Access to the General Curriculum of Middle School Students with Mental Retardation

An Observational Study

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ABSTRACT

The IDEA requires participation and progress in the general curriculum by all students. However, there is limited knowledge about the degree to which students with mental retardation have such access. This study examined the degree to which middle school students with mental retardation have access to the general curriculum and the impact of the classroom setting and the student's level of ability on such access. Findings indicated that students with mental retardation were most likely to participate with the general curriculum in the general education classroom and were less likely to engage in activities linked to a standard if they had more severe disabilities. Many students were engaged in activities in the general curriculum, but there was room for improvement in providing curricular modifications to promote access.

ENSURING THAT STUDENTS WITH DISABILITIES have access to the general curriculum was a key feature of the 1997 amendments to the Individuals with Disabilities Education Act (IDEA). Those amendments, as they were eventually passed by Congress, included statutory and regulatory language pertaining to providing such access. Section 300.347(a)(3) of IDEA requires that a student's Individualized Education Program (IEP) include the following:

A statement of the special education and related services and supplementary aids and services to be provided to the child, or on behalf of the child, and a statement of the program modifications or supports for school personnel that will be provided for the child

(i) to advance appropriately toward attaining the annual goals;

(ii) to be involved and progress in the general curriculum; and

(iii) to be educated and participate with disabled and nondisabled children.

Although the law requires that IEPs address issues pertaining to the degree to which students with disabilities are involved and progress in the general curriculum, these mandates have more generally been referred to as the *access to the general curriculum mandates*. The purpose of these mandates was threefold:

1. to ensure that all students, including students with disabilities, have access to a challenging curriculum;

2. to ensure that all students, including students with disabilities, are held to high expectations; and

3. to ensure that students with disabilities are not excluded from accountability mechanisms emerging in school reform efforts across the nation (Orkwis & McLane, 1998; Wehmeyer, Sands, Knowlton, & Kozleski, 2002).

Consistent with these intents, which fundamentally align special education services with standards-based reform efforts, the general curriculum was defined in the regulations as referring to the same curriculum as other, nondisabled children receive. For all intents and purposes, in most states the general curriculum is best delineated or defined by state and district standards that have been set as part of standards-based reform efforts.

Standards-based reform efforts involve the establishment of content and performance standards intended to direct the design of the general curriculum so as to align with such standards and, in turn, to change the way educators teach. Accordingly, the establishment of standards, the development of curricula, and the implementation of quality instructional strategies are linked to multiple levels of accountability. That is, the content and performance standards are used as measurement criteria to evaluate student progress toward those standards through state and district assessments of student performance. Student performance indicators are then used to determine consequences, either punishments or rewards, for students (graduation, grade promotion); teachers and principals (promotion, salary increases, job retention); and schools and school districts (accreditation, funding; Turnbull, Turnbull, Wehmeyer, & Park, in press).

We have suggested (Wehmeyer, Lance, & Bashinski, 2002; Wehmeyer, Lattin, & Agran, 2001) that a number of factors make such efforts to align special education services and supports with reform efforts particularly important for students with mental retardation. These students are frequently held to low expectations based on stereotypes and biases, are still highly likely to be educated in segregated settings, often have access only to alternative curricular options whose quality and appropriateness vary a great deal, and typically are not involved in assessment efforts designed to hold schools accountable for progress (Wehmeyer, Sands, et al., 2002). Although we have expressed concern over several aspects of the application of standards-based reform to students with mental retardation and severe disabilities, particularly the implementation of high-stakes testing (Turnbull et al., 2002; Wehmeyer, Sands, et al., 2002), we also believe that through the implementation of principles of universal design throughout the educational process (e.g., curriculum design and standards setting, instruction, evaluation) and the implementation of school-wide practices that stress quality instructional experiences for all students, students with men-

tal retardation can achieve to higher standards and benefit from efforts to promote access to the general curriculum (Wehmeyer, Lance, & Bashinski, 2002; Wehmeyer, Sands, et al., 2002).

Unfortunately, there has been too little consideration of how students with mental retardation can achieve access to and make progress in the general curriculum, and many educators believe that such efforts are not relevant to this population. Agran, Alper, and Wehmeyer (2002) asked teachers questions about their perception of the access requirements for their students with severe disabilities. When asked if ensuring students' access to the general curriculum would help increase educational expectations for students with severe disabilities, 68% either agreed or strongly agreed. When asked, however, if students with severe disabilities should be held accountable to the same performance standards as students without disabilities, 93% of the 60 teachers indicated that they disagreed or strongly disagreed. In other words, teachers agreed that having access to the general curriculum would raise expectations, but did not think students should be held accountable to the general curriculum.

There is a need to focus considerably more attention on issues pertaining to achieving access to and progress in the general curriculum for students with mental retardation and other severe disabilities. Perhaps the first step in this process is to examine the degree to which students with mental retardation currently have access to the general curriculum and how factors such as placement and level of ability affect how much access students are given. This study provides relevant information with regard to this first step.

METHOD

Participants

The study involved 33 middle school students who attended two public schools (one urban, one suburban) under the mental retardation category. Age and IQ score information for the sample as a whole and by gender are included in Table 1. Students were enrolled in Grades 6 though 9, and all participants' primary disability category was identified as mental retardation. Seven students had qualified for services under the mental retardation category but did not have a recent IQ score from an intelligence test with a mean of 100 and standard deviation of 15, so scores for those students were not available. Fifteen students were identified (through their school records) as having limited support needs, and 18 students were identified as having intense support needs. Eleven students (33%) were African American, 20 (60%) were White, and 2 (6%) were Hispanic. We also assigned students to one of two overall groups based on the degree to which they consistently (e.g., at least daily) attended one or more classes with nondisabled peers. Students who did so were grouped as *having access to the general education classroom*

TABLE 1. Demographic Characteristics of Participants

Student	IQ			Age		
	M	Range	SD	M	Range	SD
Boys	57.75	36–75	14.15	13.64	12–16	1.21
Girls	57.38	37–73	10.17	13.00	12–16	1.27
Total sample	57.50	36–75	11.25	13.21	12–16	1.27

Note. Data on IQ were not available for 7 students, so *n* = 26 for IQ scores.

(*n* = 16). Those students whose entire educational program was delivered in classes only with other students with disabilities (resource room, self-contained classroom) or where students with disabilities were the majority were identified as *not having access to the general education classroom* (*n* = 17). Informed consent was obtained from the families of all students involved in the study.

Procedure

The study employed a time-sample observation method in which students were observed in a naturally occurring classroom context for at least eight 15-minute observation sessions, although some students were observed for as many as 16 sessions. The total time each student was observed ranged from 120 to 240 minutes, with the mean observation duration per student being 202.73 minutes (*SD* = 30.49). Observations were conducted over a 7-month period, and no student was observed more than once per day. Observational data were collected over a total of 6,585 minutes, or 109.75 hours. Each minute of observation yielded two intervals in which data were recorded (20-second observation, 10-second recording period). As such, the 6,585 minutes of observations yielded a total of 13,170 data intervals, ranging from 240 to 480 such intervals per student (*M* = 405.15, *SD* = 60.63). Across the 33 students there were 439 unique 15-minute observation sessions.

For each unique observation, subject content being taught at the time was coded (English/language arts/reading, academics/functional academics, life skills instruction, social studies/geography, math, history, art/music, computer/typing, speech, science/health), as was the presence or absence of peers without disabilities. Table 2 presents the frequency of observations by subject content. Several content areas had too few observations to be maintained as separate categories, so these (history, art/music, computer/typing, speech) were coded as "other" for the purpose of analysis. Classroom settings in which the majority of students did not have a disability were coded as "inclusive" classrooms, and settings in which only students with disabilities were served or where students with disabilities were in the majority were coded as "noninclusive." The latter were typically resource rooms or self-contained special education classrooms. Of the 439 total observations, 162 (36.9%) were coded as occurring in inclusive settings and 277 (63.1%) in noninclusive settings. Table 3 provides frequency counts for inclusion status by class content area.

Data Collection

First, we used school records to collect demographic data for each student. This information included each student's birth date and age, gender, and latest IQ-test score. From each student's most recent IEP, we recorded information about current goals and objectives and whether that student had taken the state assessment and, if so, with what type of accommodations. To examine the status of students with mental retardation with regard to access to the general curriculum, we developed an observational coding sheet on which trained observers recorded information about the occurrence of classroom-based activities that provided evidence of a student's access to and involvement in the general curriculum. The following situations were recorded for the target student (i.e., student with mental retardation):

- All students in class (including target student) are working on a task associated with district standard.
  - Student is involved in or is expected to be involved in the same activity/task as the other students.
  - Student is working on or is expected to work on an activity that is driven by a different standard/benchmark than that of the other students.
- Target student is working on a standard identified for a grade level other than the student's current grade.
- No students in the class (including target student) are working on a task associated with district standard or benchmark.

TABLE 2. Frequency of Observations by Class Content

Class content	Frequency	% of observations
English/language arts	99.0	22.6
Social studies	76.0	17.3
Science/health	71.0	16.2
Math	67.0	15.3
Functional academics	60.0	13.7
Life skills	40.0	9.1
Art/music	12.0	2.7
Typing/computer	7.0	1.6
History	4.0	0.9
Speech	3.0	0.7

TABLE 3. Content Area in Which Observation Occurred by Inclusion Status

Content area	Inclusion status	
	Included	Self-contained
English/language arts	36	63
Functional academics	0	60
Life skills	1	39
Social studies	50	26
Math	8	59
Science/health	45	26
Other	22	4
Total	162	277

- Target student is working on a task linked to IEP goal or objective.

- Target student is receiving accommodation. An accommodation was defined as any support that helped the student accomplish the task but did not change or modify the curriculum itself (e.g., using a peer to take notes, using a calculator).

- Target student is working on an adapted task or activity. An adaptation was coded when the student was involved in an activity or task that was similar to what the rest of the class was working on but was adapted/changed in a way that made the presentation or representation of the content different from that of the other students' activities.

- Target student is working on a task or activity that augments the curriculum. A curriculum augmentation involved any activity that

taught students strategies or skills they could use to more effectively learn the content in the curriculum, and included learning strategies like memorization or mnemonics, content enhancement strategies, self-directed learning strategies, and so forth.

The project director worked with two project assistants to collect data. Observers engaged in training sessions in which two coders recorded information on the same student. Following each session, the coders met to discuss agreements and disagreements. When coders reached 90% agreement among one another on three consecutive observations, observations began.

As described earlier, observations occurred in 15-minute sessions. Coders recorded the task that was worked on during the observation session and identified whether or not the activity was linked to a specific district standard or benchmark. For each student, coders had a list of current IEP goals and objectives to determine if the student was working on a task linked to an IEP goal or objective. Just prior to each observation, the coder recorded if the setting was inclusive (majority of students without disabilities) or noninclusive (majority of students with disabilities), as described previously. Coders observed for 20 seconds and then recorded the occurrence of any of the previously mentioned categories for 10 seconds, repeating this cycle through the 15-minute observation to achieve 30 observation intervals per session. All data were recorded on the coding sheets by observers, as discussed previously, and entered into an SPSS database from those sheets.

Reliability

Interrater reliability was collected on a total of 3,111 intervals, or 1,555.5 minutes of observations (approximately 23.6% of all observation minutes). Reliability for those minutes (total agreements/total minutes × 100) was 88.88%. Agreement was defined as identical codes recorded across all categories during the interval.

Analyses

Data were analyzed in two ways: as a function of (a) cumulative observed student behaviors across all observation periods (e.g., $n = 33$ students) and (b) the impact of certain classroom variables on access across all 439 unique observations. To determine cumulative student performance across observation periods, data on target students' involvement in instructional activities that were related to a district standard or an IEP goal and the degree to which accommodations or curriculum adaptations or augmentations were present were totaled and presented in tabular form. However, because there were unequal numbers of observations conducted per student, we first calculated the mean number of observed behaviors by minute for the following variables:

1. all students working on a task linked to a standard (total, same task, or task related to different standard/benchmark);

2. all students working on a task not linked to a standard;

3. target student working on a task linked to an IEP objective;

4. target student provided accommodation to work on a task linked to a standard;

5. target student working on curriculum adapted to provide greater access; and

6. target student learning strategies to better enable him or her to succeed in the general curriculum.

In additional, we conducted analyses of variance based on the student's needed level of intensity of support (limited or intense) and status of access to the general education classroom.

Data across all 439 observations were analyzed first by conducting analyses of variance examining differences by inclusion status (e.g., whether the particular observation was in an inclusive or noninclusive setting) on target students' involvement in instructional activities related to a district standard or an IEP goal and on the degree to which accommodations or instructional adaptations or curricular augmentations were present. Next, we conducted an analysis of variance on differences by class content (main effect analysis only). To further examine the impact of types of courses on access, traditional general education classes (English/language arts, social studies, math, science/health, art/music, history) were grouped with traditional special education classes (functional academics, life skills instruction, speech). An analysis of variance was conducted for observation codes by these groupings.

RESULTS

With regard to cumulative observations by student, Table 4 provides information about the percentage of time students spent engaged in activities related to accessing the general curriculum. Analysis of variance by level of support intensity need (limited or intense) resulted in significant differences on the variables "all students working on task not linked to standard," $F(1, 31) = 16.92$, $p = .0001$, "all students working on task linked to standard (same task or task related to different standard/benchmark)," $F(1, 31) = 17.06$, $p = .0001$, "all students working on task linked to standard (same task)," $F(1, 31) = 12.08$, $p = .002$, and "target student working on curriculum adapted to provide greater access," $F(1, 31) = 4.97$, $p = .033$. For the variable "all students working on task not

linked to standard," the mean occurrences per minute for students with limited support needs was .18 ($SD = .17$), and the mean for students with intense support needs was .74 occurrences per minute ($SD = .50$). For the variable "all students working on task linked to standard (same task or task related to different standard/benchmark)," students with mental retardation with limited support needs averaged 1.74 occurrences per minute ($SD = .25$), and students with intense support needs averaged 1.11 ($SD = .54$). Similarly, for the variable "all students working on task linked to standard (same task)," students with limited support needs averaged 1.6 occurrences per minute ($SD = .48$), and students with mental retardation with intense support needs averaged .98 occurrences per minute ($SD = .52$). Students with intense support needs were significantly more likely to have received adaptations than students with limited support needs (although overall that code was not frequently recorded).

The analysis of variance by access to the general education classroom status yielded significant differences only for the variables "all students working on task not linked to standard," $F(1, 31) = 26.74$, $p = .0001$, "all students working on

TABLE 4. Percentage of Time Students Engaged in Activities Linked to the General Curriculum

Activity	Min. (%)	Max. (%)	M (%)
All students working on task linked to standard (same task and task related to different standard/benchmark)	24	100.00	70.08
All students working on task linked to standard (same task)	10	100.00	63.06
All students working on task linked to standard (task related to different standard/benchmark)	0	45.00	11.33
Target student working on standard identified for grade level other than the student's current grade	0	19.00	4.38
All students working on task not linked to standard	0	74.50	24.19
Target student working on task linked to IEP	0	48.81	21.92
Target student provided accommodation to work on task linked to standard	0	25.71	5.29
Target student working on adapted task	0	20.24	2.78
Target student learning strategies to better enable him or her to succeed in the general curriculum	0	5.24	0.15

Note. $N = 33$.

task linked to standard (same task and task related to different standard/benchmark)," $F(1, 31) = 41.26$, $p = .0001$, and "all students working on task linked to standard (same task)," $F(1, 31) = 31.64$, $p = .0001$. For the variable "all students working on task not linked to standard," the mean per minute for students who had access to the general classroom was .15 $(SD = .16)$, and the mean for students who did not was .80 $(SD = .47)$. For the variable "all students working on task linked to standard (same task and task related to different standard/benchmark)," students who had access to the general curriculum averaged 1.8 occurrences per minute $(SD = .17)$, and students who did not averaged 1.01 occurrences per minute $(SD = .46)$. This trend continued with the variable "all students working on task linked to standard (same task and task related to different standard/benchmark)," with students who had access to the general classroom averaging 1.6 occurrences per minute $(SD = .29)$ and students who did not averaging .86 $(SD = .51)$.

With regard to analysis of each of the 439 observation periods entered in the database, analysis of variance by inclusion status (recorded for each observation) yielded significant differences on the frequency with which the following variables were coded: "all students working on task linked to standard (same task and task related to different standard/benchmark)," $F(1, 438) = 51.76$, $p = .0001$, "all students working on task linked to standard (same task)," $F(1, 438) = 48.46$, $p = .0001$, "target student working on task linked to

standard but below grade level," $F(1, 438) = 129.68$, $p = .0001$, "all students working on task not linked to standard," $F(1, 438) = 35.88$, $p = .0001$, "target student working on task linked to IEP objective," $F(1, 438) = 19.08$, $p = .0001$, and "target student working on adapted task," $F(1, 438) = 26.14$, $p = .0001$. As shown in Figure 1, for students with mental retardation, working on tasks linked to a standard in any way and having adaptations provided to ensure curriculum access were significantly higher in inclusive settings, whereas working on tasks not linked to a standard, working on a standard below grade level, or working on an IEP-only objective were significantly higher in noninclusive settings.

The analysis of variance for classes grouped as traditional general education classes or traditional special education classes for observation codes yielded significant differences for the variables "all students working on task linked to standard," $F(1, 437) = 76.68$, $p > .001$, "all students working on task not linked to standard," $F(1, 437) = 124.47$, $p > .001$, and "target student working on adapted task," $F(1, 437) = 5.49$, $p > .02$. The mean frequency of the variable "all students working on standard" was 22.29 $(SD = 12.58)$ for courses with traditional academic content and 9.63 $(SD = 13.14)$ for classes with traditional special education content. For the variable "all students working on task not linked to standard," the mean frequency for the academic courses was 3.81 $(SD = 9.61)$, and the mean for traditional special education content was 17.24 $(SD = 13.33)$. For the curriculum
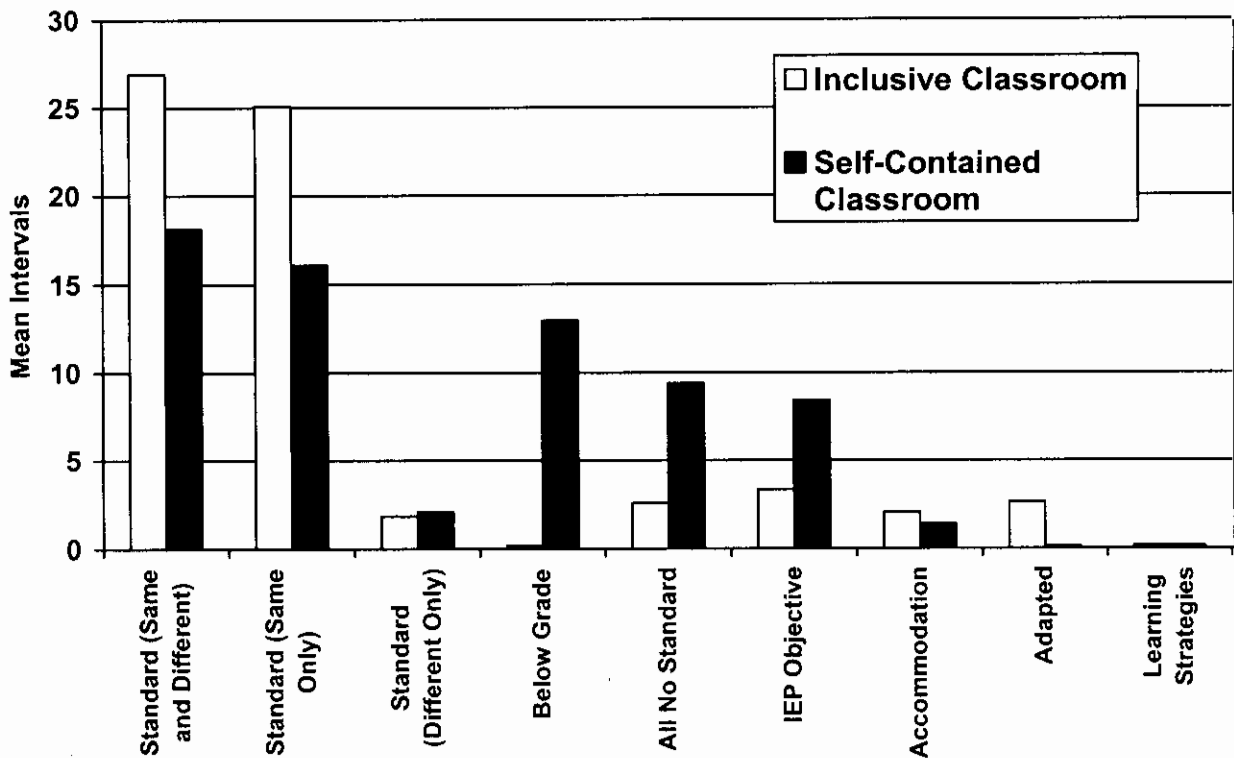

FIGURE 1. Inclusion status and mean intervals in which activity was observed.

adaptation code, the mean frequency for the traditional content courses was 1.35 (*SD* = 5.76), and there were no recorded observations in the traditional special education area for the use of adaptations.

DISCUSSION

The findings from this observational study indicate the degree to which students with mental retardation have access to the general curriculum. Several limitations to the study affect interpretation and thus warrant acknowledgement. The observational methodology did not allow us to reliably code more than the most evident student activities, such as when students with mental retardation were working on the same (standards-linked or not) task as other students, whether an accommodation was in place, and whether any forms of curriculum modifications (adaptations, augmentations) were used. Thus, our findings are necessarily broad in scope and lack information about interactions among and between variables like support need intensity, environment, and class content. There is a need to identify and use more sensitive ways to measure the nuances of classroom, student, and teacher ecological variables that affect student access. Relatedly, we were able to analyze the data for support need intensity and inclusion status only as though they were unidimensional factors because there were too few students with limited support needs who were not in the general education classroom and too few students (in the schools in which we were recording data) with more intense support needs who were routinely in the general education classroom.

Given these initial caveats, the data seem to suggest several trends. There were encouraging results with regard to the percentage of time students with mental retardation were engaged in a task related to a school district standard, whether working on the same task as peers or on a task related to a different standard or benchmark. This varied considerably by support intensity need, with students with limited support needs engaged in a task linked to a standard during 87% of intervals, and students with intense support needs doing so during 55% of the intervals. Similarly, students who had access to the general education classroom were observed working on tasks linked to a standard during 90% of intervals, and students who did not have access to the general education classroom (served primarily in self-contained settings) engaged in tasks related to a standard during only 50% of intervals.

On the whole, students with mental retardation who were in inclusive settings or who were more liable to have access to the general education classroom were consistently more likely to be working on tasks associated with district standards than were students in noninclusive settings or who did not have access to the general education classroom. As mentioned previously, when the data were analyzed by individual students, students who had access to the general edu-

cation classroom (e.g., consistently participating in general education classrooms) were significantly more likely to be working on tasks linked to a standard than students who were not, and there were no differences between these groups on amount of time spent working on IEP tasks. When data were analyzed by unique observations, students in inclusive settings were observed to be working on a standards-linked task for 40% more intervals than students in segregated settings.

Although analyses of individual students indicated no differences between students who did and did not have access to general education classrooms on the intervals in which students were observed working on IEP objectives, analyses of unique observations indicated otherwise, with IEP objectives most likely to be worked on in segregated settings. This could be a function of two issues. One is that students with intense support needs were less likely to be included. Even by middle school, their instructional needs could conceivably fall outside of those covered by the general curriculum (when the general curriculum is limited to core academic areas). This leads to the second potential explanation—that the general curriculum was not broad enough to account for the instructional needs of students with mental retardation; thus, tasks falling outside the general curriculum were worked on outside the general classroom. Whatever the explanation, the findings suggest that the general curriculum needs to be planned with principles of universal design in mind, to allow students with mental retardation to work toward their goals inside the purview of the general curriculum and, most important, to provide students with mental retardation access to the general classroom and, thus, access to the general curriculum.

Three aspects of the provision of instructional and curricular modifications need to be addressed. First, there were significant differences by setting in the provision of instructional adaptations, with the overwhelming majority of such activities occurring in inclusive settings. Second, there were very few instances in both inclusive and noninclusive settings in which students with mental retardation were being taught strategies to enable them to learn more effectively in the context of the general curriculum. Third, there were surprisingly few instances in inclusive settings in which students with mental retardation were working toward standards using benchmarks that were not grade-referenced.

The results also suggested that students with intense support needs were less likely to be engaged in activities related to the general curriculum than were their peers with limited support needs. Students with intense support needs were observed working on a task not linked to a standard for significantly more intervals than were peers with limited support needs; however, that trend was reversed for intervals in which the student was working on a standards-linked task. As one might expect, students with intense support needs were observed using some curriculum adaptations in significantly more intervals than were students with limited support needs. Perhaps the most important finding related to the use of

instructional adaptations was not the statistically significant difference based on support intensity need but the very limited number of intervals students with mental retardation were provided such adaptations. (On average, only 2.78% of intervals were recorded in which these students were receiving some adaptation.)

As indicated previously, this is likely a function of multiple variables. As students with mental retardation get older, there is a possibility that the gap between what is in the general curriculum and what constitutes a student's unique learning needs will widen unless the general curriculum is designed to promote such access. Table 5 provides recommendations ensuring that students with mental retardation have access to the general curriculum. The first step is to design the curriculum in such a way that all students can have access and show progress. This can be accomplished in two ways. First, the content captured in the general curriculum must be broad, not concentrated only on the core academic

curriculum. When the general curriculum includes content related to transition from school to adult life, independent living, health and well-being, and other areas typically conceptualized as "functional" or "life skills" content, there will be less of a need to provide instruction that is not within the scope of the general curriculum. Second, standards that are written to be open-ended are more likely to promote access for students with mental retardation. Open-ended standards are those that are written to allow multiple means of student expression and are not only age- or grade-referenced (Wehmeyer, Sands, et al., 2002).

Another explanation for the relationship between intensity of support need and access is that these students were less likely to be served in the general education classroom. It seems evident that the place in which content related to the general curriculum is delivered is, in fact, the general classroom. Including students with mental retardation in the general education setting has well-documented benefits for students with disabilities (McGregor & Vogelsberg, 1998). Our findings show that promoting access to the general curriculum can be added to that list of benefits.

There are a number of steps that can be taken to ensure that students with mental retardation who are being taught in the general education classroom are supported to the maximum extent to help them progress in the general curriculum. These are depicted in Table 5. First, the school-wide implementation of quality instructional strategies that incorporate principals of universal design will benefit students with mental retardation. Such universal design features include adaptations to curricular materials that modify how content information is represented or presented and how students respond to the curriculum (Center for Applied Special Technology, 1999). Such curriculum adaptations include using materials that present information in graphic form, using digitized text that allows for increasing font size or color, and using audio- and video-based delivery mechanisms. Using learning strategies such as advance organizers and presenting information about main ideas in the curriculum are additional ways to provide curriculum adaptations (Orkwis & McLane, 1998). Modifications to the ways students respond to the content include allowing students to report their knowledge using a wide array of products, from traditional written formats to video products (e.g., performing a play, recording a report on an audiotape, preparing a PowerPoint presentation). Finally, students with mental retardation can benefit from efforts to expand the curriculum (curriculum augmentation) to teach students "learning-to-learn" and "student-directed learning" strategies that, in turn, provide the skills they need to progress in the general curriculum (see Wehmeyer, Sands, et al., 2002, for further discussion of these issues).

PRACTICAL APPLICATIONS

This preliminary study provides some direction for promoting and enhancing access to the general curriculum for stu-

TABLE 5. Steps to Gaining Access to the General Curriculum for Students with Mental Retardation

Action step	Description
Standard setting and curriculum design	Standards are written as open-ended, and the curriculum is planned and designed using principles of universal design that ensure that all students can show progress.
Individualized educational planning	The individualized planning process ensures that a student's educational program is designed based on the general curriculum, taking into account unique student learning needs.
School-wide materials and instruction	There is school-wide use of universally designed curricular materials and quality instructional methods and strategies that challenge all students.
Partial school and group instruction	Groups of students who need more intensive instruction are targeted. Building and classroom instructional decision-making activities focus on the lesson, unit, and classroom level to ensure students can progress in the curriculum.
Individualized interventions	Additional curricular content and instructional strategies are designed and implemented to ensure progress for students with learning needs not met by school-wide efforts or partial school efforts.

Source: Wehmeyer, Sands, et al. (2002).

dents with mental retardation. First, students who have access to the general education *classroom* are more likely to have access to the general *curriculum*. What we cannot determine from this study is the degree to which *access to* the general curriculum correlates with *progress in* the general curriculum for these students. It is worth reiterating that the federal law requires that the IEPs of students with disabilities describe the ways students will be involved with and *progress* in the general curriculum. Referring again to Table 5, such efforts will necessarily involve multiple activities. First, as mentioned previously, the standards upon which the general curriculum is based must be written and designed in such a manner that all students can show progress. This can be accomplished if the standards are written to be open-ended and inclusive, not close-ended. The terms *open-ended* and *close-ended* refer to "the amount of specificity and direction provided by curriculum standards, benchmarks, goals or objectives at both the building and classroom levels" (Wehmeyer, Sands, et al., 2002, p. 112). Close-ended standards are specific and require narrowly defined outcomes or performance indicators, like writing papers or performing specific math calculations. Open-ended standards, on the other hand, do not restrict the ways in which students exhibit knowledge or skills and focus more on the expectations that students will interact with the content, ask questions, manipulate materials, make observations, and then communicate their knowledge in a variety of ways (orally, through videotape, writing and directing a play, etc.). Research suggests that open-ended designs allow for greater flexibility of what, when, and how topics will be addressed in the classroom (Stainback, Stainback, Stefanich, & Alper, 1996) and are more consistent with universally designed curricula, ensuring that more students, including students with mental retardation, can show progress in the curricula (Wehmeyer, Sands, et al., 2002).

Second, the design of the student's educational program must take into account both the general curriculum and the student's unique learning needs. Individualization is a hallmark of special education practice, and IDEA access mandates require that students be involved in the general curriculum to the "maximum extent appropriate." For many students with mental retardation, particularly students with severe disabilities, it will be necessary to include instructional activities and tasks that fall outside the context of the general curriculum (although if the first step is done well and curriculum standards are open-ended and address more than just core academic content areas, there is less need to provide alternative content).

Nevertheless, as the final steps in Table 5 indicate, there are several instructional strategies that can promote student involvement in the general curriculum. Among those is the use of curriculum adaptations and augmentations. Curriculum adaptations are efforts to adapt the curriculum's presentation and representation or the student's engagement with the curriculum to promote student involvement. Table 6 lists a number of adaptations that can be used to change how

TABLE 6. Curriculum Adaptation Strategies

Device type (use)	Presentation or representation mode	
	Verbal	Visual
Organize	Summarization Chunking Advance organizer Post organizer Verbal cues about organization	Outline Web Hierarchical graphic organizer Table Grid Flowchart
Promote understanding	Analogy Synonym Antonym Example Comparison Metaphor Simile	Symbol Concrete object Picture Model Diagram
Describe	Current events Past events Fictional story Hypothetical scenario Personal story	Film Filmstrip Video
Demonstrate	Role-play Dramatic portrayal	Physical gesture or movement Movable objects Demonstration
Promote recall	Acronyms Key words	Visual images Sketches

Source: Bulgren and Lenz (1996).

information is presented and how students respond, without changing the content itself. A second level of curriculum modification involves curriculum augmentation, where additional content in the form of teaching students learning-to-learn strategies is added to the curriculum to enable students to progress. Table 7 illustrates a variety of such strategies available for use with students with mental retardation.

It was evident that the general education classroom was the place where students engaged in tasks linked to standards, and, conversely, the place where students worked on IEP goal–related tasks was outside the general education classroom, in either a resource setting or a self-contained classroom. This was partly a function of the fact that students with more intense support needs were primarily served in separate settings in the schools in which we observed. It is also most likely an indictment of the inadequacy of the existing general curriculum to meet the needs of students with mental retardation, suggesting a need to revisit the process of setting

TABLE 7. Cognitive or Learning Strategies Appropriate for Students with Mental Retardation

Strategy domain	Specific strategy	Definition
Rehearsal strategies	Shadowing	Teaching students to repeatedly read aloud a written section, vocalize thinking (think aloud), or repeat information presented orally verbatim
	Verbatim notes	Teaching students to copy sections of text to rehearse information
Encoding and retrieval strategies	Organization and elaboration	Teaching students to organize information to facilitate learning or form additional links with information
	Graphic organizers	Teaching students to use visual representations of concepts or topics
	Semantic mapping	Teaching students to brainstorm about words related to specific vocabulary words
	Question–answer relationships	Teaching students how to ask questions in order to better understand a specific text
	Mnemonics	Teaching students to form associations between content areas
	Key word method	Teaching students to associate specific images with particular words or constructs
	Rhymes	Teaching students to create rhymes to enhance memorization

Source: Rosental-Malek and Bloom (1998).

standards and designing curricula. There may be some confusion between efforts to promote the inclusion of students with mental retardation in general education classrooms and the access to the general curriculum mandates. Although recent reports to Congress on the implementation of IDEA support the ongoing need to focus on *where* students with mental retardation receive their education, the access to the general curriculum mandates do not speak to the issue of *where* students are educated, per se, but focus instead on *what* (i.e., what is the content of the student's educational program). Technically, a student could have access to the general curriculum in settings other than the general classroom. However, IDEA indicates a strong preference for including students with disabilities in typical education settings. The current study, although clearly preliminary, provides support for the notion that students who are included in general education classrooms will have greater access to instruction from the general curriculum. This is clearly only the first step; being in the general classroom does not guarantee that the needed instructional and curricular modifications will be made to ensure success. Nevertheless, inclusion in the general classroom is, seemingly, related to a greater emphasis on the general curriculum. ∎

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