Ability Grouping Is Not Just Tracking Anymore

Carol L. Tieso

The No Child Left Behind legislation, with its emphasis on conducting scientifically based research, has reopened the door to a set of instructional and curricular practices left for dead in light of the scathing criticism of Oakes and Slavin in the 1980s, mainly ability grouping. This article represents a review of the literature of best practices, both instructional and curricular, that may lead to increased achievement among America's gifted and talented youth, whether they reside in an enrichment or resource room or the regular classroom. The review suggests that flexible ability grouping, combined with appropriate curricular revision or differentiation, may result in substantial achievement gains both for average and high ability learners. It is imperative that researchers in the field of gifted education take the lead in this endeavor so that no child, including the gifted and talented, will be left behind.

Carol L. Tieso is an assistant professor in gifted education at the University of Alabama. She completed her Ph.D. at the University of Connecticut in June, 2000. Her research interests include the impact of flexible grouping and curriculum differentiation models on students’ achievement and addressing the social and emotional needs of gifted, talented, and creative students. E-mail: CTieso@bamaed.ua.edu

In the backdrop of the No Child Left Behind legislation and its requisite need for scientifically based research to support educational practices, the time has come to revisit an old friend (or foe depending upon one’s personal persuasion): ability grouping. In the recent past, research on ability grouping has ground to an inexorable halt, mainly due to concerns raised in the 1980’s by Jeannie Oakes and Robert Slavin over issues of equity and accusations of racism. The result has been the degradation of educational opportunities for students identified as gifted and talented and the lack of concern for students identified as needing extra assistance. Equity is a noble goal, but not at the expense of students who lie on either end of the normal curve, especially in these days of political rhetoric and a heightened concern for educational accountability. But ability grouping is neither the fiend nor the foe that it has been labeled. In the past, ability grouping has been equated with tracking, a permanent and now unacceptable approach in which students are assessed based on prior achievement or measured intelligence and placed into streams or tracks from which they never escape, a situation that has created problems for advocates of equity and equality. The present and future of ability grouping lies in the flexible use of grouping, either between or within classrooms. However, ability grouping alone will not lead to significant improvement in students’ achievement unless it is combined with curricula that have been created based on students’ learning styles, interests, and abilities. When ability grouping is utilized in a flexible and temporary manner, with appropriate curricular adjustment, significant achievement gains can be realized.

A great deal of research indicates that moderate gains occur in students’ academic achievement when teachers adopt practices from gifted education pedagogy, such as ability grouping (Kulik, 2003; Slavin, 1987), curriculum modification (Wiggins & McTighe, 1998), differentiation (Renzulli, 1994; Tomlinson, 1995, 1999), strategies to enhance higher level thinking skills, concept-based instruction (Erickson, 1998), problem-based learning (Delsie, 1997), and constructivist pedagogy (Brooks & Brooks, 1995), to improve student achievement (Bechtol & Sorenson, 1993; Bloom, 1976; Feldhusen, 1989; Kaplan, 1986, 2001; Renzulli, 1988, 1994; VanTassel-Baska, 1986; Walberg, 1985). Because it is unlikely that one strategy operating in isolation is as effective as multiple interventions, it is recommended that school personnel investigate the combined effects of grouping practices and differentiated curriculum.

The following review of the literature is offered to assist school personnel in this investigation. Related literature provides background information that focuses on three grouping practices (whole class, between class, and within-class flexible groups) and two curricular practices (modification and differentiation) that have demonstrated moderate to impressive achievement gains for diverse learners.

Common Grouping Practices

Ability grouping has been defined as a practice that places students into classrooms or small groups based on an initial assessment of their levels of readiness or ability (Kulik, 1992). Kulik found that grouping practices have different effects on student achievement based on the type of grouping practice and the subsequent curriculum developed for those groups.

Whole Class Instruction

Whole class instruction is characterized by the utilization of a tradition, textbook-dominated curriculum (Bagley, 1931; Goodlad, 1984; Reis et al., 1993), movement through the curriculum at the same pace using the same methods and materials (Cuban, 1984; Goodlad, 1984), and instruction for the entire class at the same time (Good & Brophy, 1994).

According to Archambault et al. (1993), classroom teaching has not evolved much from its infancy early last century. Teachers still follow a lock-step curriculum with traditional grade-level divisions, subject-matter divisions of classroom time and resources, and a sequential model that has the teacher introducing a new lesson, followed in rapid succession by recitation or group practice, additional seatwork, and finally, homework to allow students to practice the skill on their own (Good & Brophy, 1994). Goodlad (1984) observed that “a great deal of what goes on in the classroom is like painting-by-the-numbers—filling in the colors called for by numbers on the page” (p. 108).

In Goodlad’s seminal study of America’s classrooms (1984), he mused about the role of the teacher in the classroom. “No matter how we approach the classroom in an effort to describe and understand what goes on, the teacher..."
comes through as coach, quarterback, referee, and even rule-maker. But there
the analogy must stop because there is no
team” (p. 108). He observed that
the teacher made virtually all of the choices
in the classroom, including what ques-
tions to ask and which to answer.
According to Goodlad, “the didactics of
the classroom are very much the same
from school to school; teachers lectured
and questioned, students listened, [and]
textbooks were the most common med-
ium for teaching and learning—there was
much pedagogical conformity” (p. 247).

Teacher-versus student-centered
classrooms. Cuban (1984) described the
observable characteristics of classrooms
as either teacher- or student-centered.
Teacher-centered classrooms are charac-
terized by teacher talk that exceeds stu-
dent talk during instruction; instruction
that occurs mainly in a whole-class set-
ting with small group or individual
instruction occurring less frequently;
teacher determination of class time; and
a classroom arrangement that typically
includes desks that are arranged in rows,
facing the blackboard, with a teacher’s
desk nearby.

In teacher-centered classrooms,
Teachers ask questions for which
there is only one right answer, while
imploring students to become more inde-
dependent thinkers and learners (Goodlad,
Soder, & Sorotnik, 1990). Adams and
Biddle (1970) noted that the teacher is the
principal actor in 84% of classroom com-
munication and Cuban (1984) noted that
classrooms are characterized by a heavy
reliance on teacher-initiated drill and
recitation. Even when students are placed
into small groups, they are frequently
working on the same activities and
lessons (Cuban; Good & Brophy, 1994;

Student-centered classrooms are
characterized by student talk on learning
tasks at least equal to teacher talk;
instruction that occurs mainly in small
groups or individually; students’ needs
are infused into the organization of con-
tent to be learned; students help deter-
mine rules of behavior and enforcement;
use of varied instructional materials that
can be used by individuals or by students
within small groups; students use materi-
als organized by the teacher or deter-
mined by the students at least half of the
time; and the classroom is organized to
allow students to move independently
within their work space, including the
physical movement of desks and chairs
to facilitate instruction.

The major advantage of whole
group instruction is that more students
can be educated within a graded class-
room in which the teacher prepares
lessons based on a single ability or readi-
ness level (Goodlad, 1984). The major
disadvantage is that students move
through the curriculum without regard to
their prior knowledge, interests, or levels
of readiness (Good & Power, 1976).
This practice has been the dominant
grouping arrangement since the mass
industrialization of the American econo-
my in the late eighteenth century
(Grinder & Nelsen, 1985) and continues
to dominate the educational landscape
today (Archambault et al., 1993; Cuban,
1984; Gardner, 1999; Good & Brophy,

Between-Class Grouping

The best known of the between-
class grouping plans is the Joplin Plan,
devised by Cecil Floyd, the assistant
superintendent of schools in Joplin, Mis-
souri (Floyd, 1954). The earliest version
of this plan included the cross-grade
grouping of elementary students in read-
ing. During the time reserved for read-
ing, students in grades 4, 5, and 6 would
proceed to different classrooms to
receive instruction geared to their readi-
ness levels. Students in the high group
would use textbooks from grades 6, 7,
and 8; students in the middle group
would use textbooks from grade 5, 6,
and 7; and students in the low group
would use textbooks from grades 4, 5,
and 6 (Kulik, 1992). After the hour was
over, students would return to their regu-
lar classrooms. This grouping arrange-
ment was later expanded to include
arithmetic instruction.

The Joplin Plan. There are three
major advantages to the Joplin Plan
grouping arrangement. The first advan-
tage is the temporary nature of the
grouping arrangement. Most modern
cross-grade grouping plans are single-
subject oriented and closely tied to a
specific skill. This arrangement allows
students to move in and out of groups
based on their current demonstrated
achievement (Kulik & Kulik, 1982;
Slavin, 1987). Students are preassessed
in one or two subjects and grouped
according to their actual performance
in these areas. Students generally attend
another classroom for instruction in
reading or mathematics then return to
their regular classroom or homeroom for
the remainder of the school day. Accord-
ing to Slavin, regrouping for instruction
(Joplin Plan) allows errors in original
student placement to be remedied with-
out moving students to another class sec-
tion or changing their basic homeroom
assignments.

A second major advantage of the
Joplin Plan is the curricular adjustment
made among groups. The teacher must
develop curriculum according to the
unique needs of the group, rather than
utilize a “one size fits all” approach to
curriculum development. Students use
textbooks from different grades based on
their level of readiness (Kulik, 1992).
According to Kulik and Kulik (1992),
students in different ability groups work
with different materials and different
methods. Hence, the match between
regrouping arrangement and curriculum
is enhanced.

A third major advantage of
between-class, cross-grade
grouping plans is the admirable goal of
reducing heterogeneity in the classroom
without adversely affecting the self-
estem of those students in the lowest
achieving groups (Begle, 1975; Goodlad,
1966; Slavin, 1987). Goodlad suggested
that the spread in “average achievement
in an elementary-school class slightly
exceeds the number of the grade level”
(p. 6). This means that in the typical
fourth grade classroom, there are stu-
dents who are working at the second
grade as well as sixth grade levels. “A
teacher who says, ‘I teach the fourth
grade,’ is talking about only three or four
children in the class!” (Goodlad, p. 6).
Goodlad further suggested that standard-
ized tests most likely would fail to note
the distinction between two average
fourth grade students: one who scores
3.9 grade equivalents in arithmetic com-
putation and 7.4 in paragraph meaning
and another who scores 6.7 in arithmetic
concepts and 3.2 in vocabulary and read-
ing comprehension. By regrouping for a
single subject, teachers are more likely
to reduce the heterogeneity within the
classroom, while assuring that they are
meeting the appropriate curricular needs
of each student.

Within-Class Grouping

A third major type of grouping
arrangement is within-class or flexible
grouping (Benbow, 1998; Davis &
Rimm, 1994; Feldhusen & Moon, 1992;
Kulik, 1992; Kulik, 2003; Renzulli
1994; Slavin, 1987; Tomlinson, 1995,
1999; Westberg & Archambault, 1995).
This practice groups students within the same class into “smaller groups for specific activities and purposes” (Kulik & Kulik, 1992, p. 75). Typically, the teacher presents a lesson to the whole class and then places students into small groups based on demonstrated performance, interests, levels of prior knowledge, and the like. (Renzulli, 1994). Kulik and Kulik identified several facts about within-class grouping plans. First, for within-class grouping practices to be successful, teachers must differentiate instruction. It would not be an expedient use of resources and time to preassess students, place them into small groups, and make the same presentation to two or three separate groups. Second, students should remain within their regular classrooms for the entire school day. This plan can alleviate the potential scheduling problem of having all teachers teaching the same subject at the same time. According to Slavin (1987), the major advantage of flexible grouping is the temporary nature of the groups. Students are assessed frequently for growth and reassigned to different groups based on that assessment.

Within-class grouping and opportunity to learn. Sorenson and Hallinan (1986) suggested that one of the key issues underlying the debate over ability grouping is students’ opportunity to learn. They proposed that students’ ability and effort determine how they utilize opportunities for learning provided by the teacher. Within the framework of that model, they suggested two benefits to students of within-class ability grouping. First, teachers have an easier time obtaining and retaining students’ attention when there are fewer of them in the instructional group. Second, teachers are more able to adapt their methods of instruction and instructional materials to students within a smaller, more homogeneous group. Even though instructional time is actually diminished when students are placed into small groups, the amount and type of learning that occurs in these small groups more than compensates for the shortened instructional time.

Sorenson and Hallinan summarized that “the increased attention and the adaptation of the instructional materials to the aptitudes and preparation of students should help students make better use of their abilities. This grouping might result in students making more efficient use of their intellectual resources” (p. 522). Even though there are demonstrated advantages in the use of within-class grouping, there are also consequent problems.

A major disadvantage of within-class grouping is that teachers are required to learn a new form of classroom management to create a learning environment sensitive to individual levels of readiness and manageable in terms of student behavior (Arain, 1982; Tomlinson, 1999). Due to this concern about classroom management, many teachers who attempt to utilize different learning tasks for different small groups concentrate on extensive drill and practice, especially for students with lower levels of readiness. Though this drill and practice approach may facilitate classroom management, it deprives students of the opportunity to work with higher-level concepts, resources, and methodologies (Newman & Schwager, 1992). Kulik and Kulik (1992) suggested that when within-class grouping is successful, teachers differentiate instruction for the different groups and students remain within their regular classroom. Students placed into different groups based on their levels of readiness should all be engaged in work that is meaningful and appropriate for their specific learning needs.

Research on Grouping Practices

Research on ability grouping has continued for almost a century. The earliest recorded study occurred in Salt Lake City, Utah, in 1927 when researchers identified and preassessed two equivalent groups of elementary students (Kulik, 1992). Students in one group were separated by ability and placed into homogeneous classes while students in the other group were assigned to mixed-ability classes. Students were tested again at the end of the school year and those in the homogeneous group scored approximately two grade equivalents higher in mathematics than did similar-ability students in the heterogeneous group. With those results, the opening shot was fired in the century-long battle over the grouping of students for instruction.

In an early summary of ability-grouping practices, Passow (1962) suggested that the results of numerous studies on ability grouping depended less on the “fact of grouping itself than upon the philosophy behind the grouping, the accuracy with which grouping is made for the purposes intended, the differentiations in content, method, and speed, and the technique of the teacher” (p. 284). Kulik (1992) reviewed early studies of research on ability grouping (i.e., 1900’s-1950’s) and applied meta-analytic techniques (Glass, 1976) to these studies. He found nontrivial average effects (ES = .14) for students grouped for mathematics by ability, without any curricular adjustment, when compared to whole class instruction.

Modern meta-analytic studies suggest that average effect sizes for student achievement in classes grouped according to the Joplin Plan (with curricular adjustment) is .33, a small but nontrivial effect size (Kulik & Kulik, 1982). Kulik and Kulik investigated 16 controlled studies of the Joplin Plan for cross-grade grouping in one or two subjects. Twelve of those studies found higher achievement levels in the Joplin Plan classes. Two Joplin Plan studies reported effect sizes for different ability levels separately. A median effect size of .12 was reported for the high achieving group, .01 for the middle group, and .29 for the low achieving group (Kulik & Kulik).

Slavin (1987) found a median effect size of .45 for Joplin Plan grouping, while Rogers (1991) noted average effect sizes of .34. Additionally, Mills, Abard, and Gustin (1994) found large effect sizes (ES = 2.4 SD) for fifth graders enrolled in a Joplin-like, flexibly-paced mathematics course with appropriate curricular adjustment.

Finally, Slavin (1987) found significant, moderate effect sizes (ES = .41) and Kulik (1992) small average effect sizes (ES = .25) for within-class (flexible) grouping. Nine of Kulik’s eleven studies reported higher overall achievement levels with flexible grouping arrangements (average ES = .25) over whole class instruction. Lou et al. (1996) found average effect sizes of +17 in a meta-analysis of within-class grouping versus no grouping. In comparisons of heterogeneous versus homogeneous within-class grouping, they found average effect sizes of +12 for homogeneous grouping. Slavin argued that research on within-class grouping in mathematics “consistently supports this practice in upper elementary grades” (p. 320). He also contends that “there is no evidence to suggest that achievement gains due to within-class ability grouping in mathematics are achieved at the expense of low achievers” (p. 321). Little research, however, exists that compares whole class, between-class, and within-class flexible grouping arrangements in terms of student achievement.
Concerns About Grouping Practices

Ability grouping practices have come under attack the past two decades because of concerns over issues of social and economic equity (Oakes, 1985; Slavin, 1990) and potential damage to students’ self-concept and self-efficacy. However, Kulik and Kulik (1982) and Marsh and Parker (1985) found little evidence to substantiate these concerns.

Schunk (1996) defined self-concept as “one’s collective self-perceptions that are formed through experiences with, and interpretations of, the environment, and that are heavily influenced by reinforcements and evaluations by significant other persons” (p. 448). Bandura (1994) defined self-efficacy as “people’s beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives” (p. 71). Oakes (1985) and Slavin (1990) expressed concern that the self-concept and self-efficacy of students who are placed in low ability groups will suffer due to the stigma of such an assignment. However, Kulik and Kulik (1982) found in 15 controlled studies of between-class ability grouping and self-concept that the average effect size was –.06, a negligible effect. They suggested that effects of grouping on self-concept or self-esteem may be slightly positive for low ability students and slightly negative for high ability students. This effect on low ability students may be due to their opportunity to interact with the teacher and others in the classroom without the sometimes intimidating presence of high ability students. On the other hand, high ability students often suffer an early drop in self-concept or self-esteem due to the presence of other high ability students in their group (Marsh & Parker, 1985). This drop usually corrects itself within a brief period of time. Additionally, students of different ability levels may need different types of instruction to facilitate learning.

Feldhusen and Moon (1992) proposed that educators must be responsive to the reality that students begin new units of study with differing abilities, learning styles, and motivation levels. They continued, “some [students] are ready for fast-paced, high-level, very abstract instruction; for others instruction must be adjusted to fit their particular needs or deficiencies” (p. 64). Special grouping arrangements may be necessary to meet the ever-changing achievement levels of students in heterogeneous classrooms.

A Critique of Slavin and Oakes

The major sources of opposition to ability grouping have been Robert Slavin and Jeannie Oakes. Their research is quoted by both educators and researchers as the basis for abolishing or curtailing programs that may smack of ability or homogeneous grouping. But other researchers (Bode, 1996; Kulik, 1992; Rogers, 1993) have outlined flaws in their research.

First, Bode (1996) proposed that the controversy over ability grouping has become one of equity versus excellence. The opponents of ability grouping stress its inequitable effects, especially on those in the low groups. Bode suggests that research supporting the equity argument (Eder, 1981; Oakes, 1985; Page, 1965; Rosenbaum, 1980) is largely qualitative and anecdotal in nature. She also suggests “some of these contradictory conclusions can be attributed to the fact that different outcomes—academic versus social—are being referenced” (p. 1).

Second, in Slavin’s “best-evidence synthesis” of research on comprehensive ability grouping at the elementary level, he purposely eliminates studies that include any special classes for low or high ability students (e.g., resource classes for special education or gifted students). He suggests that it would be unfair to compare these classes to those with mixed-ability students because there are typically curricular adjustments made in these special classes (Slavin, 1987).

A third flaw in the majority of research on ability grouping is that most studies reviewed used aptitude or ability tests to regroup the students for instruction (Rogers, 1991). Most elementary schools today that use a form of ability grouping do not use IQ or aptitude tests as a placement tool. They are more likely to use specific achievement tests or demonstrated performance as a means to group students either between or within classes.

A fourth problem lies in Slavin’s conclusions regarding ability grouping. He emphasizes one major review of ability-grouping studies published by Goldberg, Passow, and Justman (1966) in which IQ tests were used as the pre-assessment for initial placement, there was no evidence of any curricular adjustment, and the comparison of achievement gains among groups was nonsignificant. After reporting nonsignificant results in many of the studies he analyzes, he concludes that mixed-ability classrooms are more effective in raising student achievement levels.

A final problem with the majority of research on ability grouping is that it is approximately 25 years old. Typically, opponents of ability grouping have focused on studies of tracking or XYZ homogeneous grouping arrangements, which have fallen out of favor in most of the educational landscape. Additionally, with the exception of a few correlational studies of the Second International Mathematics Symposium (SIMS) and Third International Mathematics & Science Symposium (TIMSS) data (National Center for Education Statistics, 1999), there have been few controlled studies of the effects of different types of grouping arrangements on student achievement, especially those arrangements that include curricular adjustment.

Summary

Whole-group instruction is characterized by a single, set curriculum delivered at the same pace for all students. Between-class Joplin grouping involves the preassessment of specific skills and prior knowledge that necessitates assignment of students to a different teacher for instruction in that skill or content area. Within-class, or flexible small grouping, is characterized by preassessment and placement of students into small groups within their regular classroom setting. Researchers are divided on the effects of such grouping arrangements, but most agree that some form of temporary ability grouping, based on a specific aptitude in a skill or content, when complemented by appropriate instruction, may have significant effects on student achievement. Grouping practices alone will have only small to moderate effects on achievement if they are not complemented with appropriately modified and differentiated curricula (Kulik & Kulik, 1992; Rogers, 1993; Slavin, 1987).

Curriculum Revision and Differentiation

At least two classroom-based practices appear to hold promise for increasing student achievement: curriculum revision or modification and differentiation. Current research suggests that textbook-based curriculum units suffer from a lack of variety and in-depth presentation of the major principles and concepts within a discipline (Erickson, 1998;
Curriculum modification is the critical analysis and remodeling of existing curriculum (Maker, 1982; Paul, Binker, Jensen, & Kreklau, 1990; Renzulli). Curriculum differentiation is the assessment of students' prior knowledge and the subsequent adaptation of grouping and curricular practices based on that assessment (Renzulli; Tomlinson, 1995, 1999). A comprehensive program for diverse learners must provide modified and differentiated instruction within mixed-ability classrooms.

Textbook-Based Curriculum

In his seminal studies, Goodlad (1966, 1990), has criticized educational policymakers for failing to modify or improve classroom organization and instruction. He mused that if students from the early 1900s were magically transported to the classroom of the 1990s, they would recognize virtually every facet of the school day (1966). Even more critical, in this era of high-stakes standardized testing, one curriculum, geared to drill and practice prior to the test, dominates the modern classroom. According to Goodlad (1966), “too often, schools reward only that which is easily measured. And what is easily measured may be inconsequential in the conduct of human affairs” (p. 17).

Curriculum Revision or Modification

Cawelti (1999), Erickson (1998), Gardner (1999), Levin (1987), Wiggins and McTighe (1998), and Renzulli (1988, 1994) have been instrumental in providing educators with strategies to modify, or remodel, existing units of study. Curriculum modification includes the analysis and removal of unchallenging and repetitive content; the enhancement of existing curricular units through the use of advance organizers, higher level questioning strategies, and critical thinking skills (Halpern, 1996; Paul, Binker, Jensen, & Kreklau, 1990); the connection of the unit of study to the disciplines (Bruner, 1975; Gardner, 1999; Phenix, 1958; Renzulli, 1988); and the design of units of study based on interdisciplinary concepts (Erickson, 1998; Jacobs, 1989; Kaplan, 1986).

Remodeled curriculum. Paul, Binker, Jensen, and Kreklau (1990) define curriculum “remodeling” as the process whereby teachers critique their lesson plans and formulate new ones based on that critical process. They suggest creating new lesson plans utilizing the major strategies of critical thinking. These 35 strategies are subdivided into three major categories: affective strategies that include thinking independently and developing confidence in one’s reason; cognitive strategies: macroabilities that include transferring insights to new contexts and generating or assessing solutions; and cognitive strategies, microskills that include making plausible inferences or predictions and recognizing contradictions. The major guiding premise is that students will become autonomous, precise, and fair-minded thinkers. Using Paul, Binker, Jensen, and Kreklau’s method, lesson plans are remodeled or enhanced to address higher order critical thinking processes.

Essential understandings. Erickson (1998) proposed a curriculum development plan that develops sophistication in knowledge, understanding, and the ability to perform. She suggested that this systems approach should address four critical components: (a) student outcomes—what students should know, understand, and be able to do based on the identified knowledge, skills, and abilities they will need for the 21st century; (b) the critical content, key concepts, and essential understandings that frame the knowledge base of different areas of study; (c) the major process and skill abilities that ensure quality performance; and (d) quality assessments for measuring standards-driven performance. She contends that teachers may begin to address these components if they acknowledge the essential understandings of a unit of study (i.e., the “big ideas” or key principles and generalizations) and allow those understandings to guide their curriculum development. According to Erickson, “essential understandings are the foundational ideas on which students build increasing conceptual depth and understanding” (p. 47). Teachers can facilitate students’ essential understandings by constructing curricula that focus on the “big ideas” or key concepts and principles of a discipline, rather than a series of random, unconnected, and, usually, unlearned facts and skills.

The structure of the disciplines. Bruner (1960) suggested that if students could grasp the structure of a subject, they could relate other ideas to it meaningfully. The study of a field within the context of the disciplines includes the location of that subject within the history of knowledge, the methodologies employed by those who are the practicing professionals in the discipline, the major principles and concepts of the field, and the connections that field has with others in the history of knowledge. Bruner explained that students have limited exposure to the materials and content they are to learn. The key question becomes, “How can this exposure be made to count in their thinking for the rest of their lives?” He contended that understanding the structure of the subjects taught is the “minimum requirement for using knowledge for bringing it to bear on problems and events one encounters outside the classroom” (p. 59).

Goodlad (1966) also extolled the virtues of a curriculum that is developed with the structure of knowledge in mind. The teaching and learning of structure, rather than simply the mastery of facts and techniques, is at the center of the classic problem of transfer. The school curriculum should be planned to reveal continuing threads—ideas, generalizations, principles, concepts, methods—by means of which specific learnings might be related effectively to one another. These threads are derived from at least three sources: the developing characteristics of children, the subject matter disciplines, and the nature of society. (pp. 11-16)

Gardner (1999) added that when an individual truly understands a concept, skill, theory, or domain of knowledge, she or he is capable of applying that knowledge appropriately in a new context. He scolded purveyors of the cultural literacy approach to learning (Hirsch, 1987), “with its promise of five minutes on every topic” (p. 118). He contended that without a disciplinary way of thinking, “cultural literacy lacks an epistemological home; it amounts to a hodgepodge of concepts and facts wanting to be used somehow, somewhere, sometime. Moreover, absent such disciplinary treatment and glue, the facts are likely to be soon forgotten” (p. 118). This problem becomes more acute in the global technological age in which teachers cannot possibly teach students all of the facts and skills that multiply exponentially on a daily basis.
The multiple menu model. Renzulli, Leppien, and Hays (2000) introduced a method of advanced curriculum development for teachers and curriculum developers in the upper elementary and secondary grades entitled the Multiple Menu Model. This model provides a guide for curriculum development that proceeds from several menus of curriculum techniques. These menus include a knowledge menu (i.e., the structure, definition, and location of the topic within the fields of knowledge, as well as the major concepts and principles of the field and the facts, conventions, and trends of the field of study). The instructional techniques menu includes a list of objectives and instructional strategies used in the study, a sequential list of the actual teaching and learning activities, and a section that allows for the "artistic modification" based on teacher talents, interests, and particular knowledge. Finally, the guide includes an instructional products menu, which allows students to create new knowledge and information and to demonstrate that knowledge in the form of abstract ideals (e.g., values, appreciations, and cognitive structures) and concrete products (e.g., written, spoken, or artistic) that should be presented to an authentic audience. In utilizing this model for curriculum development, teachers and developers are able to combine the most important aspects of each unit with the effective enrichment techniques of authentic learning; (i.e., authentic resources, products, and audiences).

The parallel curriculum model. Tomlinson, Kaplan, Renzulli, Purcell, Leppien, and Burns (2002) updated the literature on curriculum revision by developing the Parallel Curriculum Model, a model for developing engaging and challenging curriculum for average and gifted learners. The Parallel Curriculum Model consists of four parallels, or categories of learning experiences. According to the authors, the Core curriculum is a plan that includes a set of guidelines and procedures to help educators address the core concepts, principles, and skills of a discipline. The Core curriculum specifies those key concepts, principles, and representative topics that form the core of student learning. Unlike the laundry-list style of cultural literacy, the Core curriculum suggests those ideas and concepts that aid essential student understanding of a field of study. The Connections curriculum is a set of guidelines and procedures to help educators connect overarching concepts, principles, and skills within and across disciplines, time, cultures, places, and/or events. The Practice curriculum helps students understand, generalize, and transfer essential knowledge in a field to authentic, discipline-based problems. The Identity curriculum helps educators connect the disciplines to students' own lives, personal growth, and future development. The Parallel Curriculum Model is a powerful blend of gifted education theories, models, and strategies proposed by Renzulli (1988), Kaplan (1986), and Tomlinson (1995, 1999).

Curriculum Differentiation

Introduction. Bechtol and Sorenson (1993), Kaplan (1986), Passow (1962), Renzulli (1994), Tomlinson (1995, 1999), VanTassel-Baska (1994), VanTassel-Baska and Little (2003), and Wang and Walberg (1985) have proposed models for curriculum differentiation that include the extensive use of pre-assessment to determine students' strengths and interests; flexible grouping practices based on those pre-assessed areas; and the differentiation of existing curricula, which suggests increasing the breadth (interest, choices, and learning style variation) and depth (lessons for different ability levels) of the curriculum. Passow defined differentiated curriculum as "that which embodies the recognition of differing learning rates; styles, interests, and abilities" (p. 6), while Ward (1980) explained the need to provide appropriate instruction at students' ability levels. The goal of curriculum differentiation is to elicit learner responses commensurate with their gifts or talents.

Principles of differentiated curriculum. Tomlinson (1999) suggested four principles that should guide educators as they create a differentiated classroom: (a) teachers focus on the essential concepts, principles, and skills of each subject; (b) teachers attend to student differences, which are guided by their experiences, culture, gender, genetic code, and neurological wiring; (c) teachers realize that assessment and instruction are inseparable; and (d) teachers modify content, process, and products to meet individual students' levels of prior knowledge, and learning, thinking, and expression styles. In a differentiated classroom, teachers are attuned to student differences and attempt to align their curricula to address those differences.

Implications for Gifted Education

Previous research on practices that enhance student achievement suggests that practices such as between-class grouping (Kulik & Kulik, 1982; Rogers, 1991) and flexible, within-class grouping (Slavin, 1988) can create substantial gains in achievement for able learners and nontrivial gains for average and struggling learners when instruction is tailored to students' readiness levels. Several research studies (Cawelti, 1999; Kulik, 2003; Kulik & Kulik, 1984; Slavin; Wang & Walberg, 1985) have described curricular practices that also have significant effects on student learning and achievement. The need for a critical analysis of existing curricula and enrichment activities, especially if they stem from a textbook, creates an extra imperative in these days of high-stakes state achievement testing.
Additionally, current social and educational discussions and debates (e.g., inclusion, heterogeneous classrooms) have raised concerns over these potential gains, citing student self-esteem as a potential victim of such grouping practices. Due to these concerns, many teachers hesitate to address the diverse learning needs of students for fear of causing harm to students' self-esteem (George, 1988; Oakes, 1985; Slavin, 1987). Students are aware from day one that they have different strengths, interests, and talents. These differences should be nurtured and celebrated along with other types of diversity. Educators are only fooling themselves if they believe all students learn the same way and should be taught in the same way, using the same materials, and creating the same types of products.

One recent study demonstrated that a brief, three-week implementation of enhanced or differentiated curriculum, combined with between- or within-class grouping arrangements, can have a moderate effect on students' achievement in mathematics without the assumed loss of self-esteem or self-efficacy (Tieso, 2002). In this study, students were administered a preassessment and separated into flexible between- and within-class grouping arrangements. Students in the various ability groups were exposed to curriculum that was revised and differentiated for their levels of prior knowledge. Students with high levels of prior knowledge worked on problems, assignments, and products at challenge levels through the eighth grade. Students with low levels of prior knowledge worked with similar resources and on identical problems and products, but had their materials differentiated by allowing for fewer problems, more active questioning and differentia-

It is imperative that researchers have the strength of their convictions to address and challenge educational correctness and investigate programs that may result in improved achievement for all students. Further, school officials cannot be bullied by the political rhetoric of the day that calls for increasing amounts of drill and practice to prepare students for standardized tests of achievement. This actually results in a philosophy of "no child left behind, but don't let the gifted students get too far ahead." If students are to realize true gains in achievement, not subject to the educational winds of politics, then school personnel must be aggressive in their use of appropriate and flexible ability grouping combined with curricular adjustment.

REFERENCES


