools, it initiates a discussion which examines the relationships among those constructs in charter schools.

Recommendations for Future Research

This study should be replicated including qualitative data to allow researchers to explore the perceptions of the participants on academic optimism, collective efficacy, faculty trust, and academic emphasis in their respective schools. It would also be beneficial to repeat this study at the classroom level across the schools so that research might check the possible unexplained variance in student achievement. Embedding students in classrooms and examining achievement at the student level rather than at the school level would allow using HLM statistical method to account for this variance. Given that the multiple regression analysis did not find OCBs to have a direct relationship with schools' reading and mathematics achievement, but did report that OCBs

had a strong relationship with academic optimism and that academic optimism had a statistically significant relationship with school achievement, this would suggest one examine whether or not academic optimism could potentially be a mediator between OCBs and school achievement.

Therefore, there is a need for study to examine why there was no relationship between OCBs and school achievement or whether it was mediated through another construct.

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Appendix

Glossary of Key Terms

1. Academic Optimism (AO) - A collective property of schools, having three properties: (a) faculty's collective efficacy, (b) faculty trust in students and parents, and (c) the school's academic emphasis (Hoy, Tarter, & Woolfolk Hoy, 2006).

- **Collective efficacy** - The perceived collective efficacy of a school refers to the judgment of the teachers that the faculty as a whole can organize and execute the actions required to have positive effects on students. The school faculty believes it can teach even the most difficult students.
- **Faculty trust** - The school faculty trusts students and parents.
- **Academic emphasis** - The academic emphasis of a school is the extent to which the school focuses on student academic achievement. In such schools, the faculty sets high but attainable goals for students and students work hard, are cooperative, and respect others who get high grades.

2. Organizational Citizenship Behaviors (OCB) – The “voluntary and assistive teacher behaviors above and beyond performance expectations of their official role that ‘go the extra mile’ to help students and colleagues succeed” (DiPaola, Tarter, & Hoy, 2005, p. 894).

TEACHER-STUDENT INTERACTIONS DURING INSTRUCTIONAL READ-ALOUDS IN
THE ELEMENTARY CLASSROOM

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ABSTRACT

Reading aloud to elementary students for instructional purposes is common practice and teachers often ask questions while reading to engage students in conversations. This research adds to the literature pertaining to the types of questions teachers ask while reading aloud. Six elementary teachers and their students were observed and video recorded to examine questions teachers asked and responses students gave during classroom read-aloud sessions. ELAN (Max Planck, 2012), video annotation software, was used for data analysis. Findings revealed no apparent relationship between the level of questions teachers posed and the amount of talk time allocated to students. Frequently, questions were posed that limited student response to a single word answer. This research highlights the importance of teachers formulating effective questions prior to the classroom read-aloud for instructional purposes.

Introduction

Reading aloud for instructional purposes has been widely studied and implemented at various grade levels; however, much of the research has been done at the lower elementary level. As a teacher, I read-aloud to my fourth and fifth grade students on a daily basis for instructional purposes. But some sessions left my students and I unsatisfied with the conversation and response to the text. This led me to researching how teachers in 2nd – 5th grades read-aloud and used trade books to best meet the educational objectives for their students.

Reading aloud for instructional purposes can engage students in quality conversations about what they are listening to and lead to deeper understanding about content and about how texts function. This point was made clear by Anderson, Hiebert, Scott, and Wilkerson (1985) when they stated “The single most important activity for building the knowledge required for eventual success in reading is reading aloud to children” (p. 23). Even though I understood what made a good instructional read-aloud, I still had concerns about why some of them were not as effective as others. In order to ascertain whether other teachers were having the same difficulties as myself, I conducted research of six upper elementary teachers who read-aloud for instructional purposes. The purpose of this study was to examine the actual talk that occurs between teacher and students during read-aloud interactions. The following research questions guided this qualitative study:

1. What types of questions do teachers ask when reading aloud?
2. What types of responses do students give to questions posed by the teacher when reading aloud?
3. Is there a relationship between the types of questions teachers ask and the amount of talk time that is allocated to students during the read-aloud experience?

In order to capture authentic data all teachers were video recorded and all questions and responses were identified using video annotation software, ELAN (Max Planck, 2012).

Using video is a relatively new form of data collection in educational research. As Loehr and Harper (2003) noted, “the advent of two technologies – inexpensive video recorders and digital video annotation software – is revolutionizing the study of human interaction” (p. 225). Researchers are no longer limited by the “cumbersome mechanical manipulation of video frames, and separation of video footage from annotation” (p. 226) due to the advancement in video annotation software, such as ELAN (Max Planck, 2012). Currently, the use and analysis of video data using annotation software provide educational researchers with richer data and more complete analysis of that data.

As a result of using video annotation software and examining the three research questions above, what became apparent is that planning prior to the read-aloud is necessary. Preparedness prior to instructional read-aloud can increase student engagement and allow students to show their thinking about the text rather than all knowledge coming from the teacher. Teachers need to make the best use of the instructional read-aloud by preplanning questions for effective and meaningful learning.

Review of the Literature

Reading aloud to students for instructional purposes is not something that can be done well without knowledge of effective practice. Previous research clearly identified important components of classroom read-alouds: previewing text, building background knowledge, making predictions, building vocabulary, asking questions, reading a variety of texts, and engaging students with different styles of interactions (Bradbury, 2006; Helsey & Kucan, 2010; Lohfink,

2012; Morrow & Britain, 2003; Teale, 2003). In addition to these components, the previous research also identified benefits of reading aloud, such as: constructing meaning from text, gaining experience with language, instilling a joy of reading, motivating students to read, learning new vocabulary, adding to background knowledge, teaching text structure, and engaging students in quality talk (Barrentine, 1996; Beck & McKeown, 2001; McKeown & Beck, 2003; Morrow & Britain, 2003; Teale, 2003). However, researchers have reported that teachers approached read-aloud as a teacher-directed experience rather than truly engaging students in conversation about text. As such, students lost out on valuable opportunities to explore the text and achieve the previously mentioned benefits (Barrentine, 1996; Beck & McKeown, 2001; Martinez & Teale, 1993).

Much of the work done in the previous research regarding read-alouds was qualitative in nature. Researchers have collected data on effective components of read-alouds (Fisher, et al., 2004), benefits of reading aloud (Dickinson & Smith, 1994; Kindle, 2009), and teacher styles while reading aloud (Beck & McKeown, 2001; Hall & Williams, 2010; Martinez & Teale, 1989, 1993; Wright, 2011). In addition, many of these studies advocate for styles of read-alouds that are interactive and suggest that teachers ask higher-level questions when reading aloud (Barrentine, 1996; Lohfink, 2012; McGee & Parra, 2015; Beck & McKeown, 2001; McKeown & Beck, 2003). What previous studies neglected to report was specifically what happened between the teacher and students during the interactions of a read-aloud experience. This qualitative study attempted to fill that gap.

Methodology

This study was qualitative by design and employed a grounded theory approach to develop codes for identifying the types of questions teachers asked and the types of responses students gave to those questions. The data were further analyzed by examining the relationship between the types of questions teachers asked and the amount of talk time allocated to students during the instructional read-aloud experience. Data were collected by video recording and observer notes, and then analyses were completed using a constant-comparison method. Codes for question and response types were developed as the data were analyzed.

Stages for constant comparison in order to generate codes for the data were done using the methodology of grounded theory analysis as described by Creswell (2007) and named by McEneaney, Gillette, Farkas, Clifton, and Guzniczak (2012). The first four-steps of their process was used in order to describe the data. The first step, “Observing,” involved viewing each video in its entirety without attempting to code. The second step, “Describing,” involved viewing each video and annotating potential codes from when the teacher was talking and when the students were talking. The third step, “Generalizing,” the codes were narrowed, defined more clearly, and annotated within the video stream. Lastly, the fourth step, “Refining,” started with reviewing all codes and refining the content and description of said codes. At this point, calculations of inter-rater reliability were done with a subset of three cases. These four steps were in regard to the creation of codes for teacher questions and student responses, other steps did take place in order to input field notes and calculate talk time.

Study Setting and Participants

A convenience sample of teachers was selected from schools located in a general geographic location of a small Midwestern city. Public, private, and parochial schools were

considered equally and the researcher recruited through the principals of all elementary schools in the selected geographic area. Six classrooms were randomly selected from those who volunteered to be a part of the study. All names are pseudonyms. Two of the classrooms were in parochial settings and the remaining four were public schools. Of the 145 students in the six classrooms, 124 had parental permission to participate in the study. Those without permission were placed out of camera range and no data were used from those students. All six teachers were Caucasian and ranged in age from 34 to 56 years old. Four out of the six teachers held a master's degree in education and their experience ranged from 11 to 17 years teaching elementary school. All of the teachers already used read-alouds for instructional purposes in their classrooms. Data was collected in the spring of the school year, therefore all students were accustomed to read-alouds in their classroom.

Data Collection and Analyses

Six second through fifth grade classrooms were observed in the spring of 2013 and three instructional read-alouds were videotaped for each classroom. The day before and after any school break or holiday was avoided. Scheduling of data collection was done with the classroom schedule in mind. The observations were conducted during regularly scheduled read-aloud times in order to create minimum disruption of the classroom schedule. There were three recordings done in each classroom in order to ensure that if the equipment failed during one read-aloud there were still two others to use. The first recording was completed to acclimate the classroom to the cameras and researcher and the second and third read-alouds were used for analysis.

Types of Data. In order to collect comprehensive information regarding the specific questions of this study, the researcher gathered three particular types of data. Each teacher completed a pre- and post-observation survey, the researcher collected field notes during each

read-aloud, and each experience was recorded using two video cameras: one that focused on the teacher and one that focused on the students. Students without permission to participate in the study were out of camera range and their comments were blocked out of all recordings.

Survey. Prior to the first instructional read-aloud, a pre-observation survey focusing on teacher demographic information and general experience, knowledge and understanding about classroom read-alouds was distributed and collected. After each read-aloud, a post observation survey was administered and focused on the teachers' selection of text, pre-reading preparation (if any), and teacher reflection. Data collected through the pre-observation survey were used to compile demographic data regarding each teacher in order to provide background information about their education and experience. The post-observation survey asked about the particular read-aloud recorded that day.

Field notes. This researcher's role was that of an outsider, rather than a participant of the read-aloud, in order to observe the experience as it naturally occurred in the classroom. The presence of an outsider always carries the risk of affecting the natural environment; however, the benefits of written field notes during the read-aloud outweighed the risk of adverse consequences due to researcher observation. Field notes were a necessity to capture small nuances and the overall atmosphere of the read-aloud that were lacking in the video recordings. Being present during the read-alouds allowed the researcher to perceive the experience as a whole rather than just watching the limited view through each recorded video stream. Field notes were integrated into the video stream on ELAN (Max Planck, 2012) to provide a complete picture of the read-aloud and so the information was readily available when coding. Field notes were not analyzed separately.

Video. Data of the read-aloud were gathered using video recorders. Video recordings were done once a week for three consecutive weeks attempting to hit a variety of days and times while making sure that the recording was done during normal read-aloud time. Two cameras were used: one focused on the teacher and one focused on the students with permission to participate. This created two distinct video streams offering simultaneous views focused on both groups of participants.

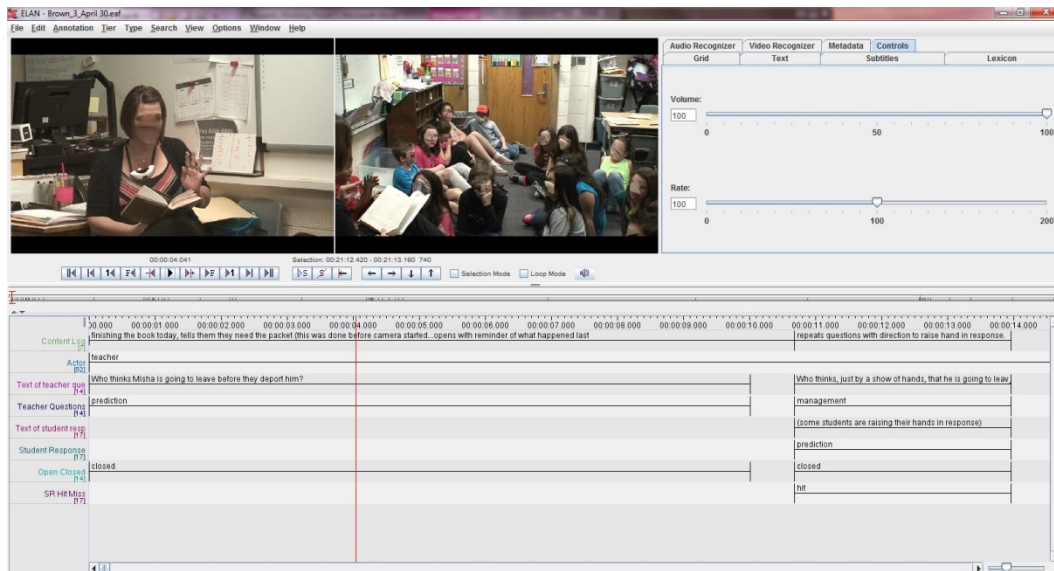


Figure 1. ELAN Screenshot

Figure 1 shows the view of a video and annotations in ELAN (Max Planck, 2012) from this study. In the upper left hand corner, viewers can observe the view of the camera focused on the teacher. Just to the right of that is the second video, which was focused on the students. The upper right hand corner has multiple options for viewing and creating sections for annotation. The bottom half of the figure shows the tiers that were created in ELAN (Max Planck, 2012) for annotating the data. Multiple tiers were created for each type of coding and then frequency charts were compiled to display the data in tables.

Reliability

The presence of the researcher in the room was the first measure to ensure reliability of the data collected. Field notes were recorded during each read-aloud in order to make notes about the general environment and the experience as a whole. These field notes were used to create a content log in the notes of the video recording in order to ensure the experience was recorded accurately. The collection of data using video recordings was also a measure to ensure reliability. When conducting observations, a researcher has to rely solely on notes and memory of the experience. Video recordings and annotations in ELAN (Max Planck, 2012) allow the researcher to return to the raw data to address any concerns that may occur with interpretation of the data.

Data were collected from multiple classrooms to increase the chance of valid conclusions. There were also three read-alouds recorded in each classroom, of which two were analyzed. This reduced the likelihood of data being skewed based on an extraordinary event in that classroom or judgments being made based on isolated events. As data were collected and analyzed, the recordings were viewed multiple times to ensure accuracy of coding, not only by the researcher, but also by two trained colleagues.

In an effort to ensure reliability, inter-rater reliability was computed using two trained colleagues. The researcher met with two fellow doctoral students to define and explain the codes that were used for teacher questions and student responses. A sheet was provided showing the codes with definitions and examples. Both colleagues had previously worked with ELAN (Max Planck, 2012), so a brief review of the software and a reminder of how to operate the software was all that was needed. They were given four sections of video from four separate events. Two sessions of teachers reading picture books and two novels were selected. Two of the read-alouds

were coded in their entirety, one of the beginning and middle, and one of the middle and end. This allowed the two raters to see a variety of text and all parts of a read-aloud (beginning, middle, and end). The only tiers that were showing were the ones showing the text of the teacher question and student responses, as well as a tier for their coding. When each person was done coding the four sections, this researcher put the “Teacher Question” tier back onto the screen and created an additional tier to identify hits and misses. The data were then put into SPSS to calculate Kappa. Cohen’s Kappa (1960) was used because it is a reliability metric that accounts for chance and therefore provides a more rigorous measure than simple percentages.

Types of Questions Asked

In order to answer the first research question, codes needed to be identified for categorizing the questions asked. The final codes identified in Table 1 are the result of using constant-comparison with the raw data to determine the types of questions teachers asked while reading aloud.

Table 1

Total of Question Types and Percentages for All Read Alouds

Teacher	Grade	Total Questions	Inferential Questions	Percentage of Inferential Questions	Literal Questions	Percentage of Literal Questions	Personal Response Questions	Percentage of Personal Response Questions	Prediction Questions	Percentage of Prediction Questions	Prior Knowledge Questions	Percentage of Prior Knowledge Questions	Vocabulary Questions	Percentage of Vocabulary Questions
Brown	5	22	9	41%	2	9%	0	0%	6	27%	5	23%	0	0%
Davis	5	93	30	32%	7	8%	18	19%	8	9%	26	28%	4	4%
Johnson	2/3	33	11	33%	8	24%	4	12%	0	0%	10	30%	0	0%
Jones	4	90	29	32%	12	13%	10	11%	1	1%	32	36%	6	7%
Smith	3	22	3	14%	13	59%	0	0%	1	5%	4	18%	1	5%
Williams	4/5	15	2	13%	3	20%	4	27%	0	0%	3	20%	3	20%
Totals		275	84	31%	45	16%	36	13%	16	6%	80	29%	14	5%

The following six codes were used for identifying teacher question types and compiling the frequency chart.

1. Literal questions refer “to an understanding of the straightforward meaning of the text, such as facts, vocabulary, dates, times, and locations. Questions of literal comprehension can be answered directly and explicitly from the text” (Day & Park, 2005, p. 62).
2. Vocabulary questions were direct questions asking for the meaning of word, concept, or phrase related to the read-aloud.
3. Prediction questions “involve students using both their understanding of the passage and their own knowledge of the topic and related matters in a systematic fashion to determine what might happen next or after a story ends” (Day & Park, 2005, p. 63). Prediction questions helped students to use what they previously read in order to draw conclusions about the possibilities for the next part of the text.

4. Personal response questions “require readers to respond with their feelings for the text and the subject” (Day & Park, 2005, p. 64). These questions seemed to help students respond to the text in a personal way and apply situations in the text to their own lives. Dochy, Segers, and Buehl (1999) define prior knowledge as “the whole of a person's actual knowledge that: (a) is available before a certain learning task, (b) is structured in schemata, (c) is declarative and procedural, (d) is partly explicit and partly tacit, (e) and is dynamic in nature and stored in the knowledge base” (p. 146).
5. Prior knowledge questions were used as a way to remind students of what previously happened in the read-aloud or asked students to recall personal experiences that happened prior to the current read-aloud. These types of questions allowed students to consider what they learned or experienced previously in order to prepare and connect to the text being read. An inference question “involves students combining their literal understanding of the text with their own knowledge and intuitions” (Day & Park, 2005, p. 63).
6. Inference questions also included those for which the teacher’s intent seemed to be inferential. However, in some cases, the question was worded in such a way that the teacher helped the students to put the information together, rather than the student doing the thinking. For example, “So, is he making, is he saying something to be nice or to not be nice?” (Davis, event three). By including the choices of nice or not nice in her question, Mrs. Davis limited the response of the students to “yes” or “no,” which limited their thinking and closed off the question. The teacher had no idea if the student is guessing, agreeing because a friend does, or even paying attention to the text at all. Just the beginning, “so, is he” already limits the possibilities for responding.

Findings

The first research question addressed the types of questions that teachers asked during the instructional read-aloud experience. The results are displayed in Table 1. As the data were being analyzed, it became evident that teachers were asking questions in such a way that student response was limited. This connected to the work of Hargreaves (1984) that suggested using codes of “open” and “closed” for teacher questions. In addition to coding questions as initially specified, another reading/viewing of the video—as prescribed by the constant comparison methodology—led to classifying each of the 275 questions as either open or closed. Open questions were those “where several possible and equally valid answers are available to pupils” (Hargreaves, 1984, p. 47). Students were able to respond with their own thinking and there were a variety of options available for a response. For example, “What was the matter with Al?” (Williams, event two) and “So, how was the crowd feeling?” (Davis, event two). Usually, one student was asked to respond to these types of questions, and then the teacher moved on to the next piece in the text. There were a total of 87 open questions across all read-alouds (Table 2).

Table 2 *Total of Open and Closed Questions by Type*

	Inference - Open	Inference - Closed	Literal - Open	Literal - Closed	Prior Knowledge - Open	Prior Knowledge - Closed	Personal Response - Open	Personal Response - Closed	Prediction - Open	Prediction - Closed	Vocabulary - Open	Vocabulary - Closed	Total - Open	Total - Closed
Brown	4	5	2	0	2	3	0	0	2	4	0	0	10	12
Davis	16	14	0	7	7	18	6	12	2	6	2	2	33	59
Johnson	3	8	3	5	1	13	0	0	0	0	0	0	7	26
Jones	7	22	0	12	5	27	1	9	0	1	3	3	16	74
Smith	0	3	4	10	0	4	0	0	0	1	1	0	5	18

Williams	0	2	2	1	1	2	2	2	0	0	3	0	8	7
Totals	30	54	11	35	16	67	9	23	4	12	9	5	79	196

In contrast, 196 of the questions were closed in nature. Closed questions were those in which “there is only one correct answer acceptable to the teacher” (Hargreaves, 1984, p. 46). In other words, these types of questions could be answered simply with yes, no, or one word replies. Additionally, questions were classified as closed if they were worded in such a way that they implied the answer the teacher was looking for by leading the students to the answer in some way. For example, “Would you say Fern was seeing animals equal to people?” (Johnson, event two) and “Is that a nice looking person?” (Jones, event three).

The second research question was focused on the types of responses students gave to teacher-questions posed during the read-aloud. These data were also coded in ELAN (Max Planck, 2012), then compiled into a frequency table as shown in Table 3.

Table 3														
<i>Total of Response Types and Percentages for All Read Alouds</i>														
Teacher	Grade	Total Responses	Inferential Responses	Percentage of Inferential Responses	Literal Responses	Percentage of Literal Responses	Personal Response Responses	Percentage of Personal Response Responses	Prediction Responses	Percentage of Prediction Responses	Prior Knowledge Responses	Percentage of Prior Knowledge Responses	Vocabulary Responses	
Brown	5	31	13	42%	1	3%	0	0%	11	35%	6	19%	0	0%
Davis	5	98	36	36%	8	8%	20	20%	9	9%	23	23%	2	2%
Johnson	2/3	47	14	30%	18	38%	6	13%	0	0%	9	19%	0	0%
Jones	4	82	24	29%	12	15%	10	12%	1	1%	25	30%	10	12%
Smith	3	24	1	4%	17	71%	0	0%	1	4%	4	17%	1	4%
Williams	4/5	18	4	22%	3	17%	2	11%	0	0%	4	22%	5	28%
Totals		300	96	32%	59	19%	38	13%	21	7%	71	23%	18	6%

The coding categories identified in research question one were also used for research question two. This researcher selected to use the same codes in order to identify if students were answering questions in the manner the teacher asked them, because theoretically, teachers are going to get back what they request. By using the same codes, this researcher is providing a parallel system to examine if students responded to questions in the same manner in which they were asked. The same coding also allowed this researcher to calculate correct responses and matches by adding an additional coding tier for hits and misses. This did get conflated when teachers ask a question where they wanted an open answer, but they worded the question in a way that limited students' responses to a yes or no. Overall, this researcher examined question types and student response types based on teachers' intent for the students' responses and whether or not the students' responses reflected the teachers' question type.

Student responses to questions posed by the teacher were examined to see if the students' response matched the type of question the teacher posed. For example, if the teacher asked a literal question and the student provided a literal answer, then, they were both coded as literal. But, if the teacher asked a literal question and the student answered with an inference response, then, the teacher question and the student response were coded differently and did not match. In order to address incorrect answers and responses that did not match the question type, an additional tier was created in ELAN (Max Planck, 2012) in order to record matches, mismatches, and incorrect answers for student responses in order to look at whether or not the student responses were reflecting the teacher questions. If a response matched a question, and was correct, it was coded as a "match." Student responses matched teacher questions 91% of the time. If the response matched the question type but was wrong, it was coded as "incorrect."

Student responses were incorrect 7% of the time. If a response did not match the question type asked, it was coded as a “mismatch,” which only occurred 2% of the overall responses.

There were occasions when students answered a question incorrectly and teachers had two distinct ways of dealing with incorrect answers. First, they simply moved on to another student to respond without acknowledging the response as right or wrong. For example, when Mrs. Smith (event two) was reading *Mishe-Mokwa and the Legend of Sleeping Bear* (Sproul, 1979) and asked students to identify which state the bears were in before they started swimming. A student responded “Michigan” when the correct response should have been Wisconsin. Mrs. Smith simply called on another student who replied “Wisconsin” and the teacher affirmed her answer as correct. Secondly, teachers identified that the response was wrong and moved on to another student to answer the question. Durkin (1978-1979) also recognized this issue, “Rarely, for example, was anything done with wrong answers except to say that they were wrong. Never did children have to prove or show why they thought an answer was correct. Often times, students were not asked to explain correct answers either. Frequently, in fact, the emphasis seemed to be on guessing what the teacher’s answer was rather than on recalling what had been read” (490). Often times, students were not asked to explain correct answers either. Overall, there were 21 incorrect responses and no teacher asked for a student to explain or justify his or her incorrect answers.

The third question, in regard to the relationship between the level of teachers’ questions and the allocation of student talk time, was answered by looking across categories in order to determine if there was a relationship. This researcher took a step back and examined the types of questions teachers asked and how much time was allocated to students for talking about the text and answering those questions. The answers to these questions were determined by what

actually occurred in the data. Teacher questions types were examined with the total amount of talk time allocated to students in order to see if any pattern emerged.

In order to examine this question, this researcher calculated the amount of time allocated to each actor—teacher, students (combined as a single actor), text, and silence—during each event. An annotation tier in ELAN (Max Planck, 2012) was used to code when the teacher was talking, the text was being read, students were talking, and periods of silence that lasted five seconds or more. Table 4 lists the actor and the amount of time in minutes and percentages allocated to each classroom.

Table 4

Total Talk Time by Minutes and Percentages

	Teacher	Percentage of Teacher Talk Time	Text	Percentage of Text Talk Time	Students	Percentage of Student Talk Time	Silence	Percentage of Silence	Totals
Brown	4.70	9%	43.22	84%	3.62	7%	0.00	0%	51.54
Davis	20.70	37%	23.95	43%	10.47	19%	0.22	0%	55.34
Johnson	17.85	32%	30.17	53%	6.97	12%	1.62	3%	56.61
Jones	37.80	47%	28.35	35%	14.13	18%	0.12	0%	80.40
Smith	11.52	37%	15.40	49%	4.40	14%	0.23	1%	31.55
Williams	8.05	35%	13.55	58%	1.13	5%	0.45	2%	23.18
Totals	100.62	34%	154.64	52%	40.72	14%	2.64	1%	298.62

The total amount of time allocated to students was less than half of teacher talk time. Individually, the teachers varied from 5-19%. These percentages were, then, used to look at the kinds of questions teachers asked to see if there was any type of relationship. Teachers varied in the amount of questions asked and which types they used the most, as shown in Table 5.

Management questions are included this time in order to see the proportion of time teachers were dealing with management issues as opposed to asking questions about the text.

Table 5

Total Questions by Type and Teacher

	Brown	Davis	Johnson	Jones	Smith	Williams	Total
inference	9	30	11	29	3	2	84
literal	2	7	8	12	13	3	45
management	4	13	8	32	35	9	101
personal response	0	18	4	10	0	4	36
prediction	6	8	0	1	1	0	16
prior knowledge	5	26	10	32	4	3	80
vocabulary	0	4	0	6	1	3	14
Totals	26	106	41	122	57	24	376

My expectation was that if a teacher was asking higher level questions, then the amount of talk time allocated to students would be a greater percentage than those asking lower level questions. This turned out to be false. The issue of open and closed questions impacted the amount of student talk time, therefore, the results varied and no relationship was apparent. Overall, the lowest and the highest percentages of student talk time were Mrs. Williams and Mrs. Davis. The data from these two teachers matched what this researcher expected to see, however, the four teachers in the middle did not meet the expectation. Therefore, no relationship between student talk time and the level of teachers' questions could be determined using this data.

The Management of the Read-aloud

Each of the individual events in this study added up to one big story related to the management of the read-aloud. Overall, in each read-aloud, teachers were in control and worked

constantly to maintain control during each read-aloud event. The general pattern of talk for each teacher began with a teacher question, led to a student response; the teacher then evaluated the response and moved on asking another student to respond or returning to the text. On the whole, teachers did not display knowledge of asking effective questions.

Prior research clearly recommended that teachers ask higher-level questions. The data revealed that it was likely that teachers were aware of this. Overall, 31% of the questions asked were inference and only 16% were literal. This suggests that the teachers are aware they should be asking students to put together information from the text and that they should be able to draw conclusions from the reading. The paradox lies in the fact that even though the teachers were asking inferential questions 31% of the time, 64% of those questions were closed in nature. Overall, teachers asked closed questions 77% of the time, which means that 77% of the time students were able to answer a question with yes, no, or one word. This did not enable the student to display their knowledge about the text and limited their thinking. Consider the following exchange from Mrs. Davis (event three):

Mrs. Davis: Do you think these are kids that you do or do not want to run into?

Multiple Students: Do not

When Mrs. Davis began the question with “do you think,” she automatically limited the answer to two choices. Additionally, she lead them to the answer of “do not” when she asked the question and emphasized the “do not” in her question with her tone of voice. Essentially, this wording closed off the questions and left little time for students to talk and kept the teacher in control of the conversation and the thinking. Perhaps it would have been a better conversation if she had asked, “What do you think about these kids that have appeared in the woods?” With the

question worded this way, it is up to the student to make the inference and they will have the opportunity to express their own thoughts rather than just confirming the teacher's thoughts.

By posing closed questions, teachers in this study failed to assist students as much as could be achieved through open-ended questions. The data suggested that teachers asked fewer literal questions than in previous studies, however, the prevalence of higher level-intent questions posed in a closed manner indicates that teachers have not mastered the fine art of questioning. When this happened, the teachers lost opportunities to engage students in quality conversations about the text being read.

One possible reason for this is simply a matter of time. There are only so many minutes in a day and teachers have to move through one lesson to get to the next one. A read-aloud is a conscious choice that also must be balanced with other forms of instruction. It is probable that the teachers are simply posing questions in order to present the "right" answers and move on to the next lesson. The blame for this only partially falls on the teacher; it is also an unfortunate outcome of the increased demands on teacher-time due to the pressures of high-stakes testing.

Another possible reason for the lack of effective questions may be lack of teacher reflection on questioning or insufficient training in questioning techniques. In my experience, pre-service courses discuss questioning, however, effective questioning may be one issue that falls to the wayside by the time the pre-service teacher is in a classroom with the ever-increasing demands of teaching and test preparation. Many undergraduates may not always know what is and is not pertinent from courses and how to apply it once they are teaching full time. Also, teacher manuals provide the specific question rather than suggestions and instruction for how to ask questions. The possibility exists that teachers have not been trained in the "how" of questioning.

In the participant classrooms, however, questioning appears to be a means of controlling the talk and managing student participation during a read-aloud. As the results suggested, questioning may have become a means to control the talk and manage the classroom rather than having deep and meaningful discussions about text.

Implications for Teaching

First and foremost, teachers need to determine why they are asking students questions during instructional read-alouds. There are a multitude of reasons from checking understanding, looking for misconceptions, or assessment. Then, teachers can determine what they need to change based on the purpose of their questions. “Changing our talk requires gaining a sense of what we are doing, our options, their consequences, and why we make the choices we make” (Johnston, 2012, p. 7). This study focused on the questions that teachers asked in order to elicit conversation from students during a read-aloud. Other factors were examined, such as student responses and the allocation of talk time. As a result of these data, this study has one major implication: Teachers need to be explicit when planning the questions they ask during read-alouds.

I saw no evidence, in my observations or in the post-observation surveys filled out by each teacher, of questions that were planned prior to the read-aloud. Teachers need to plan out questions to ask students when reading aloud by pre-reading the text and thinking about the possibilities for discussion. Questions can be written on sticky notes and tagged in the book as further modeling for students of how to interact with text. By planning out questions, teachers will be able to word them in ways that ensure a student is the one doing the work in order to answer higher-level questions and show what they are thinking. This kind of thinking needs to

be intentional to "...choose our words and, in the process, construct the classroom worlds for our students and ourselves" (Johnston, 2012, p. 1). By preparing for read-alouds intentionally, teachers will be modeling for students how to ask open questions and they can, then, further this thinking by having students write open questions about the read-aloud.

Teachers could benefit from being videotaped and using ELAN to ascertain what questions they are actually asking and how they can ask better questions to encourage student input. Video recording can be done simply and inexpensively by using smart phones and laptops. Once a recording is done, examine it to see what kinds of questions are being asked and how much of the talk time is being taken up by students or teacher. Teachers can figure out what needs improvement, then, specifically plan for another read-aloud. The next step would be to video record the planned read-aloud and revisit the questions above in order to determine the improvements that have taken place. One final note, do not be intimidated by ELAN; it is free and user friendly. It is helpful when educators enlist the assistance of colleagues to work with and help each other with the recordings, analysis, and making positive impacts on teaching.

Limitations of the Study

There were three overall limitations to this study. This study was conducted in one geographical location and only analyzed two events for each of six elementary teachers. The data collected and conclusions represented one set of participants and, therefore, were not generalizable to the general population. There was also a difference in the read-aloud time spent in each classroom. The shortest read-aloud was just under ten minutes and the longest was almost 43 minutes. This also limited the conclusions that could be drawn. Lastly, the texts were teacher-selected and resulted in a variety of formats and genres. The read-alouds were for

instructional purposes, which resulted in reading during a variety of content-area blocks. This resulted in different read-aloud styles and instructional focus, which also limited conclusions to this population of teachers.

Conclusion

The overall conclusion of this study is that teachers need to give up some of the control during an instructional read-aloud experience. Control can be shared with students by being more explicit and planning for questions to ask during read-alouds in order to allow students to show their thinking and discuss the text being read. Specific training using a framework for talk, particularly the work of Johnston (2004) would be beneficial for teachers' construction of questions, and, in turn, increase the amount of talk time allocated to students during an instructional read-aloud. By using the framework, teachers will be led to preplan effective questions that can be asked during an instructional read-aloud in order to engage students in meaningful learning about text.

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An Analysis of School Climate and Student Growth in Select Michigan Charter Schools

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Biography

Dr. Benjamin P. Jankens is an Assistant Professor and program director in the Department of Educational Leadership at Central Michigan University. He earned his doctor of educational leadership from Eastern Michigan University. Prior to his work as an professor, Dr. Jankens served in various charter school roles, including teacher, principal, superintendent, and Assistant Director for the Governor John Engler Center for Charter Schools. His research interests cover a broad array of educational reform and policy issues in the K-12 setting, including: the school environment and its effects on student performance; school performance evaluation systems; and school reform efforts, including charter school and authorizing practices.

Abstract

The purpose of this study was to examine the relationship between school climate and student growth in Michigan charter schools. The Organizational Climate Descriptive Questionnaire for Elementary Schools (OCDQ-RE) developed by Hoy, Tarter and Kottkamp (1991) was used to assess teacher perceptions of school climate. Student growth data were calculated using the fall and spring reading and math results from the Performance Series test by Scantron, and the MAP test by NWEA. A non-experimental, quantitative analysis was used to test for variables in participating charter elementary schools in Michigan. The results indicated there is a significant relationship between school climate and student growth in the select schools and reinforce that the school environment is a key variable in student performance. Understanding the variables that affect a student's performance, both academically and social, will provide insight for school leaders to help focus on factors that contribute to increased student performance. While educators and researchers have been studying the dynamics within the school environment and how they impact student outcomes for many years, this study departs from the traditional student achievement variable and instead uses student growth to determine what influence the school climate may have on student performance. Additionally, this study looks at the new environment of charter public schools.

Keywords: *School Climate, School Environment, School Outcomes, Student Growth, Charter Schools*

NOTE: This research paper is an adaption of work conducted for a doctoral dissertation in 2010-2011.

Introduction

Due to the countless social dynamics students and schools face on a daily basis, the environment surrounding student learning and the factors that have a direct or indirect impact on student outcomes is as broad and elusive as ever (Cohen et al., 2009). School climate is a complex, multidimensional phenomenon which influences many aspects of the school and greater community in which it resides (Marshall, 2004). Although extensive research demonstrates school climate contributes to a student's overall well-being (Cohen & D'Alessandro, 2013), the factors that contribute to school climate is less understood (Anderson, 1982; Marshal, 2004). Despite a wealth of empirical data on student achievement and factors related to student outcomes, teachers are still uncertain of their impact on students (Fullan, 2007).

Research has demonstrated that there are many variables that contribute to influencing a student's academic success, which include: instructional strategies, classroom resources, school culture or current school climate, as well as the student's socioeconomic status, previous educational attainment and his or her past educational experiences (Brookover et al., 1978). Although the use of student achievement as a measure of school success is still debated (Boyles, 2000), a significant body of empirical research demonstrates that various characteristics of school climate influence student outcomes (Brookover et al., 1978; Freiberg, 1999; Hoy & Clover, 1986; Hoy et al., 1991). The variables used in this research, however, have primarily focused on student achievement (Brookover et al., 1978; Hoy & Clover, 1986; Hoy, 1997; Kelly, 2005). Rarely, however, has student growth in reading and math been a topic of conversation in relationship to school climate.

The purpose of this quantitative study was to investigate the relationship between school climate and student growth within a selected cohort of Michigan public charter schools. Not only

is student growth a new approach to understanding school climate, the overall charter school environment is one that has yet to be fully understood. To examine the relationship between these two variables, participating charter schools in Michigan with a common authorizer were surveyed using the Organizational Climate Descriptive Questionnaire for Elementary Schools (OCDQ-RE), a school climate inventory (Hoy, Tarter, & Kottkamp, 1991). This survey examined aspects of school climate, including teacher perceptions of teacher and leader behaviors, as well as other variables surrounding the learning environment.

To complete this quantitative research study, we investigated the following questions

1. What is the relationship between school climate, as measured by the OCDQ-RE, and student gain scores in reading and math, as measured by the Performance Series or MAP tests?
2. What are the common characteristics of schools with similar climate results, as measured by the OCDQ-RE?

The grounds for comparison focused on the variables associated with school climate in a select group of charter schools in Michigan. School climate data served as the independent variable and was gathered using the OCDQ-RE survey by Hoy et al. (1991). The dependent variable, student growth, was measured using both fall and spring scaled scores from the same academic year, from Scantron's Performance Series and Northwest Evaluation Association's Measures of Student Progress's (MAP) reading and math tests administered in grades 3 through 8. From these raw scaled scores, each student's gain score was then compared to the student's expected gain based on national results to create a percentage of normal growth.

School Climate

Unlike school culture, which is rooted in the field of sociology and anthropology, school

climate is an adaption of organizational climate (Lewin, Lippit, & White, 1939) which seeks to apply business concepts to schools. The concept of school climate, as a specific component of the learning environment, was originally drawn from organizational theory research from the mid-1900s (Anderson, 1982; Cohen, McCabe, Michelli, & Pickeral, 2009; Perry, 1908). The 1950s brought the dawn of organizational climate with researchers such as Pace and Stern (1958), March and Simon (1958) and Halpin and Croft (1963) first defining organizational climate as “organizational life” or “work environment.” It was Argyris (1958) who introduced organizational climate as a concept and provided a comprehensive definition of the term that is still used today; defining climate as the formal policies, employee needs, values, and personalities of the organization. Because of its all-encompassing scope, this definition contributed to the ambivalent relationship between climate and culture that continued over the next twenty years (Kundu, 2007).

Although many explanations of organizational and school climate have been used over the past century, there is still no commonly used definition (Cohen, 2006). Originally developed by Tagiuri (1968), organizational climate can be broken down into four main distinctions: ecology, milieu, social system, and culture. Although Tagiuri’s definition serves as a foundation for identifying the main components of organizational climate, Moos (1974) and Insel and Moos (1974) added that organizational climate can be separated into two additional dimensions: physical and social. Additional work in the area of organizational climate was further refined by research in, which provides the following characteristics of school climate:

- Peoples’ shared perceptions of the school or department (Freiberg, 1999; Hoy, Tarter & Kottkamp, 1991; Stolp & Smith, 1995),
- The collective impressions, feelings, and expectations of individuals within a school

(Freiberg, 1999; Stolp & Smith, 1995),

- Perceptions of the school's structure and setting (Freiberg, 1999; Stolp & Smith, 1995),
- Social interactions and behaviors among individuals who work or spend time in the school (Stolp & Smith, 1995; Hoy, Tarter, & Kottkamp, 1991; Freiberg, 1999),
- Something that is immediate and present, not historical (Freiberg, 1999; Stolp & Smith, 1995), and
- Something that surrounds us and is influenced by us, but is not integral or part of us (Stolp & Smith, 1995).

Using this foundation, the following definition of school climate is presented for the purpose of this study, capturing the essence of an organization's character (Hoy & Miskel, 1987; Hoy, Tarter & Kottkamp, 1991; Tagiuri, 1968):

The relatively enduring quality of the school environment that is experienced by participants, affects their behaviors, and is based on their collective perceptions of behaviors in schools.

Student Growth

In the current high-stakes environment of public education, schools are becoming more accustomed to high levels of accountability. Most of the state-mandated assessments are only proctored once a year and provide limited data in regard to student performance. Primarily measuring static achievement, these single-use tests do not provide rich information into the complex makeup of a school or classroom, such as variables between academic years, teachers, programs, school culture and climate, or even different schools themselves.

In order to gain insight into student performance relevant to a specific timeframe, program, or instructor, a more flexible assessment model – one that seeks to measure student

gains – is needed. Computer adaptive testing systems, such as the Performance Series and MAP tests, provide data that are accurate and reliable. Not only are students assessed on material from their grade level, but the test also adapts to their achievement level. By using multiple test windows within a school year, these computer adaptive tests measure both student achievement and growth. As student growth becomes a more accessible evaluation tool, more educational leaders are looking to implement such assessments (Gong, 2004). Using student growth over a set period of time provides a method by which to measure the effects variables, such as climate, have on learning (Betebenner, 2008).

Charter Schools

It's now widely accepted that the American school system has its shortcomings and needs to improve, but the approach to improvement is still up for debate (Weil, 2000). Despite the vast variations of charter legislation, chartering process, oversight and operations, the one commonality of charter schools across the country is “individuality.” A charter school by its very nature is created to do things differently than the traditional district schools it neighbors (Nathan, 1996). Although charter schools are not that dissimilar from their traditional counterparts, their entire existence is to innovate and span a void that the one-size-fits-all districts struggle to fill.

The characteristics of charter schools range as widely as the communities in which they reside. From a fine art integrated curriculum to a college-prep program, or trade school, each charter school seeks to find their own niche. A popular theme of charter schools across the country is focusing on cultural identity, with the school's focus being a reflection of that particular community (Price & Jankens, 2015). Unfortunately, there is a lack of research providing information on school climate itself, for charter schools in particular (Jankens, 2011).

Although the focus of this study is based on the relationship between school climate and student growth in charter schools, institutional factors including class size, the competency of the teachers, availability of learning resources, faculty workload, and overall program effectiveness may also affect student outcomes (Ramsden & Entwistle, 1981). Ewell (1995) contends that student services provided by the school, including special education, as well as a student's enrollment status and the location of the school all play a role in influencing student outcomes. Therefore, providing additional empirical findings in the area of school climate and student growth will contribute to a better understanding of our current education landscape and the factors that contribute to student learning in charter public schools.

Conceptual Framework

The conceptual framework used in this study to examine the relationship between school climate and student growth in selected Michigan charter schools rested on the Anderson (1982) causal model constructed from Tagiuri's (1968) taxonomy, which provided a comprehensive assessment of the social environment. Using Anderson's (1982) model as an additional point of reference, Hoy's (1986) six dimensions of the OCDQ-RE can be exchanged with Tagiuri's four dimensions of the organizational environment, focusing on teacher and principal perceptions (Figure 1). The principal's behavior, made up of three dimensions (supportive, directive, restrictive), interacts with the teachers' collective behavior, made up of three dimensions (collegial, intimate, disengaged), which in turn interacts with and establishes the school climate.

The three distinct behaviors for both the principal and the teachers overlap to form two openness dimensions: principal openness and teacher openness. Figure 1 conceptualizes all possible interactions between the teachers and principal in the school environment as they relate to one another and formulate openness, and the collective school climate.

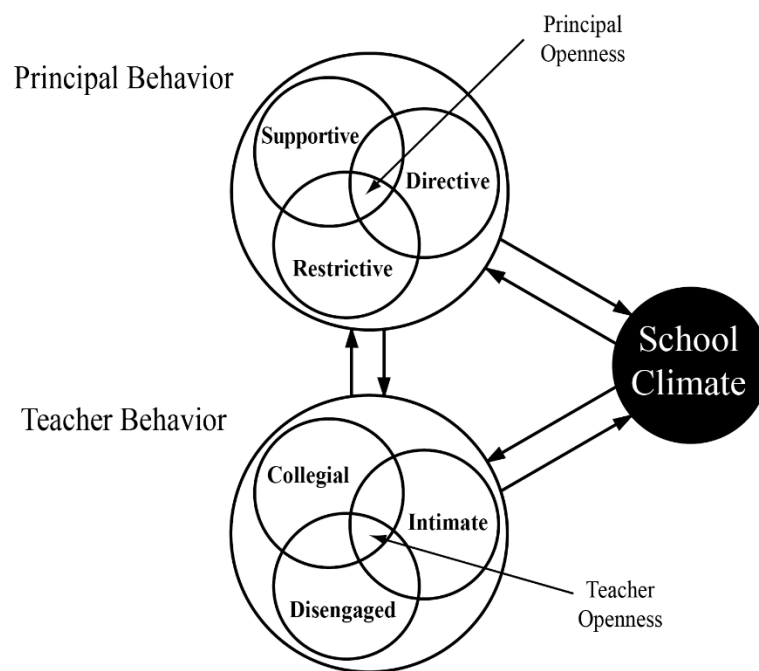


Figure 1. Interrelationships Among Hoy's 6 Climate Dimensions

Figure 2 builds upon the interrelationships among Hoy's six climate dimensions and illustrates the interactions between the collective school climate and student outcomes. Similar to that in Anderson's model (1982), the outcomes have an interaction with the collective school climate. Outcome1 is shown as affecting both school climate and Outcome2, however, outcome1 is not directly affected by outcome2 as time is a factor in this relationship. For the purpose of measuring student growth within an elementary school, two points of reference are being used to create a growth score: Outcome1 (the results of a pretest), and Outcome2 (the results of a posttest). Therefore, outcome1 may have an interaction effect on outcome2, but outcome2 cannot have a reciprocal relationship with outcome1 (Figure 2). This is divergent from Anderson (1982), who measured student achievement at a single point in time using a status score (Anderson, 1982).

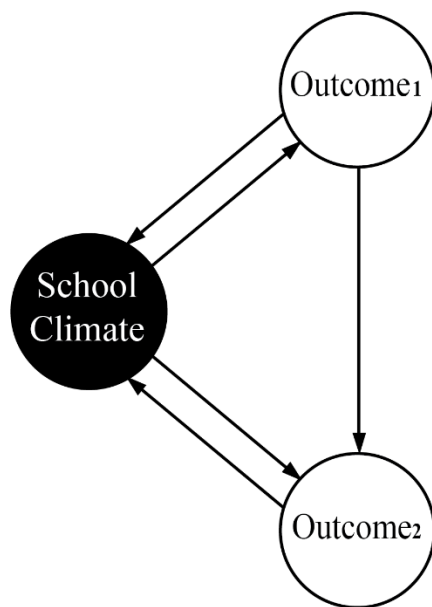


Figure 2. School Climate's Impact on Growth

The conceptual framework used to illustrate the theory of school climate and its relationship to student growth within this study combine the concept of school climate developed through the OCDQ-RE by Hoy et al. (1991) with that of student growth. Using the OCDQ-RE to measure climate and student growth as a measure of student outcomes, this new approach is a progression of Anderson's (1982) work seeking to understand how school climate affects student achievement (Figure 1 & 2).

Research Design

In order to explore the issues surrounding school climate and student outcomes, a non-experimental quantitative study was used to investigate these relationships within select Michigan charter schools. In order to collect quantitative data for this study, researchers used the OCDQ-RE. As pioneers in the field of organizational climate in schools, Halpin and Croft designed the first Organizational Climate Descriptive Questionnaire (OCDQ) in 1963, providing

the field a reliable instrument with which to gather data about school climate. Hoy, Tarter, and Kottkamp (1991) provided additional groundwork of empirical research through reliable and valid measures with their work on school climate and the OCDQ-RE in *Open Schools/Healthy Schools* (1991). Through many years of testing and refining, they have garnered support and provided the field of educational research with a solid framework within which to work, aimed toward organizational improvement (Cohen et al., 2009; Hoy et al., 1991).

Each survey was comprised of 42 questions and scored using a four-point Likert-type scale (1 = Rarely Occurs, 2 = Sometimes Occurs, 3 = Often Occurs, 4 = Very Frequently Occurs). The survey responses sought to provide six dimensions of responses separated into two categories: principal behavior and teacher behavior.

Researchers obtained student growth data from the public state university authorizer who chartered the participating schools. Student test scores from 2010-2011 were gathered from either the Performance Series test by Scantron or the MAP by Northwest Evaluation Association (NWEA); scores originated from the reading and math tests administered in grades 3 through 8, in both fall and spring semesters, depending on the assessments identified in each school's charter contract. Results were coded using a non-student-identifiable code in compliance with the Family Educational Rights Privacy Act (FERPA), and a percent of normal growth was calculated based on national results.

This study was limited by the data set available for the years gathered, as well as the time the tests were administered (spring and fall). Additional delimitations were set, restricting the perception of additional stakeholders to compose a full review of school climate; namely administrators, students, parents and the community. Therefore, the school climate indexes only present the view from the perspective of the teacher, as the individuals who are most closely

impacted by the leadership style of the school administration.

Population and Selecting Participants

The population for this study consisted of elementary charter schools in Michigan. Because Michigan-based charter schools are authorized by one of many state universities, community colleges, local intermediate school districts, or local school districts, the non-probability sample was intended to limit the variables between charter schools with various authorizing agencies. This limit sought to ensure the schools administered a common, nationally-normed, criterion-referenced assessment – the Performance Series and the MAP tests – that were used in the study to collect student assessment data.

The sample in this study was selected from schools chartered by the same public state university authorizer within Michigan. Teachers and teacher assistants (or paraprofessionals) from the schools were invited to participate in the study encompassing a total population of 355 teachers and paraprofessionals. Of the original 35 schools that were invited to take part in the study, 11 participated (31%). Of the 266 surveys distributed, 224 were returned (84.2%). Data collection began in February 2011 and ended in June 2011. School climate data was collected through the use of a school climate survey. Student growth data was collected from the university authorizer that chartered the schools participating in this study. The OCDQ-RE was used to assess teacher's perceptions of principals' and fellow teachers' behavior.

Data Analysis Procedures

Survey results from the OCDQ-RE were scored for each respondent, and teachers perceptions were mapped to six dimensions of school climate – three for principal openness and three for teacher openness. Each dimension is attributed to a particular characteristic of both the principal and the collective group of teachers:

- Supportive Principal Behavior;
- Directive Principal Behavior;
- Restrictive Principal Behavior;
- Collegial Teacher Behavior;
- Intimate Teacher Behavior; and
- Disengaged Teacher Behavior.

Principal openness and teacher openness scores were also used to calculate the overall openness scores of each school. An open climate was defined as having both teacher and principal openness mean scores above 500. A closed climate existed when both teacher and principal openness mean scores were below 500. An engaged climate was defined as having a principal openness mean score below 500, with a teacher openness mean score above 500, and the disengaged climate had a principal openness mean score above 500 and a teacher openness mean score below 500.

Based on these calculations, openness scores were calculated for each school, as well as for the principal and teachers. The characteristics of an open climate were cooperation, respect and openness; all attributes that exist within the school environment, among the faculty and between the faculty and principal (Hoy, 1991). Additionally, the principal within an open school listens and is receptive to feedback, and provides frequent and genuine praise.

Student growth data was obtained from the public state university authorizer that chartered the schools who participated in the study. Student test scores from 2010-2011 were gathered from either the Performance Series or MAP tests. Scores originated from the reading and math tests administered in grades 3 through 8, in both fall and spring semesters, depending on the assessments identified in each school's charter contract.

Data was analyzed using the Pearson Product-Moment, and the correlation coefficient was used to compare the OCEQ scores of the schools with reading and math growth scores. In addition, a linear regression analysis was conducted to determine what relationship exists between school climate and student growth, and between schools with similar characteristics.

Findings

The OCDQ results were scored and analyzed describing the responses of 355 teachers, categorized by the six standardized climate profiles, including the climate indices for principal openness and teacher openness. The student growth scores for each school were obtained and a percent of normal growth was calculated using national results. The percent of normal growth

Table 1. *School Climate and Student Growth Comparison*

School	Perceived Principal Profile	Perceived Teacher Profile	Perceived School Climate	Mean % of Normal Growth (Math)	Mean % of Normal Growth (Reading)
1	High (572)	High (588)	Open	1.62	1.85
2	Low (426)	Below Average (476)	Closed	0.98	1.21
3	Above Average (534)	Above Average (542)	Open	1.05	1.69
4	Average (490)	Slightly Below (476)	Closed	0.84	0.99
5	Above Average (530)	High (570)	Open	1.22	1.19
6	Average (507)	Above Average (526)	Open	1.01	1.37
7	Slightly Below (479)	Below Average (460)	Closed	0.54	0.61
8	High (582)	High (578)	Open	1.46	2.01
9	Very High (665)	Slightly Above (521)	Open	0.85	0.82
10	Very High (630)	High (552)	Open	0.67	0.85
11	Average (507)	Average (501)	Open	0.94	1.44

from the 11 schools who participated in the study is presented in Table 3 (n=4015). Included in the table are the minimum, maximum, mean and standard deviation. Additionally, the perceived principal and teacher profiles for each school, along with the perceived school culture, were compared to the mean of the students' percent of normal growth for both math and reading (Table 1). All schools posted perceptions of either open or closed school climates.

Using the Pearson r to test the relationship between the independent variable (school climate) and the dependent variable results (student gain scores in reading and math) the results indicated small to moderate, positive correlations between school climate and student growth when analyzing math and Supportive Behavior (S), $r = .18$, $p < 0.01$; math growth and Collegial Behavior (C), $r = .20$, $p < 0.01$; and math and Intimate Behavior (Int), $r = .20$, $p < 0.01$ (Table 2). Conversely, there was a relatively small to moderate negative correlation between math and Disengaged Behavior (Dis), $r = -.20$, $p < 0.01$, and a small negative correlation between math and

Table 2. *Intercorrelations, Means and Standard Deviations for Climate Levels and Math Growth (N = 4015)*

Variable	1	2	3	4	5	6	7	M	SD
1. Math Growth	--	.18**	-.08**	.00	.20**	.20**	-.20**	1.02	1.04
2. Behavior (S)	--	--	-.10**	-.24**	.64**	.63**	-.45**	581.11	68.37
3. Behavior (D)	--	--	--	.50**	-.37**	-.15**	.46**	537.18	61.18
4. Behavior (R)	--	--	--	--	-.51**	-.20**	.21**	466.36	73.64
5. Behavior (C)	--	--	--	--	--	.62**	-.48**	536.67	50.51
6. Behavior (Int)	--	--	--	--	--	--	-.15**	546.22	55.25
7. Behavior (Dis)	--	--	--	--	--	--	--	504.49	62.46

** $p < 0.01$ (2-tailed)

and between reading and Intimate Behavior (Int), $r = .12$, $p < 0.01$ (Table 4). Conversely, there was a small negative correlation between reading and Disengaged Behavior (Dis), $r = -.12$, $p < 0.01$, and between math and Directive Behavior (D), $r = -.05$, $p < 0.01$. As with math, there was a weak positive correlation between reading and principal openness, $r = .06$, $p < 0.01$, and the same between math and teacher openness, $r = .14$, $p < 0.01$ (Table 5).

Table 5. *Correlation Between Principal and Teacher Openness and Reading Growth (N=4015)*

Variable	1	2	3	M	SD
1. Reading Growth	--	.06**	.14**	1.27	2.074
2. Principal Openness	--	--	.71**	525.85	48.946
3. Teacher Openness	--	--	--	526.13	45.503
** $p < 0.01$ (2-tailed)					

In order to determine the common characteristics of schools with similar climate results, schools were scored and categorized based on the standardized openness indexes presented in Table 1. A total of 8 of the 11 schools had both principal and teacher open indexes above 500 and were categorized as open schools. The other three schools had both principal and teacher openness indexes below 500 and were categorized as closed schools. None of the eleven schools were categorized as either engaged or disengaged schools.

The descriptive statistics in Table 6 and Table 7 show mean math scores for schools with open climates are higher than those of closed schools, with means ranging from 0.67 to 1.94 (Table 6), and 0.54 to 0.98 (Table 7) respectively.

Table 6. *Open Schools Growth Comparison (math)*

Variable	N	Minimum	Maximum	Mean	Standard Deviation
School 1	475	-3.19	9.50	1.62	1.439
School 3	477	-2.07	4.19	1.05	0.761
School 5	475	-1.93	4.58	1.22	1.019
School 6	560	-5.08	6.99	1.01	0.944
School 8	179	-1.14	4.47	1.46	0.914
School 9	103	-1.45	4.06	0.85	1.039
School 10	270	-1.68	3.04	0.67	0.779
School 11	357	-1.51	4.03	1.94	0.805

Table 7. *Closed Schools Growth Comparison (math)*

Variable	N	Minimum	Maximum	Mean	Standard Deviation
School 2	185	-0.88	3.70	0.98	0.729
School 4	336	-2.62	3.67	0.84	0.958
School 7	576	-4.36	3.75	0.54	1.012

Descriptive statistics presented in Table 8 and Table 9 determined that the mean reading scores for schools with open climates generally had higher and also similar scores than those of closed schools, with means ranging from 0.82 to 2.01 (Table 8), and 0.61 to 1.21 (Table 9) respectively.

Table 8. *Open Schools Growth Comparison (reading)*

Variable	N	Minimum	Maximum	Mean	Standard Deviation
School 1	454	-9.26	10.00	1.85	2.324
School 3	448	-7.80	9.21	1.65	2.287
School 5	477	-6.28	5.30	1.19	1.521
School 6	553	-8.39	9.06	1.34	1.717
School 8	175	-8.47	8.06	2.01	1.819
School 9	101	-9.13	8.50	0.82	3.352
School 10	263	-10.00	9.62	0.85	2.307
School 11	353	-8.34	8.27	1.38	1.568

Table 9. *Closed Schools Growth Comparison (reading)*

Variable	N	Minimum	Maximum	Mean	Standard Deviation
School 2	188	-6.59	8.81	1.21	1.678
School 4	338	-8.47	8.63	0.99	2.318
School 7	561	-9.20	7.97	0.61	2.045

Next, multiple regression analyses were conducted to examine the relationship among six profiles of school climate based on teacher perceptions. The combination of variables to predict math growth from principal openness and teacher openness was statistically significant, $F(4, 3989) = 983.28, p < 0.001$) (Table 10). Note that high principal openness explains 50% of the variance of student growth in math, with low principal openness as the constant ($R^2 = .50$). Average principal openness and high teacher openness were also moderately strong predictors of math growth. Average teacher openness was a relatively low predictor of math growth with low

teacher openness as the constant.

Table 10. *Regression Analysis: Principal and Teacher Climate Profiles and Math Growth*

Predictor Variable	Beta (β)	p-value
Principal Openness High	.709	.000
Principal Openness Average	.541	.000
Teacher Openness High	.509	.000
Teacher Openness Average	.330	.000

Note: Constant = Principal Profile 3 (low), Teacher Profile 3 (low)

The combination of variables to predict reading growth from the principal's openness and teacher openness was also statistically significant, $F(4, 3907) = 369.84, p < 0.001$ (Table 11). Note that high teacher openness and average teacher openness explains 28% of the variance of student growth in reading, with low teacher openness as the constant ($R^2 = .28$). High principal openness and average principal openness are also moderate predictors of reading growth.

Table 11. *Regression Analysis: Principal and Teacher Climate Profiles and Reading Growth*

Predictor Variable	Beta (β)	p-value
Principal Profile 1 (high)	.684	.000
Principal Profile 2 (average)	.620	.000
Teacher Profile 1 (high)	.796	.000
Teacher Profile 2 (average)	.518	.000

Note: Constant = Principal Profile 3 (low), Teacher Profile 3 (low)

Using the openness index variable to predict math growth, the regression analysis provided results that were statistically significant, $F(1, 3992) = 3181.73, p < 0.001$. The beta coefficient is presented in Table 12. Note that school openness significantly predicts student

growth in math, with the closed school index as the constant. The adjusted R² Value was .44. This indicates that 44% of the variance in math growth was explained by the model. Based on these results, schools with open climates are more likely to have high math growth results than schools with closed climates. According to Cohen (1988) this is a large effect.

Table 12. *Regression Analysis: Open Schools and Math Growth*

Predictor Variable	Beta (β)	p-value
School Index: Open	1.139	.000

Note: Constant = School Index: Closed

Using the same openness index variable to predict reading growth, the regression analysis provided results that were also statistically significant $F(1, 4014) = 261.58, p < 0.001$). The beta coefficient is presented in Table 13. Note that school openness moderately predicts student growth in reading, with the closed school index as the constant. The adjusted R² Value was .25. This indicates that 25% of the variance in reading growth was explained by the model. Based on these results, schools with open climates are more likely to have high reading growth results than schools with closed climates.

Table 13. *Regression Analysis: Open Schools and Reading Growth*

Predictor Variable	Beta (β)	p-value
School Index: Open	1.430	.000

Note: Constant = School Index: Closed

Discussion

While examining the relationship between the variables of school climate and student growth, it can be concluded that there is significant statistical evidence to support the relationship between school climate and student growth in the selected population. Based upon this analysis, school climate is correlated to student outcomes. This conclusion is consistent with

earlier studies looking at the relationship between school climate and student outcomes, namely student achievement (Brookover, 1978; Cohen, 2009; Hoy et al., 1991). The results of correlation analyses and multiple regression analyses for both math and reading, with associated p-value of <0.01 , provided statistical evidence to support this conclusion.

Researchers, therefore, concluded that there is a significant relationship between school climate, based on teacher perceptions, and student math and reading growth from fall to spring testing periods within a school year. Furthermore, study findings showed that schools with similar school climates produce similar student math and reading growth results, based on the results of correlation analyses and multiple regression analyses for both math and reading, with associated p-value of <0.01 . These analyses provided statistical evidence to support this conclusion.

The findings of this study in charter schools are similar to those of previous research in traditional public schools. Providing additional support for the work of Brookover (1978) and Hoy and colleagues (1986, 1991 & 2004), the study found that there is a relationship between school climate and student outcomes. This result supports the notion that the school environment, which is experienced by and affects the behaviors of its participants, plays a significant role in the learning process of students.

Although this study adds further support to the already sound research on school climate and its impact on student outcomes, it is the approach of using student growth within a school year, as well as additional data on charter school climate that lends additional implication for practice in the field of education. The design used in this study provides school leaders and educational researchers with a reliable method to measure various factors that contribute to the learning environment at a specific point in time. By using the pretest and posttest approach (with

fall and spring test results), this study provided a model that focuses the impact of the chosen variables within a more controlled environment: a single school year. And, unlike student achievement that is influenced by a multitude of factors, including students' past academic experiences, socioeconomic status and home life, student growth focuses on the amount of academic progress a student has made within a set period of time, despite the students' current level of educational attainment.

Additionally, by using a lens that looked at the charter school environment as the unit of analysis, this study provided additional clarification on the impact of school climate on student learning within a charter school. As a relatively new field of study, much of the research on charter schools either focuses on student achievement as the measure of student outcomes, or overlooks the school environment as a factor in the school's influence on student performance (Hoxby & Rockoff, 2004; Miron & Nelson, 2002).

In summary, the body of literature and research regarding the relationship between school climate and student achievement has a longstanding tradition (Anderson, 1982; Cohen et al., 2009; Frieberg, 1999; Zullig, 2010). Although the association of student achievement to student growth has been explored by way of year-to-year gain (Betebenner, 2008), more research is needed and this study lends additional support to the focus on how school climates affect student growth within a school year. Additionally, this study continues to provide support to the importance of school climate on the social-emotional implications of a student's well-being, let alone the student's academic success (Becker & Luthar, 2002; Haynes, Emmons & Ben-Avie, 2010). This study also provides charter school leaders with a better understanding of the importance of school climate in the broader context of school activities, and the ability of teachers and principals to influence the current school climate.

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