Reconciling an Ecological Curricular Framework Focusing on Quality of Life Outcomes With the Development and Instruction of Standards-Based Academic Goals

Pam Hunt  
San Francisco State University  
John McDonnell and Margret A. Crockett  
University of Utah

The emergence of the standards-based reform movement has raised a number of issues related to the design of educational programs for students with severe disabilities, and a debate has arisen that presents an “either/or” choice between the general education curriculum and an ecological curricular framework that has traditionally guided curriculum development. In this paper, the authors propose that, to adequately meet the needs of students with moderate to severe disabilities, an ecological approach focusing on quality of life outcomes must be reconciled with the development and implementation of standards-based academic curricula. To accomplish this reconciliation, the authors recommend that individualized education plan teams engage in a process that allows them to work within an ecological curricular framework to develop standards-based goals that reflect meaningful knowledge and skills that are tailored to students’ individual needs and applicable to their everyday lives. They propose that quality of life goals expand beyond home, friendships, community participation, and work to include academic goals that are life enriching and promote lifelong learning that can be linked to a broader range of subject area domains in the core curriculum. In addition, they suggest instructional approaches that promote effective instruction and generalized outcomes for both academic and functional skills. Finally, they outline a number of issues that require additional reflection, discussion, and research.

DESCRIPTORS: ecological curricular framework, standard-based academic goals, quality of life, instructional strategies, generalization

The ecological framework for curriculum development for students with severe disabilities emerged in the late 1970s in response to the concerns of advocates and researchers that traditional developmental and academic curricular approaches for this group of students had not lead to significant improvements in their quality of life (Brown et al., 1979). In contrast to developmental and academic curricular models that focused on teaching students a predetermined sequence of skills, the ecological framework was structured to identify and teach the routines, activities, and skills that students needed to learn to support their full participation in home, school, work, and community settings. The educational planning process was dynamic and took into account a number of factors including the students’ and their family’s preferences, needs, and resources; the opportunities and supports that were available to the students in their community; and the students’ long-term goals and aspirations. Educational goals were not driven by a specific curricular sequence but rather were based on a student’s individual needs. The effectiveness of an educational program was evaluated in terms of its impact on promoting a student’s use of community resources, ability to live where and with whom he or she chooses, opportunity to have paid employment in typical businesses and industries, and his or her independence and autonomy.

As the ecological framework took root as the predominate approach for developing curriculum for students with severe disabilities (cf., Ford et al., 1989; Neel & Billingsley, 1989; Sailor et al., 1989; Wilcox & Bellamy, 1987), it soon became clear that simply making students more competent in typical settings was insufficient to meet the broader goals of full acceptance and membership in the community. As a result, the expected outcomes of this approach to curriculum development expanded from increasing students’ presence and participation in the community to the development of positive
social relationships and friendships (Giangreco & Putnam, 1991). The result was that advocates and researchers began to emphasize the need for students to attend their neighborhood schools, participate in the instructional and extracurricular activities of general education classes and the school, and develop meaningful friendships with peers without disabilities. As a result, social connectedness became as important in defining students’ quality of life as having satisfying work and a comfortable home, being able to use the resources of the community, and having control over one’s life.

Research examining the postschool outcomes of young adults with severe disabilities has repeatedly affirmed the benefits of the ecological approach to curriculum development. For example, research indicates that educational programs that are anchored to the routines, activities, and skills needed to participate in the community and are focused on fostering social connectedness improve students’ adjustment to employment (Benz, Lindstrom & Yovanoff, 2000; Blackorby & Wagner, 1996; Phelps & Hanley-Maxwell, 1997; White & Weiner, 2004), independent living (Blackorby & Wagner, 1996; Stancliffe & Lakin, 2007), and development of social relationships with peers without disabilities (Chadsey, 2007). Given these outcomes, it is not surprising that an ecological approach to curriculum development continues to enjoy strong support from the field today (Dymond & Orelove, 2001; McDonnell & Hardman, 2010; Wehman, 2006).

The emergence of the standards-based reform movement in the late 1990s has raised a number of issues related to the curriculum and the design of educational programs for students with severe disabilities. The focus of this movement was to ensure that (a) schools, districts, and states establish high academic expectations for students; (b) students who are at risk of school failure and those with disabilities have equal access to the general education curriculum; (c) curriculum, assessment, and instruction are aligned to increase school, district, and state accountability for student achievement; and (d) educational resources are allocated in ways that maximize learning for all students (McGregor, 2003; McLaughlin & Tilstone, 2000).

The standards-based reform movement culminated with the passage of the No Child Left Behind (NCLB) Act in 2001. NCLB requires states to establish rigorous academic content and academic achievement standards for all students in the areas of reading/language arts, mathematics, and science. Academic achievement standards must be aligned with the state’s academic content standards and be incorporated into a comprehensive assessment system that allows states to evaluate students’ “adequate yearly progress” toward mastering the academic content standards.

The Individuals With Disabilities Education Act (IDEA) was amended in 2004 to align it with the key elements of NCLB (Yell, Shriner, & Katsiyannis, 2006). Of particular importance is the requirement that individualized education plan (IEP) teams must determine how students with disabilities will participate and progress in the general education curriculum. Furthermore, the law requires that students with disabilities participate in the statewide assessment system or an alternate assessment to determine their adequate yearly progress toward meeting the state’s academic achievement standards in reading/language arts, mathematics, and science.

Given the broad support in the field for an ecological approach to curriculum development, it is not surprising that the enactment of these mandates has resulted in on-going discussion among advocates and researchers about which curricular approach should drive the development of students’ educational programs. Some researchers have suggested that the emphasis in IDEA on participation and progress in the general education curriculum reinforces the idea that all students can learn complex academic skills (Browder, Wakeman, et al., 2007; Thurlow, 2002). Indeed, there is a growing body of research that supports this argument and provides empirical evidence that these students can learn skills drawn from the general education curriculum when provided explicit and systematic instruction (Browder, Trela, & Jimenez, 2007; Dymond et al., 2006; Jimenez, Browder, & Courtade, 2008; McDonnell, Johnson, Polychronis, & Riesen, 2002; Ryndak, Morrison, & Sommerstein, 1999).

Other researchers have argued that these mandates raise a number of questions about the design and implementation of students’ educational programs (Ryndak, Alper, Hughes, & McDonnell, 2012; Lowrey, Drasgow, Renzaglia, & Chezan, 2007). First is whether alternate assessments will drive the selection of goals and objectives and will result in a loss of individualized IEPs that are specifically tailored to students’ educational needs. This is based on the concern that teachers will no longer take a person-centered approach to the design of IEPs and will essentially begin to “teach to the test.” Second is whether the focus on the general education curriculum and high-stakes testing will lead IEP teams to abandon an ecological approach to curriculum development altogether as a basis for designing students’ educational programs even though it is not required in the law. The result would be a dramatic shift in the focus of educational programs for students away from teaching functional routines, activities, and skills that improve their performance in typical settings to teaching isolated reading/language arts, mathematics, and science concepts and skills. Third is the concern that all students, especially those with severe disabilities, have significant difficulties generalizing skills from academic to natural performance settings (Horner, McDonnell, & Bellamy, 1986; Rosenthal-Bloom & Malek, 1998). Finally is the concern regarding the lack of research evaluating the impacts of students’ participation in the general education curriculum and alternate assessments on either their short-term academic achievement or long-term, postschool outcomes.
Although it appears that NCLB, and subsequently IDEA, will be amended in the next Congress, it is likely that some form of high-stakes assessment linked to the general education curriculum will remain a central element of both laws. The result is that IEP teams will continue to be required to design education programs that will allow students to master rigorous academic knowledge and skills drawn from the general education curriculum. It is also true that students with severe disabilities will continue to need educational programs that support their acquisition of functional routines, activities, and skills that are necessary to live, work, and participate in the community. We suggest that it is time to move beyond casting the debate as a choice between the general education curriculum and an ecological curricular framework. Instead, we propose that, to adequately meet the needs of students with severe disabilities, an ecological approach focusing on quality of life outcomes must be reconciled with the development and implementation of standards-based academic curricula.

To accomplish this reconciliation, the authors propose that an ecological approach to curriculum development become the overarching framework for all curriculum development activities; that is, consideration of high-priority goal areas associated with quality of life outcomes for individual students must guide the selection of IEP goals and the development of curricular and instructional approaches, activities, and contexts. In addition, we recommend that IEP teams engage in a process that allows them to work within an ecological curricular framework to develop standards-based academic goals that reflect meaningful knowledge and skills that are tailored to a student's individual needs and applicable to their everyday life. Finally, we suggest instructional approaches and strategies that promote effective instruction and generalized outcomes for both academic and functional skills.

**Working Within an Ecological Curricular Framework to Develop and Teach Standards-Based Academic Goals**

With an overarching ecological curricular framework, the question that drives all curriculum development activities is this: What can we teach students and how can we arrange educational environments to increase quality of life outcomes; connect the students to their worlds of home, school, and community; and increase postschool outcomes of full access and social participation, employment, and independent living (Ayres, Douglas, Lowrey, & Sievers, 2011; Ford et al., 1989; Sailor et al., 1989; Turnbull, Turnbull, Wehmeyer, & Park, 2003)? The focus is on curricula that are relevant to students' individual lives and interests and are, therefore, meaningful and motivating.

A variety of student and family-centered assessments are implemented to identify individualized, high-priority, quality of life goal areas as the first step in the overall assessment process. Ecological assessments include, for example, ecological inventories (Brown et al., 1979; Brown, Lehr, & Snell, 2011), functional assessments (Dunlap & Carr, 2007; Horner, Albin, Todd, Newton, & Sprague, 2011), family interviews and collaborative planning processes (Childre, 2004; Giangreco, Cloninger, & Iverson, 1998; Hunt, Soto, Maier, & Doering, 2003; Mortier, Hunt, DesimpeI, & Van Hove, 2009; Turnbull & Turnbull, 1997), and person-centered planning (Falvey, Forest, Pearpoint, & Rosenberg, 1997; Mount & Zwernick, 1988; Vandercook, York, & Forest, 1989).

Individualized quality of life goals identified through these types of assessment activities address, for example, communicative and social competence; the development of positive social relationships and friendships; increased independence within classroom and school, community, and vocational routines; and self-determination, self-management, and problem-solving skills. While historically, outcomes associated with quality of life goals have been defined in utilitarian terms—access and social inclusion, interpersonal relations, postschool employment, and independent living—we propose that the definition of quality of life outcomes be broadened to include the acquisition of knowledge and skills that are good in and of themselves—for example, academic content knowledge that is life enriching because it opens up a student's understanding of the physical, historical, and social/political world; or knowledge associated with culture and citizenship and the impact of both on a student's role in the community; or academic skills that increase the students ability to become a lifelong learner. To do this, procedures for ecological assessments such as person-centered planning and ecological inventories would be expanded to allow for the identification of quality of life outcomes associated with academic content knowledge and skills; that is, academic content and skills that are (a) functional, if taught or practiced in a variety of natural contexts (e.g., reading, writing, and mathematics skills); or (b) life enriching because it introduces the worlds of art, literature, science, history, and culture; or (c) of high interest to the student.

All members of the educational team contribute to the identification of quality of life goal areas that will be the focus of a student's educational plan, with family and student preferences clearly represented (Halvorsen & Neary, 2009; Hunt & McDonnell, 2007; Ryndak, 2003; Turnbull & Turnbull, 1997). All potential areas are considered, for example, communication, social interactions and friendships, independence and access, self-determination, and academic content areas, and although team decisions weigh some areas more highly than others for individual students, IEP goals representing any of the areas have equal standing in the student's educational plan.

**Reconciliation Process**

Reconciling an ecological curricular framework with the current emphasis placed on achievement in academic
subjects requires the identification of a process for developing and teaching standards-based goals that reflect meaningful knowledge and skills, individualization, and application and generalization to everyday life. Narrowly constructed content standards limited to core academic subjects present formidable challenges to the development of educational goals that will impact students’ quality of life and increase postschool outcomes of employment and independent living (Dymond, Renzaglia, Gilson, & Slager, 2007; Ford, Davern, & Schnorr, 2001; McDonnell, 2010; Turnbull et al., 2003), and the usefulness of alternate assessments in helping IEP teams make decisions based on empirical evidence and logically sequenced curricula is limited (Kohl, McLaughlin, & Nagle, 2006; McDonnell, 2010). A process is needed that would allow educational team members to work within the standards frameworks that their states currently offer to develop academic goals for students with severe disabilities that reflect meaningful outcomes and that are taught in ways that promote generalization to the students’ daily lives, and a number of recent publications have provided very thoughtful analyses of the steps that educational team members can follow to select and teach standards-based academic content that will impact the quality of students’ lives now and in the future (e.g., Browder, Spooner, Wakeman, Trela, & Baker, 2006; Browder, Wakeman, et al., 2007; Ford et al., 2001; Kleinert & Thurlow, 2001; McDonnell, 2010; Ryndak, 2003). We build on this body of work to offer a process that differs only in its emphasis; that is, we propose that each step of the process—from goal identification to instruction—be driven by the high priority, quality of life goal areas identified by families and other members of the educational team. The steps that we propose are outlined below.

Step 1: Identify Quality of Life Goal Areas for Individual Students Through Family and Student-Centered Assessment Activities

The quality of life goal areas for individual students identified through the student and family-centered assessment processes described above both anchor and drive the process for identifying and teaching standards-based academic goals (Ayres et al., 2011; Downing, 2006; Dymond et al., 2007; Ford et al., 2001). Quality of life goal areas include, for example, communicative and social competence; the development of positive social relationships and friendships; increased independence within classroom and school, community, and vocational routines; and self-determination, self-management, and problem-solving skills. In addition, quality of life goal areas include academic content knowledge and academic skills that are enriching, increase access and independence in current and future environments, or increase the student’s ability to become a lifelong learner. Student interests and preferences are a key consideration in identifying academic content areas that will enrich the student’s life. Table 1 includes a description of the quality of life goal areas that were identified by educational team members for three students—Manuel, Sarah, and Jamal.

Step 2: Identify Priority, Grade-Level Content Standards From State Standards Frameworks

With individual student’s quality of life goal areas in mind, teachers consider the grade-level content standards in the major domain areas for academic subjects (e.g., in language arts, academic domains might include reading, writing, speaking and listening, and language; National Governors Association Center for Best Practices & the Council of Chief State School Officers, 2011). Their task is to identify standards that are a priority because they represent “big ideas” or key content in each of the domains (Browder, Spooner, et al., 2006; Browder, Spooner, & Jimenez, 2011) that will support the student’s ability to achieve his or her life goals. Typically standards are selected from at least language arts, mathematics, science, and social studies frameworks. Table 1 describes the priority grade-level standards that were selected for Manuel, Sarah, and Jamal within a major domain area for science, language arts, and mathematics. The students’ general education teachers provided guidance in identifying key standards; however, the student’s quality of life goal areas were the most important consideration.

Step 3: Identify the “Critical Function” of Each Selected Standard in Terms of Enriching Students’ Lives

It is a daunting task for educational team members to take the next step—that is, to identify performance outcomes linked to these priority academic content standards—without first translating them into their “critical functions.” Kleinert and Thurlow (2001) have suggested that team members look beyond the “form” of an academic content standard to the “function” of the standard in enhancing the student’s quality of life. For example, a 5th-grade reading standard for literature included in the “Key Ideas” section of the Common Core State Standards for Language Arts is the following: “Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.” This standard was selected by Sarah’s educational team as an educational priority (see Table 1). The team members then translated the standard into its critical function: “Accessing and comprehending main ideas in a meaningful, accessible text.” When the standard was translated into its critical function, the quality of life goal areas for Sarah could be naturally and logically linked to the standard, and individualized performance outcomes could be developed (see Table 1).

Step 4: Identify Meaningful, Individualized Performance Outcomes Associated With the Critical Function of Selected Standards That Reflect the Student’s Quality of Life Goal Areas and Current Level of Symbol Use

When educational team members link the student’s high-priority goal areas and current level of symbol use...
to the critical function of the content standards, the individualized performance outcomes that the team identifies through this process become what Ford et al. (2001) call foundational skills—"skills that open doors for people...skills that provide the basis for interacting with people and information in a multicultural society, successfully navigating the tasks of living, solving problems, and making contributions" (p. 217); or content knowledge that is life enriching because it opens up a student's understanding of the physical, psychological, social, or intellectual world; or skills that represent earlier abilities needed to move through a sequenced curriculum.

The critical function of selected grade-level standards from each academic domain is the point of reference (Browder, Spooner, et al. 2006; Browder, Wakeman, et al., 2007); however, for language arts, skills from earlier grades are part of a continuum of skills that culminates in grade-level proficiency. Therefore, for emergent and beginning readers, the extended grade-level standards may align with emergent skills associated with earlier grade standards; however, we propose teaching those earlier skills using grade-level materials and activities that are adapted to allow access by emergent and beginning readers (e.g., adapting grade-level literature to reduce pages and text, simplify vocabulary, and include picture icons and objects to promote comprehension of written text), thereby making it possible for emergent and beginning readers to share in the same literature experiences as their peers.

For mathematics, skills addressed at earlier grades may be needed to access grade-level content (e.g., counting for standards in the measurement and data domain); however, if skills addressed by early grade standards are considered to be prerequisites to moving on to current grade-level standards, then students are subjected to 13 years of learning to count, identify shapes and patterns, match colors and sizes, and group objects. We propose that when mathematics skills associated with earlier grades are needed to access grade-level content, those skills are addressed in the context of teaching the grade-level content (e.g., teaching counting in the context of teaching skills associated with a measurement-related standard). Finally, we propose that all mathematics instruction be contextualized for meaning (i.e., story-based lessons or taught during functional and motivating school and community activities), that grade-level activities and materials be adapted to allow access by beginning mathematics learners, and that mathematics instructional contexts provide motivating opportunities for communication and literacy development (e.g., reading mathematics story problems with adapted text and added picture icons and objects to promote comprehension; using picture icons on a communication board to request mathematics materials and respond to mathematics comprehension questions).

For science, history, and social studies, we propose that performance outcomes address priority grade-level content standards with individualization for each student (e.g., in the targeted content, instructional approaches used, and adaptations and modifications) that will provide the student with access to life enriching knowledge and experiences in each of these academic areas. In addition, instructional contexts should be designed to provide motivating opportunities for instruction of communication, social, literacy, and self-management and choice-making skills.

Finally, performance outcomes are identified by educational team members after first considering not only the student's high-priority, quality of life goal areas but also his or her current level of symbol understanding and use (Browder, Ahlgrim-Delzell, Courtade-Little, & Snell, 2006; Mirenda, 2005). Any approach to the development of educational goals for students with severe disabilities must take into account that they are a very heterogeneous group. This diversity is reflected in the continuum of symbol use that characterizes this population of students—from students who are learning that symbols have meaning and are currently communicating with presymbolic behaviors (e.g., facial expressions, body movements, vocalizations, and gestures) to students who understand and currently communicate with concrete symbols (e.g., words, objects, photos, concrete graphic icons), to students who understand and communicate (or are learning to communicate) with a variety of abstract symbols (e.g., words, signs, abstract graphic icons). The student's current level of symbol use is a critical factor in the development of individualized performance outcomes. For example, performance outcomes associated with the critical function of "accessing and comprehending the major themes of a meaningful, accessible text" might take form for a student who is learning that symbols have meaning through performance outcomes that include selecting books and other reading materials, turning pages, and attending to the pictures on each page and identifying characters in the story or answering questions about the story by pointing to the pictures; attending to short stories read by peers; and inserting repetitive lines in stories or poems at appropriate times using a voice output communication aid. The critical function of the standard might come to life for a student who understands and currently communicates with concrete symbols (photographs and concrete graphic icons) through performance outcomes that include following stories and other text as they are read with photos and graphic icons on a communication board; answering questions about a story or other text and predicting what will come next by pointing to appropriate symbols on a communication board; and summarizing the story or other text by arranging three pictures in the order in which the ideas that they represent appear in the text. For a student who understands abstract symbols and communicates using abstract graphic icons and a high-tech, voice output communication aide and a variety of low-tech communication boards, performance outcomes associated with reading adapted, grade-level literature might include describing the attributes of the major characters, answering comprehension and
Hunt et al.

Table 1
Decisions Made by Educational Team Members at Each Step of the Process for Identifying and Teaching Standards-Based Academic Goals

<table>
<thead>
<tr>
<th>Student/grade/current level of symbol understanding and use</th>
<th>Quality of life goal areas identified through family and student-centered assessments</th>
<th>Academic subject and domain</th>
<th>Priority grade-level standard</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Manuel; 1st grade; learning that symbols (objects/photos) have meaning and currently communicating with facial expressions, body movements, vocalizations, and gestures</strong></td>
<td>(a) Communication using presymbolic behaviors, objects, and photos to express wants and needs, share information, make choices, and interact socially; (b) development of positive social relationships and friendships; (c) actively participating in academic instructional contexts and increasing comprehension of concepts relevant to the student's daily life; (d) increasing independence in classroom and school routines</td>
<td>Science: life sciences</td>
<td>1st grade life sciences standard (CA Curriculum Frameworks): “Plants and animals meet their needs in different ways.”</td>
</tr>
<tr>
<td><strong>Sarah; 5th grade; currently communicating with some concrete words, photos, and graphic icons</strong></td>
<td>(a) Communication to express wants and needs, share information, make choices, and interact socially; (b) development of positive social relationships and friendships with peers; (c) development of self-monitoring and problem-solving skills to increase active, positive, and productive engagement; (d) life enrichment through the development of emergent literacy skills and motivating academic content knowledge; (e) increased independence in classroom and school activities</td>
<td>Language arts: reading</td>
<td>5th grade reading standard for literature (National Common Core Standards for LA): “Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.”</td>
</tr>
<tr>
<td><strong>Jamal; 10th grade; communicating with one-syllable written words and concrete to abstract graphic icons</strong></td>
<td>(a) Communication to engage in conversation turn-taking with peers and to share feelings, information, and perspectives with others; (b) development of positive social relationships and friendships with peers; (c) development of self-management and problem-solving skills; (d) life enrichment through gaining meaningful academic content knowledge and the development of reading and writing skills; (e) increased independence within community-living contexts and activities</td>
<td>Math: number and quantities</td>
<td>10th grade reading standard for number and quantities (National Common Core Standards for Geometry): “Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.”</td>
</tr>
</tbody>
</table>

Each of the student’s individualized, quality of life goal areas is addressed through instruction of skills identified in the academic IEP goals.

The prediction questions as the story is read, and summarizing the story using software that incorporates icons.

**Step 5: Generate the IEP Goals and Objectives to Address the Performance Outcomes**

The academic performance outcomes—with associated assistive technology, AAC devices, and contextual adaptations—are included as goals on the student's IEP along with those relevant to the student’s quality of life goal areas that are not academic in nature (e.g., communication, social, self-determination, and community and vocational activities goals). All goals describe observable and measurable performance outcomes that address quality of life goal areas and performance criteria that include generalization across multiple natural settings.
<table>
<thead>
<tr>
<th>Critical function of the standard</th>
<th>Individualized performance outcomes</th>
<th>IEP goal to address the performance outcome</th>
<th>Examples of instructional activities that provide meaning and context</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 3</strong></td>
<td><strong>Step 4</strong></td>
<td><strong>Step 5</strong></td>
<td><strong>Step 6</strong></td>
</tr>
<tr>
<td>Understanding the difference</td>
<td>Identifying the difference</td>
<td>During science lessons and in community</td>
<td>Community and school activities with a small group</td>
</tr>
<tr>
<td>between people, animals,</td>
<td>between people, animals,</td>
<td>settings during school and family</td>
<td>of peers to find and take photos of people,</td>
</tr>
<tr>
<td>and plants and that living</td>
<td>and plants by sorting examples and</td>
<td>activities, Manuel will discriminate</td>
<td>plants, and animals; working with peers to sort</td>
</tr>
<tr>
<td>organisms need different things</td>
<td>photos of each into the appropriate</td>
<td>between people, animals, and plants by</td>
<td>the photos into the appropriate category and</td>
</tr>
<tr>
<td>to thrive</td>
<td>category and demonstrating an</td>
<td>sorting actual examples or photos of</td>
<td>match the groups of organisms to the items</td>
</tr>
<tr>
<td></td>
<td>understanding that people and</td>
<td>each into the appropriate category and</td>
<td>needed to thrive; growing a plant in the</td>
</tr>
<tr>
<td></td>
<td>animals need food and water to</td>
<td>will demonstrate an understanding of the</td>
<td>classroom or school garden and providing it with</td>
</tr>
<tr>
<td></td>
<td>thrive and plants need water and</td>
<td>basic needs of each by matching the</td>
<td>water and light.</td>
</tr>
<tr>
<td></td>
<td>light by matching the organism to</td>
<td>organism to the items needed to thrive.</td>
<td></td>
</tr>
<tr>
<td>Accessing and comprehending</td>
<td>Following stories and other</td>
<td>Given a variety of grade-level stories</td>
<td>Shared reading of adapted grade-level stories</td>
</tr>
<tr>
<td>main ideas in a meaningful,</td>
<td>text as they are read in a shared</td>
<td>and poems adapted to Sarah's reading</td>
<td>and poems in small group instructional contexts</td>
</tr>
<tr>
<td>accessible text</td>
<td>reading context with photos and</td>
<td>level, she will (1) follow the texts as</td>
<td>in which students are supported to talk about</td>
</tr>
<tr>
<td></td>
<td>graphic icons on a communication</td>
<td>they are read in a shared reading</td>
<td>the story and make predictions, point to and</td>
</tr>
<tr>
<td></td>
<td>board; answering questions about</td>
<td>context with photos and graphic icons</td>
<td>track the print, and ask questions and make</td>
</tr>
<tr>
<td></td>
<td>the text and predicting what</td>
<td>on a communication board; (2) answer</td>
<td>comments about the story; acting out scenes</td>
</tr>
<tr>
<td></td>
<td>will come next by pointing to</td>
<td>questions about the text and predict</td>
<td>from stories with classmates using a voice</td>
</tr>
<tr>
<td></td>
<td>appropriate symbols on a</td>
<td>what will come next by pointing to</td>
<td>output communication aid; participating in</td>
</tr>
<tr>
<td></td>
<td>communication board; summarizing</td>
<td>appropriate symbols on the communication</td>
<td>shared reading activities with family members</td>
</tr>
<tr>
<td></td>
<td>the text by arranging three pictures</td>
<td>board; and (3) summarize the text by</td>
<td>Purchasing items at school and in the community</td>
</tr>
<tr>
<td></td>
<td>in the order in which the ideas</td>
<td>arranging three pictures in the order</td>
<td>using the “dollar-up” method; selecting and</td>
</tr>
<tr>
<td></td>
<td>they represent appear in the text</td>
<td>in which the ideas they represent</td>
<td>preparing a simple meal with peers by reading</td>
</tr>
<tr>
<td>Using the measurement</td>
<td>Using measurement strategies and</td>
<td>appear in the text.</td>
<td>and following the steps of an adapted recipe</td>
</tr>
<tr>
<td>of quantities to solve</td>
<td>tools to solve problems including</td>
<td></td>
<td>in home econ. class &amp; eating the meal while</td>
</tr>
<tr>
<td>problems and understand</td>
<td>(1) using the “dollar-up” method</td>
<td></td>
<td>conversing with peers; practicing cooking and</td>
</tr>
<tr>
<td>data displays that provide</td>
<td>to purchase items, (2) using</td>
<td></td>
<td>conversation skills at mealtimes with parents</td>
</tr>
<tr>
<td>useful information</td>
<td>measuring cups and spoons to</td>
<td></td>
<td>at home; measuring weight each week in gym</td>
</tr>
<tr>
<td></td>
<td>measure ingredients to complete</td>
<td></td>
<td>class, recording on a graph, and comparing to</td>
</tr>
<tr>
<td></td>
<td>each step of a simple recipe; and</td>
<td></td>
<td>a height/weight chart</td>
</tr>
<tr>
<td></td>
<td>(3) using a scale to measure</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>current weight to compare to a</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>height/weight chart</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Step 6: Teach These Skills Within and Across Meaningful Activities That Provide Context and Motivation and That Are Relevant to the Student’s Daily Life**

Ensuring that what students are learning is meaningful and enhances the quality of their life will require IEP teams to design instruction so that it maximizes students’ rate of skill acquisition and promotes the generalization of skills to typical performance conditions and settings.

Recent research has demonstrated that students with intellectual and developmental disabilities can be taught a wide variety of complex academic skills selected from the general education curriculum (Bradford, Shippen, Alberto, Houchins, & Flores, 2006; Jimenez et al., 2008; McDonnell et al., 2006; Neef, Nelson, Iwata, & Page,
These studies also showed that students were able to generalize these skills to other stimulus materials, tasks, and settings in the school; however, there are few, if any, studies that have validated specific strategies for promoting the generalization of complex academic skills to the functional routines and activities completed by students on a day-to-day basis.

While much more research will be needed to fully address this issue, we suggest that IEP teams can improve the likelihood that students will use academic knowledge and skills to meet high-priority life goals if they employ four general strategies, including (a) teaching skills in multiple ways during the school day; (b) incorporating authentic tasks into instruction; (c) incorporating student-directed activities into instruction; and (d) embedding academic skills into the instruction of functional routines and activities in home, school, and community settings.

**Teaching skills in multiple ways during the school day**

Historically, instruction for students with severe disabilities was done in one-to-one, massed practice teaching formats (Duker, Didden, & Sigafos, 2004). Although students are likely to continue to need individualized instruction that provides a high number of opportunities to respond, IEP teams may need to combine multiple-instructional approaches into comprehensive teaching packages that are implemented throughout the school day to achieve this outcome. This approach is not intended to replace students’ participation in the learning activities provided by the classroom teacher but rather to supplement these activities to increase the efficacy of instruction.

Research over the last decade has validated a number of student-specific instructional strategies that can be used to teach academic skills to students in general education classes (Hunt & McDonnell, 2007). These include the use of accommodations and modifications (Fisher & Frey, 2001), student-directed learning (Agran et al., 2005), and embedded instruction (McDonnell et al., 2002).

Instructional strategies that are used with all students in the class are also effective in promoting the acquisition of academic skills by students with severe disabilities. These include cooperative learning (Cushing, Kennedy, Shukla, Davis, & Meyer, 1997; Hunt, Staub, Alwell, & Goetz, 1994), peer-mediated instruction (Kamps, Barbetta, Leonard, & Delquadri, 1994; McDonnell, Thorson, Allen, & Mathematicsot-Buckner, 2000), and heterogeneous small group instruction (Rankin et al., 1999; Schoen & Ogden, 1995).

Although these strategies are effective when they are used alone, we believe that a more beneficial approach is to combine strategies into comprehensive instructional packages. Beyond increasing the rate of acquisition, this approach would also enhance the probability of skill generalization because it would provide students with opportunities to use the skill across a variety of conditions and contexts throughout the school day. This approach would be particularly effective if each strategy employed different materials and required the student to apply the skill in different ways. For example, Manuel could be taught to differentiate between people, animals, and plants by placing pictures in the appropriate category during a heterogeneous small group instructional format with peers who were working on related content from the same unit; pointing to a picture of a person, animal, or plant during embedded instruction distributed throughout classroom routines and activities; and peer supported instruction during collaborative science activities like those described in Table 1. This is only one example of how several validated practices could be combined to provide students with effective instruction. The possible combinations of these strategies are many and would need to be tailored to students’ particular learning needs, the skills being taught, and the instructional and social context of the general education classes.

**Incorporate authentic tasks into instruction**

Cognitive psychologists have argued for well over two decades now that instruction on academic knowledge and skills needs to move beyond text-based learning activities to include authentic learning activities that link student learning to real-world problems (Berryman, 1993; Brown, Collins, & Duguid, 1989; Resnick, 1987). They argue that this approach increases the motivation of students to learn difficult concepts and operations because it is more meaningful to them and equally important because it increases the likelihood that students will be able to “transfer” or generalize new knowledge to everyday activities task.

Increasingly, special educators have also acknowledged the limitations of teaching approaches that only require students to make discrete responses to teacher-directed instructional trials. Studies have shown the utility of “anchored instruction” for students with learning disabilities in language arts and mathematics (Bottge, Heinrichs, Chan, & Serlin, 2001; Reith et al., 2003) and “functional application” of academic content knowledge for students with severe disabilities to support their generalization of these skills to typical performance settings (Browder, Spooner, et al., 2006; Browder et al., 2009). For example, in addition to the instruction that Jamal would receive on interpreting units of a scale displayed on a graph during his geometry class, he could apply these skills by weighing himself in the men’s locker room or at home and recording it on a graph. He could use this information to analyze his progress toward meeting a healthy weight goal. Similarly, Sarah’s teacher might extend instruction beyond small group instruction on questions about the main ideas in text or predicting what would happen next using her communication board to include shared reading activities with a peer in the library and with family members. These activities would not only be used to reinforce her ability to gain meaning from text
but also to increase her motivation to read as a way to gain knowledge or for recreation.

Extending instructional activities beyond traditional teaching formats and incorporating "authentic" learning activities into instruction creates opportunities for students to use knowledge and skills across a variety of contexts and to use materials and responses that more closely reflect typical performance conditions. Anchoring instruction to activities that are important to students allows them to see the link between instruction and their day-to-day activities.

**Incorporate student-directed learning activities into instruction**

The ability to independently analyze complex problems, create solutions, and communicate ideas to others is widely recognized as a critical indicator of a student's mastery of academic knowledge and skills (Council of Chief State School Officers/National Governors Association, 2010; National Reading Panel, 2000). Inherent in the independent use of knowledge and skills is the ability to generalize concepts, operations, and processes to new problems and situations. Furthermore, these abilities also provide the basis for students to become self-directed, lifelong learners and to continue to use their knowledge and skills to increase their independence and autonomy.

The basic principle of independence, autonomy, and self-directedness is one of the primary values underlying educational programs for students with severe disabilities (McDonnell & Hardman, 2010; Snell & Brown, 2011). There has been extensive research conducted on instructional models that are designed to help educators to teach students to achieve their own learning goals using self-regulated problem-solving strategies such as the Self-Determined Learning Model of Instruction (Agran, Cavin, Wehmeyer, & Palmer, 2006) and cooperative learning (Cushing et al., 1997; Hunt et al., 1994).

Student-directed learning strategies help students to learn to control their own learning and work as part of a team to independently solve problems. Activities such as working with peers to plan, purchase, and prepare a simple meal during home economics class would not only provide Jamal with opportunities to learn the "dollar-up" strategy and to use measuring cups but provide opportunities to learn a variety of planning, problem-solving, and communication skills necessary for success in a variety of activities and settings. These strategies also provide a framework for students to adjust the application of their knowledge and skills to variations in stimulus and response conditions.

**Embed academic instruction in daily routines and activities**

A final strategy that teachers can use to promote generalization is to embed explicit instruction on academic knowledge and skills in instruction on daily routines and activities (McDonnell, Johnson, & McQuivey, 2008; Snell & Brown, 2011). This approach has been used for decades to help students to be more independent in home, community, and work settings; for example, embedded instruction has been used to teach students to count money within the context of learning to shop for groceries or buy a meal at a restaurant (Colyer & Collins, 1996; Test, Howell, Burkhard, & Beroth, 1993).

Providing embedded instruction to students within the on-going routines and activities of the general education classroom and school is also an important way to support the mastery and generalization of academic knowledge and skills. A very simple example would be to provide Jamal with embedded instruction on using the "dollar up" strategy when purchasing items from the school store or purchasing lunch at school. Similarly, Sarah could be provided instruction on pointing and tracking printed instructions each time the class was asked to complete a worksheet or workbook page.

**Conclusion**

The current emphases in NCLB and IDEA on students' with disabilities participation and progress in states' core curricula have created both opportunities and challenges. On one hand, this mandate has reinforced the expectation that students with disabilities, including those with significant disabilities, can learn complex academic content. It has also broadened the definition of what participation in the core curriculum means and thus has allowed many students who may have been previously excluded based on their classification to access instruction on academic knowledge and skills. On the other hand, this mandate has created new challenges for IEP teams in identifying academic content that is both aligned with grade-level content standards and that has a clear impact on the students' immediate and future quality of life. It has also pushed the limits of our current instructional technology to identify strategies for promoting the generalization of the knowledge and skills that students' learn in school to day-to-day performance contexts and settings.

It is not uncommon for divisions to surface in our field whenever new policies force a rethinking of educational practice. In the current context, these divisions have occurred between proponents of ecological frameworks of curriculum design and those who support the development of students' educational programs based primarily, if not solely, on state core curriculum (e.g., Ayres et al., 2011; Browder, Wakeman, et al., 2007). Although both sides of the debate make important points, our concern is that by framing our discussion as an "either/or" choice we miss the opportunities to take advantage of the beneficial features of both approaches.

In this paper, we have proposed an educational planning process that attempts to blend ecological frameworks for curriculum design and state core curricula in a way that takes into account the traditional values of the field of severe disabilities including individualization, self-determination, inclusion, and a focus on improving...
students’ quality of life. We build on previously proposed planning procedures that focus on extending the academic content standards in ways that allow the students to access the content based on their symbol use and learning strengths (Browder, Ahlgren-Delzell, et al., 2006; Ford et al., 2001; Kleinert & Thurlow, 2001; Thompson, Quenemoen, Thurlow, & Ysseldyke, 2001). We argue that to make these procedures relevant, planning must begin with a clear articulation of the students’ life goals based on one or more person-centered planning processes. These life goals are intended to be more than referents in the planning process but in fact should be the primary consideration in selecting appropriate core content standards and in designing the extension of those standards to accommodate students’ unique educational needs (Bambara, Wilson, & McKenzie, 2007; McDonnell & Hardman, 2010). To unify ecological curricular frameworks and core state curriculum, the IEP team needs to expand the potential life goals beyond home, friendships, community participation, and work to include academic goal areas that enhance students’ ability to become more critical thinkers, expand their understanding of culture, society, and community and to become lifelong learners. Accepting that education is more than simply pursuing utilitarian outcomes—and includes the development of the student as a person, friend, family member, and citizen—allows IEP teams to think more broadly about what access to the state core curriculum means and how the content standards may or may not benefit students’ quality of life.

In addition to embracing a planning process that broadens our traditional definition of education, IEP teams must also begin to think of teaching as a multi-layered process that relies on instructional packages consisting of several instructional approaches and strategies. IEP teams need to think more systematically about how research-validated practices can be combined to supplement the instruction students receive from the classroom teacher to promote the acquisition and generalization of academic knowledge and skills. Research has clearly shown that students with severe disabilities can learn complex academic knowledge and skills when provided systematic instruction (Hunt & McDonnell, 2007), but we also know that a “train and hope” approach to instruction will not lead to students’ application and use of academic knowledge and skills in day-to-day activities and settings. Teaching knowledge and skills across the day in different contexts, with different materials, and within various instructional formats seems to be a good first step toward achieving these outcomes.

**Areas for Future Research**

Continued progress toward reconciling ecological frameworks to curriculum design and states’ core curricula will require additional research in a number of different areas. One critical issue that needs to be addressed is the impact that the mandate for students to participate and progress in states’ core curricula has on the design of their educational programs. While there are a number of potential issues, the following are of particular importance:

- Assess how IEP planning procedures that seek to address academic core standards impact the content and organization of students’ IEPs. Other than anecdotal reports, we have little information on how these procedures may affect the content of students’ IEP goals (i.e., functional or academic core standards); the breadth and depth of the core curricular domains (i.e., language arts, mathematics, and science) represented in students’ IEP goals; the range of adaptations and modifications used by IEP teams to support student’s access to academic content standards; or whether IEP teams are structuring IEP goals and/or objectives in ways that anchor targeted academic content standards to day-to-day activities or settings.

- Evaluate the impact of states’ alternate assessments on the development of students’ IEPs. The question is whether IEP teams are exercising their discretion to include goals that are both functional and that are based on academic core standards; or do they develop IEPs that simply reflect academic content standards because of the structure of mandated alternate assessments.

- Examine the process that IEP teams use to extend academic core standards for students who do not currently use symbols to communicate. Areas of interest would include the extent of alignment between the extended standards developed by the IEP team with the grade-level academic content standards; the alignment of the academic performance outcomes developed by the team and the “critical function” of the grade-level academic content standards; and the validity and reliability of the measures used to assess progress in mastering the knowledge and skills identified in the extended content standard.

- Determine the social validity of these planning processes from the perspective of students, parents and families, teachers, and administrators.

There is also a significant need for additional research on instructional approaches that promote acquisition and generalization of academic knowledge and skills. In general, researchers need to expand the range of dependent variables used to validate instructional strategies to include direct measurement of students’ application and use of academic knowledge and skills outside of school. In addition, we need to look closely at the relative impact of instructional packages over single instructional strategies in promoting student learning and their use of skills in day-to-day activities and settings. It seems unlikely that students will make significant progress in states’ core curricula unless they receive supplemental instruction beyond what is provided by the classroom.
teacher. We also need to begin to examine how to anchor instruction provided to students in schools to real-life problems and contexts. This could include looking more closely at the nature of the academic tasks (e.g., story problems, activity-based learning, student-directed vs. teacher-directed), instructional materials (e.g., use of technology), and the expanded use of experiential learning strategies such as service learning.

Finally, there is a critical need to examine the long-term effects of students’ participation and progress in the core curriculum on postschool outcomes (Ryndak et al., 2012). While the benefits of ecological curriculum frameworks when paired with systematic instruction and adequate postschool supports are well established, it is still not clear how students’ access to the general education curriculum through extended academic content standards impacts students’ employment, home life, social connectedness, self-determination, and perceived quality of life. Adequately addressing these issues will require comprehensive longitudinal studies that follow students from school into adulthood. In spite of the significant methodological challenges associated with this kind of research (e.g., measuring social connectedness or quality of life), it seems unlikely that we will achieve any understanding of how to improve educational programs for students with severe disabilities without this information.

**Final Thoughts**

The purpose of this paper was to propose some modest steps that IEP teams could use to plan and carryout students’ educational programs based on both ecological frameworks for curriculum design and states’ core curricula. Our primary message is that ecological curricular frameworks and states’ core curricula will work best together when they are used to achieve clearly defined life-goals that are based on the needs and preferences of individual students. It makes little sense to teach functional routines or activities to students that are not directly linked to outcomes that will enhance an individual’s quality of life. The same expectation must be applied when they are used to achieve clearly defined life-goals that are based on the needs and preferences of individual students. It makes little sense to teach functional routines or activities to students that are not directly linked to outcomes that will enhance an individual’s quality of life. The same expectation must be applied when they are used to achieve clearly defined life-goals that are based on the needs and preferences of individual students.

As we pointed out earlier, there is a significant need for additional research focused in this area. However, as important as research is, we also believe that it will do little good if, as a field, we cannot come to some agreement on three key issues. First, what is the fundamental purpose of education for students with severe disabilities? The ecological framework of curriculum design has largely taken a utilitarian approach to defining expected educational outcomes for students including employment, social connectedness, community participation, and so on. The expectation that students with disabilities participate and progress in the general education suggests that education should be more than just developing narrow disciplinary knowledge or the skills necessary for career and employment. The argument is that education is not simply about helping people to live better by achieving important but obvious tangible quality of life outcomes (e.g., where and how they work, live, and play) but creating the possibility of continued growth and development as a person, fostering and expanding their unique interests and talents, and maximizing their participation in their communities as citizens. Reconciling ecological frameworks for curriculum design and state core curricula requires us to define additional outcomes associated with expanding the students’ awareness and understanding of the physical, historical, and social/political world in which they live so that these kinds of outcomes can become an integral part of the educational planning process.

Second, we need to resolve what it really means for students with severe disabilities to participate and progress in states’ core curricula. At this point, IEP teams are required to review and select academic content standards from the core curricula in language arts, mathematics, and science that are appropriate to the student’s educational needs. This approach raises a number of important questions such as the following: Does this sampling approach to selecting standards for individual students represent meaningful “participation” in the curriculum? If we do not expect students to participate and progress in all of the standards, then what do we expect and why? How does holding IEP teams, schools, and districts accountable on a small subset of grade-level academic content standards that differ across students contribute to improving educational quality and increased accountability? Our concern is that the importance of students learning academic knowledge and skills will be lost if the decisions that IEP teams are making are driven by team member preferences or arbitrary guidelines, rather than what is in the best interest of students. To address this concern, we propose that consideration of each student’s quality of life goal areas drive the selection process.

Finally, we are troubled by the decoupling of students’ participation and progress in states’ core curriculum and the effort to increase the number of students who are educated in general classes. Obviously, the statutes allow teachers, schools, and districts to provide students’ access to the core curriculum in separate special education settings. The question is whether this makes sense given the field’s strong commitment over the last several decades to promoting inclusive education? Furthermore, it seems logical that students’ participation in the core curriculum should be guided by general education teachers who have expertise in content area knowledge. What message does it send to other students, teachers, administrators, and community members when we accept an approach that allows special education teachers who may or may not have the expertise necessary to teach language arts, mathematics, and science content to students in separate classes? Brown versus the Board of Education clearly established the principle that separate
education is not equal education for students of African American and European American decent. It is reasonable and appropriate to apply this same principle to students with severe disabilities. We believe that students' participation and progress in the core curriculum can and should be achieved in general education classes.

There are no easy solutions to these issues, and the debate over them is likely to be vigorous. We are not naïve enough to believe that the recommendations that we have made in this paper are the solution, but they are a start. As a field we do best for students and their families when we start our discussions on policy, research, and practice with their interests in mind and by acknowledging that no single approach will be effective for all people. If we build on what we know works for students and continually seek ways to push our expectations, we can significantly improve the quality of their education and lives. Reconciling the perceived conflicts between ecological frameworks for curriculum design and students' participation in states' core curricula provides an exciting opportunity for us to make that happen.

References


Received: June 9, 2011
Final Acceptance: November 1, 2011
Editor in Charge: Carolyn Hughes