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Schoolwide Mathematics Achievement Within the Gifted Cluster Grouping Model

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Abstract

An increasing number of schools are implementing gifted cluster grouping models as a cost-effective way to provide gifted services. This study is an example of comparative action research in the form of a quantitative case study that focused on mathematic achievement for nongifted students in a district that incorporated a schoolwide cluster grouping model. Although previous research found that gifted students performed better in the cluster setting, this study sought to determine the effects of the cluster model on nongifted students. Findings from this research indicate that general education students in the gifted cluster classes and those not in the gifted clusters experienced similar levels of academic growth in mathematics. Data disaggregated according to grade level, gender, ethnicity, and English language learner status showed that students achieved at similar rates in mathematics in gifted cluster classrooms and those classrooms without the gifted cluster groups.

Keywords

gifted, cluster grouping, achievement, grouping

Introduction

Due to school accountability measures, many educators focus on the learning needs of students with average or below average achievement levels. Unfortunately, when

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school-based learning is defined as annual yearly progress in the academic areas, the students most likely "left behind" are those with exceptionally high ability (Gallagher, 2004; Plucker, Burroughs, & Song, 2010). These students experience less academic progress than others because many have already mastered much of the grade-level standards being taught in any given year and as such do not receive as much attention from teachers (Brulles, Cohn, & Saunders, 2010).

By incorporating methods of grouping, differentiated instruction, and accelerated curriculum in ways that facilitate yearly academic growth for all students, schools have the capacity to provide appropriately challenging instruction for their high-ability students. Given that gifted students constitute a relatively small percentage of the total student population in most schools, school administrators must ensure that programs designed to serve this population do not negatively impact the achievement of general education students. The concern often voiced by teachers and administrators is that clustering students as a means of educating high-ability students could negatively influence the learning of the nongifted students (Gentry & Owen, 1999). Although these same authors found this did not happen, and in fact, found that all students benefited from the model, the fact remains that effective and sustainable grouping practices should benefit students at all levels. Whether or not this is occurring should be frequently evaluated. This goal requires that classroom compositions be structured so that teachers can adequately challenge all levels of learners in their classes.

During present times of decreasing school budgets when fewer support services for gifted students are funded, many schools are seeking inclusionary models, such as cluster grouping, for serving their gifted students. When cluster grouping, all gifted identified students—regardless of their area(s) of identification, ability, achievement level, or English language proficiency level—are grouped together into one or more classrooms at each grade level. Classrooms with the gifted cluster groups also include nongifted students and enfranchise underrepresented populations (Gentry & MacDougall, 2008; Winebrenner & Brulles, 2008).

Literature Review

In the cluster grouping model, students are purposefully placed in classrooms to create a balance of ability and achievement levels in all classes. The model slightly narrows the range of abilities in each classroom with no classroom having both extremes of the learning continuum. Intentionally balancing the ability and achievement levels in the classes at each grade level, while also providing professional development for the cluster teachers, has been shown to create measurable differences in student achievement for gifted students (Brulles et al., 2010). A number of studies have reported positive impacts of cluster grouping for gifted students (Gentry & Owen, 1999; Kulik, 2003); few have examined the effects cluster grouping has on nongifted students in schools that incorporate a schoolwide cluster grouping model.

Table 1. Example Classroom Arrangement

	Group 1 (gifted)	Group 2 (high average)	Group 3 (average)	Group 4 (low average)	Group 5 (far below average)
Classroom A	6	0	12	12	0
Classroom B	0	6	12	6	6
Classroom C	0	6	12	6	6

Source: Winebrenner and Brulles (2008, p. 14). Used with permission from Free Spirit Press.

Careful grouping practices in the gifted cluster model allow teachers to more readily respond to the needs of all their students, to challenge gifted students clustered together in mixed-ability classes, and to engage in practices that lead to improved academic achievement for all their students. When teachers have a significant group of gifted students in their classes, they are more likely to plan for their different learning needs in advance. This decreased range of student abilities makes targeting differentiated instruction easier for the instructor, thereby increasing possibilities for increased student achievement (Brulles, 2005; Brulles et al., 2010; Gentry, 1999; Gentry & MacDougall, 2008).

Table 1 shows an example of grouping at a grade level with three classes and 90 students. The number of sections in a grade level and the number of gifted identified students in each grade determine the student compositions in the classrooms.

Outcomes of gifted cluster grouping models that have been reported by teachers and administrators who implement the model with fidelity include the following:

- Gifted students and their parents are satisfied with the school's efforts to challenge gifted learners (Brulles & Winebrenner, 2011)
- Nontraditional gifted students are served, including those who are not fluent in English, those who are twice exceptional, and those who have not been productive with their schoolwork (Brulles, 2005).
- High-achieving students in the classes without the gifted cluster emerge as new academic leaders (Gentry & MacDougall, 2008).
- All students experience comparable achievement gains due to the narrowed range of ability and achievement in every class (Gentry & MacDougall, 2008).

Gifted cluster grouping represents a form of ability grouping that focuses on the learning needs of gifted students. Ability grouping has attracted substantial controversy among educators for decades (Nomi, 2010). The practice emerged in the 1920s when intelligence tests allowed educators to assign students to classes based on ability (Burns & Mason, 1998). Support for, and denigration of, grouping practices has continued ever since. The debate is understandable given the numerous grouping variations, student populations, and purposes the practices intend to serve. General hypotheses surmised from ability-grouping practices conclude that ability grouping benefits certain groups over others and can assist and hinder the learning of students from different groups (Kulik, 1992).

Core arguments surrounding ability grouping center on issues of academic achievement, social interactions, and opportunities for all students to have access to the same learning experiences (Oakes, Gamoran, & Page, 1991). However, students' learning needs vary (Kulik, 1992). Providing the same content to all students ensures that those who have previously learned the material will not progress in their learning (Tomlinson et al., 2004). Students are more likely to engage in challenging learning experiences when they are allowed to work with peers who are working at similar levels (Feldhusen & Moon, 1992).

Some research has suggested that grouping strategies exacerbate achievement inequalities due to the different curricular opportunities made available to each group (Nomi, 2010). Opponents to grouping strategies for low-ability students contend that these students are held to lower expectations (Gambrell, Wilson, & Gantt, 1981). Such criticism is based on the belief that ability grouping lowers self-esteem and motivation among struggling learners and often "widens the gap" between high and low achievers (Calfee & Brown, 1979; Good & Stipek, 1983; Hiebert, 1983; Rosenholtz & Wilson, 1980). However, others contend that instruction directed to students' readiness and ability levels can lead to more significant achievement gains for these students (Tomlinson et al., 2004). Some studies on ability-grouping practices suggest that within-class ability grouping may lead to higher academic performance for all students (Lou et al., 1996; Slavin, 1987). The grouping strategies, structures, and instruction are the critical factors.

Pikulski (1991) found that most teachers believe that the organization of student placements is vital for effective teaching, learning, and classroom management. In a study designed to understand teachers' attitudes toward grouping practices, Moody and Vaughn (1997) found that teachers identified control over decision making as an important issue. General and special education teachers felt that teachers should decide how they use instructional groups. Some teachers interviewed stated that continuity from grade to grade would also benefit students. The rationale for creating purposeful classroom compositions in combination classes supports the grouping philosophy behind the cluster model. Having varied, yet distinctive aptitude and achievement groups require planning in advance for the different levels in the classroom. This contrasts with the unknown results obtained from random heterogeneous practices that occur without purposeful placements (Burns & Mason, 1998). Research examining the impact of class composition shows a definite influence on curriculum and teachers' sense of efficacy (Arlin & Westbury, 1976; Barr & Dreeben, 1983).

Some schools implement grouping as an organizational response to diversity. In a recently published study, Nomi (2010) found that ability grouping reduces achievement inequalities and therefore benefits low-ability students the most. In a related fashion, Robinson (2008) found that language minority students benefited more from ability grouping for reading instruction than children from English-speaking environments. Arizona was one of three states that took this to the extreme by passing legislation in 2000 to group all English language learners (ELLs) together in classrooms for English language development. Despite strong criticism to the model by some teachers and administrators, schools report significant gains in English language proficiency levels in the years following the mandated grouping and prescribed instruction for ELL students (Clark, 2009).

School administrators seek a balance between the inefficiency of random heterogeneous grouping and the dangers and challenges involved in tracking. Cluster grouping represents a structured method for ability grouping in a heterogeneous manner in a setting where all students can make progress while avoiding permanent groupings (Gentry, 1999). In heterogeneous classes that cluster group, there are high- and low-achieving students allowing low-achieving students to have access to the same curriculum. With exposure to more challenging material, some low-achieving students may experience faster growth than they would have without that exposure.

Regardless of the purpose or structure of the ability-grouping method implemented, teachers are generally attuned to the specific achievement levels of their students when their learning groups are determined by preassessments (Nomi, 2010). Instruction is then provided according to the needs of each group. Reducing the number of achievement levels in a classroom eases the use of results collected from formative assessments. Cluster grouping allows this to occur because each nongifted student is placed according to his or her known aptitude.

Ability grouping provides the structure for targeted instruction to occur. Barr (1989) suggested that effective ability grouping requires differentiated instructional practices within the grouping arrangements. Kulik (2003) noted that bright, average, and slow youngsters benefit from grouping programs if the curriculum is appropriately adjusted to the levels of the groups. Research supporting cluster grouping supports this conclusion (Brulles et al., 2011; Gentry & MacDougall, 2008). However, teachers are often uncertain as to how to implement flexible groups and what to do with students in the different groups (Moody & Vaughn, 1997).

In results of a study examining teachers' perceptions on grouping, Moody and Vaughn (1997) found that although teachers' value control over their instructional decisions, working with flexible groups in the classroom presents challenges for the teachers. One general education teacher specified it this way: "I have six groups. Each group has gifted, average, LD; or an ESL student might be in one of the groups. I mix them" (p. 453). Most of the teachers felt that mixed-ability grouping is a preferred grouping strategy because "the ones that really benefit are the lower academic students because they are getting all this information from the other ones." Another representative comment was, "They really learn from each other. There's no doubt that grouping at different levels is the best" (p. 453). The majority of teachers also indicated that mixed-ability groups are beneficial for the high achievers as well. One teacher said, "I did find that through pairing a higher and a lower student in a group that the higher student tutored that student and brought him up and, meanwhile, the higher student was benefiting by serving as a tutor" (p. 453). In the absence of a systematic grouping practice that includes teacher training, teachers may reach erroneous conclusions based on false assumptions or a lack of understanding gifted students' needs. Professional development on the learning needs of gifted students can help classroom teachers make effective decisions on grouping configurations so that all students make meaningful academic progress on a regular basis.

Teaching to the different levels requires that teachers access students' prior knowledge, identify readiness levels, assess and monitor progress, and manage the groups working at different levels or on different learning tasks (Ysseldyke & Tardrew, 2007). For this to occur, teachers need training on using data to inform instruction and classroom management when teaching to the different levels in mixed-ability classes (Wiggins, 1998).

Background

This study was designed as an example of a single district conducting action research regarding districtwide instructional practices. During the 2006 school year, data were collected in an urban school district in the southwestern United States that served approximately 14,000 students, kindergarten through eighth grade. The school district qualified for Title I funds, with 83% of the student population receiving free or reduced-price lunch. The majority population was Hispanic in this culturally and linguistically diverse district (See Table 2). The school district had been utilizing the cluster model for 6 years at the time of this study.

Achievement scores in mathematics for nongifted students in a cluster grouping model were examined.[1] As part of routine practice, all students in the district were administered on a preassessment in August of 2006 and a parallel version of the same instrument as a postassessment in May of 2007. The benchmark assessments measured grade-level standards in mathematics that students were expected to master by the end of the school year. Teachers used the results to guide instruction throughout the school year. A team of school district mathematics specialists and a national content expert developed the benchmark assessment used. The test was created by aligning test items to the Arizona Instrument to Measure Standards (AIMS) and the Arizona state standards. Test items were purchased from the company that supplied the item bank for AIMS, the state criterion referenced test. The assessments were then field tested at two schools with diverse urban populations. Item analysis was then performed, and final revisions followed. This study represents the same process incorporated in the previous study that examined gifted students' achievement in the same district (Brulles et al., 2010).

In a previous study (Brulles et al., 2010), we investigated the effects of the cluster grouping model on gifted students who were placed in gifted cluster classrooms as well as those students who were not placed in such classrooms for various reasons. These two groups were very similar with regard to gender, race/ethnicity, and ELL status. They were also not significantly different with regard to pretest score. Despite no initial starting differences in pretest scores ($p > .05$), the gifted students who were

Table 2. Demographic Characteristics of the Sample

Demographics	*n*	Percentage
Overall	3,716	100
Gifted in gifted cluster[a]	554	15
Nongifted in gifted cluster	535	14
Nongifted in nongifted cluster	2,627	71
Gender (overall)		
Male	1,862	50
Female	1,854	50
Gender (gifted in gifted cluster)		
Male	284	51
Female	270	49
Gender (nongifted in nongifted cluster)		
Male	271	51
Female	264	49
Gender (nongifted in nongifted cluster)		
Male	1,307	50
Female	1,320	50
Race/ethnicity (overall)		
Caucasian	674	18
Hispanic	2,597	70
Asian	112	3
African American	266	7
American Indian	67	2
Race/ethnicity (gifted in gifted cluster)		
Caucasian	173	31
Hispanic	300	54
Asian	40	7
African American	32	6
American Indian	9	2
Race/ethnicity (nongifted in gifted cluster)		
Caucasian	144	27
Hispanic	328	61
Asian	25	5
African American	31	6
American Indian	7	1
Race/ethnicity (nongifted in nongifted cluster)		
Caucasian	357	13
Hispanic	1,969	75
Asian	47	2
African American	203	8
American Indian	51	2

(continued)

Table 2. (continued)

Demographics	*n*	Percentage
Language status (overall)		
ELL	2,003	54
Non-ELL	1,713	46
Language status (gifted in gifted cluster)		
ELL	250	45
Non-ELL	304	55
Language status (nongifted in gifted cluster)		
ELL	249	47
Non-ELL	286	53
Language status (nongifted in nongifted cluster)		
ELL	1,504	57
Non-ELL	1,123	43

Note: ELL = English language learner.
[a]signifies a result, finding, or number from the previous study (Brulles et al., 2010) related to the gifted kids' outcomes.

placed in the gifted cluster classrooms made substantially and significantly higher gains ($p < .01$; η_p^2 of .31). Although these positive results were found for the gifted students placed in the gifted cluster classrooms, administrators and school staff were often concerned regarding the performance of those nongifted students who find themselves in the gifted cluster classroom as well as those nongifted students who are not placed in gifted cluster classrooms. These concerns were the impetus for the present study.

Methods and Procedures

Examining the Impact on Learning: A Case Study

An urban school district in Arizona that had incorporated a schoolwide cluster grouping model examined achievement data for all students and for selected prominent subgroups. This study investigated the achievement data in mathematics for students in that district. Due to the high number of ELL students in the district, school administrators used their district-created mathematics benchmark assessment (described above) to measure achievement. Math was selected as to avoid capitalizing on the fact that many students in the study were ELLs, and this fact could influence reading or verbal test scores. Math was also used because of its emphasis on state achievement tests.

School district administrators sought evidence of achievement for all students in grade levels who were cluster grouping (Grades 2-8). In particular, the district wanted to know how factors such as gifted identification, classroom placement, gender, ethnicity, and English language status influenced achievement. This information was of great interest because the school district had adopted the model hoping to enfranchise and challenge previously underrepresented gifted student populations. Specifically, the study looked at changes in the school district's pre- and postbenchmark assessments for all students, and for the groups and subgroups described above. The percentage of change for the subgroups was important because the cluster grouping model impacts student placement for all students in the school.

The school district studied the achievement scores in mathematics for gifted and nongifted students. This study examined only the scores of the nongifted students who took the preassessment and the postassessment. Due to the high mobility rate in the district, this accounts for only 3,716 of the district's approximately 10,000 Grades 2 to 8 students. This study only focused on those students who were present for a full year as the effects of the cluster grouping model would necessitate long-term involvement. The scores of 3,716 students were examined by comparing preassessment mathematics scores to the same students' postassessment mathematics scores. This included nongifted students in the gifted cluster classrooms and nongifted students who were not placed in gifted cluster classrooms. Improvement was measured by comparing preassessment mathematic achievement scores in fall of 2006 to the same student's achievement scores in the spring of 2007. Of the 3,716 test scores that were examined, 554 gifted students were in gifted cluster classrooms, 535 nongifted students were also in the gifted cluster classrooms, and 2,627 nongifted students were placed in nongifted cluster classroom. This is a larger proportion of gifted students than would be expected in the total school population. However, this may be due to the fact that gifted students are less likely to be transient and therefore more likely to have completed pre- and postmath tests. Demographics of the sample are included in Table 2.

Teachers assigned to the gifted cluster classrooms either held or were working toward obtaining a gifted endorsement by participating in professional development in gifted education. Teachers assigned to the nongifted cluster classes did not receive any particular training in the area of gifted education. However, some could have sought training or received it on their own outside of school professional development or required training. All classes used curriculum that was aligned to the state standards, but curriculum and instruction in the gifted cluster classes was extended, accelerated, and/or enriched for students who required more challenging work.

This action research project addresses the following questions:

1. How do nongifted students perform in mathematics when placed in a gifted cluster classroom?
2. How do nongifted students perform in mathematics when placed in the nongifted cluster classroom?

Even though this study did not investigate the achievement of the gifted students, several results from the earlier study (Brulles et al., 2010) are reported throughout this manuscript for comparison purposes.

Student Achievement

Achievement was analyzed for the 3,716 students who had taken pre- and postassessments. After conducting general nongifted cluster versus nongifted noncluster comparisons, mathematics test score data were disaggregated for

- gifted students in the gifted cluster classroom (Brulles et al., 2010)
- nongifted students in the gifted cluster classroom
- nongifted students in the nongifted cluster classroom

In the previous study in which we investigated the effects of the cluster grouping model on the gifted students who were placed in the gifted cluster as compared with gifted students not placed in the gifted cluster, a general analysis of covariance (ANCOVA) investigated the influence of the clustering after controlling for gender, ethnicity, ELL status, and grade level (Brulles et al., 2010). In this analysis, only grade level was statistically significant. In the same fashion, variables of grade level, ethnicity, gender, and ELL status were investigated here to see if they were significantly related to posttest scores after controlling for pretest scores. When this was done, the results indicated that ethnicity, ELL status, and gender were not statistically significant at the .05 level. However, grade level was significant. On further reflection, this made sense as the benchmark assessments for each grade level are based on their own 0 to 100 scale, which was aligned with grade-level content. This was analogous to each grade of students taking a different test. For this reason, we chose to report descriptive statistics for cluster/noncluster students within each grade level and used only pretest score and grouping variable in the ANCOVA.

In the present study, the desire was to examine the performance of two distinct groups of students with differing demographic and pretest characteristics. In addition, because of the case-specific/action research nature of the study, there is no larger population to which the results are meant to generalize. For these reasons, inferential statistics were not used when evaluating the results beyond the general ANCOVA test of cluster versus noncluster performance differences. Instead, descriptive data are presented for various subgroups. However, means and standard deviations are still presented as an indicator of relative change.

Results

Table 3 presents the pre- and posttest means and standard deviations for the two groups of interest. Values presented here are percentages of items answered correctly on the math benchmark assessment, their accompanying standard deviations, and the percentage change for each comparison. This analysis was especially important as each grade-level benchmark assessment covered the grade-level content for that specific grade.

Table 3. Pre- and Postassessment Means and Standard Deviations by Grouping Based on Grade Level

		Preassessment		Postassessment		
Group	*n*	*M*	*SD*	*M*	*SD*	% Change
Gifted overall[a]	554	63.15	13.52	84.78	9.81	34
Nongifted in gifted cluster	535	56.30	17.57	75.67	19.39	36
Nongifted in nongifted cluster	2,627	39.62	14.05	57.19	18.78	43
Grade 2 nonclustered	54	70.69	13.88	92.83	7.35	31
Grade 2 clustered	290	47.94	12.70	72.81	15.92	52
Grade 3 nonclustered	122	64.37	13.94	87.79	8.11	36
Grade 3 clustered	617	41.71	14.88	64.34	18.43	54
Grade 4 nonclustered	85	59.62	12.87	84.18	9.80	41
Grade 4 cluster	510	39.11	13.76	56.86	18.51	45
Grade 5 nonclustered	65	61.20	15.96	77.71	15.28	27
Grade 5 clustered	366	41.13	14.76	55.94	15.79	15
Grade 6 nonclustered	67	53.21	16.57	71.40	18.80	34
Grade 6 Clustered	329	37.18	13.03	50.69	17.19	36
Grade 7 nonclustered	73	40.85	13.96	51.19	14.28	25
Grade 7 clustered	212	37.03	11.76	47.57	13.14	28
Grade 8 nonclustered	69	41.45	14.22	58.45	18.50	41
Grade 8 clustered	303	30.85	8.99	43.41	12.79	41

[a]signifies a result, finding, or number from the previous study (Brulles et al., 2010) related to the gifted kids' outcomes.

Table 4. General ANCOVA Results for Nongifted Versus Gifted Cluster Students

Variable	Estimate	*df*	*SE*	*t* value	*p* value	η^2_p
Intercept	22.37	2	1.03	2,353.71	<.01	—
Pretest	0.95	1	0.02	21.76	<.01	0.60
Grouping	2.7	1	0.66	4.10	<.01	0.002

Note: ANCOVA = analysis of covariance.
[a]signifies a result, finding, or number from the previous study (Brulles et al., 2010) related to the gifted kids' outcomes.

The results from Table 3 show substantial pre- and posttest increases for every grade level. These consistent comparisons indicate that regardless of cluster placement, nongifted students still made progress in math. These differences were further tested using an ANCOVA to determine if the grouping variable (where the nongifted students were placed) accounted for any significant difference after pretest score was taken into account.

Table 4 presents the results of the general ANCOVA. The results indicate that while grouping was found to be a statistically significant predictor of posttest score

Table 5. Pre- and Postassessment Means and Standard Deviations by Grouping Based on Gender

		Preassessment		Postassessment		
	n	*M*	*SD*	*M*	*SD*	% Change
Gifted female in gifted cluster[a]	270	63.79	13.27	84.99	9.67	33
Nongifted female in gifted cluster	264	56.80	17.53	75.95	19.31	33
Nongifted female in nongifted cluster	1,320	40.43	14.22	58.02	18.59	45
Gifted male in gifted cluster[a]	284	62.55	13.74	84.59	9.96	35
Nongifted male in gifted cluster	271	55.82	17.62	75.40	19.51	34
Nongifted male in nongifted cluster	1,307	38.81	13.84	56.35	18.94	47

[a]signifies a result, finding, or number from the previous study (Brulles et al., 2010) related to the gifted kids' outcomes.

Table 6. Pre- and Postassessment Means and Standard Deviations Based on Ethnicity

		Preassessment		Postassessment		
	n	*M*	*SD*	*M*	*SD*	% Change
Gifted Caucasian[a]	173	63.94	14.67	85.15	9.98	33
NG Caucasian gifted cluster	144	60.78	16.64	81.49	14.88	33
NG Caucasian nongifted cluster	357	41.64	14.64	60.05	18.45	43
Gifted Hispanic[a]	300	61.98	12.87	84.02	9.82	36
NG Hispanic gifted cluster	328	53.67	17.48	72.29	20.59	33
NG Hispanic nongifted cluster	1969	39.55	13.88	57.15	18.69	33
Gifted African American[1]	32	64.06	12.17	86.06	9.11	34
NG African American gifted cluster	31	55.06	19.34	74.13	20.72	35
NG African American nongifted cluster	203	35.81	16.32	51.30	19.07	42
Gifted Asian[a]	40	69.30	11.37	87.48	9.41	26
NG Asian gifted cluster	25	68.56	9.90	88.56	9.41	29
NG Asian nongifted cluster	47	44.91	15.34	63.34	20.53	40
Gifted American Indian[a]	9	56.78	17.47	86.56	9.25	53
NG American Indian gifted cluster	7	49.29	19.97	75.00	24.12	53
NG American Indian nongifted cluster	51	38.84	13.66	56.41	16.31	44

Note: NG = Not identified as gifted.
[a]signifies a result, finding, or number from the previous study (Brulles et al., 2010) related to the gifted kids' outcomes.

even after accounting for pretest score, its effect size was essentially zero ($\eta_p^2 = .002$). This indicates that there were not substantial or practically significant differences between posttest scores for the two groups once pretest scores were taken into account. Essentially, growth was the same for nongifted students regardless of whether or not they were placed in gifted or nongifted clusters.

Table 7. Pre- and Postassessment Means and Standard Deviations by Grouping Based on ELL Status

		Preassessment		Postassessment		
	n	*M*	*SD*	*M*	*SD*	% Change
Gifted ELL in gifted cluster[a]	250	63.02	12.70	84.38	9.77	33
Nongifted ELL in gifted cluster	249	55.21	17.45	73.43	20.70	33
Nongifted ELL in nongifted cluster	1,504	39.39	14.06	57.21	19.20	46
Gifted non-ELL in gifted cluster[a]	304	63.26	14.18	85.12	9.85	35
Nongifted non-ELL in gifted cluster	286	57.26	17.64	77.62	17.99	37
Nongifted non-ELL in nongifted cluster	1,123	39.94	14.04	57.16	18.21	43

Note: ELL = English language learner.
[a]signifies a result, finding, or number from the previous study (Brulles et al, 2010) related to the gifted kids' outcomes.

Although not found as being significant predictors in previous research using the same data (Brulles et al., 2010), Tables 5-7 disaggregate the pre- and posttest scores by gender, race/ethnicity, and ELL status.

As was the case with grade-level comparisons in Table 3, every subgroup showed large posttest gains regardless of whether or not the students were served in the cluster classroom or the noncluster classroom.

Discussion

Relating Student Performance to the Research

By far the most important implication of this research, in combination with previous research (Brulles et al., 2010), is that nongifted students, whether placed in the gifted cluster classroom or in any other classroom under the gifted cluster grouping model (see Table 1), were not harmed by the implementation of the cluster grouping model and, in fact, made nearly identical progress regardless of the placement. The cluster grouping model as implemented in this particular setting also allowed for gifted students to show significantly higher posttest achievement gains as compared with gifted students who were not served in the cluster classroom (Brulles et al., 2010). These results are consistent with Kulik's work (2003) where gifted students showed gains from the cluster grouping model and nongifted students showed similar gains as they would have received without the model. Regardless of the model, all nongifted students gained in math achievement anywhere from 15% to 53% from pre- to posttest scores (although gains in the 30s were more common). Although these gains were no more significant for the nongifted cluster students as they were for the gifted cluster students, all made substantial learning progress and were not hindered by the implementation of the model.

Some educators have voiced concerns that by grouping students according to their ability/achievement levels, opportunities to develop relationships among students from other racial, ethnic, and socioeconomic groups are limited, and this has a negative effect on race relations (Burnett, 1995). This stance assumes that gifted cluster classrooms are filled with Caucasian, high-socioeconomic status (SES) students. However, in the school district discussed in this report, all students were from low-SES families and the majority of the students were Hispanic (78%). Although race relations were not examined in the study, teachers reported no anecdotal negative social impacts or outcomes of the grouping practices.

Research by Kulik in 1992 stated, “benefits are slight for programs that group children by ability if they prescribe the same curricular experiences for all ability groups” (p. 21). If ability grouping is to be successful for all groups, modification and adjustments to the curriculum based on the students’ ability levels should be considered as the basis of their learning. Use of benchmark assessments provides teachers with data that inform and guide instruction. In the present study, teachers used knowledge of student benchmark assessment scores to better differentiate instruction and meet the needs of their particular students.

In these times of accountability for all students, schoolwide cluster grouping models provide one method for positively influencing achievement for all groups of students. These models provide a structure that allows schools to focus on the learning needs of the gifted students and achievement gains for struggling learners without sacrificing the educational needs of any particular students. Cluster grouping is one method of transitioning traditional public education from a chronological age-based instructional design to a need-based instructional design that has far greater potential to educate all students. Without such methods, there will continue to be some students who receive the most of the finite amount of instructional time and focus, and there will continue to be those who are left behind.

Limitations

As with any action research that is based on a particular setting, the results from this study should not be considered widely generalizable. Instead, they should be taken as an example of what is possible given a certain intervention in a given location. This study utilized a single, highly diverse, and predominantly low-SES school district. The school district had an established, districtwide curriculum program, and systemic assessment and training procedures. Because of these factors, different results may be found in different locations. A significant limitation of this study is the benchmark assessment used. Although designed using methods consistent with psychometric test development procedures, it did contain a lower test ceiling than would have been ideal to measure the full range of some students’ abilities (each test was based on what was aligned to grade-level state standards). It is also important to note that this study did not address what actually went on in the classrooms. It is likely that cluster grouping as a structural model—simply placing students in carefully balanced homogeneous classrooms—does not help unless there is an accompanying change in the pedagogy and course content. In the district used in the present study, significant professional development was available for teachers to differentiate for the students who were clustered in their rooms. As such, it is important to note that this study looked at the model as a whole and did not parse out effects from improved teaching practices versus the structural changes to the classrooms. In addition, because the district identification program included teacher and parent recommendations for gifted testing nominations, it is likely that some gifted students went unidentified.

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Note

1. For purposes of this study, nongifted students are defined as those who have not been formally identified as gifted. Gifted students in this district are identified by scoring 95% or above on any one battery (Verbal, Quantitative, or Nonverbal) of the Cognitive Ability Test or the Naglieri Nonverbal Ability Test. Students were nominated for gifted testing based on classroom screenings conducted by the teacher or parent nomination. No blanket testing occurred.

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