An Analysis of High School Transformation

Effort from an Outcome Perspective

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Abstract

This study investigates the effectiveness of the Ohio High School Transformation Initiative using several years of state data on attendance, graduation, dropout rates, and performance index scores. Results indicate differences between small schools or small learning communities, and traditional schools that have similar school profiles to small schools in: graduation rates by year; attendance rates among the traditional schools over the years; and the performance index scores.

Small schools' performance index scores gradually increased, but traditional schools with similar

school profiles outperformed small schools. There was no difference in the dropout rates.

Creating a sense of community, rather than simply transforming the school structure, seems to be

the key to improving high school education.

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An Analysis of High School Transformation Effort from an Outcome Perspective

In 2003, the KnowledgeWorks Foundation, along with the Bill & Melinda Gates Foundation, the Ohio and U.S. Departments of Education, the Ford Foundation, the Kellogg Foundation, and local community-based foundations established the Ohio High School Transformation Initiative (OHSTI). This school improvement effort focused on transforming Ohio's ineffective large urban high school model into a model that promoted smaller learning communities by diminishing school size and by addressing "rising high school dropout rates, declining scores on the state student achievement exams, and increased problems with school violence and truancy" (KnowledgeWorks Foundation, 2009, p. 3). The Ohio State Board of Education (ODE, 2004) proposed that a key measure for educational success would be an increase in the graduation rates for all students, in all demographic groups, and an increase in the percentage of students who advance with their cohort group from eighth grade to graduation.

The Western Interstate Commission for Higher Education (2008) reported that the U.S. was heading toward an overall decline in the number of high school graduates. The report predicted that the number of graduates in the Midwest would continue to increase until 2007-08 then face a dramatic decline that will ultimately see the region's number of graduates fall by eight percent by 2014-15. The report concluded that Ohio can expect large decreases in graduation rates by 2021-22 (relative to 2004-05), which will result in almost 16,000 fewer public high school graduates.

In this study, we investigate the effectiveness of the small schools concept from an outcome perspective. Because the concept became a transformative model for many urban high schools in Ohio, we were curious about the initiative's effect on school characteristics: graduation rates, attendance rates, performance index scores, and dropout rates. The purpose of

the study is to analyze the Ohio Department of Education's data to see if the initiative had an

effect in these areas, when compared to similar high schools that remained large. The research

questions for this study are:

1.   Did the transformation of a school from a large urban school to small learning

    communities have an effect on graduation rates, attendance rates, dropout rates, and

    performance rates?

2.   Did the transformation of a school from a large urban school to small learning

    communities have an effect on graduation rates, attendance rates, dropout rates, and

    performance rates when compared to similar schools that remained traditional?

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School Characteristics that Measure Success

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School Size

Several studies report that small schools attain: higher achievement (Lee, 2000; Lee &

Smith, 1997; Wasley, Fine, Gladden, Holland, King, Mosak, & Powell, 2000; Wyse, Keesler &

Schneider, 2008), lower dropout rates (Kahne, Sporte, de la Torre, & Easton, 2008; Toch, 2003),

higher graduation rates (Wasley et al., 2000), and even a higher likelihood of student enrollment

in higher education (Schneider, Wyse, & Keesler, 2007). High school students, especially those

who are considered at greater risk, fare much better in small schools: "the effect of increasing the

size of high schools, it seems as though there is reduced individual participation in school

activities, decreased attendance, and less expressed satisfaction with school" (Pittman &

Haughwout, 1987, p. 338). Students attending small schools are reported to be doing better,

because the learning experience that is offered is more authentic and relevant to the student.

Many small learning communities focus on the continued success of each student, especially

those learners who seem neglected by the typical large school environment. In a small learning

community, every student is a significant member of the school; in the large schools, many

disadvantaged students sense that teachers and staff lack concern for their well-being and

learning (Ark, 2002; Crane, 2002; House, 2007). The small school concept stresses a supportive

community where students receive individualized help and attention from their teachers. By

making schools smaller, the goal is to create a better teaching and learning environment, as well

as a caring community within the schools. Soon after a district has changed to small schools, a

common manifestation is that achievement gaps among all students appear to be bridged (Ark,

2002; Crane, 2002; House, 2007; Keller, 2001; Raywid, 1998, 2002).

Smaller school environments allow for improved safety and increased support for

students and staff (Association for Supervision and Curriculum Development, 2000). Small

learning environments commonly create the possibility of closer collaboration among teachers,

which contributes to a collaborative school community (Duke & Trautvetter, 2001; Strull, 2002).

"Teachers could develop better connections between home and school, better understand

students' strengths and weaknesses, provide better support for both, and learn more from each

other, creating a more exciting and vibrant career" (Wasley et al., 2000, p. 10). Perhaps it is not

only due to the size of a small school and its classes, but rather to the greater involvement of

students, teachers, staff and parents, that yields a more pronounced sense of community where

all affected groups work together in the interest of their learning community. Students tend to

feel more connected to their teachers and peers when they are in a small school. Overall,

attending a small school at any grade level appears to reap greater rewards for students than the

larger schools, regardless of social class or minority status (Driscoll, 2003; Metzger, 2006;

Sackney, Leonard, & Leonard, 2001).

It has been shown that converting a large school into a small school has some disadvantages. With a limited number of faculty, a small school may not be able to offer an extensive selection of courses. Also, as more large high schools become small schools, some schools become small only physically, but retain the same philosophy of teaching and learning found in the large school. They do not adopt the small school principles described earlier in the paper (Gregory, 2000; Myatt, 2005).

In summary, school size seems to have an impact on some school related issues, such as performance, dropout rates, attendance, and behavioral issues. Students feel that their needs and accomplishments are better recognized, which leads them to higher achievement. Although there may be more opportunities for extracurricular activities in larger schools, more students are involved and participate in more activities in small schools. Small schools seem to benefit students in numerous ways, from greater engagement in learning and activities to a higher level of parent involvement (Iatarola, Schwartz, Stiefel, & Chellman, 2008).

Dropout and Graduation Rates

The reporting of dropout rates for high schools varies greatly within the research literature. The variation in dropout rate data is due to differences in the ways data is collected and reported. For example, some researchers count students who move back and forth between multiple school systems, while other researchers use the rate of enrollment, instead of the actual number of students attending the school (Bracey, 2009; Mishel & Roy, 2006; Stanard, 2003). The graduation rates in many school districts have been steadily improving for several decades, especially among minority groups. Some discrepancies arise from overgeneralization of categories, which yields rates that are higher than actual, especially in inner city schools. A cause of high dropout rates, one that could be more easily focused on, if not rectified, is the lack of

community involvement in the schools. Some students drop out because their families do not value education. Others leave school early, because the available school options are just too limited. Some researchers maintain that if these issues were more seriously addressed, the graduation rate would improve (Alliance for Excellent Education, 2008a).

Attendance Rates

Students in larger schools are more likely to commit truancy and miss more days than students who attend small schools. Research shows that the small schools have a greater impact on student engagement, parent involvement, and attendance (Roby, 2004, The National Forum, 2004). A deficiency with the research that examines attendance rates is that they do not account for excused absences, which yields inaccurate data (Greene & Winters, 2002). Some research shows that the more students miss school, the more they do not want to be there at all, "Excessive absenteeism influences the student's desire to return to school" (News Briefs, 2006, p. 6).

Performance Index Scores

Some schools require a high school exit exam, while others require that students pass standards-based exams at a tenth grade level or higher. The number of schools with this requirement has greatly increased in the past few years. Emphasis is also being placed on factors considered by college admissions offices, such as grade point average, Scholastic Aptitude Tests scores, American College Testing scores, class rankings, and classes taken, so that students will be considered "college ready" at graduation. Some advanced courses are required to get into certain colleges, while some colleges consider how many years of each subject a student has taken during their high school academic career (Alliance for Excellent Education, 2008b; Greene & Forster, 2003; Louvouezo, 2008).

The importance of what content should be addressed in high school is an issue that is constantly changing and discussed among policy leaders and educators. This leads us to believe that some form of action must be taken regarding how and what students are being taught, if it is leading them to perform poorly on tests related to the content that students are struggling to master (Cavanagh, 2009; Manzo, 2009).

Students who do not perform well academically tend to give up and eventually drop out of school. Some research demonstrates that students who are alienated in school often feel their absence goes unnoticed. Many students who dropped out said that they felt school did not relate to real-life situations and was therefore irrelevant. If they had been more interested in what they were learning and had felt it was relevant, they might have remained in school and possibly achieved at higher rates. Engaging the students is the key to academic motivation and success (National Academy of Sciences, 2003).

Potentially, socioeconomic segregation could also be a factor in the large achievement gap between minority and white students. Much of the research demonstrates that a student's family background and socioeconomic status (SES) play a much more significant role in achievement levels than does anything directly related to the school itself (Konstantopoulos, 2006, Mickelson & Borman, 2007; Rumberger & Palardy, 2005).

Method

The study focused on the effects of small schools in Ohio on graduation rates, attendance rates, dropout rates and performance index rating scores. The data from the small schools were compared to traditional schools that are identified as similar to the small schools by the Ohio Department of Education. Graduation rates, attendance rates, and dropout rates are based on the data reported by each school to the state, and performance index rating scores are based on the

state standardized tests scores. The data used in this study are produced by the state, and our

research team was unable to collect descriptive information how each school calculated their

graduation rates, attendance rates, and dropout rates.

Data Collection

Data were collected from more than 230 Ohio schools, from 2003 – 2007: between 30 –

35 schools from 14 districts were identified as small school by KnowledgeWorks; and

approximately 200 schools were identified as similar to small schools by the Ohio Department of

Education (ODE). Our reason for collecting data from these schools during these school years

was to align with the data included in the report on the effectiveness of the small schools

released in January 2009 by the KnowledgeWorks Foundation.

The KnowledgeWorks Foundation collaborated with the Bill & Melinda Gates

Foundation and other partners, to create the Ohio High School Transformation Initiative

(OHSTI), a model to transform large urban low performing high schools to small learning

communities. The OHSTI model defined a large school as at or above 800 students, while small

schools or small learning communities are approximately 100 students per grade level, or 400

students within the learning community (KnowledgeWorks Foundation, 2009). The OHSTI

model was designed according to the following criteria developed by the KnowledgeWorks

Foundation (2009):

- existing campuses have been divided into independent schools of no more than 400
  students;
- each school has its own area of focus such as business or creative arts, or a curriculum
  model;

- each school has its own shared leadership model consisting of administrators and

   teachers;

- a standards-based curriculum is combined with new teaching methods, such as real-world

   connections, longer class periods, project-based learning and cross-curricular study; and

- close working relationships between teachers and students, such as teachers working as

   student advisers (Ohio Education Matters, 2009).

The ODE website allows researchers to extract data that pertains to specific schools in

Ohio. The site allows the data to be compared to similar schools through a process designed by

ODE. The similar school district comparison methodology data evaluates performance data for a

school district. When a school is identified, the site finds up to 20 districts that are most similar

according to certain criteria. Statistically, the comparable districts are considered the nearest

neighbors of the selected district. ODE maintains that a "consistent and objective method of

determining similar districts has been established, and within that framework, comparison

groupings have been tailored to each individual district. Each district's characteristics drive the

creation of the comparison groupings, and each district's set of "peers" is developed with only

that district's characteristics in mind. Every district thus has its own unique set of peers" (ODE,

2010, http://webapp2.ode.state.oh.us/similar_districts/).

ODE produced a set of 11 descriptors to differentiate districts; four stand alone, and

seven are included in two composite measures. Composite measures were used for dimensions

where there is no valid data element used to describe the dimension. "Tests for relationships

between data elements were conducted with each variable prior to the analysis of dimensions.

Data representing each dimension were normalized prior to the analysis, with means equal to

zero and standard deviations of 1. This process standardized the metric used for comparative

purposes so that each district can be fairly compared with any other district. The data used for each dimension represent a set of descriptive background characteristics that distinguish one district from another. These single or composite variables create the six dimensions used to determine a district's comparison grouping: district size, poverty, socioeconomic status, rural/urban composite, race/ethnicity, and non-agricultural" (ODE, 2010, http://webapp2.ode.state.oh.us/similar_districts/).

The similar school process works by identifying a district which is compared to 609 other districts by performing a collective comparison across all dimensions. The formula for each district-to-district comparison can be found at http://webapp2.ode.state.oh.us/similar_districts/. The comparison groupings are those districts that are most similar to the initial district. For most districts, there are 20 similar districts, but some large urban and unique districts have a minimal number of comparatively similar districts. ODE recognized that there are limitations to this methodology: (1) no geographical dimension; (2) arbitrarily setting a minimum of 6 and maximum of 20 comparison districts; (3) comparison groupings can produce counter-intuitive results for inter-grouping comparison cases; (4) the poverty measure includes all children ages 5-17 residing in a school district, living in a family reported by the Ohio Department of Jobs and Family Services; and (5) the rural-urban scale for school district population (2000 Census) and whether the school district contains a large (>40,000) or very large (>100,000) city.

Data Analysis

Analyses were conducted with SPSS for Windows, Version 16.0. In order to examine differences in small and similar schools over the four years, we performed the Wilcoxon, the Mann-Whitney, and Friedman nonparametric statistical tests. The Mann-Whitney test is a non-parametric analog of the independent samples t-test and can be used when the dependent variable

is a normally distributed interval variable. We used this test to determine if there is a difference in small and similar schools. A Friedman test is used when there is one within-subjects independent variable with two or more levels and a dependent variable that is not interval and normally distributed (but at least ordinal). Finally, we used the Wilcoxon test to compare the differences for two years for each group separately.

Results

Graduation Rates

Table 1 is a summary of the descriptive statistics for graduation rates with Mann-Whitney results for group comparisons, from 03-04 to 06-07. This test compares graduation rates by year between small schools and similar schools. Z scores in Table 1 suggest that there is a statistically significant difference between small schools and similar schools in graduation rates by year with similar schools having greater graduation rates.

Table 1.

Graduation Rates Between Small and Similar Schools

	Type	N	Mean	Std. Dev.	Z Score
Graduation Rates 03-04	Small school	30	66.387	18.299	-3.872*
	Similar school	207	79.514	20.496	
Graduation Rates 04-05	Small school	31	69.500	18.638	-3.944*
	Similar school	212	82.994	16.949	
Graduation Rates 05-06	Small school	33	72.091	21.482	-3.480*
	Similar school	218	83.742	18.317	
Graduation Rates 06-07	Small school	35	77.214	18.809	-2.122*
	Similar school	215	84.451	15.498	

Note. *p<.05

Table 2 is a summary of a Friedman test for graduation rates in 2003, 2004, 2005 and 2006. This test compares differences in graduation rates over the four years for the whole group, small schools, and similar schools separately. According to the Chi-Square scores shown in

Table 2, there are statistically significant differences in the whole group and also small and similar schools separately in their graduation rates over the four years.

Table 2.

Graduation Rates Over the Four Years

Friedman Test	Whole Group	Small School	Similar School
N	224	27	197
Chi-Square	39.978*	21.067*	31.833*
Df	3	3	3

Note. *p<.05

In order to compare changes of each group's graduation rates in two consecutive years, a Wilcoxon test (two-by-two comparisons) is performed (see Table 3). We compared the whole group, small schools, and similar schools separately. Both the whole group and similar schools show statistically significant differences in graduation rates in the years 03-04 & 04-05, 04-05 & 05-06, and 05-06 & 06-07. No yearly differences were observed from small schools. However, all three groups showed statistically significant differences in their graduation rates when we compared 03-04 and 06-07.

Table 3.

Graduation Rates Comparison Between Two Years

Wilcoxon Test		Grad 03-04 Grad 04-05	Grad 04-05 Grad 05-06	Grad 05-06 Grad 06-07	*Grad 03-04 Grad 06-07*
Whole Group	Z	-4.845*	-4.121*	-2.105*	*-5.996*￼*
Small School	Z	-1.635	-1.470	-1.674	*-3.460*￼*
Similar School	Z	-4.662*	-3.894*	-3.012*	*-4.912*￼*

Note. *p<.05

According to the KnowledgeWorks report (2009):

- High school graduation rates increased from 62.8 percent in 2002 to 82.4 percent in 2007.

- The graduation gap between OHSTI high schools and all Ohio high schools closed dramatically, by nearly 75 percent, from 19.9 percentage points in 2002 to 4.5 percentage points in 2007.

- 91 percent of OHSTI campuses experienced an increase in graduation rates since 2002.

- The growth in graduation rates for white, black, and Hispanic OHSTI students exceeded the state growth rate for these groups between 2002 and 2007 (pp. 11-12).

Unlike the KnowledgeWorks' claim, our findings can only conclude that the differences between small and similar schools lie in their graduation rates every year. A steady yearly difference in graduation rates is not observed in small schools, but is found in similar schools. As seen in Table 2 and the last column in Table 3, the graduation rates changed over the four years, which suggests that OHSTI school graduation rates increased from 2003 - 2004 to 2006 - 2007. However, we also observed a significant difference in graduation rates for similar schools from 2003-2004 to 2006-2007.

Attendance Rates

Table 4 shows the descriptive statistics for attendance rates with Mann-Whitney results for group comparisons.

Table 4.

Attendance Rates Between Small and Similar Schools

	Type	N	Mean	Std. Dev.	Z Score
Attendance Rates 03-04	Small school	34	93.056	4.012	-0.939
	Similar school	221	92.857	3.433	
Attendance Rates 04-05	Small school	35	92.960	3.415	-0.996
	Similar school	226	92.142	4.598	
Attendance Rates 05-06	Small school	34	91.271	4.551	-1.405
	Similar school	221	92.524	4.037	
Attendance Rates 06-07	Small school	35	91.457	4.093	-1.365
	Similar school	217	91.989	4.324	
Attendance Rates 07-08	Small school	32	90.688	4.386	-2.176*
	Similar school	213	92.376	4.251	

Note. *$p<.05$

This test compares attendance rates between the two groups, small and similar schools, by year. As can be seen from the Z scores in Table 4, 2007-2008 is the only year showing a statistically significant difference in attendance rates between small schools and similar schools, with similar schools having higher attendance rates.

Table 5 is a summary of a Friedman test for attendance rates in 2003, 2004, 2005, 2006, and 2007. It shows that there is a statistically significant difference in attendance rates for the similar schools over the 5 years. However, there was no statistically significant difference observed in the attendance rates of either the whole group or small schools.

Table 5.

Attendance Rates Over the Five Years

Friedman Test	Whole Group	Small School	Similar School
N	235	28	207
Chi-Square	9.398	6.105	12.564*
Df	4	4	4

Note. *p<.05

A Wilcoxon test was performed to make two-by-two comparisons for the whole group, the small schools, and similar schools separately (see Table 6). Both the whole group and similar schools show statistically significant differences in attendance rates between 04-05 and 05-06 and between 05-06 and 06-07. The only differences in attendance rates observed in small schools occurred between the years 05-06 and 06-07 and between 03-04 and 07-08.

Table 6.

Attendance Rates Comparison Between Two Years

Wilcoxon Test		Att. 03-04 Att. 04-05	Att. 04-05 Att. 05-06	Att. 05-06 Att. 06-07	Att. 06-07 Att. 07-08	*Att. 03-04 Att. 07-08*
Whole Group	Z	-1.493	-3.196*	-2.077*	-1.178	*-0.429*
Small School	Z	-0.858	-1.309	-2.588*	-1.171	*-2.403**
Similar School	Z	-1.246	-4.112*	-3.314*	-1.711	*-0.598*

Note. *p<.05

According to the results shown in Table 4, the only statistical differences in attendance rates between small and similar schools were observed in 07-08. However, only similar schools' attendance rates show differences over the 5 years, specifically from 04-05 through 06-07 (see Table 5). A statistically significant difference in attendance rates between 03-04 and 07-08 was observed only in small schools (see Table 6). This finding supports the KnowledgeWorks report (2009) on OHSTI campus growth in attendance in total, but cannot support their claim on the growth in attendance rate for annualized data.

Performance Index Scores

Table 7 shows the descriptive statistics for performance index scores for both small and similar schools. There are Mann-Whitney results for group comparisons, comparing performance index scores between small schools and similar schools by year. The Z scores in Table 7 suggest that there is a statistically significant difference between small schools and similar schools in performance index scores by year, with similar schools performing better.

Table 7.

Performance Index Scores Between Small and Similar Schools

	Type	N	Mean	Std. Dev.	Z Score
Performance 04-05	Small school	34	76.256	17.737	-3.660*
	Similar school	226	87.997	13.264	
Performance 05-06	Small school	35	78.143	17.717	-4.239*
	Similar school	221	90.989	10.809	
Performance 06-07	Small school	35	82.989	11.912	-3.848*
	Similar school	217	91.037	9.660	
Performance 07-08	Small school	32	83.728	12.270	-3.111*
	Similar school	213	90.320	10.327	

Note. *p<.05

Table 8 is a summary of a Friedman test for performance index scores for 2004, 2005, 2006 and 2007. This test compares differences in performance index scores over the four years

for the whole group, small schools, and similar schools. According to the Chi-Square scores

shown in Table 8, there are statistically significant differences in all three groups, the whole

group, small schools, and similar schools in their performance index rates over the four years.

Table 8.

Performance Index Scores Over the Four Years

Friedman Test	Whole Group	Small School	Similar School
N	241	29	212
Chi-Square	39.991*	13.138*	34.622*
Df	3	3	3

Note. *p<.05

A Wilcoxon test was performed to do two-by-two comparisons for the whole group, the

small schools, and similar schools separately (see Table 9). All three groups, the whole group,

small schools, and similar schools, show statistically significant differences in performance

index scores between 04-05 and 05-06, between 05-06 and 06-07, and between 04-05 and 07-08.

Table 9.

Performance Index Scores Comparison Between Two Years

Wilcoxon Test		Per. 04-05 Per. 05-06	Per. 05-06 Per. 06-07	Per. 06-07 Per. 07-08	***Per. 04-05 Per. 07-08***
Whole Group	Z	-7.175*	-2.683*	-1.148	***-3.712***
Small School	Z	-3.291*	-2.097*	-1.197	***-3.125***
Similar School	Z	-6.433*	-3.844*	-0.731	***-2.752***

Note. *p<.05

According to the results from these Mann-Whitney, Friedman, and Wilcoxon tests, there

was a statistical difference in performance index scores between small and similar schools every

year. Also, the differences in performance index scores were observed across four years within

each group. However, only statistical differences between two consecutive years were observed

from 04-05 through 06-07 in all three groups. The findings in the last column in Table 9 show

that all three groups have a significant difference in the performance index scores, comparing 04-

05 data to 07-08. According to mean scores in Table 7, the performance index scores of small

schools gradually increased every year. However, we cannot compare our findings on

performance index scores to the KnowledgeWorks report (2009), because their report does not

include overall performance growth, but rather the improvement on both the mathematics and

reading pass rates on the Ohio Graduation Test.

Dropout Rates

The state dropout data are presented using frequency data. Our team re-coded the data as

Less than 10, Between 10 and 19, Between 20 and 29, Between 30 and 39, Between 40 and 49,

and More than 50. Figure 1 shows the frequencies of the middle grades. Dropouts for Grades 6 –

8, middle school students, do not seem high enough to be a matter of concern. Figure 2 shows

the frequencies for the dropout rates for Grades 9 – 12 in small and similar schools. As can be

seen in Figures 1 and 2, the dropout rates of high school students are much higher than those of
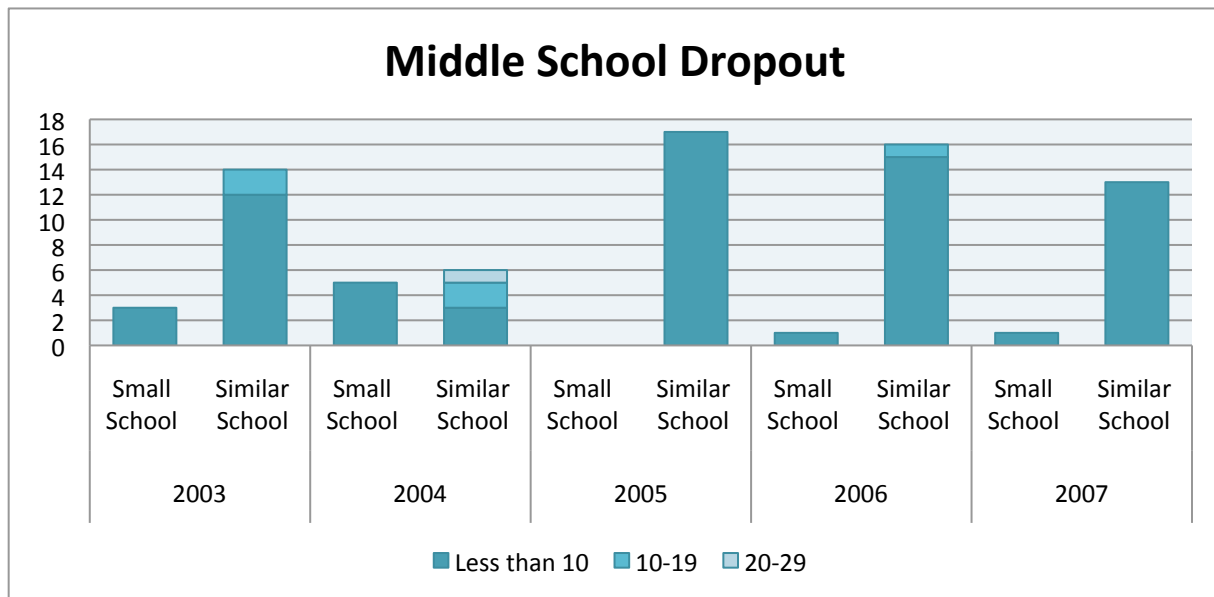
middle school students.
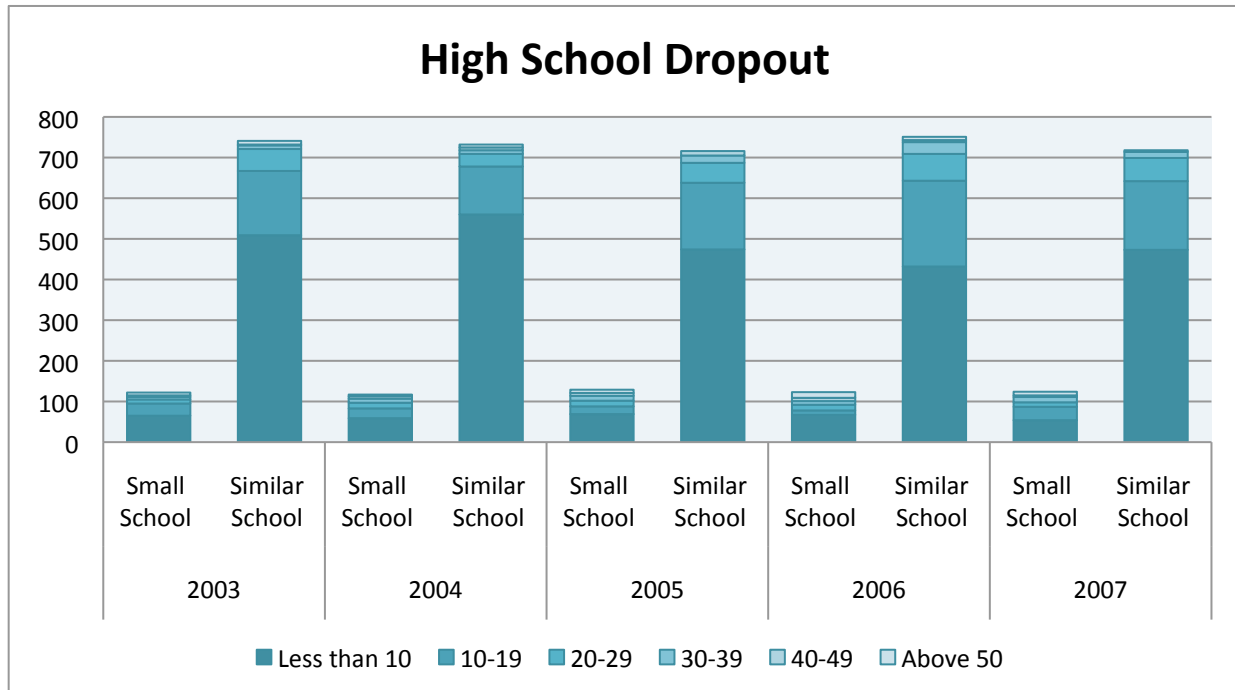
Figure 1. Dropouts in middle schools

Figure 2. Dropouts in high schools

Figure 2 and Table 10 compare dropout rates of re-coded data categories (from Less than 10 to

More than 50) for 5 years for small and similar high schools. No increasing or decreasing pattern

was found in the total number of students dropping out of school in either small schools or

similar schools. For every year, a higher ratio of students appears in the More than 50 group in

small schools than in similar schools. Both small and similar school dropout rates mostly appear

in the Less than 10 students range. Less than 5 percent of dropout rates of similar schools occur

in the ≥ 30 range; whereas approximately 20 percent of dropouts in small schools occur in the ≥

30 range each year. Considering the size of the small school, the respective ratios of (1) dropout

rates in the range of 30 - 39, (2) 40 - 49, and (3) More than 50 to the total in small schools are

much higher for similar schools.

Table 10.

Dropout Ratios for Small and Similar High Schools

		2003	2004	2005	2006	2007
Small Schools	Less than 10	65	59	69	67	54
	10-19	30	24	19	11	33
	20-29	10	14	14	14	11
	30-39	6	10	12	9	13
	40-49	4	6	7	8	4
	More than 50	7	4	8	14	9
Similar Schools	Less than 10	509	560	474	432	473
	10-19	158	118	164	211	169
	20-29	54	31	49	66	57
	30-39	9	9	18	29	15
	40-49	2	7	11	5	4
	More than 50	9	7		8	

The Mann-Whitney results for group comparisons (small schools versus similar schools

by grade) show significant differences in the high school grades: the ninth grade dropout rates

show a statistically significant difference between small and similar schools in 2005 and 2007; and 10th, 11th, and 12th grade dropout rates show statistically significant differences in 2003, 2004, 2005, and 2007.

Implications

In order to investigate the effectiveness of the OHSTI model, four variables are used to measure the success of small schools and traditional schools that have similar school profiles according to the state criteria. KnowledgeWorks also released a report on the effectiveness of the small schools in 2009. We attempted to compare our findings and the results reported by KnowledgeWorks to provide readers with a broader view of school transformation. The KnowledgeWorks report and our findings cannot be compared item by item, because the two studies used different sets of data and the detailed research methods used by KnowledgeWorks cannot be confirmed. Some findings of these two studies support each other to some degree, while others do not.

With regard to the graduation rates, KnowledgeWorks reported that small schools' graduation rates in 2007 increased by 20 percent compared to those of 2002, and that the graduation gap between OHSTI high schools (small schools) and all Ohio high schools closed dramatically in 2007 compared to 2002. Unlike KnowledgeWorks, our findings conclude that the differences between small and similar schools lie in their graduation rates by year. A steady yearly difference in graduation rates is not observed in small schools, but is found in similar schools. Similar schools had higher graduation rates than small schools. However, both small and similar schools showed statistically significant differences in their graduation rates when we compared 03-04 and 06-07.

According to the descriptive statistics for attendance rates, 2007-2008 was the only year showing a statistically significant difference between small schools and similar schools, with similar schools having higher attendance rates. There was a statistically significant difference in attendance rates for the similar schools over the 5 years. There was no yearly difference in small schools but a difference in small schools occurred between 03-04 and 07-08. Our findings support the KnowledgeWorks report (2009) on the growth in attendance rate not for annualized data but in total.

Even though the performance index scores of small schools gradually increased by year, there was a statistically significant difference between small schools and similar schools in performance index scores by year, with similar schools performing better. Since KnowledgeWorks did not report on an overall performance growth, no comparison on performance index scores between the two studies was conducted. Based on our data, there was no pattern in the total number of students dropping out of school in either small schools or similar schools. There was no dropout data reported by KnowledgeWorks.

This study exclusively analyzed the standardized test results available from the Ohio Department of Education. The authors did not use individual class or individual student data, since that data was not made available by ODE. The results of the study are therefore limited by the information available from the state standardized tests: limitation of standardized tests in assessing students/schools growth; limited data or analysis offered by KnowledgeWorks or small school organizations; and relatively new data with a short history of the school system. Another limitation of similar studies is in the variation among the states of the definition of graduation and requirements to obtain a high school diploma. This also needs to be taken into consideration when reviewing the collected data (Gewertz, 2007).

Issues to be considered regarding the variation in reported dropout rates is that some research does not account for students who move/transfer schools or who are held back for a year and so graduate a year later than expected. Many studies also do not account for those students who enter or are expelled in the course of the year. All of these things cause significant discrepancies in the data collected and the rates reported. Several of the researchers seem to be in agreement that the best way to get the most accurate data on who is graduating and what the dropout rates are is to collect this type of data by following individual students through their high school years. This would be the best way to ensure more precise data is being reported (Greene & Winters, 2002; Ramirez, 2008). Some believe that having more accurate data on dropout rates, which ties directly to performance issues and why students are not performing well in schools, would be very beneficial in evaluating student performance and the effects for school reform issues (ODE, 2004). One teacher stated the importance of the "need for a cultural shift—at the federal, state, and school levels—from using data for compliance to using data for improving student performance in each classroom" (Marshall, 2009, p. 1).

Both KnowledgeWorks and our studies observed some progress in the small schools. However, it was not clear if the progress occurred due to a change in the school system. Small schools programs alone are not the answer to improve education. In addition to restructuring a school system, a sense of community needs to be created within small schools. Learning must be made a relevant hands-on endeavor by supporting teachers to become more caring, helping administrators become more effective leaders, and increasing parental involvement. In addition, it has been suggested to extend the school day and year for the students who need and want additional instruction (Driscoll, 2003; House, 2007). "The key to solving the distribution problem at the high school level is to act comprehensively, by significantly increasing the supply

of teacher candidates where shortages exist, improving the recruitment and hiring process, and retaining effective teachers in low-performing high schools" (Alliance for Excellent Education, 2008b, p. 1).

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