

Discussion Paper: Grade Configuration

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A. Introduction

There are many ways to organize a given K-12 education system. The advantages and disadvantages of different grade configurations have received a great deal of attention in the educational literature for many years and continue to be a controversial subject. The most often utilized configurations include:

- K-8 elementary school followed by a 9-12 high school
- K-5 elementary; 6-8 middle; 9-12 high school
- K-6 elementary; 7-9 junior high/middle; 10-12 high school
- K-12 school

Most California schools are configured following the K-5 elementary; 6-8 middle school; and 9-12 high school model. A small number of 7-9 junior high schools and K-12 schools exist. Of the total number of pupils enrolled in California public K-12 schools in 2004/05, the breakdown is as follows:

Format	% of Pupils
Elementary	49.4
Middle:	18.3
Junior High	.3
High School	27.9
K-12	.8
Other	3.3

Most of the controversy around grade configuration centers around the middle grades: 5th through 9th grade and where students at these grade levels are best served. The questions most often raised include:

- Should 5th grade and/or 6th grade be included in elementary school or in middle school?
- Should middle school/junior high be 6-8th or 7-9th grades?
- Should 9th grade be in a separate program/school from the rest of high school?
- Is K-8 a better model than K-5 followed by 6-8?
- Is K-12 the best model?

Nationally, in 2000, the most common configuration for the middle grades was 6th-8th grade:

Grade configuration	% of Pupils
5-8	10
6-8	59
7-8	17
7-9	5
Other	9

The discussion around grade configurations offers a broad range of opinions regarding the key drivers for choice of grade configuration. Some authors feel that it is primarily driven by student academic achievement; others reference the need to attend to the social, emotional and psychological needs of students at different stages in their lives; and others point to the need for schools and school districts to consider other factors such as funding availability; facility issues; distances between schools; rural versus urban; declining or growing enrollment; transportation costs; and community perceptions.

B. Historical achievement data in the middle years

One of the factors that has led to, or fueled, the interest in grade configurations and academic achievement is international and national data showing that U.S. middle school students are lagging behind students in other developed countries, particularly in the areas of math and science.

The TIMSS and follow-up TIMMS-R were cross-national surveys of student achievement in mathematics and science among 4th, 8th and 12th grade students. The results of these studies show that, in mathematics, U.S. 4th grade students scored about at the international average, ranking 9th out of 17 countries. By the 8th grade, however, the students were scoring significantly below the international average and were ranked above only 5 other nations. Similar declines in performance were observed for science. In science, U.S. 4th graders scored significantly above the international average, ranking 3rd out of 17 nations. As 8th graders, they were ranked 12th out of 17. This decline from 4th to 8th grade has raised concerns among educators about the value of middle school instruction.

Studies have also looked at progress of middle school students over time based on data from the National Assessment of Educational Progress (NAEP) tests in mathematics, science and reading. In mathematics, scores have generally been increasing since the mid-1980s and students in 1999 scored significantly better than students in 1978. Similarly, middle school students in 1999 performed better on the science portion of the tests than did students in 1977. In reading, gains were observed between 1970 and 1980, but scores have remained relatively steady since then. Despite this lack of progress in reading in recent years, 8th graders in 1999 performed better than they did in 1971.

In addition to concerns regarding overall trends in student achievement, concern has been raised about the performance of various subgroups. Boys are lagging behind girls in reading achievement while girls are lagging behind boys in science achievement and these gaps have not decreased since the 1970s. Similarly, the Latino-white achievement gaps in science and reading remain as large in 1999 as they were in the 1970s.

Based on the most current NAEP data from the 2000 mathematics and science assessments and the 1998 reading assessments, researchers note that only 27% of 8th graders nationally attained proficiency in mathematics; 32% in science; and 33% in reading. Despite improvements in achievement scores since the 1970s, the levels of proficiency continue to be of major concern. In mathematics and science, slightly more males than females reached proficiency, whereas the reverse is true for reading. Very few Latinos or African-American students reached the proficient level in any of the subject areas. For African-Americans, 6% reached the proficient level in mathematics; 7% in science and 12% in reading. For Latinos, 10% reached proficiency in mathematics; 12% in science; and 15% in reading.

In summary, the NAEP results suggest that few students are reaching the proficient level in mathematics, science or reading. This is particularly true for minority students and for students whose parents did not finish high school. Even among more privileged students, such as those whose parents

are college graduates, over 50% of the students failed to reach the proficient standard in any of the core subject areas.

C. Research findings on grade configuration and academic achievement

Many authors point to the fact that there is very little solid evidence of the relationship between grade configuration and academic achievement. Many studies have suggested a relationship, but are based on data from a specific geographic location or type of area (e.g. rural schools) or are based on anecdotal data. There does not appear to be any substantive national data on this issue from well-designed research studies. Despite this, there may be some value in looking at the data that has been produced as being possible indicators of some connection between grade configuration and academic achievement.

1. Placement of 6th grade: elementary or middle?

There is considerable discussion in the literature about the appropriate placement for 6th grade students. For example, are they best served in an elementary school setting of K-6 or a middle school of 6th-8th? Some parents, in particular, raise concerns that some 6th graders are not emotionally mature enough to attend middle school with older children. However, most educators and researchers would agree that 6th graders are physically and psychologically closer to 7th & 8th graders than they are to 1st graders. It would seem fair to say that some 6th graders are ready for middle school and some are not. This may vary from one community to another, suggesting that there is no one size fits all solution to this question.

Research has raised some interesting points in this regard:

- 1998 study of 700 schools in Louisiana, found 6th & 7th grade students who were in schools serving K-6, K-7 or K-12 populations performed better on standardized tests than did students in 6-8 or 7-9 middle/junior high schools.
- 1987 study of 330 Pennsylvania schools found there was an overall achievement advantage to locating 6th graders in an elementary school versus a middle school configuration and that this advantage was most evident among students low in socioeconomic status.
- One study found that a statistically significant achievement loss associated with the transition from elementary school to middle school at the 6th grade and that this loss was larger when students from multiple elementary schools were merged into a single middle school. The same study also found that all students experienced an achievement loss during the transition to high school, but that the loss was larger for middle school students than for K-8 elementary students.
- A 1997 study found that each time students switched schools, their feelings of anonymity increased. Another study found that girls in early adolescence suffered from a drop in self-esteem, extra-curricular participation, and leadership behaviors when they made the transition into middle school or junior high, but not if they remained in an elementary school setting. For boys, the study found similar negative effects in extra-curricular participation and grades, but not in self-esteem.

- Other studies note student and parental concerns with personal safety due to aggressive and violent behaviors. A 1996 study in Louisiana found that 6th grade boys experienced more suspensions in middle or junior high schools than in elementary schools.
- National school safety statistics suggest that physical conflict and bullying are especially problematic in middle schools.

It has been suggested, by some, that achievement losses related to the transition from elementary to middle school and/or to high school may relate to the levels of stress students face. An elementary school is typically perceived as a cozy, nurturing environment with few stressors. Alternatively, middle and high schools are often seen as formal, impersonal environments with many stresses. One study asking students about their worries in moving to a new school, reported:

- Getting to class on time
- Finding lockers
- Keeping up with the materials
- Finding lunchrooms and bathrooms
- Getting on the right bus to go home
- Getting through the crowded hallways
- Remembering which class to go to next

It is clear that there is no definitive answer to the question of the placement of 6th grade students.

2. 6th – 8th Middle Schools

Middle schools are currently the dominant form of school structure for early teens. As of 2000, 59% of middle grade level students in the U.S. attend school in 14, 107 6-8th grade middle schools. This represents a growth in the number of middle schools of 17% since 1991. Proponents of this model believe that the middle school best serves the unique needs of the young adolescent. A 2000 national survey of middle school principals reported that 65% believe that the ideal grade organization for the middle grades was 6th-8th grades.

Consideration must be given to the fact that the 10-14 year old is changing physically, emotionally and intellectually faster than at any other time in his/her life. The effective middle school model is designed to address the needs of these students through:

- Challenging curriculum.
- Interdisciplinary team teaching using a variety of approaches.
- Exploratory programs and a wide range of elective offerings.
- Extended academic time for learning through flexible scheduling.
- Close relationships between teachers and students through Advisory or similar programs.
- After school extra-curricular programs.

- Programs that foster health, wellness and safety.

Despite the promise of improvement upon the older junior high model, some researchers suggest that middle schools are associated with poor academic outcomes, negative school climates and disciplinary problems. A major study, funded by the Rand Corporation, reports that:

“Not only is evidence showing that young teens benefit from a separate three years of schooling weak, there is strong evidence suggesting that transitions (especially if they involve several changes in the school environment and instruction) have at least temporarily negative effects on some youth. Separate elementary and middle schools cause transition problems for students that can negatively affect their developmental and academic progress. In short, the research findings indicate that the separate middle school has weak empirical support.”

Conversely, advocates of the middle school model point out that the poor performance of many middle schools is more likely attributed to inadequate implementation of the middle school concept rather than any weakness in the model itself. Researchers suggest that the implementation of the middle school concept has been less than adequate in most districts and schools.

Another consideration is that evaluation of middle school success is being focused too narrowly on achievement. Little research has been published on factors such as student engagement, aspirations, school climate or disciplinary issues. Many of the reforms promoted as part of the middle school movement were designed to facilitate developmental responsiveness, not necessarily academic outcomes. Therefore, it may not be appropriate to use academic achievement as the sole measure of effectiveness. Teaming practices were designed to lessen student anonymity and to facilitate closer student-teacher connections; these may be best measured through examinations of school climate. Similarly, the effects of interdisciplinary teaching should include measures of student motivation as well as academic achievement.

Many call for improvements in middle schools including attention to the following:

- Improved middle school teacher preparation including subject matter expertise and developmentally responsive instructional and classroom management methods.
- Ongoing professional development.
- Training for administrators to encourage focus on instructional leadership rather than operational management.
- Encouraging parent involvement that typically drops off as students move from elementary school to the next level of schooling.
- Improving school climate.
- Overall student health and wellness.
- Focus on low performing students with consideration to summer programs before 6th grade, additional reading and mathematics classes in 6th grade and beyond.

3. K-8 schools as an alternative to middle school and/or junior high

Criticism of middle schools has led to a renewed interest in an older grade configuration model, the K-8 school. One leading proponent of these K-8 schools has coined the term “elemiddle”. Not every K-8 school is an “elemiddle”, just as every 6-8 school is not necessarily a middle school. An elemiddle school is one that includes both primary and middle grades and where there is a specific focus on implementing effective middle-level programs. Most true elemiddles are K-8, although some may be 4-8 or 5-8. Some research findings related to this grade configuration include the following:

- Study of 18 schools in New York in 1984 found that both 7th and 8th grade reading achievement was higher for students in K-8 schools than in schools having a 6-8 configuration. Better attendance, more positive attitudes toward school and higher self-esteem was also reported for 7th and 8th graders in K-8 schools.
- 1992 study of 163 Maine schools found that 8th grade total achievement was significantly higher in K-8, K-9 and 3-8 schools than in schools configured around the middle or junior high grades.
- 1998 study in Missouri found that students who went from a K-8 school directly to high school experienced less of an achievement loss than those students who had attended a middle school or junior high school.

Many districts have discovered students in elemiddle schools outperform students in schools with other grade configurations, particularly those in middle schools:

- Cleveland has converted 21 schools to accommodate K-8th grade and has found that 6th graders in K-8 schools are experiencing better attendance and higher standardized test scores.
- Cincinnati completed a 5-year transition to K-8 in 2000. They have noted a reduction in discipline problems and absenteeism and an increase in overall student achievement.
- Philadelphia is converting middle schools to K-8 school where feasible. Their results show that 8th graders in K-8 schools are scoring significantly higher than those in middle school on standardized achievement tests in reading, mathematics and science.
- In suburban Boston, the Everett Public Schools is converting its 5 elementary schools to K-8 schools to “provide a better atmosphere where no child falls through the cracks”.
- A rural district in Tennessee, Fayetteville, has all students attending K-8 schools in an attempt to address a high dropout rate.
- The Baltimore City system doubled the number of K-8 schools to 34 to “create smaller learning communities that would better meet the needs of our students”.
- Oklahoma City is spending \$530 million over 7 years to convert its elementary schools into K-8 schools.
- Chicago schools have always been primarily K-8 schools.

One analysis suggests that the success of K-8 or elemiddle schools can be attributed to the degree to which they have successfully implemented the middle-level concept. This author contends that these schools have been more successful at this than have the traditional middle schools. In addition to implementing successful practices such as teaming, cross-age tutoring, integrated inquiry-based teaching and learning strategies, intramural sports programs and cooperative learning, elemiddle schools are aligned to a more nurturing child-centered environment commonly found in elementary schools.

Others disagree and point to research that suggests that the 6-8 middle school organization is most likely to provide the key characteristics of recommended practices and programs for young adolescents. To date, it would appear that the research supporting either side of the argument is limited in that it generally comes from studies of individual districts rather than large-scale national studies.

4. 9th Grade Centers/Programs

Some suggest that placing 9th grade in a separate center or program is the most effective means of easing the academic and social transitions for high school-bound students. The transition into 9th grade can be one of the most emotionally difficult, most academically challenging times in childrens' lives. Researchers have identified 9th grade as the most critical point to intervene and prevent students from losing motivation, failing and dropping out of school. Research has also found that students going from 8th grade in the spring to 9th grade in the fall had a statistically significant drop in the following domains of self-perception:

- Physical appearance
- Job competence
- Romantic appeal
- Behavioral conduct
- Global self-worth

Some school districts are addressing these issues by creating separate 9th grade academies or centers and schools within schools. In 1999/00, 128 9th grade only schools were operating in the U.S. in Des Moines, Iowa; Kentwood, Michigan; Alexandria, Virginia; and in the Indianapolis area among others.

Researchers in Pennsylvania completed a national study of more than 400 high schools and their feeder middle schools. One of their key recommendations was that schools develop 9th grade academies to ease the stress of transition. In school systems with comprehensive transition programs, they found an 8% dropout rate versus a 24% dropout rates at schools without such programs. In addition, schools with transition programs in place had fewer students who were retained in grade. Added benefits to successful transition programs include reduced rates of risky behaviors including drug and alcohol use, sexual activity, and crime.

The following are some examples of 9th grade centers currently in operation:

- Aldine Independent School District in Houston operates 4 9th-grade only centers, with approximately 850 students each, to keep freshmen from getting lost in the corridors and classrooms of already massive high schools ranging in size from 1,900 to 2,300 10th - 12th

grade students. They have found a dramatic decrease in the dropout rate, an increase in the attendance rate, test scores have risen and behavior has improved.

- Another Houston area district operates 2 9th grade centers of 900 students each adjacent to high schools with connecting sidewalks. They have experienced reduce rates of failure and dropouts through the use of individualization and learning teams. Students tend to develop a bond and sense of belonging and teachers find it easier to identify those with special needs. Finally, more 9th graders are involved in activities than was the case when they were part of comprehensive high schools.
- A school district in Pennsylvania is operating a 9th grade center of 750 students as a temporary solution to overcrowding. They have identified positive returns in isolating 9th grade students from the pressures of older students and giving them the opportunities to participate in after school activities, clubs, the school play, yearbook without having to compete with upper classmen.

Researchers, as well as those involved with 9th grade centers, note that it is critical that these centers be an integrated component of a full transition plan to guide students from 8th grade into the high school experience. It is important that the 9th grade center is seen as a full experience, not an extension program. It is suggested that a 9th grade center should be on the same site or very close to the high school to allow 9th graders to participate in marching band, athletics and other extra-curricular programs that the center cannot offer on its own. This also allows for the sharing of administrative and support services such as library and health services.

The literature suggests that some school districts have found advantages to schools of one grade level, although these are not necessarily supported by research. Some of these are:

- School for 9th graders can develop programs specific to the needs of that group.
- Siphoning off students from several high schools can relieve overcrowding at those schools.
- Students may be able to participate on an equal level in more activities and be less influenced by older students.
- The greater number of students in single-grade center may enable the school to increase the course offerings.

Some possible disadvantages to separate 9th grade centers include:

- Students are required to make an increased number of transitions.
- The cost and length of student travel may increase, particularly in geographically spread out districts.
- Parent involvement may decrease; affected by the distance to the school and/or the number of schools a family's children attend.
- Fewer opportunities are provided for interaction between age groups.

- A 2000 study of 15 schools in Missouri found that the higher grade at which a student transitions to high school, the more likely the student would dropout of high school. Students in 7-12 high schools had a lower occurrence of high school dropout than students who entered high school in 10th grade. This finding may not necessarily apply to a transition from a 9th grade academy/program as it is designed to address issues relating to dropouts, etc.

This possible configuration appears worthy of consideration, particularly if a district is faced by poor performance at the high school level and/or a high dropout rate.

5. Are K-12 schools a viable option?

Although fairly rare, there is some mention in the literature of resurgence in interest in K-12 schools. Texas and Louisiana are 2 of the few states that have a large number of K-12 schools. These tend to be in rural areas where the K-12 school is the only school in the district. Studies have shown that attending a K-12 school in Texas was a strong positive influence on achievement, particularly for students of low socioeconomic status. This achievement gain may be associated with the removal of the transition effects and associated achievement gaps experienced in other settings where students must change schools one or more times through their K-12 career.

D. Transition Issues

One of the key issues discussed in the literature around grade configurations is that of transitions, or the number of times that a student has to change schools during their K-12 educational experience. It appears to be well documented that transition effects are largely negative and can include achievement losses, as well as declines in motivation and self-esteem. It has been concluded that the more transitions a student makes, the worse he/she performs.

It is clear that attention must be given to transition issues to address the loss in achievement experienced by many students and concerns raised by parents. These stresses associated with transitions may be minimized when a school is responsive to the needs of its incoming students. A 1997 study found that middle schools with transition programs, which targeted students, parents and staff produced high school students with higher GPAs and fewer high school dropouts versus middle schools that did not have comprehensive transition programs. Effective and comprehensive transitional programs help:

- Build a sense of community.
- Respond to the needs and concerns of the students.
- Provide appropriate, faceted approaches to facilitate the transition process.

E. Conclusions

Despite many citations of the benefits or disadvantages of different grade configurations, it is generally acknowledged that the body of viable evidence around any particular model is relatively weak and/or open to interpretation. Researchers point out the need for a national database to enable research into issues associated with grade-span configurations in a more comprehensive, systematic and unbiased manner.

It is clear that students in the middle grades require special attention to meet their unique needs, however it is not conclusive as to whether these needs are best met in an elementary (K-6), a middle (6-8), or an elemiddle (K-8) school. The determining factors would appear to relate to the difficulties associated with transitions and how effectively these are addressed as well as the degree to which the school implements sound middle school practices. The research is clear that transitions tend to be problematic, both in terms of negatively impacting student achievement and in social/emotional effects. However, schools implementing comprehensive transition programs have reported some success in dealing with this issue.

Many authors suggest that it is not the grade configuration per se that is the central issue, but that of offering a quality program in an effective manner. For example, one suggests:

“In theory...any school with a nurturing learner-centered environment, staffed by competent, caring teachers who fully implement promising practices should be able to document positive student outcomes. Certainly parents should be engaged in the learning process and transitions by students from one grade level to the next should not be disruptive. Students and their families have the right to a safe, healthy learning environment. Schools that can provide these things also should be able to maximize student success as measured by academic achievement, attendance and graduation rates, discipline problems, and the health, well-being and safety of well-adjusted student learners.” (Hough, 2005).

The National Middle School Association believes that:

“Middle level education is not about grade configuration, but rather about effective programs and practices, like interdisciplinary teaming and integrated curriculum, that are developmentally appropriate for young adolescents. Successful schools for young adolescents are staffed with teachers who are prepared to teach young adolescents and do so in an environment that is academically challenging, socially equitable, and developmentally responsive.”

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