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Curriculum Compacting: A Research-based Differentiation Strategy for Culturally Diverse Talented Students

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Tom Bernard, a fifth grade teacher in an urban school, walked into the teachers' room, sank into the worn sofa in exhaustion and frustration, and started to speak without really caring who was listening, 'I just don't know what to do with Miguel. He's so bright, and he finishes his math before everyone else, but he's started getting restless, and now he doesn't even want to do the assignments at all. He says he already knows this stuff, and it's boring to have to do all the problems. I know how he feels, and I've tried to have him help the other kids, but he's not really interested in doing that. It's the same in reading, but the others need so much help, and the state tests are coming up. I feel guilty because I know I am not challenging Miguel, but I just don't know what to do.'

Ms. Castellano, another fifth grade teacher listened intently, 'I know exactly how you feel. Brandy, in my class, is the same way. She was zipping through her math so quickly that I decided to let her take the next few chapter tests and she sailed through them even though we haven't covered the material yet in class. I've been letting her read while the others have been working on math, and she's picked up a book with excerpts from Shakespearean plays and really has gotten into it. I have an idea. I suggested to Brandy that she should try acting out a scene from one of the plays. She really likes Taming of the Shrew and wants to do one of the scenes, but needs a Petruchio. Miguel is very dramatic. Maybe he would like to work with her during the times that the others are working on things that he already knows and they can dramatize the scene.'

These teachers face a common problem, and they need a strategy to differentiate for high achieving and high potential students called curriculum compacting (Reis, Burns & Renzulli, 1992; Renzulli & Smith, 1979). Curriculum compacting can be used in all classrooms to help students who have proven mastery of material that must be covered by other students. "What do I do now?" is a refrain that causes frustration in many teachers and students, and curriculum compacting has been demonstrated to be a successful intervention to keep high potential students engaged.

In urban areas where many students begin to underachieve due to repetition of content and the attention that must be given to students who are scoring below grade level or are unmotivated, pressure to raise test scores permeates a teacher's day. In

some urban schools, the most able academic students are at-risk for becoming underachievers because of the lack of challenge they experience. Since the 1940s and 1950s, textbooks have been “dumbed down” by as much as two or three grades (Kirst, 1982) leaving material basic and predominantly on a factual level. This dumbing down can create problems for talented students, especially when a district adopts one textbook for all (Bernstein, 1985). Urban teachers are often told to use specific direct instruction programs or to depend on textbook instruction, and to complicate the issue even further, budgetary restraints often result in outdated versions of these instructional materials that must be used longer than they should be.

Over the past decade, urban areas have been plagued with the controversy of the nature of gifted programs, as a disproportionately low number of culturally diverse children have been identified to participate in these programs, and equity issues are being raised by parents, journalists, and the Office of Civil Rights. Some parents of culturally diverse children are frustrated by the traditional identification strategies that often overlook their children, while others fight any attempt to change instruments or procedures, stating firmly that they do not want “watered down” identification or programming for their children.

Barriers for the participation of talented urban youth in gifted and enrichment programs and the rise of underachievement have been attributed to several factors, such as the use of definitions of giftedness that reflect middle-class majority culture, values, and perceptions (Frasier & Passow, 1994), standardized tests that do not reflect the exceptional abilities of minority children (Ford, 1994; Ford & Harris, 1990; Kitano & Kirby, 1986), and the effects of low socioeconomic status and/or differences in environmental opportunities that enhance intellectual achievement (Ford, 1996, Ford & Harris, 1990). Crocker (1987) has also found that social factors have been underestimated and that the effects of discrimination and low socioeconomic status have profound effects on the achievement of urban youths. High ability students may often be affected more severely, as their intellectual strength often goes hand in hand with emotional sensitivity and a sense of social justice (Neihart, Reis, Robinson & Moon, 2001; Silverman, 1993) causing psychological impediments that Ford (1992) believes have a negative impact. Many American born minorities, in contrast to immigrant populations, consider obstacles to their achievement insurmountable, thus the key to change must be within the educational system (Ogbu, 1987).

A number of factors have been found that relate to success in talented urban students. These factors are true for all children, but even more imperative for the child who faces the societal obstacles posed by minority and low socioeconomic status. A study of talented students who either achieved or underachieved in an urban high school identified several factors that characterize high levels of achievement and success in school (Reis, Hébert, Diaz, Maxfield, Ratley, 1995). Students who achieved (a) developed a belief in self and a vision of a hopeful future, (b) had relationships with supportive adults (teachers or parents) in their lives, (c) interacted regularly with high achieving peers, (d) encountered intellectual challenge in honors or advanced classes, and (e) participated in extracurricular activities and opportunities to develop their talents. A study of 20 successful programs identified five strategies that can be successfully

used with urban students: (a) high expectations for students, program, and staff, (b) personalized attention, (c) innovative structure and organization, (d) experiential learning opportunities, and (e) long-term support (James, Jurich, & Estes, 1999; Keith & Cool, 1992).

In the current climate of urban schools, teachers are expected to meet the needs of an increasingly diverse group of students in their classrooms than ever before. If advanced programs exist in urban areas, they are usually not available until middle school or high school, but this may be too late for talented students who need but do not receive differentiated instruction. They may already feel as if they have turned off school and learning if their needs have not been previously met. Preventive intervention proves more effective than remedial, as the drop-out rate for urban teenagers includes many gifted students who have given up (James et al., 1999; Reis et al., 1995).

Strategies for Curriculum and Instructional Differentiation

In order to accommodate for the simultaneous inclusion of diverse students and the increasing elimination of gifted programs in economically strapped urban areas, many school districts have adopted a variety of within-classroom strategies collectively referred to as differentiated instruction. Differentiation is an attempt to address the variation of learners in the classroom through multiple approaches that modify instruction and curriculum to match the individual needs of students (Tomlinson, 2000). Tomlinson (1995) emphasized that when teachers differentiate curriculum, they stop acting as dispensers of knowledge and instead, serve as organizers of learning opportunities. Differentiation of instruction and curriculum suggests that students can be provided with materials and work of varied levels of difficulty with scaffolding, diverse kinds of grouping, and different time schedules (Tomlinson, 2000).

Renzulli (1977; 1988; Renzulli & Reis, 1997) defined differentiation as encompassing five dimensions: content, process, products, classroom organization and management, and the teacher's own commitment to change themselves as a learner as well as a teacher. The differentiation of *content* involves adding more depth to the curriculum by focusing on structures of knowledge, basic principles, functional concepts, and methods of inquiry in particular disciplines. The differentiation of *process* incorporates the use of various instructional strategies and materials to enhance and motivate various students learning styles. The differentiation of *products* enhances students' communication skills by encouraging them to express themselves in a variety of ways. To differentiate *classroom management*, teachers can change the physical environment and grouping patterns they use in class and vary the allocation of time and resources for both groups and individuals. Classroom differentiation strategies can also be greatly enhanced by using the Internet in a variety of creative ways. Last, teachers can differentiate *themselves* by modeling the roles of athletic or drama coaches, stage or production managers, promotional agents and academic advisors. All these roles differ qualitatively from the role of teacher-as-instructor. Teachers can also 'inject' themselves into the material through a process called artistic modification (Renzulli, 1988). This process guides teachers in the sharing of direct, indirect, and vicarious experiences related to personal interests, travel experiences, collections, hobbies, and

teachers' "extra-curricular" involvements that can enhance and make real the subject matter.

Curriculum compacting is a differentiation strategy that incorporates content, process, products, classroom management, and teachers' personal commitment to accommodating individual and small group differences. The scenario at the opening of this chapter describes the need for this strategy, and how two teachers who wanted to improve instruction for talented youth used a similar strategy that emanated from their common experiences. This approach can benefit teachers of all grades in many subject areas, and addresses the demand for more challenging learning experiences designed to help urban youth achieve at high levels and realize their potential.

Curriculum Compacting: Definitions and Steps for Implementation

Curriculum compacting streamlines the grade level curriculum for high potential students to enable time for more challenging and interesting work. This differentiation strategy was specifically designed to make appropriate curricular adjustments for students in any curricular area and at any grade level. The procedure involves (1) defining the goals and outcomes of a particular unit or block of instruction, (2) determining and documenting the students who have already mastered most or all of a specified set of learning outcomes, and (3) providing replacement strategies for material already mastered through the use of instructional options that enable a more challenging, interesting, and productive use of the student's time.

Most teachers indicate that they are committed to meeting students' individual needs. Yet, many teachers do not have background information to put this commitment into practice as related research demonstrates that many talented students receive little differentiation of curriculum and instruction and spend a great deal of time in school doing work that they have already mastered (Archambault et al., 1993; Reis et al., 1993; Westberg, Archambault, Dobyys, & Salvin, 1993). Too often, for example, some of our brightest students spend time relearning material they already know, which can lead to frustration, boredom, and ultimately, underachievement. Curriculum compacting has been effective in addressing underachievement when the compacted regular curriculum is replaced with self-selected work in a high interest area, making schoolwork much more enjoyable (Baum, Renzulli, & Hébert, 1995; Reis, et al., 1993).

Most teachers who use compacting learn to streamline or "compact" curriculum through a practical, step-by-step approach to the skills required to modify curriculum, and the techniques for pretesting students and preparing enrichment and/or acceleration options based on individual areas of interest. Practical issues such as record keeping and how to use the compacting form are also necessary to help guide teachers toward implementing this strategy. Once they have tried to compact for students, these guidelines can help to save valuable classroom time for both teachers and students.

Curriculum compacting, as presented in this chapter, has been field tested since 1975. It has been used with individuals and groups of students with above average ability in any academic, artistic, or vocational area. Most important, research demonstrates that compacting can dramatically reduce redundancy, and challenge gifted students to new heights of excellence (Reis, et.al, 1993). It can be particularly meaningful for high ability students who are underachieving as it provides one clear way to eliminate work that may be too easy and replace that work with self-selected opportunities in an area of interest.

An overview of the curriculum compacting process is best provided by the use of the management form "The Compactor," as presented in Figure 1, that serves as both an organizational and record keeping tool. Teachers usually complete one form per student, or one form for a group of students with similar curricular strengths. Completed compactors should be kept in students' academic files, and updated regularly. The form can also be used for small groups of students who are working at approximately the same level (e.g. a reading or math group), and used as an addendum to an Individualized Education Plan (IEP) in states in which services for gifted students fall under special education laws.

INDIVIDUAL EDUCATIONAL PROGRAMMING GUIDE The Compactor

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NAME _____	AGE _____ TEACHER(S) _____	Individual Conference Dates And Persons Participating in Planning Of IEP
SCHOOL _____	GRADE _____ PARENT(S) _____	
<u>CURRICULUM AREAS TO BE CONSIDERED FOR COMPACTING</u> Provide a brief description of basic material to be covered during this marking period and the assessment information or evidence that suggests the need for compacting.	<u>PROCEDURES FOR COMPACTING BASIC MATERIAL</u> Describe activities that will be used to guarantee proficiency in basic curricular areas.	<u>ACCELERATION AND/OR ENRICHMENT ACTIVITIES</u> Describe activities that will be used to provide advanced level learning experiences in each area of the regular curriculum.

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Figure 1. The compactor.

The Compactor is divided into three columns:

- The first column includes information on learning objectives and student strengths in those areas. Teachers should list the objectives for a particular unit of study, followed by data on students' proficiency in those objectives, including test scores, behavioral profiles and past academic records.
- In the second column, teachers should list the ways in which they will pre-assess whether students already know the skills that will be taught in class. The pretest or pre-assessment strategies they select, along with results of those assessments, should be listed in this column. The assessment instruments can be formal measures, such as tests, or informal measures, such as performance assessments based on observations of class participation and written assignments. Specificity of knowledge and objectives are important; recording an overall score of 85% on ten objectives, for example, sheds little light on what portion of the material can be compacted, since students might show limited mastery of some objectives and high levels of mastery on others.
- Column three is used to record information about acceleration or enrichment options; and to determine these options, teachers must consider students' individual interests and learning styles. We should not uniformly replace compacted regular curriculum work with harder, more advanced material that is solely determined by the teacher. Many years of research and field-testing have helped us to learn that when teachers do this, students will learn a major lesson. They learn that if they do their best work, they are rewarded with harder and more work. Instead, we recommend that students' interests should be considered. If for example, a student loves working on science fair projects, time to work on these projects can be used to replace material already mastered in a different content area. Teachers should be careful to help monitor the challenge level of the material being substituted. Too often, talented students do not learn and understand the nature of effort and challenge because everything they encounter in school is too easy for them. Teachers must attempt to replace the compacted material with work that is engaging and challenging.

How to Use the Compacting Process

The first of three phases of the compacting process consists of defining the goals and outcomes of a given unit or segment of instruction. This information is readily available in most subjects because specific goals and outcomes are included in teachers' manuals, curriculum guides, scope-and-sequence charts, and some of the new curricular frameworks that are emerging in connection with outcome based education models. Teachers should examine these objectives to determine which represent the acquisition of new content or thinking skills, as opposed to reviews or practice of material that has previously been taught. The scope and sequence charts

prepared by publishers, or a simple comparison of the table of contents of a basal series will provide a quick overview of new vs. repeated material. A major goal of this phase of the compacting process is to help teachers make individual programming decisions; a larger professional development goal is to help teachers be better analysts of the material they are teaching, and better consumers of textbooks and prescribed curricular materials.

The second phase of curriculum compacting is to identify students who have already mastered the objectives or outcomes of a unit or segment of instruction that is about to be taught. Many of these students have the potential to master new material at a faster than normal pace; and knowing one's students well, is, of course, the best way to begin the assessment process. Standardized achievement tests can serve as a good general screen for this step because they allow us to list the names of all students who are scoring one or more years above grade level in particular subject areas.

Being a candidate for compacting does not necessarily mean that a student knows all of the material under consideration. Therefore, the second step in identifying candidates involves the use of assessment techniques to evaluate specific learning outcomes. Unit pre-tests, or end-of-unit tests that can be given as pre-tests are appropriate for this task, especially when it comes to the assessment of basic skills. An analysis of pre-test results enables the teacher to document proficiency in specific skills, and to select instructional activities or practice material necessary to bring the student up to a high level on any skill that may need some additional reinforcement.

The process is slightly modified for compacting content areas that are not as easily assessed as basic skills, and for students who have not mastered the material, but are judged to be candidates for more rapid coverage. First, students should understand the goals and procedures of compacting, including the nature of the replacement process. Underachieving students often regard compacting as a bargain as they may be able to compact out of a segment of material that they already know (e.g., a unit that includes a series of chapters in a social studies text), and the procedures for verifying mastery at a high level should be specified. These procedures might consist of answering questions based on the chapters, writing an essay, or taking the standard end-of-unit test. The amount of time for completion of the unit should be specified, and procedures such as periodic progress reports or log entries for teacher review should be discussed and selected.

Providing Acceleration and Enrichment Options for Talented Students

The final phase of the compacting process can be one of the most exciting aspects of teaching because it is based on cooperative decision-making and creativity on the parts of both teachers and students. Time saved through curriculum compacting can be used to provide a variety of enrichment and acceleration opportunities for the student.

Enrichment strategies might include a variety of strategies such as those included in the Enrichment Triad Model (Renzulli, 1977) that provide opportunities for exposure to new topics and ideas, methods training and creative and critical thinking activities, and opportunities to pursue advanced independent or small group creative projects. This aspect of the compacting process should also be viewed as a creative opportunity for a teacher to serve as a mentor to one or two students who are not working up to potential. We have also observed another interesting occurrence that has resulted from the availability of curriculum compacting. When some previously bright but underachieving students realized that they could both economize on regularly assigned material and “earn time” to pursue self-selected interests, their motivation to complete regular assignments increased; as one student put it, “Everyone understands a good deal!” Several strategies have been suggested for differentiating instruction and curriculum for talented or high potential students, ranging from substitution of regular material with more advanced material to options such as independent program or specific content strategies, such as Great Books or Literature Circles. Many of these strategies can be used in combination with compacting or as replacement ideas after students’ curriculum has been compacted, as can acceleration, that enables students to engage in content that is appropriately challenging (Southern & Jones, 1992; Stanley, 1989) by joining students in a higher grade level class or by doing advanced curriculum materials while in the same class, a form of content acceleration.

Case Study of Rosa and the Use of Compacting in Language Arts

Rosa is a fifth grader in a self-contained heterogeneous classroom in a lower socio-economic urban school district. While Rosa’s reading and language scores range between four or five years above grade level, most of her 29 classmates are reading one to two years below grade level. This presented Rosa’s teacher with a common problem: what was the best way to provide differentiated services to Rosa. He agreed to compact her curriculum, and taking the easiest approach possible, he administered all of the appropriate unit tests for the grade level in the Basal Language Arts program. He subsequently excused Rosa from completing the activities and worksheets in the units where she showed proficiency (80% and above). When Rosa missed one or two questions, the teacher checked for trends in those items and provided instruction and practice materials to ensure concept mastery.

Rosa usually took part in language arts lessons with the rest of her classmates for one or two days a week; the balance of the time she spent with alternative projects, some of which she selected. This strategy spared Rosa up to 6 or 8 hours a week with language arts skills that were simply beneath her level. She joined the class instruction only when her pre-tests indicated she had not fully acquired the skills or to take part in a discussion that her teacher thought she would enjoy. In the time saved using compacting, Rosa participated in a number of enrichment activities. First, she spent as many as 5 hours a week in a resource room for high ability students with an enrichment specialist. This time was usually scheduled during her language arts class, benefiting both Rosa and her teacher, since he didn’t have to search for all of the enrichment options himself. The best part of the process for Rosa was she didn’t have to make up regular classroom assignments because she was not missing essential work.

Rosa also visited a regional science center with other students who had expressed a high interest and aptitude for science. Science was a second strength area for Rosa, and based on the results of her *Interest-A-Lyzer*, a decision was made for Rosa to proceed with a science fair project on growing plants under various conditions. Rosa's Compactor, which covered an entire semester, was updated in January. Her teacher remarked that compacting her curriculum had actually saved him time—time he would have spent correcting papers needlessly assigned! The value of compacting for Rosa convinced him that he should continue the process. The Compactor was also used as a vehicle for explaining to Rosa's parents how specific modifications were being made to accommodate her advanced language arts achievement level and her interest in science. A copy of her compactor form was also included in her permanent record folder and provided for Rosa's sixth grade teacher, and a conference between the fifth and sixth grade teachers and the resource teacher helped to ensure continuity in dealing with Rosa's advanced curricular needs.

Research on Curriculum Compacting

A national study completed at the University of Connecticut's National Research Center on the Gifted and Talented (NRC/GT; Reis et al., 1992) examined the use of curriculum compacting for use with students from a wide diversity of school districts. A sample of 465 second through sixth grade classroom teachers from 27 school districts throughout the country participated in this study. Several urban schools were included in the study, including a magnet school for Hispanic students in California. Classroom teachers were randomly assigned to participate in either the treatment (implemented compacting) or the control group (continued with normal teaching practices). Treatment and control group teachers were asked to target one or two candidates in their classrooms for Curriculum Compacting, and all participating students in treatment and control groups were tested before and after treatment with out-of-level Iowa Tests of Basic Skills (ITBS). Next-grade-level tests were used to compensate for the "topping out" effect that is frequently encountered when measuring the achievement of high ability students.

The most important finding from this research might be described as the more-for-less phenomenon. Approximately 40 to 50% of traditional classroom material was compacted for targeted students in one or more content areas. When teachers eliminated as much as 50% of regular curricular activities and materials for targeted students, no differences were observed in post-test achievement scores between treatment and control groups in math concepts, math computation, social studies, and spelling. In science, the students who had between 40 to 50% of their curriculum eliminated actually scored significantly higher on science achievement post-tests than their peers in the control group. And students whose curriculum was specifically compacted in mathematics scored significantly higher than their peers in the control group on the math concepts post-test. These findings point out the benefits of compacting for increases on standard achievement assessments. Analyses of data related to replacement activities also indicated that students viewed these activities as much more challenging than standard material.

In another recent study, teachers were asked to use both curriculum compacting and self-selected Type III enrichment projects (self-selected projects based on students' interests) as a systematic intervention for a diverse group of underachieving talented students. In this study, underachievement was reversed in the majority of students, and the use of compacting and replacement of high interest projects (Renzulli, 1977) specifically targets student strengths and interests to reverse academic underachievement (Baum et al., 1995).

Use of Compacting in the Future

In research on compacting (Reis et al., 1992), participating teachers were asked whether they would continue to use curriculum compacting in the future, and why they would make this decision. Responses to this question from almost 400 teachers were coded into three categories: positive, negative, and uncertain. More than two thirds of all teachers indicated that they would continue to use curriculum compacting procedure in the future, and most who responded positively explained why, including the following representative comments from urban teachers:

Yes. I feel that the time talented students are in my classroom is better spent doing more challenging work than it is doing assignments on material they already know. When they share projects and reports with the class, it also enriches their [other students'] learning experiences.

Yes, I will continue this method of differentiation because it has shown me a very meaningful strategy to use with students who already know grade level material. In turn this enables students to become interested in independent learning they would like to pursue. The capable students are less likely to be turned off by this approach. This was a strategy that kept all students challenged in my class. I will use this next year in Math and hopefully other areas as well.

Definitely! This is such an exciting way to teach! The students involved in the compacting program had the opportunity to become such active, independent learners. They had a taste of learning through their own actions not just the material spooned out through limited textbooks. It was amazing to watch this learning process in action! Sparks flew in my classroom this year! Now that I'm familiar with compacting, I can't wait for next year to begin!

Teachers who responded that they were uncertain about continuing with compacting discussed their concerns about available planning time, a need to learn more about compacting, and students' lack of independent skills. The reasons cited by the small number of teachers who gave negative responses about the future use of compacting included comments about large class sizes and a preference for their own method of meeting students' needs.

The vast majority of teachers were able to implement curriculum compacting for the student(s) they selected, although many experienced some frustration over a lack of expertise in knowing what to substitute for high ability students, the limited time they

had to plan to meet individual differences, and the logistics of teaching different topics to different groups of students. Some also indicated the lack of support staff needed to implement replacement activities (reading and math specialists, gifted and talented program staff), and other concerns relating to classroom management. While curriculum compacting is a viable process for meeting the needs of high ability students in the regular classroom, it does take time, effort, and planning on the part of classroom teachers. With urban teachers, especially those who work with students placed at risk because of poverty, compacting requires different types of efforts, particularly in finding different materials to substitute in environments that often rely primarily on addressing deficits and remedial instruction.

Many factors contribute to the creation of a supportive school environment for the use of curriculum compacting, such as: administrative support, encouragement, availability of materials and resources for substitution of the regular curriculum, the availability of guided practice and coaching, and teachers' increased ease and reflections about how to fit compacting into their professional practices. Logs and interviews helped us to understand the reasons that some teachers experienced insecurity about the work involved with the compacting process. As teachers learned more about the compacting process and worked with each other to learn how to compact curriculum, some began to doubt their ability to be successful in being able to implement compacting, or their motivation to do the work required for this to happen. The high percentage of teachers who used compacting in their classroom for one academic year who then expressed positive reactions about their future use of compacting is encouraging, and suggests that this process may be useful in addressing the needs of able students in the classroom.

Our follow-up research study also indicated that a substantial number of teachers involved in the study indicated that they were able to extend curriculum compacting to other students, many of whom were not identified and involved in the gifted program (Reis et al., 1993). This finding may indicate the usefulness of extending the types of gifted education pedagogy often reserved for high ability students to a larger segment of the population, as has been previously suggested (Renzulli & Reis, 1991) and to the need to extend differentiation services to a broader segment of the school population (Renzulli & Reis, 1997).

Why Teachers Can Successfully Implement Curriculum Compacting

Ninety-five percent of all teachers who participated in a national study on compacting completed the compacting form and identified students who were eligible for curriculum compacting (Reis et al., 1993). This finding suggests the majority of teachers were able to accurately select high-achieving students whose curriculum needed to be adjusted. Reasons for this high percentage of success can be traced to several factors. First, superintendents and principals supported the idea and committed time to the initial professional development opportunities. Indeed, before beginning the study, both superintendents and principals had to read and agree to a long series of commitments about this study and the implementation of curriculum compacting. The second reason for the importance of administrative support is that curriculum

differentiation for capable students remains an area of concern in most districts, and principals are often the first persons who know when parents are unhappy with the lack of challenge faced by some students. Therefore, some principals may have supported this because they saw it as a legitimate problem for students, or a way to address valid parental concerns. There may have also been the excitement of participating in a national study and the opportunity for press releases, and some positive excitement about an innovation like curriculum compacting in the school district. No doubt exists, however, that administrative support was a prime motivator in encouraging teachers to try the innovation.

Finding appropriate replacement activities was most difficult for classroom teachers, and urban teachers often did not know what to assign, had few materials or supplies for this task, and did not have either the time or the knowledge of how to design these activities. The analysis of compactors indicated that many teachers used alternative and challenging strategies that were unrelated to the students' needs and interests and less challenging assignments as extensions of the regular curriculum. Teachers often replaced previously mastered work with any material or activity they could find, and unfortunately, that work was often not appropriately challenging, such as extra problems, reading assignments, more difficult math activities or alternative assignments suggested in the textbook. Research liaisons indicated that teachers needed time for reflection about appropriate work and additional guided practice. It is clear that more time and help would have addressed this issue.

What remains to study is how much time and effort teachers will expend in implementing compacting if they encounter considerable obstacles, such as larger class sizes, fewer materials to use for replacement of compacted work, and the inclusion of more students with a wide range of abilities and special needs in the classroom. The positive response of teachers and their ability to eliminate content and replace it with various activities and more advanced content provides an optimistic view of the use of this differentiation strategy.

Advice From Successful Teachers Who Implement Compacting

Research (Reis et al., 1993) showed that the most successful teachers to use compacting, many of whom taught in urban areas and/or taught culturally diverse talented students, implemented the following strategies to successfully implement compacting. First, they worked with a colleague or colleagues with whom they shared a common bond. They wanted to improve their teaching practices and were not afraid to ask each other for help or support. Second, they started with a small group of students and not their entire class. The successful teachers understood that this process would take some time and organization and became committed to trying to work with a group who really needed the process first. By not trying this with all students, they reduced the stress and challenges they would have encountered if they tried to do too much in the beginning of the process. Third, they asked for help from their liaisons, the district content consultants and each other. In each successful district, teachers asked each other how they were handling pre-testing and assessment. They shared strategies for management and for replacement, and visited each other's classrooms at their own

suggestions or because a liaison suggested it. The modeling and sharing success stories made a difference. Fourth, they also understood that like a novice practicing piano scales, they would continue to improve by trying and reflecting on their work in this area. The teachers who did the best work consistently asked their colleagues and liaisons what had worked best and how current practices could extend and improve this practice. By reflecting on what had worked, they were able to modify and change their own attempts, and consistently improve. In the most successful schools, teachers were provided with time to work with liaisons, small amounts of material funds for curricular replacement costs, and substitutes to enable them to visit and observe direct modeling in each other's classrooms.

In Conclusion

The many changes that are taking place in schools require all educators to examine a broad range of techniques for providing equitably for *all* students. Curriculum compacting is one such process. It is not tied to a specific content area or grade level, nor is it aligned with a particular approach to school or curricular reform. Rather, the process is adaptable to any school organizational plan or curricular framework, and it is flexible enough to be used within the context of rapidly changing approaches to general education. The research described in this chapter, and the practical experiences gained through several years of field testing and refining the compacting process, particularly in urban areas and in schools that serve culturally diverse students, have demonstrated that many positive benefits can result from this process for both students and teachers, and particularly, talented students who may be placed at risk for underachieving in school.

Like any innovation, curriculum compacting requires time, energy, and acceptance from teachers. Yet, educators we have studied who compact effectively indicate that it takes no longer than normal teaching practices. More importantly, they reported that the benefits to all students certainly make the effort worthwhile. One teacher's comment about the compacting process reflects the attitude of most teachers who have participated in research about compacting, "As soon as I saw how enthusiastic and receptive my students were about the compacting process, I began to become more committed to implementing this method in all my classes."

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