

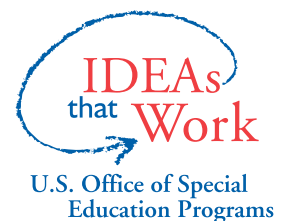
NATIONAL CENTER ON ACCESSING THE GENERAL CURRICULUM

NCAC

Effective Teaching Practices and the Barriers Limiting Their Use in Accessing the Curriculum: A Review of Recent Literature

Teacher Practice

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Effective Teaching Practices and the Barriers Limiting Their Use in Accessing the Curriculum: A Review of Recent Literature

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Introduction

The IDEA amendments of 1997 opened up great opportunities for students with disabilities by mandating their access, participation, and progress in the general education curriculum. However, these opportunities have been difficult to realize, in part due to the persistence of predominantly print-based curricula, suitable perhaps to most learners but a barrier to significant numbers. Increasingly, general education classrooms will undergo rapid changes with the introduction of new forms of media such as digital text, digital images, digital audio, digital video, digital multimedia, and networked environments (O'Neil, 2000). The coming digital curriculum holds the promise of increased flexibility and the capacity to align content and tools more precisely with a wide range of students' strengths and needs. As accessible digital media become ubiquitous in schools and classrooms, the National Center on Accessing the General Curriculum (NCAC) envisions collaborative teams of general educators, special educators and other school personnel able to function with increased efficiency, less stress and greater effectiveness. These educators can raise expectations and improve results for *all* students by providing greater access to the curriculum.

To maximize the likelihood that future curriculum will be accessible, interactive, and enable student progress, NCAC is pursuing a new framework for reform called Universal Design for Learning (UDL) (Rose & Meyer). Based on new insights from brain research and new understandings about the complexities of individual differences (Rose & Meyer, 2000), this new framework advances three guiding principles for the design of learning opportunities (Rose & Meyer):

1. *Provide multiple, flexible methods of presentation in order to support diverse recognition networks.* For example, the content of a lesson on endangered species could be presented as printed text, text in digital format (with an option for text-to-speech, Braille and variable display formats), images, video, or as an online simulation.
2. *Provide multiple, flexible methods of expression and apprenticeship in order to support diverse strategic networks.* For example, when testing understanding of the characteristics of mammals, a teacher could offer flexible options for demonstrating knowledge or skill, including answering multiple choice questions, composing an essay, selecting critical features from a picture series, composing a scrap-book of mammalian exemplars, or giving an oral presentation.
3. *Provide multiple, flexible options for engagement in order to support diverse affective networks.* For example, a lesson about state government could allow the students to select a state of interest to them and learn about the state's government by reading, searching the Web, interviewing government officials, etc. Additionally, for some learners, an extrinsic motivation structure could support their affective networks, much like the system of paychecks do for working adults.

Developments in digital media and UDL cannot move ahead without an understanding of the related contexts of schools and classrooms. With the intent of contributing to such an understanding, this report summarizes the results of a review of the research literature from 1996 to 2001 concerning barriers that impede student access to the general curriculum and the support structures and teaching practices that hold particular promise for improving access for students who have high incidence disabilities.

In recent years, the U.S. Department of Education and the Office of Special Education Programs (OSEP) has supported numerous efforts to examine the knowledge base in special education and identify practices that are supported by the research literature. The results of these efforts have been disseminated through a host of professional publications in the form of meta-analyses, research syntheses, state of the art reports, and various seminal works by recognized leaders in the field. This review targets works published between 1996 and the present that address curriculum barriers and teaching practices in K-12 schools. The authors acknowledge, however, that without more foundational research, predating 1996, the field would not be where it is at this time (e.g., Fuchs & Fuchs, 1994; Lipsky & Gartner, 1997; Stainbeck & Steinbeck, 1989,1992;).

Published works were identified using the ERIC thesaurus. Keyword descriptors were generated to maximize the possibility of locating articles relevant to the two research questions: “What are the barriers for accessing curriculum?” and “What are the current practices used to overcome these barriers?” The initial descriptors included:

- Universal design
- Accessibility for the disabled
- Curriculum
- Access to education
- Access to education for disabled
- Instructional improvement
- Differentiated instruction
- Meta-analyses
- Synthesis
- Teacher practice
- Learning disabilities and research
- Special education practice
- Intervention strategies for learning disabled

Additional keywords were gleaned from the sources identified as having the highest degree of relevancy. Priority was assigned to the references in reverse chronological order, and to those that were meta-analyses, syntheses, and literature reviews. Single studies were used to fill in the gaps between the comprehensive articles. In all, the review encompassed 87 studies.

EndNote database software was used to keep bibliographic records as well as to code pertinent data from each article, including demographic information, methodological information, descriptions of interventions, findings, and limitations. EndNote search capabilities allowed us to compile and categorize relevant studies for aggregation of the data. Presenting these findings in table format grants deeper insight into the application of interventions in research and practice by supporting, for example, the identification of commonalities and differences across disciplines and grades. The appended tables contain the complete literature database.

Barriers Limiting Access to the General Curriculum

Teachers employ a variety of instructional methods in classrooms. Many of these methods are well grounded in an educational pedagogy and constitute validated classroom practices. Moreover, these teaching practices are most often applied for the intended purpose of producing the best possible results. However, classroom research indicates that within and outside

classrooms, both students and teachers face a range of barriers that block access to and impede progress in the general curriculum. These barriers range from practical issues, such as physical and instructional access, to philosophical differences, such as theoretical and pedagogical views and include the great diversity of students in classrooms. In the following sections, most frequently noted barriers in the literature as limiting access to the curriculum are presented.

Differing Interpretations of Inclusion

The laws and regulations requiring access to the general curriculum for all students have resulted in a trend toward inclusion. A problematic and fundamental starting point for the discussion of curriculum barriers is that the term *inclusion* has many interpretations (e.g., Fuchs & Fuchs, 1994; Hewitt, 1999; Kauffman, & Hallahan, 1995; Stainback, & Stainback, 1992; Will, 1986). Some teachers view inclusion as dichotomous teaching—teaching special needs students and general education students in the same classroom but at different times, in different spaces and with different lessons. Many would argue that this is as exclusive as teaching students with disabilities in a separate classroom. In other adaptations of inclusion, the school simply provides a place for special needs students among their peers without variation of instruction. This kind of whole class instruction without individualization frequently presents problems for learners with disabilities (Elbaum, Vaughn, Hughes, & Watson-Moody, 1999). For example, Moody et al. (2000) reported that most teachers taught reading much like they were instructing a whole class of students with the same abilities. These teachers provided little instruction that addressed word recognition or specific reading comprehension strategies for the students who were less able, including students with disabilities.

Supporters of full inclusion propose that all students should be educated in the general education classroom, but overemphasis on full inclusion “runs the risk of over-generalizing an ideology quite detached from the realities of classrooms” (Chow Blais, and Hemingway, 1999 p. 464). Chow et al. (1999) question whether some advocates of full inclusion are respecting the nature and severity of disabilities or possibly seizing a “golden opportunity” to cut back on expensive special education services.

The National Center on Accessing the General Curriculum has adapted the definition of inclusion introduced by York (1997). Inclusion means that students with disabilities are (a) attending the same schools as siblings and neighbors, (b) have membership in general education classrooms with age-appropriate peers, (c) have individualized, relevant learning objectives, and (d) are provided with the means to access classroom curriculum materials. Defined as such, inclusion leads to a greater number of students participating in the general education classroom. However they define inclusion, teachers today are increasingly confronted with the expectation that they must meet the needs of all learners.

Curriculum Standards and Availability

Meeting every student’s needs becomes a challenge in general education classrooms where students with disabilities are integrated to the fullest extent possible. Moody et al. (2000) note that current reform movements are stressing higher, more specific and more inflexible academic performance requirements. The need to align curriculum and instruction more carefully with standards to improve achievement of performance requirements leaves less time and opportunity for teachers to accommodate and adapt instruction for students with disabilities (Deschenes, Cuban, & Tyack, 2001; King-Sears & Cummings, 1996; Klingner & Vaughn, 1999). King-Sears (1997) questioned, “How much can an educator differentiate instruction?” Unfortunately, adaptations to meet all students’ needs are not feasible given the other demands placed on teachers.

The overall cultures in schools (Mamlin, 1999) and teachers' unfamiliarity with the standards-based reform movement (Maccini & Gagnon, 2000) are also not conducive to the consideration of all learners. Nolet and McLaughlin (2000) state that for many special education teachers, access to the general education curriculum is more "rhetorical than practical." Moreover, they provide case study examples of general education teachers and administrators who ask what it means to provide access to the general education curriculum and "why should they want to do this" (p. 9). Clearly, meeting all students' needs whenever possible in the general education setting is a challenge that must be carefully addressed in all academic settings as teachers and schools work to conform with standards-based reforms and legal requirements.

Increased Practitioner Responsibilities

The obligation to meet the needs of individual students creates challenges for all teachers but particularly for those with large class sizes. The large caseloads carried by teachers in diverse classroom settings prevent them from individualizing instruction (Moody et al., 2000). As teachers' responsibilities continue to grow, they are nevertheless increasingly called upon to assess and accommodate every student's individual approach to learning (Schumm, Vaughn, Gordon, & Rothlein, 1994; Schumm, Vaughn, Haager, McDowell, Rothlein, & Saumell, 1995). Inevitably, both general and special educators must adjust to taking on additional classroom responsibilities. They must assume new roles, develop new competencies, and become more aware of the philosophy and process of inclusion (Benner, 1998; Chow et al. 1999; Pugach & Johnson, 1995). These new roles include, but are not limited to, assessing and accommodating individual academic, intellectual, and emotional needs. Students must be prepared for participation in standards-based assessments, and teachers must adjust the curriculum and instructional approach accordingly. Teachers must also determine requirements for and access to resources and support systems and recognize the importance of positive attitudes toward students with disabilities (Chow et al. 1999). All of these expectations are set in a context of increasing concern with having all students meet the same standards through broad scale assessment systems.

Practitioner Attitudes to Shifting Roles and Expectations

As responsibilities expand and expectations increase, teachers' attitudes toward challenges vary. Negative attitudes can emerge among special educators (Cook, Semmel, & Gerber, 1999) when their validated practices do not transfer easily to general education classrooms (Chow et al., 1999). When special educators are unfamiliar with the general education structure and curriculum, the coordination of special and general education teachers is made all the more problematic (Nolet & McLaughlin, 2000). Such unfamiliarity may make special educators reluctant to embrace the philosophy of inclusion (Hewitt, 1999). Moreover, when working in the general education classroom, special education teachers are noted in the research to, in some cases, be taking on the role of an instructional aide rather than that of a fully qualified teacher, with the unfortunate consequence of poor feelings about the situation. Additionally, this structure leaves special education teachers with less time for special education students (Hewitt, 1999). Klingner and Vaughn (1999) observe that these constraints can ultimately inhibit progress for students with learning disabilities. In fact, King-Sears (1997) states that inclusive practices may limit students with learning disabilities to "just getting by" from day-to-day.

Negative attitudes also develop among general practitioners, reflecting their frustration with systemic obstacles to effective instruction and inclusion. Many of the reviewed studies examined the factors that make general education teachers more or less receptive to inclusion, finding that the more teachers feel overworked and overwhelmed with trying to meet students' individual

needs, the more resistant they become to inclusion (Soodak et al. 1998). Soodak, Podell, & Lehman (1998) found that teachers are more receptive to those with physical disabilities because the disabilities are seen as involuntary. In contrast, students with cognitive and behavior disorders may be viewed as “blamable.”

Thus, attitudinal shifts on the part of both special and general educators need to occur in order for inclusion to be successful. Clearly, there is need for professional development that would help teachers from both special and general education to clarify roles, responsibilities, and beliefs about the inclusion of students with disabilities. Teachers need time to learn new skills, but more importantly they need opportunity to identify mutual and complementary skills. They need to feel empowered, so that all teachers come to this new, shared responsibility from a stance of real purpose and commitment.

Issues of Time, Skills and Training

Some of the barriers that have been identified appear to be beyond the classroom level, relating to the resources needed by general educators to implement inclusion. General education teachers frequently report having inadequate training, time and personnel resources for including students with disabilities (Scruggs & Mastropieri, 1996a). This is not surprising given that many states and teacher training programs do not require general education majors to enroll in even a single class with a focus on students with disabilities. Higher education programs in education and common inservice education do not emphasize the preparation of general education teachers for working with the diversity of students that currently constitute general education classrooms (Nolet & McLaughlin, 2000; Schumm, et al., 1994). The outcome of these current training practices is that many teachers enter the work force with no formal education regarding students with disabilities, unprepared to work with special needs populations (Hewitt, 1999). This is likely to affect the quality of education that they can provide to students with disabilities and secondarily these students’ access to curricula.

Teachers also report that insufficient time is available to plan, design adaptations, consult and collaborate with special education teachers (Boon & Mastropieri, 1999; Dev & Scruggs, 1997; Scruggs and Mastropieri, 1996b). Teachers experience frustration with their lack of time to give students with learning disabilities what they need, and may give up lunch periods to do so (Moody, Vaughn, Hughes, & Fischer, 2000). Thus, teacher planning and collaboration time is critical for the successful implementation of an inclusion model.

Teacher and Student Perceptions of Curriculum Adaptations

A frequent concern voiced by many general education teachers is that of “fairness.” Adaptation may be necessary to meet the needs of all students. Presented with the same lesson, some children feel it progresses too slow and is too easy, while others feel it progresses too rapidly and is too difficult (Moody et al., 2000). Some students may require accommodations. For example, some students with learning disabilities may require tools such as spelling and grammar checkers to manage the writing process – due to language difficulties or lack of knowledge in the writing process (DeLaPaz, 1999). When the curriculum is adapted for these learners, how is that perceived by others? According to research, general education students may perceive this practice as unfair (Vaughn et al. 1996).

This perceived unfairness on the part of general education students may not itself be particularly problematic; research suggests that general education students do not interpret adaptations for students with disabilities as prohibiting their own learning (Klingner and Vaughn, 1999). The

real concern may rest with teachers, who in general place too much emphasis on the student as a problem (King-Sears, 1997), one of the perceptions Universal Design for Learning is trying to change. Universal Design for Learning turns this perception on its head by remedying curricular barriers to student access instead of seeing the student as the site of change.

Potential Strategies for Overcoming Barriers

As illustrated here, there are numerous and significant barriers to students' accessing the curriculum. How might teachers and students overcome these barriers? To answer this question we look again to the research literature and examine studies reporting on current practices attempting to overcome these barriers. These practices include providing systemic reform, instructional goals, administrative support, teacher support, and equal opportunities for students. In addition to the research outlined below, more research is critical to assessing the best ways to implement these support structures. Specifically, integrating UDL among these means of overcoming barriers is an area calling for more analysis.

Systemic Reform

Overcoming barriers tied to larger systemic issues calls for systemic educational reform. Osborne and DiMattia (1995) urge school officials to take a more active role in restructuring educational systems so that inclusion becomes a reality (Chow, Blais, & Hemingway, 1999). One approach that is important to consider is a "bottom-up" method of generating and implementing policy and providing the resources, conditions and time necessary to make inclusion successful (Cook, Semmel, & Gerber, 1999). Additionally, the ownership for change should be from all levels, administrative, teacher and parent (Osborne & DiMattia, 1995).

Instructional Goals

The key ingredient to effective instruction for all learners is instruction, not placement. Inclusion calls for guided instructional practice (Kuhn & Stahl, 1998), changes in curriculum and changes in pedagogy (Hewitt, 1999). The focus needs to be on intensive, direct and special instruction (Moody, Vaughn, Hughes, & Fischer, 2000). All of these impact the objectives in teachers' lesson plans. Goals for instruction need to be aligned to the instructional episode from introduction to student activities and assessment.

One promising way to address every student's needs is to assess students' "zone of proximal development (ZPD)" (Vygotsky, 1978). Vygotsky (1978) coined this phrase to describe:

....the distance between the actual developmental level as determined by independent problem-solving and the level of potential development as determined through problem-solving under adult guidance or in collaboration with more capable peers. (p. 86)

Thus, teachers should encourage students to work towards accomplishments just beyond their current capacity. This is possible with UDL. Universally designed instructional goals contain the following components; they are clearly stated, observable, measurable, separate from the means and performance criteria, and connected to the curriculum standards. When goals are clearly stated and do not needlessly restrict means and performance criteria, students have the necessary leeway to work in their ZPD and, consequently, chance to make optimal progress.

Administrative Support

Administrators must be more aware and supportive of the needs of general and special education teachers working with students identified as having special needs. One proactive procedure by which this can be accomplished is for administrators to take a more active role in providing continuing in-service training for general education teachers. Additionally, by encouraging active collaboration between special and regular education teachers, administrators can make implementations of school change more successful (Pugach & Johnson, 1995). One way administrators can foster collaboration is by scheduling shared or common planning time between these educators. When all personnel establish and act upon the instructional goal, the needs of all students are better met (Snyder, 1999). Additional guidance regarding the benefits of administrative support can be found in the effective school and site-based management literature (Darling-Hammond, 1997; Meier, 1995; Wohlstetter, & Mohrman, 1996).

Teacher Support

The successful implementation of inclusion in general education classrooms can burden already overworked teachers with extra responsibilities. If support is not provided for these teachers integration of diverse learners is almost certain to fail. Support can take the form of professional development, opportunities for collaboration, extra personnel, more time, and higher salaries (Pugach & Johnson, 1995). Snyder (1999) advises that, “Administrators and special educators need to be more aware and supportive of the needs of the general education teachers who are working with special education students” (p. 180). The more professional development in the area of special education, the more understanding teachers become of student needs and the more positive their attitudes toward inclusion (O’Shea, 1999). Professional development is instrumental for general education teachers to be able to meet the needs of students with disabilities (Snyder, 1999), particularly because it introduces them to new instructional practices. Systemic changes can also support teachers. Decreasing class size allows teachers to work individually with all students, especially those who have special needs. Collaboration and team teaching can greatly reduce apprehension about inclusion. Liberman, quoted by Snyder (1999) stated that “[inclusion] is like a wedding in which we, as special educators, have forgotten to invite the bride (general educators)” (p. 173). Snyder (1999) suggests that for successful inclusion general educators need to be involved early and at all stages of planning.

Equal Opportunities for Students

Equifinality, the assurance that all students have an equal opportunity to access education in an environment conducive to learning can maximize individual development (Chow et al., 1999). Student voices should be considered as teachers make decisions about instructional routines (Vaughn, Bos, & Schumm, 2000). By adapting the curriculum and instruction to the needs of learners with disabilities instead of attempting to “fix” the student, barriers to equal learning opportunity can be eliminated.

Teachers incorporating the principles of UDL into their lesson plans can move towards this goal. Traditionally, curriculum followed a developmental skills progression in which students were not given the opportunity to write until they learned to read; they were not given the opportunity to problem solve until they learned to calculate. These practices were largely driven by the static nature of curriculum resources and efficiency models of grouping. Lessons that allow students to

“read” using synthesized speech or discover problem-solving strategies by using a calculator bring more students into the activity, yielding improved results.

Implementation of Effective Teaching Practices for Accessing the General Curriculum

Efforts to integrate students with disabilities into the least restrictive milieu promote improvements in self-concept, social awareness, and overall cognitive functioning. Chow et al. (1999) suggest that combining general education and special education techniques can provide the best of both worlds, benefiting all learners. They conclude that while some opponents of inclusion believe it is unrealistic and downright harmful to children, the literature has in many cases illuminated benefits. For example, Klingner and Vaughn’s (1999) study found that most students did not perceive the instructional adaptations and accommodations to meet the special needs of selected students as problematic. In fact, the majority of students believed that these adaptations and accommodations could facilitate their own learning. Yet, Snyder (1999) and Mercer et al. (1996) caution that inclusion is not necessarily the best approach for all students with disabilities. Forness, Kavale, Blum and Lloyd (1997) as well as Mercer et al. (1996) express concern that research material in the area of inclusion is becoming dated and recommended further research.

Zigmond, Jenkins, Fuchs and Fafard (1995) present the Vanderbilt Model Integration Project as an example of a comprehensive program incorporating an array of effective practices and thus holding great promise for the future. The program increases the capacity of general education to accommodate student diversity, boosts meaningful participation, and improves the achievement outcomes of students with learning disabilities. These goals are achieved by relying on ongoing assessment, intensive instruction for students with learning disabilities, trans-environmental programming to increase the similarity between special and general education settings (instruction, motivational strategies, curriculum materials, expectations for classroom behavior), and frequent structured meetings between special and general education teachers.

Inherent in successful instructional methods is a built-in flexibility that allows teachers to address the needs of a diverse student body. While some of the best practices are those that are tried and true, others are just now gaining popularity and merit further research. For additional references addressing the effective practices discussed below, see the tables appended to this document.

Collaboration Among Stakeholders

All general education professionals, administrators and parents of students with disabilities need to be involved in the conceptualization and implementation of inclusion. Collaboration with a great deal of verbal communication and planning should be the foundation of all inclusion plans. Collaboration among these groups can help to shape and realize the appropriate learning environment. King-Sears (1997) recommends a proactive student behavior management approach consistent *across* the school, along with frequent and positive communications with families and collegial teams that support individual teachers and students. Such an approach contributes to the success of responsible inclusion.

Involving all perspectives allows for the consideration of how the demands of schooling affect all students, not just students with learning problems. Preparing administrators and teachers before modifying practices and incorporating teacher input into implementation of inclusion can pave the way for success (Mamlin, 1999). Miller, Brownell, and Smith (1999) also suggest strong administrative leadership with shared decision making.

Parental Involvement

Instructional practices that promote meeting the needs of all learners in the general classroom can be further supported in the home environment. Involving parents in the education of their children and encouraging them to take an active role in their children's academic program maximizes learning time, builds students' self-esteem, and focuses resources for individualized instruction (Kauffman, 1993; Hewitt, 1999). One of the most obvious roles parents can take is in helping students with supplemental instruction such as homework (Swanson, 1999). Regardless of the degree of involvement on the home front, communication between school and home is essential for progress (Nelson, Epstein, Bursuck, Jayanthi, & Sawyer (1998).

Teacher Collaboration

Teamwork among educators with no territorial attitude between general and special educators is also a constructive feature of successful inclusion. Cooperative teaching and consultant services between general and special education teachers help move students at a successful pace academically, emotionally, and socially into the least restrictive environment (Cook et al., 1999). Together, general and special education teachers can offer a range of services rather than a continuum of placements (Barry, 1994). By using the strategies of cooperative teaching teachers develop the potential for transforming how concept or skills may ordinarily be taught, what materials are used to support content, and how to apply methods and strategies (Hewitt, 1999)

An aspect of collaborative teaching that is most important, but also most neglected, is co-planning (Downing et al., 1997; Hewitt, 1999; McLeskey et al., 1999; O'Shea, 1999; Salend & Duhaney, 1999). Common planning time enables more than just an opportunity to hammer out the nuts and bolts of instruction; it is a collaborative process, where teachers develop a shared vision. This shared vision actively involves educators in all steps of the change process including adoption or initiation and implementation of strategies for effective instruction.

Managing a Self-Directed Learning Environment

Self-regulated strategies (goal setting, self instruction, self-monitoring) assist students in learning how to compose, plan and revise their work. For example, Field and Hoffman (1994) propose a self-determination model for students. Van Reusen, Deshler and Schumaker (1989) found that high school students with learning disabilities who were taught to self-advocate during their Individual Education Program (IEP) conferences contributed important and relevant information. Their input accounted for 86% of the goals on their IEPs.

Mastropieri, Scruggs and Shiah (1991) compared the effect of different goal setting conditions (self-set goals, assigned goals, and no goals) on thirty, sixth grade students with learning disabilities' self-efficacy, subtraction borrowing skills and expectancy of goal attainment. Students in the self-set condition would have to decide how many pages to complete for the day.

These students performed higher than students in both the “assigned goals” and “no goals” groups on all three measures. Thus, when students are involved and empowered to be meta-cognitive about their skills and abilities, they take ownership of their learning and work. This leads to self-directed learning that enriches their life skills, preparing them to participate fully as citizens and valuable contributors in the workplace.

It must be emphasized that self-directed learning is not unstructured learning. Generalization techniques, i.e. applying skills and knowledge beyond the classroom, are instrumental in providing a framework. Educators should know “where they are taking a class,” as well as where they are taking every individual student in relation to the instructional goal (what they will learn, why they are learning that information, and how it applies in real world living).

When the primary focus is the needs of the individual child, finding the environment that can address those needs is crucial (Hewitt, 1999). According to King-Sears (1997), differentiated instruction, which includes accommodation, adaptation, parallel instruction, and overlapping instruction; has been shown to be effective for this purpose. Moreover, if students are kept apprised of their performance capabilities, engagement increases, and they can self-select incremental individualized goals as stepping-stones to achieving the overarching aims set by the teacher.

Strategy instruction, in particular, redirects educators’ efforts away from helping a student to keep up with day-to-day demands on content learning toward enabling the student to learn strategies to do so independently. Strategy instruction and scaffolding co-exist as key ingredients for self-directed learning. Students will not apply strategies independently if they do not attain mastery (King-Sears, 1997; Scanlon, Deshler, & Schumaker, 1996). Teachers can use strategy instruction to create an environment conducive to learning for all students by allowing for different levels of challenge and different kinds of engagement, thus keeping students in their ZPD.

Peer Support Structures

Peer supports can allow learners to act as both teachers and learners in the classroom. Peer-mediated instructional strategies or peer mediated instruction and intervention (PMII) serve as alternative classroom arrangements in which students take an instructional role with classmates or other children (King-Sears, 2001). Acting as a teacher allows students to consolidate and refine their own learning. To be most effective, students must be taught roles in the instructional episode, as well as to be systematic, elicit responses, and provide feedback (Fulk & King, 2001; Utley, Mortweet, & Greenwood, 1997). Research supports the use of these approaches as alternative practice activities; however, it does not support the use of peers for providing instruction in “new” instructional content (Greenwood, Arreaga-Mayer, Utley, Gavin, & Terry, 2001; Harper, Maheady, Mallette, & Karnes, 1999; Mastropieri, Scruggs, Mohler, Beranek, Spencer, Boon, & Talbott, 2001).

Many approaches have been developed in which students may work in pairs or small groups. Collaborative/cooperative learning (Cook, Semmel, & Gerber, 1999) or small group learning, particularly student pairing (Elbaum, Vaughn, Hughes, & Watson-Moody, 1999), is effective

when students receive appropriate help from a group member. This is best accomplished when the teacher structures cooperative learning groups. Defining specific roles for each participant helps the students achieve clearly stated goals (Gillies & Ashman, 2000). Haring and Breen (1992) note that forming and supporting social networks is a more effective, efficient, and natural way for students with disabilities to learn how to participate in non-structured contexts. Direct adult support is not necessary to initiate and maintain the interactions, as students rely more on peer-controlled than adult-controlled situations (King-Sears, 1997).

Both peer learning and teacher-facilitated instruction tap into Vygotsky's (1978) ZPD. ZPD has a direct bearing on practice in psychological testing and school instruction. Potentially, a child may extend his/her ZPD through peer-mediated activities (Gindis, 1999). The examined literature supports Vygotsky's theory of social construction of knowledge, as cooperative learning was by far the most popular effective teaching strategy studied by researchers – although it is one not necessarily employed by special educators.

Flexible Grouping

When students with learning disabilities are in smaller learning communities in inclusive settings they contribute greatly to group efforts and complete assigned tasks (King-Sears, 1997). On the other hand, homogenous grouping can also support academic success for these students when instructional materials are varied to meet the needs of different groups of students (Moody, Vaughn, Hughes, & Fischer, 2000). Flexible grouping allows students to work in a variety of configurations to best meet their current needs and promotes socially constructed knowledge opportunities (Soodak et al., 1998). King-Sears and Cummings (1996) recommend using assessment data to form four groups of students within a classroom (HALO): “H” for high achievers, “A” for average or typical students, “L” for low achievers and “O” for other students or students with disabilities. Scores across HALO should indicate that all students are progressing (King-Sears, 1997).

Explicit and Implicit Instruction Continuum

The research literature frequently pits explicit (direct) instruction against implicit (indirect) instruction. Explicit instruction may be teacher directed and carefully scripted and sequenced whereas implicit instruction may be project-based or activity centered. While explicit instruction may focus on skill acquisition, implicit instruction may promote more open-ended and possibly authentic learning outcomes. Both types of instruction can be beneficial. In the early stages of learning, as students begin to acquire skills, they may benefit from explicit instruction. During later stages they may benefit more from implicit instruction, working on projects where they demonstrate how to apply what they have learned.

A fundamental component of explicit instruction is scaffolding. Scaffolding is the provision of temporary support or guidance to students during initial learning in the form of steps, tasks, and materials; with the ultimate goal of self-directed learning. By providing students with building blocks for future learning, scaffolding helps to ensure that new material is reduced in complexity. When a new task is structured into manageable chunks, the odds of successful task completion are increased (Kameenui, & Simmons, 1998). The degree of scaffolding changes with the abilities of the learner, the goals of instruction, and the complexities of the task. Scaffolds are

gradually removed as the learner becomes more successful and independent at task completion. Thus, the purpose of scaffolding is to allow all students to become successful in independent activities considered to be more implicit (DeLaPaz, 1999). The process of scaffolding brings out the abilities that have been emerging and developing and thus reveals the hidden potential of a child, which is crucial for prognosis and diagnosis (Gindis, 1999).

Inclusive or heterogeneous classrooms may present curriculum differentially to students depending on how much direct or explicit instruction and how much opportunity for application an individual student require. Mercer and Mercer (2000) recommend that teachers consider the notion of a continuum from explicit to implicit, which could prove useful in models of collaboration such as co-teaching between general educators and special educators.

Thus, both explicit and implicit instructional practices have an important role in all classrooms with all learners. It is a disservice to students to provide too much scaffolding or structure throughout the learning process, just as it is unrealistic to expect learners to complete tasks without guidance. Therefore, a continuum of services from high to low levels of support is recommended (e.g., DeLaPaz, 1999; Kameenui & Simmons, 1998; Rosenshine & Stevens, 1985).

Formative Evaluation


The results of all instructional efforts can be measured in an authentic way by using formative evaluation. This frequently used curriculum-based technique indicates to teachers the extent to which their methods are resulting in desirable achievement gains for individuals or groups of students. It is a useful tool for shaping future instruction. When assessing instructional methods it is important to bear in mind the argument of Gersten, Keating, and Irvin (1995), that assessment is only valid if it results in improved learning; it should guide teachers' decision-making during learning, not solely or primarily at the end. Assessments should not only be frequent but also varied. Because students engage in and express learning outcomes in various ways, varied assessments more accurately capture the progress individual students make on self-set and teacher-set goals (Stainback & Stainback, 1992; Zigmond et al., 1995). This research underscores the need to offer students multiple means to demonstrate skill and knowledge, which is one of the tenets of UDL.

Conclusion

Teachers and other school personnel work together to make decisions about what to teach and how to teach. This collaborative planning process is very likely the most important activity in which teachers engage. The national priority of "leaving no child behind" implies that educational resources must extend to meet the needs of students who are at-risk, from diverse backgrounds or have a disability. However, both structural and ideological barriers to curriculum access are well established in schools and classrooms. This report identified several of these barriers and then presented teaching practices that have been demonstrated to reduce their impact on students' opportunities for making effective progress. In an era of standards-based reform, where great emphasis is placed on schooling outcomes, scientifically validated instructional interventions and teaching approaches must be made palpable so that practitioners can apply them in their own learning environments. The practices identified here are known to work under

the conditions in which they were developed and investigated. The realities of classrooms and the residuals of barriers, however, suggest that to solve these longstanding challenges students, teachers and administrators must invest heavily.

Techniques used in both general and special education settings frequently complement one another to produce environments and create opportunities conducive to optimal learning. As described at the outset of this report, technology tools and digital media will increase curriculum flexibility enormously. Application of the principles of UDL will ensure that digital curriculum will be accessible by the widest possible range of students. But new technologies and new digitally based media will not replace teachers. Rather, UDL will reform curriculum so that the challenges of teaching all students will become a more joyful and doable undertaking.

In summary, the literature findings point to the need for flexibility in planning instructional routines, selection of media and materials, and design of learning activities in order for instruction to be considerate of the learner. These studies support the underlying principles of UDL: multiple means of representation, multiple means of engagement, and multiple means of expression. 

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