

# SERVICE DELIVERY MODELS

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## INTRODUCTION

**A**s parents, teachers, administrators, and others work to ensure that the needs of each child are met in the classroom, those responsible for educating gifted children consider various service delivery models to better serve high-achieving students. Although some question the value of providing gifted services, studies have consistently demonstrated that gifted students who receive *any* level of services achieve at higher levels than their gifted peers who receive none (Adelson, McCoach, & Gavin, 2012; Delcourt, Loyd, Cornell, & Goldberg, 1994; Kulik, 2003; Reis & Renzulli, 2010; Steenbergen-Hu & Moon, 2011). The choice of a given service delivery model is often affected by a variety of considerations, including available faculty expertise, funding issues, political factors, scheduling concerns, and transportation problems, among others (Callahan & Moon, 2007; Lee, Olszewski-Kubilius, & Peternel, 2010; Neihart, 2007; Wood, Portman, Cigrand, & Colangelo, 2010). Substantial research has been conducted regarding the efficacy of various service delivery models, although uneven attention has been paid to some of the variables (e.g., training, student outcomes, cost). This chapter shall define various service delivery models, examine the research on these (with special attention paid to those findings that might assist with decisions regarding these approaches), and present practical ideas for their implementation.

## DEFINITIONS

The following categories of service delivery models are most frequently referenced in the literature: integrated classroom support, cluster grouping, pull-out programs, special classes for gifted students, and special schools.

*Integrated classroom support* refers to those gifted education services that are provided by the students' regular classroom teacher, with or without the assistance of a gifted education specialist. Integrated classroom support, also known as *within-class services*, has enjoyed a recent surge in popularity for a variety of reasons, including the goals of improving nongifted students' access to quality resources (Tomlinson et al., 2009), increasing the proportion of time during which gifted students receive services (Landrum, 2001), and achieving cost savings through reducing the number of specialized personnel needed to serve the gifted (VanTassel-Baska, 1992). Such goals make integrated classroom support an attractive option to many school leaders.

*Cluster grouping*, a specific refinement of the integrated classroom support or pure heterogeneous grouping model, refers to the program model where gifted students receive services grouped with other gifted students in a regular education classroom. In several studies cluster grouping has resulted in benefits for gifted students (Delcourt & Evans, 1994; Feldhusen & Moon, 1992; Kulik & Kulik, 1992; Miller & Gentry, 2012; Reis, Gentry, & Maxfield, 1998).

*Pull-out programs*, where students leave their regular classroom to work with a specialist trained in gifted education in a separate room, represent a common form of gifted education (Swiatek & Lupkowski-Shoplik, 2003). In a survey of more than 4,500 third through sixth graders scoring at or above the 95th percentile on standardized achievement tests, for example, 40% of these students received pull-out services, more than any other type of service (Swiatek & Lupkowski-Shoplik, 2003).

*Special classes* for gifted students has been used to refer to a wide variety of options, including pull-out groups or Saturday and summer programs. Usually, however, the term is used to describe classes that provide either enriched or accelerated curriculum for more able learners, such as honors, Advanced Placement (AP), or International Baccalaureate (IB) classes (Kulik, 2003). Special classes can refer to self-contained classrooms made up almost exclusively of gifted and talented students at the elementary level (Tsai & Shih, 1997); however, in practice they tend to be used mostly with middle and high school students (Adams-Byers, Whitsell, & Moon, 2004; Foust, Hertberg-Davis, & Callahan, 2009; Gentry & Owen, 2004).

The term *special schools* generally refers to public schools set up to focus on a specific disciplinary area such as math, science, technology, or the performing arts (although all subjects are taught; Borland, Schnur, & Wright, 2000; Sethna, Wickstrom, Boothe, & Stanley, 2001; Subotnik & Rickoff, 2010). Some of these schools may be residential. Other special schools have also been specifically established to meet the learning needs of the gifted in a wide range

of disciplines (Borland et al., 2000; Coleman, 2005; Subotnik, Olszewski-Kubilius, & Worrell, 2011).

## IDENTIFICATION OF THE MAJOR QUESTIONS ADDRESSED IN THE RESEARCH

Because each gifted service delivery model can deliver different results, decision makers should always keep their goals for their program in mind when reviewing studies. Common questions that emerge from both the practitioner and the research literature include:

- Do particular gifted program models have better-documented student outcomes than others?
- Are some gifted program models more effective with certain populations of students than others?
- Have some program models worked better with younger, or older, age groups than others?
- Is there a relationship between the models and identification of gifted students, and the effects of differing program and identification models?
- Do teachers and school leaders possess the skills to effectively serve gifted learners in the regular education classroom? Can they learn and implement those skills given the current pressures on the general education program?

## DEFENSIBLE CONCLUSIONS FROM THE EMPIRICAL RESEARCH

Although the motives of its proponents are compelling, integrated classroom support has a weak research base to support its use. Indeed, an extensive study concerning integrated classroom support found that all other levels of service (pull-out, special classes, or special schools) demonstrated higher academic achievement amongst gifted students (Delcourt et al., 1994). Those gifted students in pull-out programs, special classes, or special schools, "showed higher levels of achievement than students from within-class programs" (Delcourt et al., 1994, p. 4). Historically, many attempts to eliminate gifted education have later been reversed due to the failures of some teachers to adequately accommodate gifted students (McDaniel, 2002). Learning environments that neglect to offer an appropriate level of challenge have been cited

in self-reported surveys of gifted students and their teachers as a reason for low motivation (Gentry & Springer, 2002; Schroth & Helfer, 2009). Certain studies suggest that grouping students by readiness within a classroom helps all students, including the gifted, achieve greater success (Reis et al., 2007; Rogers, 2007).

In multiple studies of cluster grouping that used correlational analyses, within-class programs in elementary and middle schools resulted in increased achievement scores for gifted students, as well as the other students in the classroom (Kulik, 1992; Kulik, 2003). Cluster grouping may also have financial benefits, as it allows for increased services for gifted students without the additional cost of a gifted education specialist *if* all teachers are sufficiently trained and willing to work with groups of gifted students in their classrooms (Banfield, 2005; Gentry & Owen, 1999; Winebrenner & Devlin, 1998). Using cluster grouping seems to increase the number of students identified as gifted, which may indicate that some students thrive when higher ability peers are not in the classroom (Gentry & Owen, 1999; Schroth & Helfer, 2008).

Pull-out programs represent the most popular delivery model of services for high-achieving and talented students (Swiatek, 2005; Swiatek & Lupkowski-Shoplik, 2003). Although pull-out programs are often criticized as elitist and unnecessary, a meta-analysis conducted by Vaughan, Feldhusen, and Asher (1991) showed significantly greater gains for students enrolled in such programs in achievement and thinking skills than for their gifted peers who received no services (Feldhusen & Moon, 1992; Vaughan et al., 1991). Pull-out programs are also seen as a way of supporting gifted students' social and emotional needs, especially when those are not met in the general education classroom (Robinson, 2003; Silverman, 1997).

How pull-out programs affect gifted students' academic performance has been the focus of numerous studies (e. g., Kulik, 1992, 2003; Rogers, 1991, 2007). After examining many studies related to pull-out programs, for example, Rogers (1991) concluded that such grouping produced an academic *effect size*<sup>1</sup> of .65, which is reflected in general achievement, creativity, and critical thinking skills. Similarly, Kulik (1992) examined 25 studies that explored the use of enrichment pull-out programs for gifted and talented students. Gifted and talented students who enjoyed such pull-out sessions outperformed gifted and talented students who did not by ".41 standard deviations, equivalent to about four months on a grade-equivalent scale," as measured by standardized achievement tests (Kulik, 2003, p. 275). Pull-out sessions are also attractive to many insofar that they focus on enrichment rather than acceleration, allowing instruction that focuses upon depth and complexity. Other studies also have found that gifted and talented students learn better in less-structured environ-

1 Examining effect size is the preferred means for reporting research results (Paul & Plucker, 2004). Effect size was described by Cohen (1988) as small, medium, and large, with each category being approximately .20, .50, and .80 respectively. Large effect sizes, however, are generally not encountered in educational studies, where a .30 is considered substantial (Pedhazur & Schmelkin, 1991).

ments and prosper when indirect and unstructured teaching methods are used (Feldhusen & Moon, 1992; National Research Council, 2000).

Interacting with others with similar intellectual skills has been documented in case study reports as important for gifted and talented students' social and emotional development. In a qualitative study of 16 students enrolled in a pull-out program for the gifted and talented, students articulated dissatisfaction with the pace and depth of instruction in their regular classroom and welcomed the opportunity to work with cognitive peers, which reduced feelings of isolation and frustration (Peine, 2003). These feelings of isolation are especially sensitive and complex for gifted students who are members of ethnic or language minority groups (Hertberg-Davis, Callahan, & Kyburg, 2006; Kyburg, 2006), who may relish the intellectual compatibility, but have difficulty with racial isolation. Recent examinations of AP and IB programs, for example, suggested that "minority students in this study reported that they especially liked being in classes with intellectual peers," but they also "expressed an appreciation of having fellow minority students in their classes" (Kyburg, 2006, p. 127).

In one study of gifted students in special classes, they reported feeling less capable, more reluctant to work independently, and less willing to seek challenge than their peers in within-class or pull-out programs (Delcourt et al., 1994). Another study involving 24 gifted fourth- and fifth-grade students found that a self-contained class provided a challenging learning environment to all students, but that not all students responded positively to this challenge (Moon, Swift, & Schallenberger, 2004). Such mixed findings are perhaps predictable, because studying with cognitive peers would certainly increase the performance levels of the gifted children's peers and present new and unfamiliar challenge.

Special classes can, of course, focus on acceleration, enrichment, or both (Kulik, 2003). More than 23 studies have focused on accelerated classes where the entire class received moderate acceleration, meaning simply that they moved at a faster pace (Kulik, 2003). In all of the cases examined by Kulik (1992), gifted students in accelerated classes performed one full standard deviation better on achievement tests than their gifted peers who did not receive acceleration. This amounted to accelerated gifted students outperforming gifted nonaccelerated students by a full year's progress on a grade-equivalent scale (Kulik, 1992). Similar results were found in a more recent meta-analysis by Steenbergen-Hu and Moon (2011). Indeed, with gifted students removed from the mix, *all* classes are able to provide instruction better linked to students' zones of proximal development (Kulik, 1992, 2003; Steenbergen-Hu & Moon, 2011). Rather than impede those students who are not in special classes, such offerings improve the instruction provided to all students.

Many recent studies examining these schools have often been qualitative in nature, with an emphasis on how interacting with other gifted children on a daily basis changes students' experiences and motivation. As measured by achievement tests, gifted students enrolled in special schools outperform

all of their gifted peers in other learning environments except those students enrolled in special classes, who perform equally well (Delcourt et al., 1994; Hong & Hong, 2009; Kulik, 2003). In terms of achievement, a major study of special schools found that gifted children attending special schools for gifted students performed better than gifted peers not in special schools (Delcourt et al., 1994). Other studies, conducted in a variety of settings, also illustrate that gifted students enrolled in special or magnet schools frequently perform at a high level of achievement or have increased educational opportunities (see e.g., Clark & Zimmerman, 2001, 2002; Sullivan & Rebhorn, 2002). Some of these studies are limited, however, in not using control groups that could provide stronger experimental evidence of the effects of enrollment at the special school and a high level of performance.

Gifted students enrolled in special schools reported experiencing greater levels of challenge than gifted students in other settings (Gentry, Rizza, & Owen, 2002). Students from both the elementary and middle school level were asked to report their perceptions of the level of challenge required by their classroom activities (Gentry et al., 2002). Although elementary students did not report a significant difference in the level of challenge received between regular and special or magnet schools, middle school students at special or magnet schools reported significantly more challenge than did their peers enrolled in regular middle schools (Gentry et al., 2002). Such findings are limited, of course, by the nature of self-reported data and the risk that students have heard parents, administrators, or teachers refer to their schools' "high level of challenge." Despite this, the qualitative studies provide descriptive evidence of the types of experiences that can happen as a result of a special school.

Coleman (2005), for example, spent a year at a state-sponsored residential school for students gifted in math, science, and technology conducting ethnographic research relating to the students' experiences at the school. Coleman determined that academic rigor and diversity available only in a special environment changed students' lives in positive ways, specifically finding that gifted students enrolled at the special school were better able to meet and tackle new ideas. Coleman also concluded that openness and acceptance were related to academic rigor and diversity, and were significant due to the novelty of rigor and diversity for most of the special school's students. The unyielding demands of homework and studying caused students at the school to adjust to their outlooks and work patterns. Special schools *can* result in environments where test scores and achievement are valued above other accomplishments (see Humes, 2003). When a general education setting has proven inadequate for certain gifted students' learning needs, however, special schools seem a valid and appropriate option.

## COMMON CONCLUSIONS THAT ARE NOT DEFENSIBLE

Many assert that abolishing gifted programming will have a positive effect on the education of other students (see Oakes, 1985; Sapon-Shevin, 1994, 1996). There is no evidence for this assertion. Similarly, school leaders considering integrated classroom support instead of other service delivery models should be aware that little research supports this position. Indeed, the call for heterogeneous grouping as an anecdote to inequities, for example, is based on ethnographic studies rather than experimental studies (Oakes, 1985; Sapon-Shevin, 1994, 1996). Curricular and instructional differences that are observed in those reports that are critical of other grouping arrangements, may, furthermore, "represent appropriate responses to the different educational and emotional needs of different school children" (Kulik, 2003, p. 277). Certain case studies and evaluations have shown individual schools where in-class services were effective, but these schools used out-of-the-classroom collaborative resource teachers who worked with regular classroom teachers to craft instruction for gifted students (Kane & Henning, 2004; Landrum, 2001; Reis et al., 2007).

Contrary to certain assertions, many gifted children do not enjoy being in heterogeneous groups. Robinson (1990, 1991, 2003) noted some negative effects of heterogeneous grouping options in her observations that gifted students grow tired of the expectations that they must "carry" other students assigned to their groups and engage in coping mechanisms to avoid this. Specifically, studies have demonstrated that gifted students respond to the *sucker effect*, or the understanding that they are carrying a greater share of the group's work, by reducing their own efforts for subsequent projects (Robinson, 2003).

The notion of cluster grouping offends some teachers, who insist that nongifted students need to work with gifted students so they will have a "model" for their own work and behaviors (Schunk, 1987; VanTassel-Baska, 1992). Such beliefs have been reinforced by supporters of heterogeneous grouping, such as Slavin (1987), who hypothesized a "Robin Hood" effect for low-ability students working with more-able peers, where the gifted students serve others less fortunate in the learning process. This belief, although passionately held, has not been documented—low-ability students do *not* model their behavior or learning on the behaviors or learning strategies of gifted students (Schunk, 1987). Indeed, nongifted students also show positive benefits from cluster grouping, perhaps because such grouping also allows them to work at *their* instructional level (Kulik, 1992, 2003; Rogers, 1991). Teacher attitudes can result in cluster grouping failing to serve gifted students adequately even when official policy favors grouping the gifted together (Blanksby, 1999; Miller, Latz, Jenkins, & Adams, 2012). At one school where cluster grouping was studied, its effectiveness was enhanced when increased planning time and profes-

Levels of Administrative Support Required				
Identification (Low) In-Depth Exploration (Moderate) Professional Development (High) Teacher Buy-In (Moderate)	Identification (Moderate) In-Depth Exploration (Moderate) Professional Development (Moderate) Teacher Buy-In (Moderate)	Identification (Moderate) In-Depth Exploration (High) Professional Development (Low) Teacher Buy-In (Low)	Identification (High) In-Depth Exploration (High) Professional Development (Low) Teacher Buy-In (Low)	Identification (High) In-Depth Exploration (High) Professional Development (Low) Teacher Buy-In (Low)
Integrated Classroom Support	Cluster Grouping	Pull-Out Programs	Special Classes	Special Schools

**Figure 43.1.** The relationship between the service delivery models. This figure illustrates common supports needed for effective service delivery models and the level of administrative support each common support needs.

sional development were provided to the classroom teachers responsible for its implementation (Blanksby, 1999).

Popular belief relates that pull-out programs make students enrolled feel "odd" and out of place with classmates (Davis, Rimm, & Siegle, 2010). When Cohen, Duncan, and Cohen (1994) examined 53 gifted students, however, their findings indicated positive affective results for students enrolled in pull-out programs. The gifted students enrolled in pull-out programs were, relative to classmates, evaluated positively by peers, more aware of the demands of friendship, and perceived less often as victims or aggressors by classmates (Cohen et al., 1994). Similar studies have also indicated better family- and home-school relationships resulted for those students enrolled in gifted pull-out programs (Moon, 1995; Moon, Feldhusen, & Dillon, 1994). The self-concept of gifted students, however, is affected when they are placed in situations where they work with their cognitive peers—those gifted students who regularly work with other gifted students have lower self-concept than those who spend their time in a regular classroom (Marsh, Chessor, Craven, & Roche, 1995; Marsh, Plucker, & Stocking, 1991; Plucker, Taylor, Callahan, & Tomchin, 1997). Such a reaction is not necessarily a bad thing, and indeed can improve gifted students' work ethic (Marsh et al., 1995; Plucker & Stocking, 2001).

Special classes are unpopular with critics of gifted education and many practitioners (Oakes, 1985; Sapon-Shevin, 1996; Schroth & Helfer, 2009). The literature on special classes presents evidence of both positive academic and social and emotional benefits for gifted students and also raises questions about



the impacts of such programs (Adams-Byers et al., 2004; Gentry & Owen, 2004). Special classes for gifted students permit general education classes to focus upon the needs of students enrolled in those classes, thus permitting achievement levels of all students to increase (Slavin, 1987, 1990).

## PRACTICAL IMPLICATIONS

Providing integrated classroom support demands teachers skilled at working with gifted students in *every* classroom. Callahan (2001) suggested that provision of high-quality education to gifted learners in the regular classroom demands: (a) serious commitment of time, energy, and funds; (b) teacher expertise in, and in-depth understanding of, the discipline content, processes, and products; (c) administrative commitment; and (d) a focus on the needs of all gifted students. Very little research documents the existence of these abilities across the teacher population, and some research indicates that teachers lack the skill and/or the will to provide such services (Moon, Tomlinson, & Callahan, 1995).

Implementing cluster grouping at a school involves going through a three-step process (Gentry, 1999; Gentry & Owen, 1999). Guidelines that have evolved from the study of cluster grouping include:

1. school administrators place 3–10 students identified as gifted, high-achieving, or high-ability in a single classroom;
2. the classroom teacher and students must accept that the grouping has been made so that differentiation may occur; and
3. teachers who serve high-ability clusters should demonstrate the background, training, experience, and expertise to work with gifted students (Gentry & Owen, 1999; Winebrenner & Devlin, 1998).

Each step in the process must be in place for cluster grouping to be effective (Gentry, 1999; Gentry & Keilty, 2004; VanTassel-Baska, 1992).

Pull-out groups may reduce the negative impact of heterogeneous grouping that Robinson (1990, 2003) noted, at least for that time gifted students are working with their cognitive peers and forced to produce more due to increased group standards for performance and/or competition. Those making decisions that involve removing minority students from their regular classroom setting for pull-out services or special classes or schools should consider, and plan for, the dual social pressures these students sometimes encounter.

Differing levels of available resources and expertise affect the levels of service a teacher, school, or school district is able to provide. As indicated in Figure 43.1, some common elements exist across the various service delivery models, although the levels of expertise and commitment required of each var-

ies. School leaders contemplating which model to adopt might be well-served in reflecting upon the resources they have available.

## MAJOR RESOURCES AND REFERENCES

In addition to the studies cited as references for this chapter, the following are useful resources for those interested in service delivery models:

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