Journal of Research in Rural Education, Spring, 1997, Vol. 13, No. 1, 64-70

Student Achievement and Middle Level Programs, Policies, and Practices in Rural America: The Case of Community-Based Versus Consolidated Organizations

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Recent debate has centered on the role of middle schools in rural areas. While some policymakers have focused on the organizational aspects of middle schools, especially those characteristics that have defined middle schools in cities and suburbs, others have focused on creating optimal learning environments with attention to curriculum, instruction, and assessment. In this article, community-based and consolidated school organizations are analyzed and suggestions made about he most appropriate setting for young adolescents in rural communities.

Background

When the traditional junior high school concept was redefined in the mid-1960s, interest in developing this new design for education was attributed to economic and social concerns of America's cities: desegregation, urban overcrowding, and even "fad." Middle school programs, policies, and practices were developed and directed toward creating small learning communities within large, impersonal factory-like systems (Cuban, 1993; Wiles & Bondi, 1993). Such ideas as "an adult advocate for every student," "family and community partnerships," and "high expectations for all" (Carnegie Council on Adolescents, 1989) have led to teaching and organizational strategies such as block scheduling, teacher teaming, advisory programs, interdisciplinary teaching, intramurals, exploratory classes, and other innovations. Some policymakers are concerned that moving to middle schools in rural places merely follows the trend in metropolitan areas rather than creates optimal learning environments (DeYoung, Howley, & Theobald, 1995). If the urban problems of overcrowding and desegregation do not normally characterize rural America's social or economic realities, the question arises, "why create rural middle schools?"

Resistance by rural schools to move toward adoption of recommended middle school concepts is often predicated on the notion that their student population is too small, which may create even more contentious problems such as sharing resources with high schools. Sharing facilities and teachers with the high school often means little flexibility for scheduling, teaming, and enrichment activities. It might also lead to undesirable, inappropriate secondary-oriented pedagogy. Small faculties force teachers to teach multiple grade levels and have multiple class preparations, leaving little time for common planning time for teaching teams. Personal counseling during advisory class sometimes challenges community values. The move away from interscholastic sports to intramurals goes against long-standing tradition and is viewed by some as an attack on the identity of the community (Wiles, 1995). DeYoung et al. (1995) argue that middle schools evaporate rural communitarian precepts by eroding the source of community cohesiveness inherent in rural areas with small schools.

The belief that the move toward consolidation of community schools in rural areas has not always been beneficial is often clouded in ambiguity. Egelson (1993) points out that consolidation of American rural schools began at the turn of the 20th century as a way for communities to save money and provide a high quality of education for their children. In her 1993 review of literature, Egelson contends that in the early 1900s school consolidation polarized rural communities and set "neighbor against neighbor." She refers to L. H. Bailey's 1920s description of the sense of community loss when a school left a local community, commenting that local pride was offended and initiative was weakened. Egelson also alludes to Peshkin's 1982 case study of a rural elementary school in Illinois in which community characteristics such as autonomy, identity, and tradition were supposedly cultivated by the rural community concept (as cited in Egelson, 1993).

Are large schools more or less beneficial for some students or just more economically convenient? Again, Egelson cites Davies (1982) as stating that one of America's foremost mistakes in the organization and conduct of public education is the construction of bigger school buildings and the consolidation of school districts. Davies declared that in the name of efficiency, everyone forgot the child

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(as cited in Egelson, 1993). Howley's 1994 study of school size concluded that input studies (costs and teachers' credentials) determined that schools needed to be about twice their size for efficiency's sake. Output studies (achievement and attainment), however, found that research generally points to a negative relationship between large size and student achievement.

One of the major arguments for creating larger schools is to offer a greater variety of courses and electives—to offer expanded opportunities to students in every area. Unfortunately, while this opportunity may exist, students seldom take advantage of larger schools' benefits. Fowler (1992) found that in small high schools, marginal students reported a sense of obligation to attend, assist, and participate in school activities comparable to regular students, while in large schools they felt no such obligations. In 1982, Lindsay found student participation to be higher in small schools, particularly for females (as cited in Fowler, 1992). Pittman and Haughwout reported in 1987 that a positive correlation exists between size of the student body and rise in school dropout rate (Fowler, 1992), suggesting that school size affects the level of student participation and the severity of school problems, with larger schools producing a poorer social climate, which, in turn, causes a higher dropout rate. Dropout rates in rural areas are substantially lower than those in urban areas—nearly the same, in fact, as those in the more affluent suburban areas (Howley, 1994). Howley also finds that educational research supports the many benefits of small school size: a more positive attitude toward school, and greater parental satisfaction, student participation, and attendance. In particular, he notes that students from lower socioeconomic-status homes achieve at much higher levels in small schools.

If adopting the middle school concept means closing local schools and moving to distantly located, oversized, consolidated schools simply to implement team teaching, block scheduling, interdisciplinary instruction, common planning time, advisory classes, etc., then the process should be rethought. Middle schools—whatever their design might be—are intended to meet developmental needs of young adolescents. Middle school "components," such as those listed here, may be a step toward this process. These components very often represent ways to meet the complex needs of young adolescents in at-risk environments, whatever that environment might be. Certainly, rural youth face certain disadvantages associated with isolation and low SES that are akin to inner city alienation and poverty. Team teaching is designed to give teachers a built-in support system for helping each other design engaging, relevant curriculum as well as to identify and address individual children's needs. Block scheduling is intended to give teachers enough time to implement lessons with interesting hands-on activities. Advisory classes should offer students with little support from home or community at least one adult with whom they can interact on a positive basis. In short, the middle school concept is an effort to implement best practice teaching-learning strategies (Hough, 1995).

By their very nature, some small rural schools may contain a variety of middle school components that are inherently built into their system. Formal advisory systems may not be necessary when a school is so small that every child is well known by every adult in the building. Block scheduling may not be necessary when a teacher must teach both science and math and has the same child two hours in a row. An interdisciplinary team of, say, four teachers is not possible when just two teachers in the building teach four of the subject area courses. What is possible, however, is a shift in practice, attitude, and outcomes. Effective teams may be only two in number or may constitute the entire faculty of a small school. Exploratory classes, for example, may be provided through distance technology and more organized interactions with an already supportive local community.

The case for middle schools in either rural community-based or consolidated organizational structures most probably should be considered in tandem with school size and risk factors such as socioeconomic status. An optimal organizational structure, then, would be contingent on site-specific community values and needs. One constant, however, should be the developmental needs of young adolescents, along with agreed upon standards reflecting what students should know and be able to do as a result of their educational experiences.

By analyzing these relationships, the current study sheds light into the ongoing debate over the value of rural middle schools. A logical first step is to examine the current state of rural middle schools to determine if middle level organizational structures are in any way related to community-based or consolidated schools in rural America. If a relationship exists, one would then ask, "Is middle level education providing the impetus behind consolidation, or are consolidated schools turning to middle level education as a teaching-learning approach?"

Method

Data and Samples

A matched pairs design was used to identify a sample comprised of 40 community-based rural schools and 40 consolidated rural schools throughout the United States. Because the school was the unit of analysis, stratified cluster sampling was used to identify groups. The researchers stratified on grade-span, geographic location, and school size by school type—community-based and consolidated. (See Table 1). Chi-square statistics were used to test for any differences in the two groups of schools (community-

Table 1
Rural Schools (Sample N = 80)

	Community-based (n = 40)				Consolidated (n = 40)			
	K-8	4/5-8	6-8	6-12	K-8	4/5-8	6-8	6-12
Geographic Location								
Northwest	1	1	2		1	1	1	1
West	3	1	2	1	2	1	2	
Southwest	1	1	1	1	2	1	2	
North	2	1	2	1	2	1	2	
Midwest	1	1	2		2	1	2	1
South	1		2	1	1	1	1	1
Northeast	1	1	2	1	1		2	
East	2	2		2	1	2		
Totals	12	8	15	5	13	7	14	6
School Size								
<100	3	2	2	0	2	1	1	0
101-200	6	5	4	2	7	5	3	2
201-300	2	1	6	3	3	1	6	3
300>	1	0	3	0	1	0	4	1
Totals	12	8	15	5	13	7	14	6

based and consolidated) that were included in the sample. No significant differences were found.

Three data sets were used to identify, select, and examine both demographic data and middle level education programs, policies, and practices: Hough's (1991) survey of middle level organizational structures; National Education Longitudinal Survey of 1988 (NELS: 88); and the National Center for Education Statistics (NCES, 1995). NCES (1995) data were obtained unobtrusively from existing records.

Data drawn from these sources were used to construct a comprehensive set of middle level variables that, in turn, were used to measure relationships between the two groups being studied,that is, community-based and consolidated rural schools (all with organizational structures that included grades 6, 7, and 8.)

Models and Statistical Techniques

Weighted means and standard deviations from description data were used. All school level factor composites were normalized to a mean of zero and a standard deviation of one. While several types of demographic variables could be employed, school size, grade-span configuration, and socioeconomic status were considered, along with a number of middle level program, policy, and practice components. These components were identified as being present or absent in the school organizational structures using a dichotomous scale of 0 or 1. Table 2 shows the number and percent of schools in the sample that indicated whether or not they implemented specified middle school program, policy, and practice components.

Factor analysis was performed on the middle level program, policy, and practice components. The analysis yielded four orthogonal components related to the composition of the school community: (1) teacher characteristics = consisting of gender, age, and degree; (2) administrative expectations = influence of local and state policy; (3) curriculum expectations = impact of curriculum guidelines, textbooks, and professional development activities; (4) middle level philosophy = level of implementation of specified middle school program, policy, and practice components (see Table 3).

Socioeconomic status was a composite measure developed by NCES that reflects parental education, income, and reading materials in the home, along with a series of dummy variables indicating single-parent, stepparent, and non-English-speaking households. Community-based and consolidated schools were dummy coded for regression analysis.

Modeling the effects of school-level variables on organizational structure presents conceptual and methodologi-

Table 2
Number and (Percent) of Schools Reportedly Implementing Selected Middle School Components (N = 80)

Component	Community-based (n = 40)	Consolidated (n = 40)
Teaching Teams	14 (35%)	21 (53%)
Flexible Scheduling	8 (20%)	13 (33%)
Common Planning Time	12 (30%)	19 (48%)
Integrated Curriculum	16 (40%)	17 (43%)
Advisory Program	5 (13%)	14 (35%)
Exploratory Classes	5 (13%)	13 (33%)
Intramural Sports	11 (28%)	12 (30%)
Cooperative Learning	28 (70%)	31 (78%)
Heterogeneous Grouping	32 (80%)	29 (73%)

cal problems. Few studies have tackled this issue, and those who have tackled it have not employed sophisticated approaches. Aggregation bias can underestimate the effects of variables that are only rough estimates, and self-report data are not precise, empirical measures. A general lack of study in this area is evidenced as researchers have too often simply noted that programmatic changes are the central feature of any school, regardless of organizational issues. This attitude fails to consider the interconnectedness between organization, community, and teaching-learning outcomes.

To overcome a number of statistical limitations, hierarchical linear modeling (HLM) was used to examine between school differences identified by dichotomous variables under multilevel situations. HLM analysis requires two types of models: a Level-1 model to estimate the effects of variables on school-level organizational structure and a Level-2 model to estimate the effects of school-level variables on the coefficients from the Level-1 analysis. Additionally, the variance of the error term can be examined to see if there are significant differences between schools. Logistic regression and HLM analysis were used to determine the degree to which these various school factors could predict student academic achievement. Student achievement was a composite factor made up of eighth graders' grades and test scores from the NELS: 88 data.

Findings

As Table 2 indicates, consolidated schools tend to implement more middle school components, on average, than do community-based schools, with the exception of heterogeneous grouping practices. Factor scores presented in Table 3 and entered into the logistic regression equation, however, would suggest only marginal relationships among these variables while stronger relationships exist for teacher characteristics and administrative expectations.

Tables 4, 5, and 6 contain results of logistic regression techniques, along with the HLM estimates. These data, which include the four orthogonal factors as new variables, indicate that smaller community-based schools are less likely to embrace middle school components than larger consolidated schools; moreover, it was found that all consolidated schools in the sample had completed reorganization prior to implementing middle school components. Therefore, it would be reasonable to assume that implementation was in response to the organizational structure, not vice versa as has been assumed by others prior to this study.

Not surprisingly, student achievement was found to be more closely related to socioeconomic status, not to school type (i.e., community-based or consolidated organizational structures). Grade span and degree of implementation of middle level programs, policies, and practice were interrelated and more closely associated with school size and type. Because student achievement was found not to vary significantly between community-based and consolidated schools, examination of the differences between the two school types becomes important in order to determine why different schools produce roughly the same results. Here the data are both clear and thought-provoking. Consistent with past research, socioeconomic status was found to be the most significant correlate to student achievement. When one controls for SES and assumes that such consolidated schools' organizational structures are detrimental to student achievement, then it would logically follow that middle level components operational to a greater degree in those schools might, in part, be offsetting these detriments. If not, some anomaly must be responsible.

In addition, data from this study indicate that rural schools share more commonalities across geographic location than differences. The central differences, again, tend to be in level of middle school component implementation (which is more closely related to school size and grade-span) rather than in student achievement or socioeconomic status—the latter two being closely related.

While the SES/achievement relationship has a long and substantial research base with which these data are in concert, school types (e.g., community-based vs. consolidated, implementation of middle level components vs. lack of implementation of middle level components, K-8 grade-spans vs. 6-8 and/or other grade-spans) have been given much less consideration and studied much less frequently by researchers.

Policy Implications

Even though much more empirical work in this area is needed before definitive policy decisions can be reached, our data suggest that school level decisions must be as-

Table 3
Factor Scores

Variables	Factor 1 (Teacher Characteristics)	Factor 2 (Administrative Expectations)	Factor 3 (Curriculum Expectations)	Factor 4 (Middle Level Philosophy)
Teacher Age	.70			
Years Experience	.94			
Degree	.35			
State Policies (Standards & Assessment)		.44		
District Policies		.62		
School Policies		.92		
School Administration		.68		
Curriculum Guidelines			.61	
Textbooks			.35	
Professional Development Activities			.36	
Implementation of:				
Teaching Team				.61
Flexible Scheduling				.48
Integrated Curriculum				.26
Advisory Program				.39
Exploratory Classes				.45
Intramural Sports				.34
Cooperative Learning				.47
Heterogeneous Grouping				-.41

Table 4
Weighted Means & Standard Deviations by Rural School Type (N = 80)

	Community-based (n = 40)		Consolidated (n = 40)	
Variable	*M*	*SD*	*M*	*SD*
Socioeconomic status	.00	1.00	.00	1.00
Single parent family	.14	.41	.12	.35
Step-family	.11	.46	.09	.42
Non-English	.09	.39	.10	.31
Parental expectations	.08	.31	.07	.36
Grade span				
K-8	.31	.29	.33	.27
4/5-8	.19	.24	.17	.21
6-8	.36	.21	.35	.19
6-12	.13	.40	.15	.38
School size				
<100	.18	.36	.09	.37
101-200	.43	.27	.42	.24
200-300	.30	.21	.33	.28
300+	.08	.39	.14	.35

Table 5
Logistic Regression: Predicted Odds Ratios for Eighth Graders' Achievement

	Univariate Estimates	Multivariate Estimates			
Variables	(1)	(2)	(3)	(4)	(5)
SES composite	.38*	.41*	.47*	.51*	.62*
Grade span K-8	5.18*		1.02	1.00	.91
Grade span 4/5-8	3.71		1.07	.92	.80
Grade span 6-8	7.04*		.96	.97	.77
Grade span 6-12	2.92*		.82*	.81	.79
School size <100	1.51		1.21	.89	
School size 101-200	3.09		1.32	.87	
School size 201-300	2.48		1.16	.79	
School size 300+	1.14		1.01	.75	
Community-based	.21			.28	
Consolidated	.19			.24	
Log likelihood		375.10	321.70	294.80	263.90

*Level of significance ($p < .05$).

sessed relative to a number of demographic considerations. Caution is urged, however, when the sole source of policy decisions rests with descriptive statistics. These numbers fail to explain direct, indirect, and interconnected relationships that are more complex than is often understood. In addition, correlational studies do not (and cannot) explain these relationships. Too many uninformed "scholars" have assumed that the proliferation of rural middle schools in name and number correlated to an increase in the number of consolidated schools (and coupled with a decrease in the number of community-based schools) is evidence that the former is causing the latter and that the latter is detrimental. Such assumptions represent an egregious breach of fundamental research and statistical principles. Moreover, empirical evidence documenting the demise of rural communitarian precepts as a result of middle school organizational structures is woefully absent. Any assumptions based on such information should be considered personal opinion, not science.

The so-called "bottom line" of educational efforts is often analogous to student achievement. If policy is determined based on this dimension of teaching and learning, then innovations that address detrimental effects of low socioeconomic status and its by-products of isolation, alienation, and a host of other social inequities should garner more attention and study than debate over community-based versus consolidated schools. Not incidentally, a body of ethnography needs to be amassed to determine if, in fact, consolidated schools lack a community base. This is yet another assumption not substantiated with empirical data. Why would it not be reasonable to assume that in some rural areas consolidated schools are not the "hub" of the community? Again, answers to questions such as this will undoubtedly lie in an analysis of specific schools and communities. If conventional wisdom holds, some community-based schools will lack a sense of community while others will not. Perhaps the former should be revisited and the latter kept intact. It would be just as reasonable to assume that some consolidated schools may lack a sense of community while others will not. Again, the former should be revisited and the latter kept intact.

In sum, no differences in achievement were found between rural community-based or consolidated schools. All other variables remaining constant, consolidated schools tend to implement more middle level program, policy, and practice components than community-based schools. The reasons for this remain speculative. However, it would be misguided to assume that the middle school movement is causing rural schools to consolidate. Our data indicate that it is the consolidated schools that are adopting middle level educational components, not the proliferation of middle schools that is causing rural community schools to consolidate. Further, if schools are satisfied with past, current, and/or (expected) future levels of student achievement, there is no evidence to support the contention that consolidation will impact student achievement either positively or negatively. There may be evidence to suggest that the implementation of middle level program, policy, and practice components has an impact, however.

Table 6
HLM Estimates of Adjusted Correlates to Eighth Graders Mean Achievement by School Type

Variables	Community-based (n = 40)	Consolidated (n = 40)
Socioeconomic status	.61*	.63*
School size	.27	.29
Grade-span	.31	.28
Geographic location	.19	.17
Factor #1 Teacher Characteristics	.22	.25
Factor #2 Administrative Expectations	.30	.28
Factor #3 Curriculum Expectations	.24	.21
Factor #4 Middle Level Philosophy	.36	.41

*Level of significance ($p < .05$).

The next level of analysis should compare differences in student achievement between small rural community-based schools implementing middle level components to those not and by examining differences between small rural consolidated schools implementing middle level components and those not. To study these differences, a larger database would be required in order to make any estimates stable enough for generalization.

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