A Case Study of the Collaboration in Mathematics Between a Fourth-Grade Teacher and a Talented and Gifted Coordinator

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The purpose of this case study was to describe how a 4th-grade teacher and a TAG coordinator collaborated to improve services for advanced learners without the support of university faculty and with limited resources. Interviews, questionnaires, transcriptions of videotaped consultation sessions, and observations of classroom instruction showed that participants coplanned lessons, utilized collaborative teaching, and developed a close rapport. Service was provided directly through a pull-out model that offered little in the way of training the teacher for differentiating the curriculum. Moving to a more indirect model of service would require better communication of role and goal expectations between the two participants. However, given the shortage of resources in many schools and the highly competitive demands for time during the school day, implementation is "a long road" that is likely to be traversed over an extended time period.

Introduction

Students identified as gifted and talented have traditionally been served in elementary schools by pulling them out of the classroom for a specified time on a weekly basis (Chalfant & Van Dusen Pysh, 1993). A significant limitation of pull-out programs is that advanced students need to receive services throughout the school day, a demand that gifted education specialists cannot always meet (Landrum, 2002). Resource consultation is one solution to this dilemma. According to Landrum, resource consultation is a collaborative problem-solving process "whereby two or more school staff members share their expertise to plan and deliver differentiated education to gifted learners for whom they have some level of responsibility" (p. 1). Effective and efficient use of limited, expensive

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resources (i.e., gifted education specialists) is the primary goal of resource consultation.

Three components are essential to effective consultation between a resource consultant and a teacher (Landrum, 2001a, 2001b, 2002): coplanning, collaborative teaching, and follow-up. Coplanning should occur regularly for at least 30 minutes per week and include discussion of the characteristics of advanced learners and the appropriate strategies to meet their needs. Collaborative teaching could be described by a variety of scenarios: the teacher and coordinator conducting separate, but complementary lessons; the consultant sharing or modeling strategies for the teacher; or the consultant designing and delivering a differentiated lesson while the teacher observes or guides small-group activities. During follow-up, the teacher and coordinator collaboratively plan and implement student assessment. They also discuss the lesson and their performance: what worked well, what was not successful, and what changes should be made before the next implementation of a lesson. To facilitate collaboration, Kirschenbaum, Armstrong, and Landrum (1999) recommended the consultant be accessible and develop a close rapport with the teacher to better develop mutually beneficial goals for the consultation sessions.

The resource consultant can also play an important role in providing additional training and support to improve teacher competencies (Dettmer & Landrum, 1998). When approximately two thirds of the resource consultant's time is spent mentoring, teachers are more likely to use more varied strategies more frequently to differentiate the curriculum (Landrum, 2001a), that is, modifying the content, process, products, and learning environment to better assist individual learners in reaching their full capacity (Tomlinson, 1995). Differentiating the curriculum can refer to accelerated instruction; in-depth study; or more complex, varied, or advanced content (National Association for Gifted Children, 1994). Specific strategies could include flexible grouping, curriculum compacting, independent study, and tiered activities.

Many have cited the need for differentiation of the curriculum (e.g., Gallagher & Gallagher, 1994; Gallagher, Harradine, & Coleman, 1997; Renzulli, 1994; Tomlinson, 1995), although little evidence exists to show it is occurring in classrooms (Gehrke, Knapp, & Sirotnik, 1992; Westberg & Archambault, 1997). Impediments to differentiating the curriculum may include specific attitudinal or philosophical barriers (Goodlad, 1983; Tomlinson). For example, teachers may believe that a pull-out model adequately

addresses advanced learners' educational needs by removing them from the classroom once each week. In contrast, the underlying assumption of the resource consultation model is that advanced students should benefit from a challenging curriculum all day, every day—a goal that is clearly beyond the scope of a pull-out program. Gifted education specialists cannot possibly provide ongoing, daily instruction for all advanced learners due to scheduling conflicts, time constraints, student numbers, and the broad spectrum of student needs and interests.

Changing the curriculum may also be impeded by practical barriers, including lack of funding, lack of teacher preparation, lack of human and material resources, limited time devoted to staff development and planning, and large class sizes (Piirto, 1998; Tomlinson, 1999; VanTassel-Baska, 1998; Winebrenner, 2000). All these impediments are exacerbated when gifted education specialists are assigned to more than 12 teachers or two school buildings (Landrum, 2002).

Many of these barriers are inherent to school settings and seem unlikely to change in the near future. Therefore, the purpose of this study was to describe how a fourth-grade teacher and a TAG coordinator collaborated to improve services for advanced learners without the support of university faculty and under less than ideal conditions (i.e., the teacher was not allotted time for consultation, and the TAG coordinator was assigned to more than 60 teachers in two buildings). Resistance to change was not an issue for these participants: Both were willing to invest extra time and effort to improve their services to advanced learners. A case study description of their efforts may be useful to (a) other practitioners also working with the limited resources, (b) university faculty and professional development personnel who must advise those who work under such conditions, and (c) other researchers interested in field-based accounts of service models. Specifically, this study had three purposes:

1. describe the nature of the interactions between a TAG coordinator and a teacher who were collaborating to improve services to advanced learners;
2. describe the impact of their collaboration on differentiating the curriculum; and
3. describe any practical, philosophical, or attitudinal barriers to their collaboration.

Methodology

Site

The study was conducted in an elementary school in a small, rural Midwestern school district where approximately 26% of the 1,846 students qualified for free or reduced-price lunch. The district employed 136 teachers to serve its students, including 2 full-time teachers who functioned as coordinators of the TAG program. Students were identified for the TAG program before reaching third grade based on teacher nomination, ITBS scores, parent nomination, and anecdotal documentation from the TAG coordinator's observations and interactions with students. Historically, enrichment has been provided to identified students in the form of a pull-out program that offered challenging activities, which may or may not have been related to the curriculum. For the 4 years previous to this study, the school district had been modifying the traditional pull-out model to provide services more closely tied to curricular standards in each discipline at every grade level. As part of the district's comprehensive improvement plan, steps were outlined to meet the needs of all students in mathematics classrooms and to provide additional assistance to talented and gifted students. The current plan called for TAG coordinators to provide classroom teachers with ongoing staff development.

Participants

The selection of the two participants was based on their interest in improving services for gifted students. The participants had developed a friendly relationship over the course of the teacher's employment in the district, and both indicated an interest in addressing individual students' educational needs. In the past 3 years, collaboration had become more frequent; and, over the last 2 years, the TAG coordinator began providing direct service by pulling out groups of advanced learners in mathematics. The fourth-grade teacher, who had 7 years' teaching experience, had initiated contact with the TAG coordinator to find a way to better serve the advanced students in her classes:

> I was realizing that I wasn't meeting the needs of everybody; and, knowing that she had the expertise, I went to her. Well, she's the one who recommended I try pretesting. That was the early stage. Once I got the information, they aced the test; now what do I do with them? I couldn't sit down in a small group and go at a quicker speed with them in the math area when I

was trying to meet 70 other kids' needs. Together we came up with the idea that we would pretest, but then take it a step further—and she would assist us in that area. It's been great.

Although the teacher had not completed any coursework in gifted education during her preservice education, her additional training had consisted of attending inservice sessions, workshops, and conferences, including the single inservice regarding gifted education that was offered by the district in the 3 years prior to the study. As one of a team of three teachers, she was responsible for providing instruction in mathematics to approximately 70 of the 107 students in three of the five fourth-grade classes.

The second participant was a TAG coordinator whose responsibilities included implementation of TAG program activities for grades K–4 and 9–12, an assignment that required her to work with more than 60 teachers in the elementary and high school buildings. Typically, the coordinator provided direct services by teaching four to five groups of elementary students in pull-out sessions each day, and she also instructed high school students individually or in small groups.

The coordinator had 31 years of teaching experience and held a master's degree in education of the gifted. She had worked with students identified as gifted and talented for 14 years and had been employed by the school district in her current assignment for 10 years. The coordinator reported that she had not conducted any formal inservice training for district staff in recent years. However, she provided indirect services by responding to consultation requests by individuals or groups of teachers. In this regard, she had shared information during individual consultations with teachers about the characteristics of advanced learners, their educational needs, and available resources.

Initial interviews revealed that both participants shared the following beliefs about providing services to advanced learners: (a) the needs of advanced learners can best be addressed through a collaborative problem-solving approach; (b) although advanced learners sometimes need enrichment, they should not be required to complete more work than other students; (c) barriers to providing a different curriculum for advanced learners included limited funding, space, and human resources; and (d) the school district had more work to do to meet the needs of advanced learners. In addition, the TAG coordinator stressed the importance of differentiating the curriculum to provide advanced students with opportunities for in-depth exploration of high-interest areas. Yet, she expressed concern that the general education teachers in her school district had not

been trained to provide services to advanced learners in the classroom and commented that her time would be better spent conducting some of that training:

> Some of the learners I work with are gifted; others I'm dealing with because the classroom teacher thinks I should be working with them, but that's too many kids. At all grade levels, even into high school, you have a range of abilities; and teachers, by simple virtue of economy and doing the best they can, tend to shoot for the middle or high middle at best. I have teachers who have come to me because they don't know what to do with a really advanced learner who's basically consuming the text as fast as they can present new material. I think my efforts would be better spent focusing on those very few students showing a great deal of need and also working with the classroom teachers, who need to be better trained on dealing with the range. However, I also think we need to help the teachers by changing the range and, then, giving the teachers the skills to meet the range of abilities. We've started by introducing guided reading; but we have not begun to train the teachers in math, science, and social studies.

Data Collection

The initial phase of data collection took place over a period of approximately 5 weeks and included questionnaires, interviews, and observations in the two instructional settings. During a second phase of the study, which lasted 7 weeks, the teacher and the TAG coordinator were interviewed; videotaped during consultation sessions; and observed during classroom instruction, scheduled consultation sessions, and impromptu meetings. The participants also exchanged five e-mail messages during the study, which were coded with the transcriptions of the consultation sessions.

Questionnaire and Interviews

At the outset of the study, each participant completed a questionnaire designed to gather demographic data about the participants, the TAG program, and the school. In addition, the participants were interviewed at four different times. During the initial interview, the participants were asked about their beliefs related to serving advanced learners, how advanced learners are identified, the barriers to serving advanced learners, and their working relationship with each other. After being observed teaching a lesson, they were ques-

tioned regarding their learning goals, their instructional strategies, and the outcomes of the lesson. After all the consultation sessions had been completed, the participants were asked about their goals, their strategies for consultation, and their overall impressions of the consultation sessions. In a follow-up visit 1 month after the primary data had been collected, the participants were interviewed about their consultation meetings during the previous 4 weeks. Questions addressed the number and nature of the consultation sessions and their topics and outcomes. (See Exit Interview and Follow-up Interview Protocols in Appendix A.)

Observation: Consultation Sessions and Classroom Teaching

The participants were observed during consultation sessions and while providing instruction. During the consultation sessions, the participants were videotaped seven times during six scheduled meetings and during one impromptu discussion after the mathematics class. The first two scheduled sessions occurred as a unit on multiplication and division was ending. Between the second and third times the participants met, the pretest for the next unit was administered. The remaining four meetings occurred during a unit on data and probability. The participants were observed teaching, both separately and together, on a total of 39 days. Data were collected in the form of field notes. One observation was conducted 4 weeks after the primary data were collected for the purpose of recording changes in the curriculum over time.

Data Analysis

Analysis was ongoing throughout the course of the study. All videotapes of consultation sessions were viewed and transcribed as soon as possible after the data were collected. Transcriptions of the videotaped interviews, questionnaire responses, and e-mail communications were also examined, and the field notes from observations were reviewed. The constant comparative method of data analysis was employed in this project (Glaser & Strauss, 1967). As data were coded, comparisons were made to other data in the same and other categories to verify accuracy and consistency of coding. Descriptions of effective resource consultation from the research literature were also considered when adding, dropping, or revising categories.

The initial coding of the data resulted in three general themes rooted in Landrum's (2001a, 2001b, 2002) recommendations for the

consultation process: Planning Activities, Questions, and Feedback. However, these categories were found to be too broad and the data within them too heterogeneous to establish theoretically interesting relationships among them. Therefore, during a second analysis, they were expanded to the following seven: (a) Planning Groups, (b) Planning Content, (c) Barriers, (d) Instruction, (e) Feedback and Follow-Up, (f) Inquiry and Checking, and (g) Affective Needs. Discussions between the authors made it clear that characterizing readily observable differences between categories like Planning Content and Instruction were difficult to distinguish; therefore, the coding would be unreliable. Consequently, during a third analysis of the data, the seven categories were revised and collapsed into the five final categories: Curriculum and Methods, Grouping, Relationship, Barriers, and Mentoring. Each category was well defined, easily distinguishable from the others, and closely linked to the previous research on the components of effective resource consultation.

Although the five categories varied widely in their proportion of the total number of comments, the relationships among them addressed the primary purpose of the study, which was to describe the nature of the interactions between a TAG coordinator and a teacher. For example, the high proportion of Curriculum and Methods (52.9%) and Grouping (26.9%) comments indicated that consultation sessions were primarily spent discussing instructional strategies and grouping arrangements. In contrast, the relatively small number of Mentoring comments (2%) suggested that little training of the teacher occurred during consultations sessions. Similar to the Mentoring category, the Barriers category was also relatively small (7.6%), but it directly addressed the third research purpose of the study, which was to describe any practical, philosophical, or attitudinal barriers to collaboration. Therefore, Barriers were treated extensively in the findings. Unlike the Barriers category, we chose not to pursue a deeper analysis of the Curriculum and Methods and Grouping categories because the participants' specific strategies for the instruction and grouping of students were not the primary focus of this study. (See Table 1 for a summary of the coding.)

To verify the reliability of the coding scheme, two graduate students were trained to code the data. The definitions of the five categories were reviewed, procedures for coding were shared, and the transcript from the shortest consultation session was coded separately for practice. After each page, differences in coding were discussed until agreement was reached. Then each independent rater

Table 1

Comment Category Totals in Consultation Sessions

	Number of comments per session								
Category	1	2	3	4	5	6	7	Total	%
Curriculum and Methods	98	101	237	17	17	84	67	621	52.9
Grouping	19	34	133	8	0	27	95	316	26.9
Relationship	14	17	39	12	0	26	16	124	10.6
Barriers	14	33	10	7	14	3	8	89	7.6
Mentoring	2	16	2	0	0	1	2	23	2.0
Total	147	201	421	44	31	141	188	1,173	100.0

coded five consecutive pages of transcript randomly selected from the remaining six consultation sessions. Independent raters coded these transcripts to an 89% level of agreement with the researchers. The graduate students' ability to reach such a high level of agreement provides further evidence that the categories were clearly delineated.

Findings

Consultation Session: Observations

During consultation sessions, the two participants collaborated in a relaxed and friendly way at a table in the teacher's room. Although often rushed, their dialogue was typically peppered with jokes, good-natured teasing, and laughter, as well as shared stories of personal and professional experiences. The consultation sessions followed a pattern that can best be described as a four-step cycle. First, they pretested all the students on a chapter or unit. Second, the pretest results were used to identify a group of advanced learners to pull out of the classroom for enrichment. The number of students participating in pull-out instructional sessions during this study varied between 6 and 10. Third, the coordinator and teacher discussed cur-

ricula and methods for both the pull-out group and the students who remained in the classroom. Fourth, they conducted separate, but complementary lessons. This four-step cycle is represented schematically in Figure 1.

For the most part, the enrichment material was an extension of the topics covered in the textbook chapter. The choice of enrichment materials was made chiefly by the TAG coordinator, whose primary source of supplemental materials was *Challenge Math for the Elementary and Middle School Student* (Zaccaro, 2000). She had used this book previously and was familiar with the contents. In addition, she also provided a few supplemental materials that she had created or collected over time.

The teacher, who deferred frequently to the TAG coordinator's long and varied teaching experience, was initially unclear about how to proceed at the consultation sessions. "I went into the consultation not knowing a whole lot about what we were going to discuss. My mind is so focused on the chapter we're on that I hadn't begun to think about the next one." After engaging in a few sessions, however, the teacher's goals for consultations were to discuss pretest results, flexible grouping, how to provide services to the advanced learners, and scheduling issues. The coordinator's goals for the consultation sessions were not always clear, either. For example, 5 weeks into the study, the coordinator acknowledged that she lacked a plan for two future scheduled consultation sessions. As a remedy, she proposed to "meet after school and quickly plan for the next day."

Consultation Sessions: Videotaping

Each of the seven sessions varied in length depending on the amount of time available to the participants. The third session was the longest and, therefore, contained the greatest number of comments. This consultation occurred after the students completed the chapter pretest. All of the remaining sessions, with the exception of the fifth, were scheduled primarily to discuss student grouping and the complementary lessons the participants would teach. The fifth session was a short, impromptu encounter that consisted of a brief exchange as the participants stood inside the door of the teacher's classroom. The abbreviated nature of this consultation was necessitated by schedule conflicts: The participants could not identify even a small amount of time to sit down together. During the seventh and final consultation, the teacher and coordinator revisited the pretest results to group the students for the next topic.

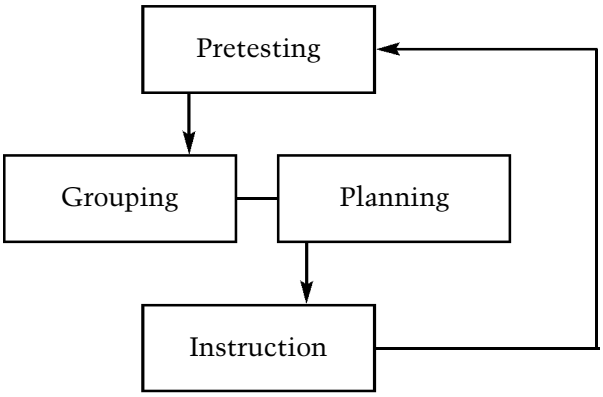

Figure 1. Cycle to maintain flexible grouping in pull-out arrangement.

Note. Planning and grouping normally occurred together during consultation sessions.

Each category of comments was represented in every session except the fourth and fifth. In the fourth session, there were no Mentoring comments; and in the fifth session, the participants did not make any Mentoring, Grouping, or Relationship comments. All comments during the fifth session were coded as Curriculum and Methods or Barriers. The categories are explicated below in order of the highest percentage of comments to the lowest. In excerpts used to illustrate the categories, *C* will refer to the TAG coordinator, and *T* will designate the teacher.

Curriculum and Methods

As shown in Table 1, discussions of curriculum and methods comprised 52.9% of the conversation during the seven discussions. This category included comments related to curriculum, methods, texts, pacing, pretest content, needed materials, students' prior experiences, and previous experience with specific lessons. For example, in the excerpt below, the teacher and TAG coordinator discuss pacing, needed materials (laptops), and their previous experience with the lesson:

> *T* So if I spend 3 days on a lesson, you're not going to think that you need to, right? I mean, you'll still go at your own pace as for right now, unless something comes up in the pretesting or midway through. You never know exactly how it is going to go.

C Right. The one thing we did last year . . . remember, we introduced making graphs on the computer for some of the students? The nice thing about that is, this year, I will have laptops we can bring in [to the classroom].

In the first six of the seven sessions, the majority of comments were coded as Curriculum and Methods. The seventh session took place after a pretest and contained more Grouping than Curriculum and Methods comments. For the abbreviated and hurried fifth session, all comments were coded as either Curriculum and Methods or Barriers. During this brief, unscheduled conversation, the participants discussed their lesson plans for the next two class meetings and tried to schedule a common time to plan. The focus on curriculum and methods during this compressed consultation provides further indication that preparing instructional strategies was a primary purpose of the participants.

Grouping. Comments coded as Grouping comprised 26.9% of the total. Grouping comments included discussions of pretest results, the identification of advanced learners for a specific topic, and anecdotal observations referring to an individual student's educational or affective needs (e.g., inappropriate behavior, motivation, and the student's level of understanding). Grouping comments occurred in all sessions with the exception of the fifth meeting; however, the largest number occurred after the administration of the pretests (i.e., during the third and seventh sessions). When reviewing the pretest results, the teacher and coordinator examined individual pretests to determine the students' current understanding of the material in the data and probability unit. In the following excerpt from the third session, they discussed student understanding of median and mode.

C But you do have some kids in there that got all this right.

T Yes, a few. I thought it was interesting to see who knew.

C Yes, I was really intrigued by this. She understands the middle number, but she didn't understand she had to rank them.

T Right. And the mode.

When grouping students, the participants also considered prior knowledge demonstrated in the classroom and students' learning styles, behaviors, motivations, and affective needs. For example, one student was considered for enrichment partially because his question, "How many can I miss to go in with [the TAG coordinator]?" provided the teacher with an indication of his advanced level of moti-

vation. In another example, the coordinator and teacher considered the placement of two students based on their past experiences:

> *C* When we got to harder stuff, he shut down. And I don't want to see that happen. I think he will hang in there. She can even shut down.
>
> *T* He will. Yes.
>
> *C* He will put forth the effort if he's here. But I think we need to ask her and say, "This is the way it is. Are you willing to put forth the effort?"
>
> *T* And I think they might.

Relationship. Comments that were of a collegial or personal nature comprised 10.6% of the conversation during the consultation sessions. These topics were not related to mathematics (e.g., a trip to Pittsburgh, their children, and extracurricular activities at the school). During an interview, the TAG coordinator characterized their relationship during the consultation sessions as follows:

> T is very easy to work with, very easy. I think the hardest thing is that both of us would like to have more time that we could spend together. She has ideas; I try to have ideas. I listen to her; she listens to me. We try to make it the best experience we can for the kids.

Both handled potentially frustrating circumstances with flexibility and professionalism. For example, on two occasions, the participants found it difficult to schedule a common planning time. Both times, the coordinator and the teacher patiently offered alternatives, apparently understanding the complexities of each other's schedules and the numerous demands on their time during and outside of the school day. As the teacher said in her exit interview, "It's what we've grown accustomed to."

Barriers to Consultation. Barriers were defined as factors affecting the provision of services, including time, space, and class assignment. Although comments coded as Barriers only comprised 7.6% of the total comments made during the consultation sessions, they were found in every consultation session, including the abbreviated fifth session, which consisted exclusively of Barriers and Curriculum and Methods comments. Thus, barriers were ever present in the collaboration between the participants. Three types of barriers were identified; each is described below. (See Table 2 for summary data.)

Table 2

Barrier Subcategories

	Number of comments regarding barriers per session								
Subcategory	1	2	3	4	5	6	7	Total	%
Time	8	31	3	4	14	3	5	68	76.4
Space	4	0	4	3	0	0	3	14	15.7
Class assignment	2	2	3	0	0	0	0	7	7.9
Total	14	33	10	7	3	3	8	89	
%	15.7	37.1	11.2	7.9	15.7	3.4	9.7		

Time and Space Barriers. Of the barrier comments, 76.4% were related to time. These included concerns related to scheduling changes, planning for absences, conflicting school-related duties, personal commitments, and the service demands made on the TAG coordinator. The majority of the Time comments were related to finding a suitable time for consultation meetings. For example, all 14 of the Time-Barrier comments during the abbreviated fifth session concerned the participants' next meeting time. The two participants, hurriedly but calmly, presented four different options to find a common time of 45 minutes or less. When they finally found tentative agreement on a mutual time, the gifted coordinator remarked that if that time wouldn't work, she had "no clue" for another option and both laughed.

In another case, the participants couldn't meet on Monday because the pretest results wouldn't be available, couldn't meet after school on Monday and Tuesday because of conflicts with other meetings, and couldn't meet on Wednesday and Thursday afternoons because of parent-teacher conferences. Eventually, the participants tentatively decided to meet while the students attended "specials" (e.g., art, music, etc.), but only if the coordinator was able to change a previously scheduled meeting with a kindergarten teacher.

During the consultation sessions, 15.7% of the Barrier comments were related to space. The participants repeatedly characterized

both the size of the coordinator's area and the classroom space designated for advanced learners as inadequate. Space became an even more critical issue when the coordinator was informed that her room would be used for another purpose. At the time, it was uncertain whether she would be assigned another space to work. Both participants expressed concern about the limited number of advanced learners who could be served without a space designated for the TAG coordinator. Although the TAG coordinator was assigned a new location, the small size of the space was problematic and prevented her from accommodating all the advanced students during one of the units.

Although the participants exhibited considerable resistance to time and space barriers (e.g., the teacher commented, "I know it's hard to be limited on space, but I don't want a student excluded for that reason"), these barriers were quite challenging to overcome. Both the participants characterized the process of implementing change as "a long road." As the coordinator said,

> I guess my passion is we can always do more. In my own mind I have this little video playing of what I think would be perfect. But then there's also the reality of budgets, money, finances, time, space, and personnel issues. This is what we've got [to work with], what can we do to help the most kids in the best way possible? And you have to constantly weigh the ideal versus reality. It's a constant battle, I think, between the two. We have such a long road, so many things to get done to make it better for kids. It's a progression of steps, and we're just not there yet.

When asked how her interactions with teachers might change if the time and space barriers were removed, the TAG coordinator indicated that she would inform teachers about advanced learners (e.g., common identifying characteristics, affective needs, and the importance of a qualitatively differentiated curricula) and help them to acquire or refine techniques associated with cluster grouping, discovery activities, questioning techniques, and classroom management. She stated the best approach to communicating this information would be through modeling:

> Teach them the way you want them to teach. Put them in groups, give them different kinds of activities. This group has this activity and this is your activity and this is what you are going to learn. Then share what you learned and the kind of student for whom you think that activity might work. You have to teach them as teachers, but then teach them as stu-

> dents, too. Honor the knowledge they bring to the topic and then try to show them ways they can use that technique.

In the follow-up interviews 4 weeks after the primary collection of data had ended, the participants reported only a single meeting for approximately 10 minutes, during which neither participant sat down. Most of their communication had occurred "on the fly" through passing conversations or e-mail messages. Part of the difficulty, according to the TAG coordinator, was due to competing schoolwide initiatives: "I think the teachers are under enough pressure with the implementation of guided reading and trying to get a handle on that. It is one of those instances of 'how much more can you pile on someone's plate before you break them?'" She also stated that overcoming time barriers was a critical factor in moving away from a pull-out model of delivery:

> Theoretically, for consultation to work, it has to be a predetermined time and then both educators stick by it. This is when you meet, period. No one is allowed to schedule other meetings then. That also puts me in the role of a resource, rather than delivery. And I don't think that we're to the point where I can back off the delivery yet. I like consultations, and I think the more that I can work with a teacher in meeting the needs of a student, the better off we all are. I think what I'm doing is still very much pull-out. It is a matter of space, too. Sometimes, if the advanced learners are doing something completely different, it helps to keep the other kids in the room focused. I think you've seen that some kids are distracted easily.

Class Assignment. To serve the advanced learners in two other fourth-grade classes, the TAG coordinator and the teacher designed an interclass grouping arrangement that enabled all the advanced mathematics learners to receive enrichment in the teacher's class. This arrangement was in part a response to the school district's practice of random assignment to achieve a heterogeneous mix of students (thus dispersing the advanced learners over three classes) and in part an accommodation of the TAG coordinator's schedule, which did not permit her to meet with the advanced learners in each of the classes separately. The interclass grouping arrangement required considerable flexibility on the part of the three teachers and the TAG coordinator and was the subject of 7.9% of the Barriers comments, all made during the first three sessions.

Mentoring. Only 2% of the total comments during the consultation sessions were coded as Mentoring. This category included the times

the TAG coordinator shared teaching strategies or made recommendations about the students to the teacher. The Mentoring comments made during this study did not appear to be systematic or planned. In sessions 1, 3, 6, and 7, they consisted of one or two tips predicated on the TAG coordinator's greater experience with differentiating the curriculum. For example, in the following quote, the TAG coordinator advises the teacher on utilizing activities from the textbook: "If you have some kids that understand it, I would have them do the extensions. They don't need to do the practice." In sessions 4 and 5, there were no Mentoring comments. Mentoring comments occurred less often than any other type of comment and were the most likely comments to be missing from the consultation sessions.

The second consultation session, which contained 16 Mentoring comments, proved the exception to this pattern. During this relatively long consultation session, the participants planned for a unit on data and probability. As indicated previously, the Mentoring comments appeared to be unplanned. For the first 8 of the 16 Mentoring comments, the gifted coordinator showed the teacher how to use a hundreds chart, shared how she had used it in the past, and suggested some applications. The next 2 Mentoring comments were based on the gifted coordinator's familiarity with the students' past performance. In two related follow-up comments, the gifted coordinator explained the importance of considering past student performance when grouping students. In the last 4 Mentoring comments, the gifted coordinator modeled a way to link new and old material and advised the teacher that certain material did not need to be covered. This session occurred before the unit pretest, thus the low number of Grouping comments, combined with the length of the session, may explain partially the emergence of an increased number of Mentoring comments.

Classroom Observations

During instructional sessions, both participants seemed to greatly enjoy their interactions with the fourth-grade students, who engaged eagerly with the lessons. The teacher and TAG coordinator shared the classroom on three occasions during the study. On those occasions, the teacher combined whole-group instruction, consisting of daily review and the introduction of material from the textbook, with small-group activities. While the teacher managed the other student groups, the advanced students worked independently or in pairs with the TAG coordinator. She provided enrichment activities for the advanced group at the center of the room, which included advanced learners from two other classes. A lack of space

at the table required some students to use the four desks directly behind it, which often made it difficult for those students to hear the TAG coordinator when the teacher was talking.

The TAG coordinator never addressed the class as a whole group, nor did she model strategies for the teacher. In one instance, the teacher made an impromptu request of the coordinator to model a strategy; however, the TAG coordinator declined her request. Her refusal may have been more due to the lack of advance warning than her reluctance to model effective teaching strategies. During a previous interview, the TAG coordinator had indicated her interest and some previous experience with modeling instructional strategies in the classroom.

> The most difficult task with modeling for other teachers is that you don't appear arrogant. Often, that is how you are perceived. I've discussed this with the reading specialist. You can tell when you go into some classrooms that you are not welcome. You need to let them know that you are not trying to say that the way you are presenting is the only way of doing it, but, instead, that it may help the teacher to meet the needs of more students. For example, teachers could benefit from additional training in questioning techniques. It would be better if I were invited into the classroom than if I just said, "I'm going to model this for you." By the same token, sometimes if you wait for your invitation, you are waiting for an awfully long time.

Whether working separately or together, the teacher and TAG coordinator utilized many of the same strategies for instruction (e.g., whole-group instruction and flexible grouping). However, the TAG coordinator employed curriculum compacting while the teacher did not, and she was also more likely to use enrichment activities. Differentiation of the curriculum occurred on two of three occasions when the TAG coordinator was absent. On the first occasion, the teacher followed a whole-group lesson by assigning more challenging worksheets to the advanced learners; on the second, the advanced learners worked on enrichment activities provided by the coordinator prior to her absence. During the coordinator's third absence, the lesson was not differentiated for advanced students, who participated in the same mathematical games at the same level as the other students. During her exit interview, the teacher acknowledged that she was not differentiating the curriculum for advanced students:

> It got really confusing when she was threatened with not having a room or space; of course, that's an issue too. I didn't

know exactly how all that was going to pan out, the idea of her being in here. I thought she was going to be in the classroom full-time, but it really ended up not being as much as I thought it would be because now she does have a place, she's not "thrown out into the street." I thought it was chaotic with all those kids—to move my kids up closer to hear me and to give them the space they needed and we weren't bothering them. It wasn't really two different lessons, though. It wasn't too different for me, because I was teaching. I felt like I wasn't really differentiating anything throughout the lesson for the advanced kids.

Discussion

The collaboration between the fourth-grade teacher and the TAG coordinator in this study reflected some of the essential components cited by Landrum (2001a, 2001b, 2002) for effective consultation. The participants (a) coplanned lessons, discussing the characteristics of advanced learners and the appropriate strategies to meet their needs; (b) employed collaborative teaching, during which they conducted separate, but complementary lessons; and (c) developed a close rapport, a key component to developing mutually beneficial goals (Kirschenbaum et al., 1999). However, enrichment occurred through a pull-out model of service that offered little in the way of training the teacher for differentiating the curriculum. These observations are supported by direct statements from the TAG coordinator ("What I'm doing is still very much pull-out") and the teacher ("I felt like I wasn't really differentiating anything throughout the lesson for the advanced kids"). Furthermore, the analysis of the transcripts from the videotaped consultation sessions showed that nearly 80% of the comments made by the participants in the seven consultation sessions were coded as either Grouping or Curriculum and Methods. By comparison, only 2% of the comments were coded as Mentoring. Thus, most of the limited available planning time was utilized to address immediate needs, leaving little or no time to identify needed changes or to improve practice.

As anticipated, the practical barriers to the consultation process in a school setting were considerable. In the TAG coordinator's words, "the reality of budgets, money, finances, time, space, and personnel issues" seemed to be the most limiting factors. In this "battle" between "the ideal versus reality," the TAG coordinator's heavy consultation load and the competing school initiatives made

it difficult to schedule 30 minutes of coplanning per week. Despite these resource constraints, however, neither the philosophy nor the attitudes of the participants served as barriers to the consultation process. The participants were committed to improvement and had already incorporated several recommendations for effective practice. In addition, the gifted coordinator was able to articulate a vision of the change process predicated on modeling instruction and training teachers to differentiate the curriculum.

Therefore, the authors are optimistic that these participants are well positioned to improve their collaboration by moving to a more indirect model of service. In a more indirect model, the TAG coordinator would train the teacher to differentiate the curriculum during consultation sessions, the teacher would deliver a differentiated lesson, and the TAG coordinator would provide follow-up and support for the teacher (see Figure 2). Reducing the amount of pull-out instruction by training teachers to differentiate the curriculum could ultimately alleviate some of the space and time barriers described in the study. However, given the shortage of resources in many schools and the highly competitive demands for time during the school day, implementation is a long road that is likely to be traversed over an extended time period. Within this context, the authors have two recommendations for improving the consultation process of the participants in this study.

First, more efficient communication between the two participants could be facilitated by a clearer understanding of their respective roles and responsibilities in an indirect model of service (i.e., the TAG coordinator's role as mentor and facilitator and the teacher's responsibility for differentiating the curriculum). For example, if the teacher would have conducted the pretest activities and made grouping decisions independently, that may have significantly reduced the number of Grouping comments, thus potentially enabling increased mentoring. Further, the participants' inability to articulate their respective interest in moving toward curriculum differentiation served as a barrier in this study, regardless of their friendly, cooperative, and professional relationship. The classroom teacher made a single impromptu request for the TAG coordinator to model instruction under difficult conditions; the TAG coordinator missed an opportunity to exploit this invitation at a later, more favorable time. More clearly articulating their respective roles could both increase the opportunities for modeling in the classroom and improve the efficiency of teacher training during the consultation sessions.

Second, the participants must set predetermined goals for the consultation sessions. Interview data indicated that, in the absence of

explicitly defined goals, the tacit goals of the participants appeared to address only the most immediate and direct means necessary to provide enrichment (e.g., examining the pretest results, grouping students flexibly according to those results, and planning instruction). In a more indirect model of service, the participants should frame each consultation session with a hierarchy of goals consonant with increasing the amount of time the TAG coordinator mentors the teacher. Further research regarding the most effective and efficient approaches to communicating role and goal expectations could contribute greatly to the efficiency of the consultation process.

We also recommend that the school district appropriate more of its inservice resources to improving the consultation process. Inservice training on the respective roles of TAG coordinators and teachers could facilitate the collaborative process by creating a common language, mutual expectations, and a better understanding of the resource consultant's role as a mentor who provides less direct service to advanced learners (Landrum, 2001a, 2001b). Inservice training could also provide teachers with some initial strategies for differentiating the curriculum. Districtwide training would fulfill the obligation outlined in the comprehensive school improvement plan, alleviate some of the TAG coordinator's overload, and simultaneously establish a foundation for more in-depth, sophisticated, and specific mentoring during consultation sessions.

Teachers and TAG coordinators should be encouraged to take an active role in the training process. For instance, as part of an inservice program, the participants in this study could describe their working relationship, give an overview of their collaborative problem-solving process, and share creative solutions to barriers. Sharing strategies could be tremendously valuable in overcoming barriers specific to individual school districts. It would also engage teachers more deeply in the training process, thus lessening staff resistance and perhaps even eliciting additional administrative support, which in turn might lead to more resources.

As school personnel redefine the role of TAG coordinators, "future research in consultation should continue to study requisite staff development and the nature of those experiences" (Kirschenbaum et al., 1999, p. 45). The challenges the participants experienced in this study are likely to be present in other school settings, as well. Further investigations may identify additional barriers, creative solutions, and the impact of effective inservice training. Such descriptions could assist educators who are interested in improving outcomes for advanced learners by implementing a more indirect model of service delivery.

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Appendix A:
Exit Interview and Follow-Up Interview Protocols

Exit Interview

1. What is your overall impression of the consultation process?
2. What were your goals for the consultations?
3. What strategies discussed during consultation, if any, were implemented in the classroom? Please comment on your experience with the strategies, including any specific observations regarding impact on advanced learners
4. What other changes in the classroom, if any, have resulted from the consultation process?
5. Did the outcome of the consultation sessions meet your expectations? Why or why not?
6. What future consultation needs do you anticipate, if any?
7. Based on your experience, how will you describe the consultation process to other educators?
8. What, if anything, about the consultation process would you change? How?

Follow-Up Interview

1. Since we last met, have any additional consultation sessions taken place? If so, how many?
2. If consultation occurred, were the sessions informal (i.e., in passing), formal (i.e., scheduled), or via e-mail?
3. What topics were discussed during these sessions?
4. Did the outcome of the consultation sessions meet your expectations? Why or why not?
5. What future consultation needs do you anticipate, if any?
6. Is there anything else that you believe is important to tell me about the consultation process or strategies that have been implemented in the classroom?