

Gifted Child Quarterly

<http://gcq.sagepub.com/>

An Evaluation of the Catalyst Program: Consultation and Collaboration in Gifted Education

Mary S. Landrum

Gifted Child Quarterly 2001 45: 139

DOI: 10.1177/001698620104500207

The online version of this article can be found at:

<http://gcq.sagepub.com/content/45/2/139>

Published by:



<http://www.sagepublications.com>

On behalf of:



National Association for Gifted Children

Additional services and information for *Gifted Child Quarterly* can be found at:

Email Alerts: <http://gcq.sagepub.com/cgi/alerts>

Subscriptions: <http://gcq.sagepub.com/subscriptions>

Reprints: <http://www.sagepub.com/journalsReprints.nav>

Permissions: <http://www.sagepub.com/journalsPermissions.nav>

Citations: <http://gcq.sagepub.com/content/45/2/139.refs.html>

>> [Version of Record](#) - Apr 1, 2001

[What is This?](#)

An Evaluation of the Catalyst Program: Consultation and Collaboration in Gifted Education

Mary S. Landrum
University of Virginia

ABSTRACT

A recent evaluation of the Catalyst Program, a resource consultation and collaboration program in gifted education, was conducted in order to investigate the effects of student academic performance and teacher competencies, as well as the effectiveness of the consulting process applied to gifted education. In a two-year pilot program, general educators and gifted education specialists at 10 elementary schools in a large, urban school district consulted and collaborated with one another to provide differentiated educational experiences to gifted learners. Results indicate that the model was an effective service delivery strategy for providing differentiated education to gifted learners, had positive spill-over effects for the entire school, led to a redefined role of the gifted education specialist, and initiated an articulation of the nature of the consulting process when applied to gifted education.

There are inherent limitations to traditional gifted education service delivery strategies. For example, pull-out programs tend to operate separately from the regular education programs and serve students on a limited basis. In addition, segregation of gifted services can contribute to perceptions of elitism. Further, the pull-out program only serves the unique needs of gifted learners sometimes. In the pull-out approach, gifted learners often leave the classroom at rigidly scheduled times, rather than on an as-needed basis. These and other shortcomings of pull-out programs have led to the need for the development of unique service delivery models in gifted education.

As gifted programming changes, the gifted education specialist has new roles and responsibilities. This call for a changing role of the gifted education specialist is well documented throughout the literature (Dettmer, 1993; Hertzog, 1998; Renzulli & Purcell, 1995; Schack, 1996; VanTassel-Baska, 1992). Dettmer called for gifted program teachers to work in new ways. Renzulli and Purcell described expanded roles for the gifted education teacher. Specifically, gifted education teachers need to collaborate with classroom teach-

ers and coordinate curriculum efforts (Hertzog; Schack). Gifted education programming must begin to move away from a separate and segregated role to become integrated with the total school program. One service delivery strategy

PUTTING THE RESEARCH TO USE

The study of resource consultation and collaboration as a service delivery model in gifted education has several important implications for best practice in educational programming. First, there are implications for using this approach as a viable service delivery model in gifted education. Second, results have implications for the integration of gifted education for every service delivery approach. Third, implications for including under-represented populations who are seldom formally identified as gifted learners is highlighted in the study findings. Finally, the descriptive data contained in this study provide a compilation of best practices, as well as limitations to using the consultative and collaborative approach to gifted education programming.

The viability of the resource consultation and collaborative model called the Catalyst Program lies in the findings of the study. Enhanced student academic performance, enhanced teacher competencies, and the inclusion of gifted and nongifted students exhibiting gifted behavior provide insight into the effectiveness of the model. The potential for other positive spill-over effects to the total school program further illustrates the viability of this approach for the good of quality education for all students.

Finally, this study outlines the frequency of practices most used to support consultation and collaboration among educators. For example, the practices of coplanning, coteaching, and cluster grouping are illustrated in the data collected in monthly reports and site visitations. The limitations of these practices are highlighted by the non-negotiables that evolved out of data analysis.

that may bridge these programs is resource consultation and collaboration.

Research has shown that general educators want more access to consultant assistance from gifted education specialists and more training and assistance in locating and using appropriate educational materials (Renzulli & Reis, 1994; Tomlinson, Coleman, Allan, Udall, & Landrum, 1996). "If classroom teachers are encouraged to participate actively in the gifted program, they may eventually come to regard efforts to meet the special needs of advanced students as shared responsibility" (Reis, 1983, p. 21). This type of ownership for the gifted program can lead to all educators becoming facilitators to appropriate educational opportunities for all gifted students. It also can result in a greater frequency of services for gifted learners. Further, gifted learners can benefit from having differentiation that extends and enhances the regular curriculum experience because the general educator is participating in the process (Landrum, 1994).

Archambault et al. (1993) suggested that, as gifted education specialists redefine their role from direct services to include more support for classroom teachers, more discussion of the results of these efforts is necessary. Therefore, continued research on the application of resource consultation in gifted education is warranted (see Armstrong, Kirschenbaum, & Landrum, 1999). Hence, a collaborative approach to serving gifted learners, named the Catalyst Program by the school district, was evaluated. In this programming model (see Ward & Landrum, 1994), the gifted education resource role was redefined so that teachers could act as a spark to ignite advocacy and service for gifted learners among general education colleagues (Reid, 1997).

As reported by Armstrong, Kirschenbaum, and Landrum (1999), research in consultation and collaboration in general has been conducted in order to study the effectiveness of models for enhancing student behavior, teacher competencies, and the consultative process (Dettmer, Thurston, & Dyck, 1993). More research is needed in order to duplicate the results of studies from outside the field of gifted education to include all aspects of the consultation process and to replicate initial research conducted on a limited basis in gifted education (Landrum, 1994).

This study was designed to contribute a needed evaluation of resource consultation and collaboration programming in gifted education. The study was directed toward addressing three questions: (1) Will resource consultation enhance student academic performance for gifted learners and their same-age peers? (2) Does resource consultation improve teacher competencies? (3) How effective is the resource consultation process when applied to gifted education?

Methodology

Participating Sample and Setting

Site. The 10 participating schools were located in the same large, urban school district near a metropolitan area that serves a racially and socioeconomically mixed student population. The school district is the largest in a southeastern state; it has approximately 70 elementary (K–6) school buildings serving 39,000 students, with approximately 17% formally identified as gifted learners. The district was using a pull-out service delivery model that met once a week as a primary service delivery for elementary students in most buildings, although some gifted learners were served at one of four magnet school buildings.

The researcher, a university faculty member serving as consultant to the district, planned the evaluation project. This included developing the resource consultation model implemented within the district, providing pilot schools with staff development through an initial workshop and follow-up site visits, and collecting field notes during site visits. Local gifted education specialists who participated in the pilot project collected student performance data and prepared the monthly consultation activity reports. Other evaluation data were collected by research assistants.

Staff. Participating staff included 6 gifted education teachers assigned to single buildings, 2 itinerant gifted education teachers assigned to two or three school buildings, and 23 general education teachers in grades 2–6 with cluster groups of gifted learners in their classrooms. Each of the 10 elementary schools participating in the pilot project was volunteered by its building administrator.

Students. Thirty-nine gifted students in grades 3–6 who attended one of the 10 pilot project schools were involved in the Catalyst Project. They had been identified as gifted by extremely high scores on standardized group intelligence tests and achievement tests as outlined by state department regulations, or by a problem-solving assessment process based on Gardner's multiple intelligences theory that was conducted each year for all second-grade students. They were matched for age, gender, and socioeconomic status with 53 nongifted students from the same classrooms.

Evaluation Design

School personnel consulted with the researcher to develop a model of resource consultation for gifted learners in their elementary school buildings. The pilot was conducted before deciding where to invest resources in district-wide implementation of the resource consultation or Catalyst model. It was

determined that only 10 schools would participate in a pilot of such efforts over a two-year period in order to allow for full implementation of a model in each school building. Further, program outcomes would be assessed in three areas against outcomes demonstrated by resource consultation programs outside the field of gifted education: changes in student behavior, teacher competencies, and effectiveness of the consultation process. Although the evaluation of the pilot project was commissioned for the project, it has important implications for our field that warrant dissemination to a wider audience.

Procedures

The gifted education teacher, general education classroom teachers, administrators, and support personnel (e.g., counselors, media specialists) from each of the pilot schools participated in one-day workshops on collaboration and consultation held at the opening of the school year. Training content consisted of the processes of consultation and collaboration, the model for resource consultation implementation, roles and responsibilities of staff, and collaborative and consultative differentiation of curriculum and instruction. Several follow-up training sessions were conducted throughout the year for each participating school's staff, including district-wide sharing sessions among classroom teachers, monthly after-school staff meetings for gifted education specialists, and building-level in-services on best practices for differentiation.

Training was followed by two years of implementation of a consultation and collaboration model in gifted education. The specific resource consultation model implemented in this evaluation was developed by Curtis, Curtis, and Graden (1988) and adapted for gifted education by Ward and Landrum (1994). According to the Ward and Landrum model, consultation for student-related problems can occur at different levels. This model allows for filtering cases through each level of the hierarchy. At level one, teachers seek to collaborate with other teachers on an unstructured, informal basis. Classroom teachers seek assistance from specialized gifted education personnel at level two of the model. Level three represents team intervention with several staff members affected by decision making.

Data Collection

Data collection included student academic performance on a standardized test of cognitive processes conducted in the first two months of year one and in the month of May during year two, general education classroom teacher observations using an established protocol, and monthly consultation activity reports collected by gifted education specialists and developed by the researcher. In addition, field notes consisting of a

priori categories were consistently recorded by the researcher during all site visits to the pilot schools across two years.

Enhanced student academic performance for gifted learners and their same-age peers. Student achievement was assessed using the Ross Test for Higher Cognitive Processes (Ross & Ross, 1976) because most goals of differentiated educational opportunities in gifted education include improved higher order thinking. This test provides normative scoring data for both gifted learners alone (IQ of at least 125 on a standardized intelligence test) and gifted and nongifted student populations combined from regular classrooms in grades 4–6. Gifted and nongifted students were tested at the beginning of the first year of the pilot project and at the end of the second year of the pilot (except for one school that was added in year two).

Improved teacher competencies. Evidence of specific instructional practices supportive of gifted learners that had been implemented by teachers were collected in pre- and postassessments during the first and second years respectively in independent classroom observations of at least 45 minutes. Three independent raters used the Classroom Practices Record (CPR; Westberg, Dobyms, & Archambault, 1993) to conduct these assessments. The CPR was used to document the differentiated instruction that gifted and talented students received through classroom activities, instructional materials, and verbal interactions. The instrument contains six sections: identification information, physical environment inventory, curricular activities, verbal interactions, teacher interview record, and daily summary. It has an inter-rater reliability of .85.

The effectiveness of the consulting process applied to gifted education. Issues important to understanding the resource consultation process in gifted education included (a) the role of the gifted education specialist and (b) the time-efficiency and cost-effectiveness of these efforts.

The nature of the roles was indicated by teachers' acknowledgement of the frequency and type of activity in which they were engaged. The nature of the role expansion of the gifted education specialist was assessed by examining descriptive statistics on the data collected on monthly staff activity reports of the specialists' direct and indirect service delivery of differentiated instructional practices for gifted learners. An increase of indirect services indicates a redefinition of the traditional role of direct service for the gifted education specialist. All gifted education specialists were instructed to move from their traditionally totally direct service delivery approach to indirect service delivery as much as possible and to preserve direct services for those activities not deemed appropriate for indirect service delivery. No specified percentages of time in either direct or indirect service delivery mode was specified by the consultant, nor were expectations set by the school district on this issue.

Table 1

Mean Group Scores for Higher Cognitive Processes for Gifted ($n = 39$) and Nongifted Learners ($n = 53$)

| Subtest | Gifted Students | | | | | Nongifted Students | | | | |
|-------------------------|-----------------|-----------|----------|-----------|----------|--------------------|-----------|----------|-----------|----------|
| | Pretest | | Posttest | | <i>t</i> | Pretest | | Posttest | | <i>t</i> |
| | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | |
| Abstract Relations | 80.17 | (29.48) | 88.17 | (26.25) | | 95.80 | (10.16) | 99.00 | (15.53) | |
| Analogy | 98.46 | (23.19) | 102.85 | (15.69) | | 108.72 | (14.60) | 120.18 | (14.70) | |
| Analysis Subtest | 90.69 | (26.78) | 100.90 | (18.12) | | 106.00 | (9.99) | 111.33 | (12.24) | |
| Analysis of Attributes | 94.81 | (15.14) | 99.04 | (17.30) | | 105.46 | (14.89) | 108.03 | (16.87) | |
| Deductive Reasoning | 90.12 | (19.47) | 95.94 | (15.38) | | 106.72 | (12.03) | 107.59 | (15.31) | |
| Evaluation Subtest | 97.33 | (16.69) | 102.00 | (11.71) | | 110.03 | (9.96) | 112.49 | (10.65) | |
| Analysis of Information | 99.06 | (18.44) | 104.39 | (13.50) | | 107.90 | (14.85) | 109.64 | (16.78) | |
| Missing Premises | 87.93 | (25.45) | 101.74 | (17.59) | | 101.44 | (11.98) | 106.69 | (16.09) | |
| Questioning Strategies | 105.33 | (13.42) | 106.38 | (14.27) | | 112.51 | (12.25) | 118.03 | (9.18) | |
| Sequential Synthesis | 98.14 | (18.69) | 107.50 | (20.39) | | 105.74 | (15.68) | 105.10 | (19.45) | |
| Synthesis Subtest | 85.29 | (23.48) | 97.40 | (18.28) | | 102.21 | (9.72) | 105.00 | (12.91) | |
| Total Score | 88.88 | (24.16) | 102.10 | (15.46) | 3.80* | 103.71 | (11.76) | 113.00 | (13.39) | 2.03** |

Note. Separate normative samples are used for the standardization of the scores for gifted and nongifted students.

* $p < .001$, ** $p < .05$

The effectiveness and efficiency of resource consultation and collaboration were assessed by collecting frequency data on monthly activity reports (a maximum of nine for each school per year) by the gifted education specialist. Specifically, the report recorded the frequency and duration of consultation and collaboration activities such as team teaching and shared planning, the target audiences for service delivery, and the use of resources in consultation and collaboration activities. The frequencies of services delivered were recorded on these reports as well, along with other related activities.

Data extracted from monthly reports denoted the frequency and duration of collaborative activities. Specifically, the reports recorded the frequency of consultation activities, including lesson development and implementation, materials development and organization, and the nature of conferencing. The number and nature of student audiences and teachers involved in lessons were also recorded on the monthly reports. Anecdotal data from the field notes collected by the project consultant upon site visits to pilot schools enhanced the descriptive data.

Data Analysis

In order to investigate differences among scores on student academic performance for the treatment and control groups, paired independent t-tests were performed on mean pre- and posttest total scores for the Ross Test of Critical Thinking (Ross & Ross, 1976). Descriptive summaries of pre- and postassessments of independent observations of classroom environments were prepared for a random sample of classroom teachers using the Classroom Practices Record (Westberg, Dobyms, & Archambault, 1993). In order to determine the nature of the consulting process in the context of gifted education, descriptive statistics of the frequency and duration of consultative activities were compiled on separate items in teachers' monthly reports, including collaborative teaching, planning sessions, types of materials used, and so forth. Descriptive statistics on demographic data such as number of students served and the composition of student groups during lessons were also recorded on monthly reports. Anecdotal information from on-site visitations was gleaned from field notes. A priori categories

of trends among consultative lessons emerged over initial sets of field notes and were consistently used to guide the content of field notes throughout the two years.

Results

Results were analyzed in three areas: enhanced student academic performance, improved teacher competencies, and understanding of the nature of the consulting process in gifted education.

Enhanced Student Academic Performance

Student academic performance was measured by assessing higher order cognitive thinking using the Ross Test of Higher Cognitive Processes in pre- and posttests (Ross & Ross, 1976). The test was given to identify gifted students and nongifted students in target classrooms. The independent ratings of student higher cognitive processing resulted in significantly increased mean composite or total scores for both gifted (from $M = 88.88$ to $M = 102.10$; $t = 3.80$, $p < .001$) and participating nongifted (from $M = 103.71$ to $M = 113.00$; $t = 2.03$, $p < .05$) students from pre- to postassessments (see Table 1). Note that means for gifted and nongifted students on this instrument are standardized differently, using two different comparative samples. The gifted education sample includes students with intelligence scores of 125 or higher, while the nongifted sample includes students with scores of 124 or lower. The scores for each sample are relative to different expectations for the same number correct in the standardization of the group and, therefore, cannot be compared directly with one another.

It is noteworthy here that each group score was significantly higher in the postassessment, and that the increase for the gifted group was greater than the gains made by the nongifted group. This is evidence of enhanced academic performance for all students, with slightly more benefit to gifted learners.

Although the frequency of differentiated lessons and the number of participating students engaged in them is no guarantee of successful academic performance, it does open the possibility for enhanced academic rigor for all participating students. According to the monthly reports of consultation activity at 10 schools, teachers implemented an average of 195 differentiated lessons to students in year one and 233 such lessons in year two (see Table 2). In the traditional pull-out program that existed in the school district, identified students participated in differentiated lessons no more than once or twice a week for an average of two hours, or considerably fewer lessons than students are provided through consultation. Monthly records also included data indicating that approxi-

Table 2

Frequency of Differentiated Lessons Taught by Type (Year 1 N = 63, Year 2 N = 81)

| Type of Differentiated Lesson | Year 1 | | Year 2 | |
|--------------------------------|---------------|--------|---------------|--------|
| | Frequency (%) | | Frequency (%) | |
| Original lesson | 44 | (23%) | 47 | (20%) |
| Collaboration lessons | 38 | (19%) | 47 | (20%) |
| Demonstration lessons | 31 | (16%) | 32 | (14%) |
| Pull-out lessons | 46 | (24%) | 49 | (21%) |
| Regular classroom observations | 13 | (6%) | 20 | (9%) |
| Team-taught lessons | 23 | (12%) | 38 | (16%) |
| Total | 195 | (100%) | 233 | (100%) |

Note. Frequencies represent times noted on monthly reports. During year two, several schools lost their sixth-grade classes to the middle school, thus decreasing the total student population that might have been served.

Table 3

Frequency of Gifted and Nongifted Students Served by Resource Consultation and Collaboration (Year 1 N = 63, Year 2 N = 81)

| Size of Student Group Served | Gifted | | Nongifted | |
|------------------------------|------------------|------------------|------------------|------------------|
| | Year 1 Frequency | Year 2 Frequency | Year 1 Frequency | Year 2 Frequency |
| 1-5 | 15 | 5 | 14 | 6 |
| 6-10 | 18 | 6 | 16 | 5 |
| 11-15 | 15 | 11 | 5 | 6 |
| 16-20 | 3 | 2 | 5 | 5 |
| 21-24 | 0 | 8 | 3 | 1 |
| 25+ | 27 | 26 | 23 | 28 |
| Other | 11 | 11 | 7 | 12 |

Note. Frequencies represent times noted on monthly reports. During year two, several schools lost their sixth-grade classes to the middle school, thus decreasing the total student population that might have been served.

mately 1,215 identified gifted learners were provided differentiated instruction through consulting efforts during the first year of the pilot project, while 1,132 gifted learners were served in year two. During the first year of the pilot project, approximately 1,032 nongifted learners participated in differentiated lessons, while 994 similar students participated in year two (see Table 3). This decrease in students served was most likely due to the move of the sixth graders from the elementary schools to the middle schools between years one and two. Customarily, gifted education programs do not include nongifted learners; however, in the consulting model, nongifted students participated in differentiated lessons when they demonstrated educational needs similar to that of gifted learners. Thus, nongifted learners had educational opportunities from which they might otherwise have been excluded if those services were not provided via consultation and collaboration with general educators.

The field notes from site visits elaborate on the nature of instructional materials used during differentiated lessons. This may indicate something positive about the quality of the academic experiences of the students, which might lead to enhanced academic performance. In particular, the advanced, complex, and sophisticated nature of differentiated experiences create differentiated learning experiences. For example, the specialist provided guest speakers, research materials, novels to replace basal readers, and laboratory equipment to general education classroom teachers. These materials came from classrooms at advanced levels, libraries, community resources, or gifted education sources. They provided classroom teachers with the appropriate curricular and instructional tools to provide differentiated learning experiences to high-ability learners.

Field notes of the project consultant also included additional indicators about the opportunity for enhanced student academic performance for gifted and nongifted learners who participated in differentiated lessons. Provisions for gifted learners included monitored continuous progress through the provision of grades for most differentiated lessons, the development of appropriate rubrics for student performance evaluation, and the practice of the preassessment of students prior to placement in instructional activities. Further, differentiated lessons included multiple instructors who brought together different expertise in designing and implementing lessons to challenge students academically.

Improved Teacher Competencies

The Classroom Practices Record (Westberg, Dobyns, & Archambault, 1993), pre- and postassessment of teacher behavior, was used to assess changes in teachers' competencies in differentiating instructional practices for gifted learners. Initial

classroom observations ($N = 7$) indicated that teachers most frequently lectured and explained information (23%) and assigned written work (23%) to students during classroom lessons, thus indicating poor competency overall for appropriately differentiating instruction (see Table 4). This is particularly problematic given that about half of the classrooms (48%) were heterogeneous, which implies that students in the same classroom participated in whole-group instruction in spite of extreme variances in ability present in the same classroom. Most of the verbal interactions that took place among students and teachers involved responding to teachers' questions (31%), explaining and making statements (26%), and making requests or commands while requiring students' use of higher order thinking infrequently (11%). No differentiation occurred in 57% of the preassessment lessons.

The postassessment classroom observations ($N = 17$) pointed to more frequently differentiated instructional practices, demonstrating an improvement in teacher competencies during the lessons observed (see Table 4). Although the most prevalent curricular activity remained explanation and lecture (23%), many more varied curricular activities, including those that differentiate instruction, were noted. Observers noted an increase in the use of independent study (18%) and a variety of other differentiation strategies (12%). Student grouping for instruction was largely whole group (60%), while the composition of the group was almost always (84%) homogeneous, typically high-level learners. It is important to note that individualization (16%) was evident in some lessons, even among homogeneous classrooms. Some small- (14%) and large-group (10%) lessons were also evident. There were subtle changes in classroom verbal interactions. For example, there was an increase in questioning (34%) and wait time following (26%) all questions. Some differentiation was seen in modifications of lesson content (32%), process (22%), and product (16%). Although this might seem like a decrease from preassessments at first sight, remember there were larger numbers of differentiated lessons observed during the second assessment. Finally, and perhaps most importantly, there was a substantial decrease in lessons without differentiation (6%) during postassessments.

The Classroom Practices Record includes an interview protocol for teachers to be used following a classroom observation. Teachers respond to questions about the nature of curricular and instructional differentiation, as well as decision making regarding student grouping. Interviews indicated that three of the seven teachers in the initial observations indicated no intent for curricular and instructional differentiation in the lesson. The other four classroom teachers indicated using advanced student novels, group discussion, questioning, problem solving, and allowing students to work at their own pace as a means of differentiation. Teachers reported instructional

grouping as whole group in heterogeneous classrooms with gifted learners as a cluster group in the classroom. Finally, teachers indicated that they determined student grouping by level of mastery and test scores.

During the postassessment interviews, responses indicated frequent and varied differentiation of curriculum and instruction, as well as varied practices for grouping students. In addition to those differentiation strategies employed in preassessments, teachers indicated that they use the following differentiation practices: varying entry/exit points for mastery learning, student choice of work product, learning stations, contracts, advanced content, individualized student assignments, higher order thinking skills, field experiences, same-ability peer interactions, coteaching, and differentiated student work product rubrics. Similarly, teachers named a greater number and variety of reasons used to make instructional grouping decisions. When asked what specific grouping formats they used, teachers indicated that they used any number of the following: self-contained homogeneous, multiage teams and cluster grouping. Although some student grouping was still determined by performance on tests, teachers also indicated using preassessments, portfolios, and curriculum-based assessments.

The field notes of the project consultant included observations that recognize the shared responsibility for the education of gifted learners among gifted education specialists and members of school staffs. This shared responsibility represents new teacher competencies for all participating staff. The classroom teacher participated in planning differentiated lessons, while the gifted education specialist conducted on-going student assessments of differentiated work products. For both groups of teachers, this signifies new teacher behaviors or competencies. Other examples of shared responsibility included determining student grouping for instruction, the preparation and delivery of differentiated lessons, and regularly scheduled coplanning.

The Effectiveness of The Consulting Process

Time efficiency is illustrated by the distribution of time expended by the gifted education teacher (see Table 5). The efficiency of time is related to the amount of differentiation that can be provided to as many students as possible. In this case, it means how much indirect or collaborative service can be implemented, given that indirect services employ the expertise of several persons and are provided to students whenever needed through the regular classroom. During the two years of the pilot, the specialists spent 67% and 64% of the time respectively in each year of the pilot involved in indirect activity and only 33% and 36% in direct service delivery. *Indirect service delivery*

Table 4

Pre- and Postobservations of General Education Classroom Instructional Practices Using the Classroom Practices Record (Year 1 N = 7, Year 2 N = 17)

| Type of Classroom Practice | Year 1 Percentage | Year 2 Percentage |
|-----------------------------------|----------------------|----------------------|
| <i>Curricular Activities</i> | | |
| Audio visual | 8% | 0% |
| Demonstration | 8% | 12% |
| Discussion | 19% | 16% |
| Explanation/Lecture | 23% | 23% |
| Games | 0% | 2% |
| Nonacademic | 3% | 3% |
| Oral reading | 4% | 3% |
| Project work | 0% | 9% |
| Review/recitation | 8% | 12% |
| Silent reading | 4% | 0% |
| Simulation/role play | 0% | 3% |
| Testing | 0% | 2% |
| Verbal practice | 0% | 3% |
| Written assignments | 23% | 12% |
| <i>Grouping Size</i> | | |
| Individually | 19% | 16% |
| Small group | 27% | 14% |
| Large group | 19% | 10% |
| Total class | 35% | 60% |
| <i>Group Composition</i> | | |
| Homogeneous | 52% | 84% |
| Heterogeneous | 48% | 16% |
| <i>Verbal Interaction</i> | | |
| Knowledge/comprehension questions | (13%) | (21%) |
| Higher order thinking questions | (11%) | (13%) |
| Request or command | (19%) | (21%) |
| Explanation/statement | (26%) | (27%) |
| Response | (31%) | (8%) |
| No verbal response | 0 | (1%) |
| Wait Time | 2 (4%) | 35 (26%) |
| <i>Types of Learning Centers</i> | | |
| 3 or more | (43%) | (50%) |
| 2 or more | (43%) | (22%) |
| 1 | 0 | (17%) |
| None | (14%) | (11%) |
| <i>Differentiation Strategies</i> | | |
| Advanced content | (40%) | (32%) |
| Advanced process | (30%) | (22%) |
| Advanced product | 0 | (16%) |
| Independent study (assigned) | 0 | (12%) |
| Independent study (self-selected) | 0 | (6%) |
| Other differentiation | 0 | (12%) |
| No differentiation | 4 (57.14%) | 1 (5.88%) |

Note. The participating classrooms contained 21–30 children and were third- or fourth-grade classrooms. Wait time reflects total number of questions observed in pre- and post-observations. No differentiation data reflect the total number of lessons in both pre- and postobservations.

Table 5

***Distribution of Indirect and Direct Service Delivery
for Gifted Education Specialists
(Year 1 N = 63, Year 2 N = 81)***

| Service Delivery Activity | Indirect Service Delivery | | Direct Service Delivery | |
|----------------------------------|------------------------------|---------------------|----------------------------|---------------------|
| | Year 1 Frequency | Year 2 Frequency | Year 1 Frequency | Year 2 Frequency |
| Original lesson | | | 44 | 47 |
| Demonstration lesson | | | 31 | 32 |
| Pull-out lesson | | | 46 | 49 |
| Regular classroom observation | | | 13 | 20 |
| Total | | | 134 (33%) | 148 (36%) |
| Initial contact | 65 | 78 | | |
| Planning sessions | 80 | 50 | | |
| Follow-up sessions | 67 | 51 | | |
| Collaboration lesson | 38 | 47 | | |
| Team-taught lesson | 23 | 38 | | |
| Total | 273 (67%) | 264 (64%) | | |

Note. Frequencies represent times noted on monthly reports. During year two, several schools lost their sixth-grade classes to the middle school, thus decreasing the total student population that might have been served.

Table 6

***Distribution of the Gifted Education Specialists' Time
Spent in Daily Activities Related to Collaboration
and Consultation (Year 1 N = 63, Year 2 N = 81)***

| Type of Catalyst Teacher Activity | Year 1 | | Year 2 | |
|--|--------|-------|--------|-------|
| | Freq. | (%) | Freq. | (%) |
| Student Identification | 90 | (18%) | 110 | (19%) |
| Conferences | 96 | (20%) | 78 | (14%) |
| Lessons (Instructional Time) | 195 | (40%) | 233 | (41%) |
| Materials Development/ Distribution | 106 | (22%) | 145 | (26%) |

Note. Frequencies represent times noted on monthly reports. During year two, several schools lost their sixth-grade classes to the middle school, thus decreasing the total student population that might have been served.

refers to activities that involved collaboration and consultation, while direct service delivery involved the individual efforts of the gifted education specialist. Further analysis (see Table 6) also indicates the distribution of time for daily activities. The 195 and 233 (see Table 2) differentiated lessons provided to students in years one and two respectively accounted for 40% and 41% of the total activity of the specialists. Another 22% and 26% of their time was spent gathering and preparing materials for instruction in the first and second years. Clearly, the majority of their activity was used in instructional preparation and implementation (62% and 67% respectively).

Other indicators of time efficiency are revealed in the analysis of gifted education specialists' distribution of time consulting (see Table 7) with one another as measured by the frequency of time spent making initial contacts, planning, lesson implementation, and follow-up. For example, from year one (17%) to two (31%), gifted education specialists spent nearly double the amount of time making initial contact with colleagues in intervals as brief as 1–15 minutes. Planning time became more efficient as staffs made increasingly greater use in years one (63%) and two (84%) of weekly planning time of less than an hour. Implementation of lessons or instructional time, however, was greater than half an hour and up to two hours per lesson of the time in year one (71%) and in year two (65%). Follow-up was consistent over two years with 73% and 71% of the time kept brief at under one hour. Therefore, the greatest length of time that educators spent together consulting involved instructional time.

A basic premise of the consulting approach is that the gifted education specialist can work with classroom teachers and other educators to provide differentiation in the general classroom, even as they reduce the number of direct services that they provide. Through consultation and collaboration, the gifted education specialist in this project worked with teachers, support staff, administrators, and others. A distribution of time spent with others indicates that the specialist spent more time with individual teachers (see Table 8) from year one (10%) to year two (25%), resulting in an increase in collaborative partnerships over time. Differentiated lessons available through the consulting approach are provided by an increased number of teachers and instructional specialists, thereby making service delivery more cost-effective. Given that in years one and two of the pilot respectively, the gifted education specialists worked with grade-level teachers or small groups of teachers rather than individuals 63% and 47% of the time, their time expended in collaborating and consulting was efficient. Further, these results illustrate the efficiency of the consultative service delivery model over time.

An analysis of the ratio of gifted education specialists to students served and faculty with whom they collaborated indi-

Table 7

Distribution of the Gifted Education Specialists' Time Spent with Educators Who Participated in Resource Consultation and Collaboration for Gifted Education (Year 1 N = 63, Year 2 N = 81)

| Time in Resource Consultation | Year 1 | | Year 2 | |
|-------------------------------|--------|-------|--------|-------|
| | Freq. | % | Freq. | % |
| Initial contact | 65 | (23%) | 78 | (27%) |
| Planning sessions | 80 | (28%) | 50 | (24%) |
| Implementation (instruction) | 76 | (26%) | 69 | (28%) |
| Follow-up sessions | 67 | (23%) | 51 | (21%) |

Note. Frequencies represent the number of times each activity was noted on monthly reports. During year two, several schools lost their sixth-grade classes to the middle school, thus decreasing the total student population that might have been served.

cates the distribution of gifted education specialists' time and energy across classrooms and students. In this pilot project, all gifted students and nongifted students with high ability were cluster grouped in classrooms targeted for collaboration. The level of activity reported here is consistent with a specific ratio of 1 specialist to 9–12 teachers and 1 gifted education specialist to 120 students.

Redefinition of Role of the Gifted Education Specialist. An examination of the monthly reports compiled by the gifted education teacher chronicled the shift away from the traditional gifted education specialist to a redefined role. The greatest influence on the redefinition of the role of the gifted education specialist was the nature of the consultative service delivery. Gifted education specialists spent 67% of their total provisions of instructional services in the first year and 64% of their time during the second year in indirect services (see Table 5). Indirect services are differentiated provisions for students that are prepared and delivered collaboratively with general education, including collaborative (coplanned) lessons, coteaching lessons, initial contact with colleagues who need services, coplanning, and follow-up. Direct services are differentiated provisions for students that are the sole responsibility of the gifted education specialist. Gifted education specialists spent 33% and 36% of their time in years one and two respectively in direct services. The inclusion and dominance of indirect services in the collaborative experience redesigned the role of the gifted education specialist from a predominantly direct service delivery model.

The data collected on 63 monthly reports from year one and 81 monthly reports from year two that show the distribu-

Table 8

Distribution of Nature of Teacher Group Involved in Collaboration with Gifted Education Specialists (Year 1 N = 63, Year 2 N = 81)

| Nature of Teachers Involved in Collaboration | Year 1 | | Year 2 | |
|--|--------|-------|--------|-------|
| | Freq. | % | Freq. | % |
| Individual | 10 | (10%) | 27 | (25%) |
| Grade-Level Teachers | 31 | (29%) | 25 | (24%) |
| Two or More Teachers | 35 | (33%) | 25 | (24%) |
| Problem-Solving Group | 1 | (1%) | 1 | (1%) |
| Support Staff | 3 | (3%) | 10 | (9%) |
| Administrators | 10 | (10%) | 6 | (6%) |
| Others | 15 | (14%) | 12 | (11%) |

Note. Frequencies represent times noted on monthly reports. During year two, several schools lost their sixth-grade classes to the middle school, thus decreasing the total student population that might have been served.

tion of instructional time spent in the consulting and collaborative approach help define the role of the gifted education specialist during the pilot project (see Table 2). The most prominent instructional activity of the gifted education specialist was implementing original pull-out lessons as an extension of the regular education curricula. In year one, the gifted education specialist spent 24% of instructional time in pull-out lessons and 21% during year two. This reinforces the importance of retaining the gifted education specialist in any service delivery model in order to provide differentiated learning opportunities. However, the role of the gifted education specialist has changed to include indirect or collaborative lessons. Across the two years, the specialist consistently spent nearly equal amounts of time developing new lessons and implementing collaborative lessons. Team-teaching increased from 12% to 16% over the two years. Smaller amounts of time were consistently spent conducting observations of classrooms and demonstration lessons that were minimally gifted education collaboration activities.

Teachers spent time preparing instructional materials in various ways (see Table 9). The gifted education specialist developed pull-out materials for instruction (37% and 35% in years one and two respectively). Similarly, in years one and two, 33% and 30% of the materials were original materials that they created on their own. The specialists also disseminated resources to general education teachers. Therefore, in the first year 19% and in the second year 28% of the materials were

Table 9

Distribution of the Gifted Education Specialists' Time Spent on Instructional Activities Preparation and Implementation (Year 1 N = 63, Year 2 N = 81)

| Type of Instructional Activity | Year 1 | | Year 2 | |
|---|--------|-------|--------|-------|
| | Freq. | (%) | Freq. | (%) |
| Preparation of pull-out lesson materials | 39 | (37%) | 50 | (35%) |
| Preparation of original lesson materials | 35 | (33%) | 44 | (30%) |
| Dissemination of resources/information | 20 | (19%) | 41 | (28%) |
| Provision of training on use of materials | 12 | (11%) | 10 | (7%) |

Note. Frequencies represent times noted on monthly reports. During year two, several schools lost their sixth-grade classes to the middle school, thus decreasing the total student population that might have been served.

developed for indirect services. This increase shows that specialists were able to develop significantly more materials for teachers over time.

Context of consultation activities. The consultative and collaborative activities documented in field notes during site visits included coplanning, coteaching, providing differentiated educational opportunities, linking gifted and general education curricula, sharing responsibility for student assessment, and gathering and distributing educational resources. School staffs met on a regular basis to collaboratively plan for differentiated educational opportunities for gifted learners, which led to the linking of general education and gifted education curricula. In other words, modifications were made to the general education curricula in order to develop differentiated curricula and instructional practices for gifted learners. Coplanning sessions ranged in frequency and duration across grade levels and buildings. Planning time occurred minimally once a week and as frequently as twice a week, lasting from 30 minutes to 1 1/2 hours per session. The sessions were conducted with a single classroom teacher and the gifted education specialist, with several teachers and specialists together, or with the specialist and a given set of teachers at the same grade level. The purposes of the sessions included planning for collaborative teaching, follow-up, and student assessment.

In addition to coplanning, teachers delivered instruction together. Coteaching efforts involved team teaching, demonstration teaching, providing supportive learning activities, and complementary teaching. All types of coteaching were evidenced across schools. The demonstration lessons involved having the gifted education specialist prepare differentiated lessons for the entire heterogeneous classroom in order to stimulate high interest and high ability in any student. The intent was to involve the classroom teacher in some aspect of the lesson or to observe student behavior in response to the lesson. Although very limited, some general education staff and support personnel worked together on specific follow-up collaborative activities after having worked with the gifted education specialist. Again, on a limited basis, the gifted education specialist facilitated team problem-solving sessions among school staff regarding problems or concerns associated with the provision of differentiated education for gifted learners.

The means by which school staffs collaborated in the provision of differentiated educational activities were varied. Some of the instructional strategies included the use of contracts, independent study, the use of higher order thinking skills, compacting, tiered assignments, a problems-based approach, and research. Strategies used to differentiate curricula included advanced content, acceleration into advanced classrooms, use of supplemental curricula, problem-solving programs, and the development of original curricula. The most unique characteristic of the collaborative lessons was that they reflected an integration of general and gifted education programs. Differentiated lessons were based on extending or increasing the depth of the general education curriculum. This integration provided a common understanding among all school staff about the educational experiences of gifted learners. Further, it offered students a bridge between programs to facilitate a transfer of learning.

Anecdotal information from the consultant's field notes indicate the presence of barriers or impediments to the consulting process. For example, competing school reforms inhibited the comprehensiveness and fluency of the collaborative and consultative approaches (e.g., the abolishment of homogeneous grouping, standards movement, and emphasis on competency and proficiency testing). Turnover of staff from year to year resulted in the need for repeating staff development and for "jump-starting" the program with new staff members. It follows that, when staff development for the model was not provided, the service delivery model was either never initiated or was extremely limited in scope. Obviously, when no staff development was conducted for a school participating in the collaboration, success was limited. The excessive number of schools, teachers, or students with whom any one gifted education specialist worked restricted the program outcomes.

Without the flexible grouping of students, consultation and collaboration efforts were extremely limited in frequency and duration. Teachers who were not given a common planning time also were unable to initiate or maintain collaborative activity. Administrative support was critical for the validity and credibility of the program with staff. Finally, staff members who were not participating in the collaborative process on a volunteer basis were not likely to participate in differentiated lessons frequently or at all.

Educational Implications

Overall, the resource consultation model led to diverse and more frequent services to gifted learners, resulting in the provision of differentiated education to gifted students. Educational services provided to both gifted and nongifted students in the general education classroom were enhanced by the use of a variety of effective instructional practices by general classroom teachers, and more specialized services were made accessible to unidentified students. With the use of resource consultation, there was a steady increase over time in the frequency of services provided to gifted and nongifted students.

The findings of this pilot project demonstrate how resource consultation moves differentiated education for gifted learners and nonidentified participants away from the exclusive provision of services outside of the general education classroom to a model that includes the provision of services both inside and outside of the general education program. The frequency and diversity of student services were enhanced when compared to the services provided gifted students through traditional educational models. Further, the frequency of instructional time in differentiated lessons was increased. Each instructional lesson was from one to two hours long. Clearly, these findings demonstrate the expansion of services for gifted learners along with the inclusion of more students in services (gifted and nongifted learners) without an increase of specialized personnel, which would require additional funding because the gifted education program embraced the participation of classroom teachers and other personnel in the resource consultation service delivery model.

The potential positive spill-over effects for the entire school and district that emerged from the implementation of consultative and collaborative efforts were an important outcome of this pilot project. For instance, there was enhanced professional development for the entire staff of each school. Gifted education specialists learned more about the general education program, while classroom teachers and other specialists became more familiar with the field of gifted education. Not only did educators benefit from this process, but students

not formally identified as gifted demonstrated gains from these services. There were other positive effects for students, as well. Occasionally, students participated in differentiated lessons inside and outside of the regular classroom when they were able to demonstrate requisite mastery levels of the regular curriculum. The students who were left in the regular classroom had a smaller teacher-to-student ratio. In a traditional gifted education program, these students would not have been given opportunities to demonstrate the abilities or participate in differentiated lessons. All in all, schools developed a culture of shared responsibility and a collaborative atmosphere.

Further, the inclusion of students not typically identified as gifted had several benefits for the gifted program. First, this approach made student services appear less elitist, which has been a common criticism of gifted programs. Second, students who were gifted but eluded identification freely participated in the provision of differentiated lessons, thus improving the likelihood of being identified as gifted in the future. For example, many teachers reported observing behaviors in students during a demonstration lesson or other differentiated lesson in their classrooms that they had not seen previously. Such observations can lead to the referral of children for gifted education services and inclusion in target collaborative classrooms in the future. Formal identification remained critical because of state mandates requiring the process at local levels and because the differentiated needs of students without labels may go undetected by some teachers.

Finally, resource consultation appeared to be an effective and efficient way to provide differentiated education to gifted learners. The findings suggest that resource consultation may have served to enhance the school system's potential to serve the differentiated needs of gifted students. Moreover, increased teacher skills in using differentiated curricular and instructional practices should be beneficial for all students, as improved services to nongifted students through direct instruction and overall improved teacher instructional competence offer the potential for spill-over effects. These effects may help bridge gifted and general education programs, as well as provide otherwise unavailable resources to some students.

A review of the literature on consulting highlights the typical pitfalls and perils of consulting (Huefner, 1988; Johnson, Pugach, & Hamilton, 1988). Dettmer, Thurston, and Dyck (1993) reorganized the most significant obstacles into four groups: lack of role definition; absence of a framework within which to consult; failure to document and evaluate both formal and informal consultation and collaboration; and little or no training in consultation skills. These barriers are predictable and were obvious in the pilot project reported here. The identification of specific impediments to the consulting process allow for the recognition of the most important and requisite

components of the process. They are non-negotiable components of resource consultation:

1. flexible pacing of instruction;
2. flexible student grouping, including pull-out;
3. regularly scheduled planning time (short and long term);
4. voluntary participation;
5. staff development;
6. administrative support (advocacy, validation, and maintenance);
7. documentation of consultation activities;
8. low ratio of gifted education specialists to number of colleagues involved in collaborative efforts;
9. participation of gifted education specialists with expertise in the field; and
10. continuation of support for direct service delivery for gifted learners by trained specialist.

Special Issues for Gifted Education

There is a concern among some professional educators that gifted education services may become watered down or eliminated altogether when gifted learners are served exclusively in the general education classroom environment. Indeed, many differentiated programs for gifted learners are based on the notion that the general education classroom is not conducive to the unique academic and socioemotional needs of gifted learners; thus, resource consultation may also be viewed with skepticism. The educational advantages for the gifted learner noted in these findings, however, may serve to diminish concerns about gifted education services becoming watered down in the general education classroom. In fact, the frequency and diversity of student services were enhanced when compared to the services offered gifted students through traditional educational models. Of course, assessment of the quality experiences in this service delivery model is as important an issue as any other approach. Unfortunately, this study did not involve a comparison of the two approaches at any level.

The continued need for pull-out lessons regardless of the inclusion of more staff involvement and the inclusion of indirect services for gifted learners was evident in the findings of this evaluation. Although the frequency of services to gifted learners increased, primarily through collaborative efforts, there was still an ongoing request for pull-out services. The frequency of pull-out lessons decreased substantially from earlier service delivery models; but, nonetheless, it was necessary at some level. In fact, most of the differentiation that took place in this pilot project was the responsibility of the gifted education specialist, either singularly or in collaboration with others. Pull-out services were employed when absolutely necessary and after having ruled out collaborative efforts. Thus, pull-out

services had greater purpose than before. These findings are as much an assurance that there is a need for a gifted education specialist in any provisions for differentiated gifted learners as it is an assurance that without collaborative efforts, general classroom differentiation is nearly nonexistent.

Finally, the role of the gifted education teacher was transformed as a result of collaboration and consultation. The gifted education teacher model moved away from being the once isolated person who was often singularly responsible for providing differentiated services to one who offered a combination of direct and indirect services. Comparisons of this model to other approaches, such as special classes, is warranted in the future.

The findings of this evaluation illustrate the redefined role of the gifted education teacher as that of a gifted education specialist who serves as a catalyst (Reid, 1997) among the school staff for providing alternative or differentiated educational experiences to those students who most need them. Therefore, the gifted education specialist shared responsibility for the differentiated education of gifted learners with participating school staff members who engaged in collaborative efforts.

Limitations and Future Directions

Several limitations to the evaluation must be addressed to interpret fully the outcomes and to conduct future research. First, the diverse roles played by the author (e.g., consultant, staff developer, and evaluator) contributed to the significance of the findings. Further, certain aspects of the data collection must be addressed to enhance the impact of the findings. For example, academic performance was only assessed with the Ross Cognitive Ability Test and should include a variety of measures. The quality, rather than just the quantity, of the academic opportunities provided to students through resource consultation must be determined. Then, too, potential spill-over effects for the entire school that have been implied in the findings reported here must be validated. Finally, a very important limitation of any single pilot project is that ensuing findings are specific to the contextual circumstances of the one application. In this study, the distribution of specialized staff to school staff and students would be relevant only to this specific situation.

Future research can be enhanced from a close look at the evaluation findings discussed above and the limitations of the evaluation that produced them. Further research in this area might make use of an experimental design that would add to the rigor of subsequent findings. In particular, the design might be set up to collect preliminary data regarding the existing service delivery model (e.g., frequency and duration of ser-

vices, quality of services, number of students served, etc.) or data might be collected concurrently with the use of a control. Regardless of the research design imposed, any future studies must include expanded data sources for assessing student academic performance and the quality of differentiated services developed. Further, the overall effects on the entire school (e.g., benefits of staff development, cluster grouping, reduction of students participating in regular education lessons, etc.) should be assessed fully.

The findings from this pilot project are based on a definitive ratio of specialists to staff and students. It seems that these findings would be challenged under circumstances where this ratio is greater. Given the diversity of gifted and talented programs and staffs across the country, this would be important in determining the impact of this service delivery model on a variety of school settings. Finally, an outside researcher who does not serve dual roles in the process—a consultant for example—would lend greater credibility to the findings. ¶

References

- Archambault, F. X., Westberg, K. L., Brown, S. W., Hallmark, B. W., Zhang, W., & Emons, C. L. (1993). Classroom practices used with gifted third- and fourth-grade students. *Journal for the Education of the Gifted*, 16, 103–119.
- Armstrong, D., Kirschenbaum, R., & Landrum, M. S. (1999). The resource consultation model in gifted education to support talent development in today's inclusive schools. *Gifted Child Quarterly*, 43, 39–47.
- Curtis, M. J., Curtis, V. A., & Graden, J. L. (1988). Prevention and early intervention assistance programs. *School Psychology International*, 9, 257–264.
- Dettmer, P. (1993). Gifted education: Window of opportunity. *Gifted Child Quarterly*, 27, 92–97.
- Dettmer, P., Thurston, L., & Dyck, N. (1993). *Consultation, collaboration, and teamwork for students with special needs*. Boston: Allyn and Bacon.
- Hertzog, N. B. (1998, January/February). The changing role of the gifted education specialist. *Teaching Exceptional Children* 30, 39–43.
- Huefner, D. S. (1988). The consulting teacher model: Risks and opportunities. *Exceptional Children*, 54, 403–414.
- Johnson, L. J., Pugach, M. C., & Hamilton, D. (1988). Barriers to effective special education consultation. *Remedial and Special Education*, 9(6), 41–47.
- Landrum, M. S. (1994, April). *A study of the nature of effective resource consultation in the education of the gifted*. Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA.
- Reid, C. (1997). *Vision 2000*. Charlotte, NC: Charlotte-Mecklenburg Public Schools.
- Reis, S. M. (1983). Creating ownership in gifted and talented programs. *Roeper Review*, 5(4), 20–23.
- Renzulli, J. S., & Purcell, J. H. (1996). Gifted education: A look around and a look ahead. *Roeper Review*, 18, 173–178.
- Renzulli, J. S., & Reis, S. M. (1994). Research related to the schoolwide enrichment triad model. *Gifted Child Quarterly*, 38, 7–20.
- Ross, J. D., & Ross, C. M. (1976). *The Ross test of higher cognitive processes*. Novato, CA: Academic Therapy Publications.
- Schack, G. D. (1996). All aboard or standing on the shore? Gifted education and the educational reform movement. *Roeper Review*, 18, 190–197.
- Tomlinson, C. A., Coleman, M. R., Allan, S., Udall, A., & Landrum, M. (1996). Interface between gifted education and general education: Toward communication, cooperation, and collaboration. *Gifted Child Quarterly*, 40, 165–171.
- VanTassel-Baska, J. (1992). Educational decision making on acceleration and grouping. *Gifted Child Quarterly*, 36, 68–72.
- Ward, S. B., & Landrum, M. S. (1994). Resource consultation: An alternative service delivery model for gifted education. *Roeper Review*, 16, 275–279.
- Westberg, K. L., Dobyms, S., & Archambault, F. X. (1993). *Observation manual for the Classroom Practices Record (CPR)*. Storrs, CT: National Research Center for the Gifted and Talented, The University of Connecticut.

Author Note

This project was completed with the assistance of the Charlotte-Mecklenburg Schools' Program for the Gifted, Charlotte, NC, and staff and teachers of the following schools: Sharon, Lebanon Road, J. H. Gunn, Nathaniel Alexander, Eastover, Chantilly, Oaklawn, McKee Road, Crown Point, Elizabeth Lane, and Nations Ford. This work would not have been completed without the efforts of the following Charlotte-Mecklenburg Schools' staff: Carol Reid, Lea Harkins, Jill Reicher, Sandra Payne, Betsy Moore, Sallie Dotson, Steve Houser, Jill Richardson, and Anne Udall.