

The Dynamic Relationship Between Context, Curriculum, and Student Learning: A Case for Inclusive Education as a Research-based Practice

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This article used theory, historical records, and empirical research to make a case that inclusive education, in which students experience significant proportions of their day in the age-appropriate contexts and curriculum of general education, is a research-based practice with students who have extensive support needs. We begin by noting that there are regressive trends occurring in educational placements in our country and that these are causing alarm. Next, we establish guidelines for defining a useful, research-based practice. These guidelines include considering what education should be achieving for all students as a standard and using a view of scientific causality that acknowledges complexity. We then show how constructs from ecological theory and group processes theory, which provide accounts for human growth and learning, relate to location of educational services (i.e., context) and curriculum (i.e., content) decisions. Throughout this discussion, we show educating students using an inclusive education approach is supported by these constructs, whereas other widely used special education are not. We then review both historical and empirical data from institutions and schools and show that these data provide empirical support for the primary theoretical position of this article—that context, together with curriculum content, matter crucially when educating students with extensive support needs. We concluded that there is theoretical and empirical support for using general education contexts and curriculum content and for not using other contexts and curriculum content both in educating students with extensive support needs and in conducting related research.

DESCRIPTORS: research-based practices, inclusion, equality of educational opportunity, ecological, self-contained programs, institutions

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It has been 7 years since the National Research Council called on education to more rigorously ground its instructional practices in scientific findings (National Research Council, 2002). Initial reactions to these pronouncements were both strong and mixed (Eisenhart & Towne, 2003; Snell, 2003; Spooner & Browder, 2003), yet subsequent years have witnessed ongoing elaboration and refinement regarding what constitutes appropriate research for informing practice (Cook, Tankersley, & Landrum, 2009; Odom et al., 2005; Slavin, 2008). Although it is presently difficult to ascertain the ultimate impact of these events on the quality of education in schools, there can be little doubt that they have mobilized educators to think differently about what defines effective and sustainable practice.

For many of us who work with students who have extensive support needs (e.g., students with intellectual disability, autism, or multiple disabilities), a concern in recent decades has not been whether teachers have used specific forms of instruction and not others but whether students even had access to the educational opportunities afforded to all other students. For many of us, the trend in the 1990s toward providing more educational services in general education (McLeskey, Henry, & Hodges, 1999; Williamson, McLeskey, Hoppey, & Rentz, 2006) was essential progress, paving the way for issues of instructional practice to move into the forefront.

As students with extensive support needs were increasingly educated with their general education peers, an instructional technology of real value began to unfold (Jackson, Ryndak, & Billingsley, 2000). Our field now has research supporting instructional practices for providing meaningful access to the general education curriculum (Soukup, Wehmeyer, Bashinski, & Bovaird, 2007), teaming and collaboration (Hunt, Soto, Maier, & Doering, 2003), peer involvement (Cushing & Kennedy, 1997), guidelines for the supporting adults (Giangreco, Edelman, Luiselli, & MacFarland, 1997), and practices for selecting

and adapting age- and grade-appropriate curriculum content (Copeland, Hughes, Agran, Wehmeyer, & Fowler, 2002). With access to general education more assured and an instructional technology evolving, the task of identifying those instructional methods that are research-based could now take priority.

However, this logical next step is, in our opinion, at risk. We have seen from our own experiences a regression in placement practices for many students with extensive support needs. There is also research supporting this contention, revealing, regrettably, that fewer students are now experiencing integrated participation in general education settings (Smith, 2007; Williamson et al., 2006). The reasons for this are myriad; however, a factor that warrants discussion as contributing to this regression is the increasing acceptance of, or resignation toward, a self-contained setting as a viable placement for students with "severe disabilities."

In this article, we provide evidence suggesting that this trend is antithetical to the goal of using scientifically demonstrated practices with students who have extensive support needs. We begin by offering three overarching concepts to guide our inquiry, focusing on the purposes of schooling, equity in educational opportunity, and the presumption of competence. In a second section, we identify the primary parameters that define educational practices with students who have extensive support needs, and we use these parameters to delineate five approaches to educational practice that are employed in our field. In the next major section, we briefly examine conceptions of causality in science and education then offer theoretical constructs from ecological and group processes theories that can account for various forms of learning. We apply these constructs, along with the three overarching concepts, to the five practice approaches. Then, we offer five theoretical learning mechanisms to build an even stronger case for the explanatory value and utility of the proposed theoretical constructs. Because the provided theoretical perspective predicts significant and unalterable outcome differences when children are educated together in general education versus in separate settings, in a fourth major section, we survey historical and empirical research to see whether it supports this proposition for persons with extensive support needs. In the fifth and concluding section, we explore the implications of this overview of theory and research on how we should proceed, given the trend toward increased reliance on self-contained and separate settings described previously.

Overarching Concepts

Instructional practice research is not about finding absolute truths that redefine how we understand the universe. Its purpose is more pragmatic: We wish to effectively educate our children so that they can achieve desired learning outcomes and later become successful adults, and we need to know how best to do this. Hence,

the issue of what represents a "scientific finding" rests largely on whether practices are shown to be effective (Stanovich & Stanovich, 2003) and whether they cause no harm (Johnson, 2005).

In this type of research, individual studies narrow their inquiry to examining particular practices in isolation or in comparison to other practices, then other studies aggregate the many individual studies in a review or meta-analysis format to reach conclusions about the relative value and use of the practices that have been examined (Stanovich & Stanovich, 2003). Sometimes, researchers may relate their findings to a theoretical framework (e.g., behavioral theory) as this may enhance their meaningfulness by linking them with probable sources of causation (Murphy, Cooper, Hollon, & Fairburn, 2009).

A summary of findings that focuses on effect size and (possibly) relevance to theory is a necessary but insufficient condition for most research consumers. Instructional practices do not occur in a vacuum; there must be an explicit relationship with real-world problems and goals. Practitioners and others who are expected to use this research must determine whether a set of findings informs their efforts to achieve authentic benefit for children and youth in schools. We propose that there are three overarching concepts that should be considered when addressing the potential benefits of scientific theories and findings when applied to educational ends. First, they must contribute to our understanding of how to achieve the purposes of schooling. Second, they must contribute to, or not detract from, efforts to realize equity in educational opportunity. Third and finally, they must not contribute to proposing differences in the educational needs of a designated group of children, when such a presumption might adversely affect the educational experiences provided to these children. The latter will be framed using the language of "presumed competence." These three concepts are examined and defined below.

The Purposes of Schooling

Egan (2008) noted that it was Bertrand Russell who "recognized that our current idea of education involves" three different purposes (p. 9): (a) socialization, defined as promoting the assimilation of cultural traditions and a society's social roles; (b) academics, defined as teaching the codes and the learning processes associated with literacy; and (c) individuation, defined as configuring educational processes to enhance individual growth. Others (e.g., Goodlad, 1990) have taken similar positions on the purposes of schooling, but they have emphasized a two-pronged approach: socialization and acquisition of the academic knowledge of one's culture.

Our scan of the contemporary educational landscape suggests two emerging emphases in education—one for education about diversity and another for literacy education. When taken together with the purposes of education described above, we posit that today's schools have three primary purposes that must be considered when

delineating educational outcomes for students, including students with extensive support needs. The first purpose of schooling is to promote socialization, with children learning not only what is socially and linguistically expected of them at certain ages but also what will be expected of them at later ages and into adulthood. The second purpose is to enhance enculturation/acculturation, with children learning the content knowledge of their own society as well as selected content knowledge of other societies. The third and final purpose is to facilitate the learning of our codes of representation, with children acquiring the symbols that make communication, reading, and mathematics possible. These three purposes, viewed collectively, represent the first of the three concepts that we will employ in our examination of how scientific theory and research should inform educational practice.

Equity of Opportunity in Education

Darling-Hammond (2007) has argued that we are experiencing a decline in educational equity, and she argues that the way this decline is dealt with in coming years will determine in large measure the future well being of our country. Although her remarks were concerned primarily with poverty and race, they also apply to disability.

In relation to the meaning and foundations of equity, Alexis de Tocqueville (1805–1859) has been credited with first observing that American democracy encourages a social change process in which groups of citizens achieve access to previously denied opportunities via the renegotiation of “social compacts” (e.g., Achenbaum, 1998, p. 15). The development of special education in this century illustrates this process (Artiles & Bal, 2008), but its development has also revealed another problem that can arise when equity solutions are sought. Artiles and Bal (2008, p. 5) call this the dilemma of difference:

Do we treat all students the same, or do we make special accommodations for certain groups? Do we educate all groups of students considered different in the same program, or do we create separate programs for some of them?

In recent years, the concept of equity has been reconfigured by the courts in several affirmative action decisions, and this reconfiguration has implications for how we think about the dilemma of difference. Moses and Chang (2006) asserted that the issue of equity is now intertwined with the issue of diversity. They noted that, in some court decisions, achieving equity via removing barriers so that people of different groups can be educated together is not being viewed as a remedial action for those seeking relief; rather, it is being viewed as an educational action benefiting all, by increasing the heterogeneity of the student body. In other words, diversity is not just a solution to the problem of equity but it is a “pedagogical asset” of effective educational systems (Nasir, Rosebery, Warren, & Lee, 2006, p. 498).

Our view combines the major points offered in this section. When researchers apply science to educational practice, effectiveness by itself is an insufficient standard for ascertaining the value of a theory or a body of findings. Issues of equity must be brought into the equation to assure that research is contributing positively to decisions about educational practices. Moreover, diversity in student composition not only promotes equity but is also a benefit in its own right for all students. It is this perspective of equity that represents the second concept to be used in our examination of ways scientific theory and research should inform educational practice.

Presuming Competence

When educators view students through the lens of a disability label (e.g., severe disabilities, autism), they may be more apt to misjudge their capabilities and bar them from opportunities to learn what other students their age are learning (Jorgensen, McSheehan, & Sonnenmeier, 2007). Using language drawn from the physical sciences, this can result in a violation of the *precautionary principle* (Foster, Vecchia, & Repacholi, 2000). This principle holds that a “special” solution should not be applied to a problem if the application could result in more serious problems than if the special solution had been withheld.

The risks posed when disability labels affect educator perceptions of competency are being addressed by changes that are occurring in how disability is conceptualized internationally primarily because of the work of the World Health Organization (2001). Within their classification system, “disability” now is defined as a discrepancy of fit between the challenges posed by various life activities, which could include school curriculum, and a person’s present capabilities rather than as a permanent limitation inherent to the person so classified.

Concerns for both the inappropriate denial of access to the learning opportunities provided to other students in schools and changing definitions of disability compel us to take a presumption of competence perspective when considering what constitutes an appropriate educational program for students with extensive support needs. This perspective requires that we start with a premise that a student can meet expectations associated with the education of typical peers rather than using the more prevalent starting point that their disability makes such an expectation inherently unrealistic. “Presuming competence,” then, represents the final concept that we will use when examining how theory and research can inform educational practice.

Describing Parameters of Practice and Educational Approaches

Patterns of educational service provision for students with extensive support needs vary greatly, and the changes in these patterns that have occurred over time have only been partially described (Dymond & Orelove, 2001).

Practices in a specific situation will have strong local determinants also, which can include state and local policies, the goals and leadership style of a school principal, the school building traditions, and the philosophy and disposition of a student's Individualized Educational Program team. The broad patterns of practices that do exist across our field appear to us as having origins in a dilemma that arose with the passage of PL 94-142 in 1975, so our discussion begins with the educational systems that existed before and subsequent to this law.

During the 19th and early 20th centuries, three distinct systems of education evolved in the United States, namely, "the common, the delinquent, and the special" (Richardson, 1994, p. 715). Richardson's (1994) analysis of trends during this period showed that a major stalwart of all modern education systems, compulsory education, emerged in the late 19th and early 20th centuries, but *only after separate systems had been established and were legitimized for students exhibiting "delinquent misconduct" or "mental and physical defects"* (Richardson, 1994, p. 702, italics ours). Richardson argued that the significant debates about educational policy and practice that have come to define education today, such as compulsory education, were "narrowed" in these early times to the populations attending "the common school."

By not applying compulsory education and other educational standards to the other two systems, the professionals responsible for "training" students within these other systems were not obligated by law or by tradition to adopt the policies, the curriculum, or the standards of the common schools. Hence, when they existed at all, the educational activities provided specifically to students with extensive support needs were a potpourri of day care, self-care, and charity-guided activities, and they could vary widely from community to community without legal consequence.

Public Law 94-142 brought compulsory education to students with extensive support needs, and it added that such an education must be "appropriate." This, in effect, created a dilemma because there were no widely recognized approaches to providing educational services to these students, and certainly the idea of "appropriate" could be interpreted in a myriad of ways depending on local customs and practices. Exacerbating this dilemma was that although there were expectations for some "blending" (integration) of the students across these systems, Richardson (1994) has noted that the legislation of the late 20th century has affirmed the continuation of the three distinct systems: "the incorporation of delinquency and exceptionality within public education does not require the collapse of structures originally established for their separate confinement, care, and education" (Richardson, 1994, p. 710). Hence, after PL 94-142, special educators in collaboration with families were on their own to decide what an "appropriate education" looks like, and they were not obligated to consider lessons learned within general education about curriculum or instruction.

Given these beginnings, what has evolved in the last 30 years is a multitude of diverse approaches to service provision that largely can be characterized using two parameters: context and curriculum. These are the place where instruction should take place, and the scope and the type of content that should be taught, respectively. On the basis of these parameters, our review of the literature indicates that there are five approaches to practice that are used widely in the United States. As will be shown later in the next section, each is grounded in a particular view of scientific causation, and each presents a different stance on what constitutes an appropriate context-curriculum configuration. These are (a) the developmental approach, (b) the functional skills approach, (c) the community-based instruction approach, (d) the self-contained general education curriculum approach, and (e) the inclusive general education approach. The nature of these five practice approaches will become evident in the next section.

Selected Theories Addressing Learning and Development and How They Relate to the Five Approaches

This section examines theoretical constructs that offer explanations for how variables associated with the two parameters identified above—context and curriculum—affect student learning in complex and enduring ways. The theoretical constructs that we will consider are derived largely from ecological theory and from theories about group processes. We propose that constructs derived from these theories, which are concerned with how social and physical environments influence behavior, may be particularly useful when examining ways that the place and content of instruction influence learning.

Because providing explanations for causation is a major way that a theory can inform practice, we begin with a discussion of causation—how it is represented in science, how it is applied in instructional practice research, and what concerns exist when causality is assigned to particular variables and not others. Next, we discuss how ecological and group processes theories can account for learning. As this discussion unfolds, the constructs of these theories are applied to the aforementioned five practice approaches, and the three overarching concepts (i.e., purposes of education, equity, and presuming competence) are brought to bear on our analysis. In a final subsection, five theoretical mechanisms of learning we offer that can help account for, and strengthen, the proposed relationships between context, curriculum, and learning.

Scientific Causation and Educational Practice

Dear (2006) has described how conceptions of causality have changed as science has evolved. The science of 400 hundred years ago described the world as a mechanical universe, and causality was linked with how observed events directly affected other observed events. In contemporary scientific practices, more complex and dynamic

explanations of causality have emerged, including explanations of how events with no visible connections in time and space are causally related to each other.

Instructional practice research often seems to express the perspective of the mechanical universe. Researchers and practitioners define cause and effect as “doing something” (i.e., instruction) to “cause” a discrete outcome (i.e., learning). This perspective fails to adequately take into account causation’s true nature. Hence, relying exclusively on instructional methods grounded in this perspective can result in the neglect of other, less tangible causal agents that are potentially relevant to good instruction. These other sources of causation may even supersede in importance the discrete methods of instruction that are so readily manipulated.

Framing causation in relation to instruction as a complex and dynamic process permits us to consider how multifaceted variables related to context and curriculum can interact with each other, and with other aspects of instruction, to affect learning, especially when learning involves multiple and diverse outcomes over extended periods. In the next two sections, we showed how mapping out complex patterns of causation using theoretical constructs from ecological and group processes theories can alter our understanding of the conditions necessary for promoting learning and what constitutes effective instruction.

Ecological Theory

The term *ecology* “refers to a system of relationships among organisms and between organisms and their environments” (Weaver-Hightower, 2008, p. 208). A central principle of this theory is that *context* (i.e., features of the physical setting, the activities, the roles and contributions of the participants, the timing of events, and the interpersonal relationships) is causally related to behavior, and this has been a subject of study in psychology since the 1940s (Barker & Wright, 1978). The construct *standing patterns of behavior* came out of the early fieldwork of these ecological psychologists (Barker & Wright, 1978) who focused on characterizing how a particular “behavior setting” (e.g., going to a restaurant) exercised differential control over what participants did and did not do. The concept of standing patterns of behavior has a parallel concept in the field of disability—normalization (Wolfensberger, 1972). Emerging in the late 1960s, the concept of normalization asserts that people act more normally when in “normal” (i.e., typical) contexts, and that the inverse is true for atypical contexts.

Ecology and early practices in our field

Prevailing theories of child development during the 1960s and 1970s focused on the child’s constitution and expressed propensities in various skill domains (see Lerner, Wertlieb, & Jacobs, 2005). Hence, although the tenets of ecological theory and the practical wisdom of normalization could have suggested paying attention to the role of context when developing practice approaches,

the scientific wisdom of the day led in a different direction. It emphasized instead the maturational patterns unfolding within the child, and how these patterns appeared causally related to the expression of important skills at later points in life. Within this scientific climate, after the passage of Public Law 94-142, one of the education field’s first approaches to instructing students with extensive support needs used the ontogenetic perspective of human development (Illingworth, 1975; Stephens, 1977). This approach assigned a very large proportion of causality for child growth to a child’s genetic constitution, and it designated the environment’s role as primarily one of facilitating the emergence of the major milestones of growth. This approach used the cognitive, motor, and language domains of the birth-to-six period to delineate curriculum for students with extensive support needs, regardless of their chronological age.

Many in our field were quick to report that the target skills of such a developmental curriculum seemed to lack both meaningfulness and utility for all but the youngest students (Guess, Sailor, & Baer, 1977), and an approach to education that emphasized “functional” or “life” skills began to take shape (Guess et al., 1978). Using adaptive behavior testing to identify curriculum goals for students, the standard used in deciding what to teach was the criterion of ultimate functioning (Brown, Nietupski, & Hamre-Nietupski, 1976). This standard directed practitioners to set their sights on the skill needs of the “next environment,” often interpreted to mean adult life. Not unlike the developmental approach, there were still terminal end points of behavioral expression (e.g., successfully washing hands, doing laundry), but direct instruction replaced facilitation in this approach as the way teachers could achieve changes in child competence.

In both of these approaches, the context of instruction was of little concern because learning was viewed as the “decontextualized” demonstration of specific target skills, and causation was assigned to the interaction of two variables: (a) learning processes within the child and (b) how the teacher facilitates, shapes, and rewards new behaviors. It is perfectly appropriate in both approaches to teach skills in isolation, followed by observing whether the child generalizes the use of the new skills into other, more relevant contexts, with or without additional training. There is also an a priori assumption in both approaches that appropriate curriculum for children and youth in special education who have extensive support needs is by definition the specialized curriculum content and sequences specific to the approach that is being used. Because general education settings do not focus on this content, placement in a general education setting would seem pointless and nonproductive to a teacher or administrator versed in, and committed to, either the developmental or the functional skills approach.

As suggested even in early research from applied behavior analysis (Stokes & Baer, 1977), absence of generalization of skills from instructional settings to real-world

settings has been a persistent problem with the functional skills approach. We suggested that this is one reason that professionals began to think differently about how instruction should occur. Accordingly, the emergence of community-based instruction in the late 1980s (Falvey, 1989) can be viewed as a watershed event, and it is at this point where we see principles of ecological theory as part of discussions of instruction (Nietupski & Hamre-Nietupski, 1987). Educators began to glimpse the possibility that stimulus control of “normal” behavior was associated with a complex interplay of context and behavioral expression; therefore, teaching in self-contained settings does not and cannot use the causal mechanisms inherent to natural contexts when building skill repertoires.

Yet, despite the advantages of this approach when contrasted with the developmental and functional skills approaches, the community-based approach remains short-sighted when viewed in relation to ecological theory. In practice, this approach tends to define context mostly in terms of a setting’s physical properties and its task analyzed response requirements and has too little consideration of variables such as the patterns of behaviors of others in the environment, time of day or time of week, interpersonal relationships, or the time in a person’s life in which such community skills become essential. (Its relation to transition services for students who have graduated from high school is a separate issue, and it will not be considered here.)

The community-based approach just described acknowledges the importance of the ecology, but it retains the life skills curriculum of the functional skills approach described previously. There is now, however, increasing pressure through legislation (e.g., No Child Left Behind Act) to ensure that students with extensive support needs have access to, are provided instruction in, and make progress on the general education curriculum, a mandate that is perceived by some as conflicting with the still prevalent emphasis on functional skills (Bouck, 2009). With so few children with extensive support needs actually receiving their education in general education settings, one solution to this mandate has been to apply instruction on age-appropriate general education content within the self-contained setting (Browder, Ahlgrim-DeLzell, Courtade, Gibbs, & Flowers, 2008; Browder et al., 2007).

We concur that high-quality instruction on core academic content should not be withheld from students who currently do not have access to general education classrooms, and we recognized that the exigencies of current school placements for students with extensive support needs may necessitate research on instructional strategies in such contexts as a short-term solution. Nevertheless, when viewed in relation to ecological theory, we assert that this solution is untenable in the long-term. There are many patterns of life within typical general education settings that cannot be replicated in a self-contained classroom. For one, self-contained classrooms often serve children representing multiple grade levels (e.g., Grades k-6

or Grades 9–12). Delivering general education curriculum content at all grade levels simultaneously is not feasible in terms of human resources or time, and it is not feasible for a single special education teacher to be highly qualified in all aspects of multigrade and multicontent curriculum. Moreover, the rich peer interactions of a typical classroom environment that contribute to the learning of curriculum material (Smith et al., 2009) simply cannot be replicated when all students in the room have difficulties communicating with each other.

What must be understood in this discussion is that we are not presenting a rationale against self-contained classrooms per se. Ecological theory is not about argument but instead is about complex patterns of causation. Specifically, the availability of curriculum in a subject area (e.g., 10th grade science), a teacher with the specialized expertise to deliver that curriculum (i.e., a high school science teacher), and the presence of ongoing student discussions in the class about that content area (i.e., science) are collectively the causes that lead to “normal” patterns of learning and development. The absence of any of these from the educational context means that learning cannot and will not be the same, even if the surface appearance of that learning can be simulated via direct instruction of specific skills.

Advances in ecological theory and implications

Ecological psychology took a leap forward with the work of Urie Bronfenbrenner (1979, 1995), which directly linked the measurement of human development with ecological rather than biological or behavioral variables. He proposed that the developmental indicator important for assessing children’s growth is how their behavior unfolds to match or more closely approximate that of others within the social and cultural contexts in which they naturally would be participants. Further, when children participate in more of these contexts across time, this also indicates growth. Bronfenbrenner posited that direct and repeated experiences within these contexts facilitated context-specific growth and offered a framework for its measurement.

The inclusive education approach, in which the child is educated with his or her typically developing peers and with supports and skill training provided as needed to facilitate participation with peers and with the curriculum, is the only approach of the five approaches to practice that is consistent with ecological development theory. In its representation of causality, the inclusive education approach holds that it is within the contexts in which all children of a particular age participate that developmental growth is most likely to occur, and that approximations to the standing patterns of behavior in those contexts—including academic, social, and interpersonal behaviors—is what defines growth. None of the other four approaches locate services in general education contexts.

In light of ecological theory, the inclusive education approach is also most consistent with the three overarching

concepts introduced at the start of this article for ascertaining the value of a proven practice. With respect to the purposes of education, the constructs of theory reviewed here suggest that socialization outcomes cannot be assured by (a) facilitation of developmental milestones in an isolated therapeutic milieu; (b) intense instruction using shaping, fading, and reinforcement in an isolated setting; (c) placement solely and exclusively in the adult community for instruction; or (d) instruction in general education curriculum that is provided separate from all other students. Socialization, however, can be meaningfully engendered and maintained across multiple years when the child is a part of the many school contexts and curriculum activities that define the typically developing child's array of standing patterns of behavior. In addition, our review of theory suggests that access to the enculturation and acculturation experiences of a particular grade level cannot be adequately emulated in separate settings (e.g., self-contained classes or the community). Inversely, these experiences are a major part of what all children experience in general education contexts. Although it might appear that instruction in the codes that provide access to the arenas of communication, literacy, and mathematics could be provided by simulating these aspects of curriculum in any setting, theory suggests this to be untenable. Self-contained settings cannot provide a balance between discrete skills training and the transfer and integration of those skills into age-appropriate, grade-level content activities, and they cannot replicate the peer conditions that are critical for good instruction, notably in relation to the acquisition of communication skills (Von Tetzchner, Brekke, Sjøthun, & Grindheim, 2005). In fact, because of the importance of context, theory would lead us to predict that code-specific skills taught in self-contained settings could prove to be transient, because the robust conditions necessary to support their retention and meaningful use are less likely to be present.

With respect to equity, the relationship between equity and diversity proposed earlier can be played out in inclusive contexts, but it is contraindicated in settings that deliberately strive toward homogeneity (i.e., self-contained settings). Finally, with respect to presuming competence, ecological development theory leads us to define progress as a student approximating in skill and performance the standing patterns of behavior associated with the activities and curriculum of typically developing peers, and we need make no stipulations regarding prerequisite competencies for participation. In contrast, the other approaches operate from a premise of a competency difference between students with and without extensive support needs, and that this difference justifies separate settings, different curriculum content, or both.

Group Processes Theory

Children in schools are influenced by the people with whom they associate throughout their day. Bronfenbrenner's (1979) eloquent theoretical description of how interper-

sonal relationships form and change over time provides the beginning point for our consideration of how learning is impacted by the company we keep.

Dyad development and the formation of community

Bronfenbrenner described how the activities in which and with whom children engage form the basis for the relationships they will establish. When children first enter into an activity, an *observational dyad* develops, which has a parallel quality in that children are responding to the task, listening to and observing each other, and intermittently imitating what they see. As a relationship develops, a *joint activity dyad* better characterizes what is occurring, with children not only playing in a similar manner but also carrying out different roles within the activities that compose their day. Lastly, Bronfenbrenner describes the *primary dyad*, in which there are relatively enduring affective qualities associated with how the children perceive each other and in which "relationship" now influences behavior when the children are together and when they are apart. We stress that these processes are ecological processes, reflecting how activities at any age can exert control over interpersonal behavior within the evolution of acquaintanceships. They occur across the life span, characterizing for example how two teenagers might discover a common interest in computer games or the evolution of a business partnership between three young adults.

We propose that the sequential progression associated with dyad formation described by Bronfenbrenner can be viewed as the seed by which communities form and that "community," when conceptualized using this progression, is a primary catalyst for learning, for sustaining learning, and for generalizing learning. As various activities involving two or more students occur repeatedly across time, and when these occur across clusters of students representing diverse dispositions and understandings, networks are formed that enhance or inhibit the blossoming within individual children of their language, social, communication, and content knowledge skills, as well as their emotional growth. Finally, this relationship formation process benefits from rich heterogeneity because diversity enhances the choices and the models that children are offered when coming together for different purposes and needs. Of course, children sometimes make mistakes and experience pain because of their relationship choices but this is also an adaptive part of how relationships form and change.

The foregoing principles help us understand more deeply the implications for learning when students are placed within self-contained versus general education classes for their educational experiences. Relationships emerge from participation in activities with others and evolve in complex ways as children connect in new patterns with each other. These relationships, which are in flux as partners and activities change, are primary mediators for how information is acquired, extended, retained,

and revised across time. If the curriculum-based activities in which children engage together systematically differ across these two types of settings, and we have seen that the restrictions of self-contained settings assure this, then the kinds of information learned and retained by students in the settings will invariably differ. If the partner-forming opportunities systematically differ across these two types of settings and the self-contained setting's limited range of contacts within and across years make this a certainty, then the information available to students in the settings will differ.

Contributions of network analysis

The patterns that we have described, connecting the formation of relationships and the emergence of dynamic communities with learning, receive corroborative support and some extensions in network analysis research from sociology (Borgatti, Mehra, Brass, & Labianca, 2009; Wellman, 1983). This research sheds light on another way that shared contexts affect behavior in ways that are pertinent to educational practice. It shows that the psychological experience of *similarity* with another child contributes to the choices and behaviors that a child will make (Borgatti et al., 2009). Similarity emerges when individuals (i.e., "nodes" in the language of network analysis) experience the same challenges and share the same understandings of experiences that they are having. Individuals experience similarity with each other by means of two processes: (a) information transmission in relation to common challenges and (b) parallel adaptation to identical challenges and the sharing of these experiences by observation, interaction, or reflection (Borgatti et al., 2009).

From this perspective, we can see that being perceived as "similar" by others can occur less because two people perceive each other as having the same or different level of skills but instead because they know that they are being challenged by similar tasks and are sharing these same experiences. This may also partially explain why peer-mediated learning is so powerful, and why it is reasonable to believe that an "adult" special education teacher, regardless of warmth and knowledge, cannot replace this form of instruction.

The principles from network analysis have a direct bearing on why the social contexts of general education and self-contained classes are different and how these contexts differentially influence development. How children develop their social selves, view each other as they grow, and learn from their classroom activities are based on their experiences of similarity, which develop in the context of experiencing and resolving challenges together. Similarity is experienced when children perceive each other as facing and trying to resolve in meaningful ways the same challenges of life, which for children in schools include the challenges associated with their classroom experiences. By these experiences, a child's sense of identity and sense of personal worth are continuously being defined and redefined, and his or her views of the

same qualities in other children are simultaneously being formed and reformed. Because the challenges within general education contexts and self-contained settings systematically differ, the interaction patterns within these two types of settings send different messages to the learners; therefore, the children's social identities, their learning, and how they view each other will not and cannot be the same. We would also predict from these same principles that, when a child is placed in a self-contained setting for his or her educational experiences, hegemony will be evident (Davenport, Reid, & Fortner, 1999), and membership in the broader student community in which others spend their day is impacted (Schnorr, 1990).

Network analysis also offers recommendations for how children should be grouped together for instruction even within general education. Schools today rely heavily on same-ability grouping (i.e., "leveling"), including extensive pullout to special programs for instruction. The reasons for these practices are multifaceted, but we proposed that part of the rationale lies in how school practitioners define and use the notion of "similarity." A dimension of the learning process (e.g., ability to decode words) is perceived as a similarity shared by certain children and something that differentiates them from other children. Perceptions of similarity in the needs and skills of children naturally suggest to teachers and administrators that grouping children together for instruction based on these similarities will enhance the results of instruction.

Network analysis suggests something different. In the long run, better results could be achieved if "similarity" referred to the challenges posed during instruction and not to the children themselves. Richer learning might occur when children with differing traits and skills are brought together to solve the same challenges, especially if the natural diversity among children was cultivated when they are resolving challenges together. For example, a child who is proficient in reading a particular set of materials is encouraged by the teacher to read passages at critical moments; a child with past experiences in what is being studied is invited to bring in background information and material; a child with enthusiasm but who struggles with reading is encouraged to show strong affect and offer pertinent exclamations; and a child who shows interest but who responds very little in reading and content knowledge tasks is given opportunities to listen unconditionally to knowledge shared by the other children.

When grouping for instruction is perceived as a challenge-driven and not as an ability-driven process, one sees new ways for researchers to understand a variety of related learning phenomena. Using the concepts of challenge and similarity, insights may be gained into why cooperative learning works so well (Johnson & Johnson, 2009), how mixed-ability grouping supports learning (Cunningham, Hall, & Defee, 1998), how same-ability grouping may negatively impact learning (Hoffer, 1992), how children with strong expressive language skills

influence the language learning and use of their peers (Mashburn, Justice, Downer, & Pianta, 2009), and how language skills in children with disabilities are enhanced by conflict resolution encounters when among their typical peers (Von Tetzchner et al., 2005).

Final implications

When the theoretical constructs offered here are coupled with our three overarching concepts (i.e., the purposes for schooling, the need for equity, and presuming competence), it is self-evident which of the five practice approaches measures up: inclusive education. The way information is distributed and learned in schools is deeply embedded in the way relationships form and how group processes operate in school and classroom activities. When this knowledge is applied to the purposes of schooling—socialization, enculturation and acculturation, and code acquisition—the conclusion supported is that these purposes cannot be adequately realized when self-contained contexts or different curriculum are imposed on learners. This is because the latter practices affect the information flow and information acquisition processes by altering irrevocably the patterns of relationship formation and the patterns of challenges experienced by learners. Because the processes described here are made richer by diversity, a trait of general education contexts that cannot exist in settings where ability level is an entry requirement, we concluded that separate settings will negatively impact equity when these theoretical constructs are applied to the issue of location of services. Finally, because these constructs neither prescribe nor depend on grouping based on competency, they are consistent with presuming competence when choosing the location for educational services.

Mechanisms of Learning Supporting Ecological and Group Processes Constructs

We have used ecological and group processes constructs to build the case that context and curriculum choices impact learning in ways that favor inclusive education practices while contraindicating other practice approaches. We have not yet supported these contentions by identifying learning mechanisms that ensure the kinds of responses to the environment that we propose are happening in children. In this subsection, we describe five such mechanisms that we believe underlie the ecological and group processes previously described: (a) mental representation of the psychological situation, (b) observational learning, (c) reinforcement patterns, (d) incidental learning, and (e) novelty. We briefly review supporting literature for each of these, using theories of human learning, cognition, and brain research.

Mental representation of the psychological situation

The first mechanism of learning, the mental representation of the psychological situation, refers to Rotter's (1982) assertion that the way a child perceives the expectations, value, and potential benefits of a setting's activities anticipates the patterns of behavior that he or she

has a high probability of producing. This mechanism of learning helps assure that context and curriculum configurations with substantially different standing patterns of behavior and relationship potentials result in different skills being acquired and expressed by a learner. At an information processing level, such a mechanism would be supported if memory for events was structured similarly. Such a structure has been proposed in *script theory* (Schank & Abelson, 1977), which posits that memory for events, with associated environmental correlates, behaviors, and emotions, form across time in complex patterns that directly reflect how the events are experienced and reexperienced by the learner.

Observational learning

The second mechanism of learning, observational learning, depends heavily on imitation, defined as "the tendency for a person to reproduce the actions, attitudes, or emotional responses exhibited by real-life or symbolized models" (Bandura, 1963, p. 89). Imitation can be brought under instructional control, but it may be most powerful in relation to how learners by their own intentions bring information from the actions of others into their own repertoires (Bandura, 1963). Imitation also has been advanced in brain research literature as an especially "powerful learning mechanism," accelerating learning and multiplying the learning opportunities of the growing child (Meltzoff, Kuhl, Movellan, & Sejnowski, 2009, p. 285).

The implications of observational learning for location of services cannot be overstated. Lortie (2002) described what he called the "apprenticeship of observation" (p. 61), which is the approximately 13,000 hours of experiences that we ourselves have as students in schools. When contexts and relationships are viewed as actively contributing to learning, where this apprenticeship occurs, and with whom, must be viewed as significantly impacting learning.

Reinforcement patterns

The third mechanism of learning is reinforcement patterns. As noted by McComas, Vollmer, and Kennedy (2009), reinforcement effects have been documented "innumerable times" in research, but what is "less well understood" are the "behavior-environment interactions as they naturally unfold" (p. 411). Bandura (1963) ascribed the impact of reinforcement to perceptions of reinforcer value as a child views a model, and we note that recent brain research offers some support for this contention by showing brain activity associations between vicarious reinforcement and similarity between an observer and a model (Mobbs et al., 2009). However, we view reinforcement more broadly as a factor in how learning is strengthened or weakened across the ongoing stream of changing activities and relationships. In light of group processes theory, we also stress the contribution of peers as agents of reinforcement, influencing social learning and the learning of curriculum content.

Incidental learning

The fourth mechanism of learning, incidental learning, has three meanings in the literature. In one, it refers to the way language skills are acquired by children without explicit instruction, including acquisition of vocabulary as part of literacy experiences (Nagy, Herman, & Anderson, 1985) and as an unintended consequence of learning to use augmentative communication systems (Millar, Light, & Schlosser, 2006). In its second meaning, it refers to learning that is intended by the teacher but without those intentions explicitly communicated to the student. Incidental learning defined in this way occurs during the flow of natural routines within the class, but the teacher is deliberately facilitating it (Von Tetzchner et al., 2005). This perspective is represented most clearly in Hart and Risley's (1980) seminal work on milieu-based instruction. In its third and most recently developed meaning, the concept refers to how students can learn information not directly taught, but the learning situation is an explicit, direct instruction routine (e.g., Gast, Doyle, Wolery, Ault, & Farmer, 1991).

We propose that all three meanings are important: children in classrooms acquire information when participating in numerous, spontaneous interactions with peers and others in natural routines; when it is intentionally taught via indirect means; and when it is modeled by teachers without the direct intent to instruct. We note, however, that incidental learning that is dependent on peers is especially relevant here because of its relationship with group processes theory. There is evidence, for example, that although children may learn certain skills via adult mediation (e.g., alphabetic skills), other forms of learning (e.g., vocabulary development) may be more associated with "child-managed activities" (Connor, Morrison, & Slominski, 2006, p. 665). There is also evidence that interactions between young children with autism and peers are more frequent when there is "limited adult engagement" (Boyd, Conroy, Asmus, McKenney, & Mancil, 2008, p. 194; see also Carter, Sisco, Brown, Brickham, & Al-Khabbaz, 2008).

Novelty

The fifth and final mechanism of learning is novelty, defined as environmental events perceived by the child as different in relation to other experiences past or present. It is associated with elevations in interest, affect, and motivation, qualities that contribute to learning (Sousa, 2006); inversely, "an environment that contains mainly predictable or repeated stimuli" can be a deterrent to effective learning (p. 28). We propose that novelty promotes the acquisition and retention of new information, playing an especially important role in learning about the basic codes of language and literacy (i.e., "fast mapping;" see Von Tetzchner et al., 2005). We also assert that its presence is more assured in classrooms composed of heterogeneous groups of children, where the activities of learning pose challenges that take advantage of heterogeneity.

The Case Against Separate, Self-contained Settings

In the previous sections, we explored ecological and group processes theories, showing that the learning processes described by these theories will promote appropriate learning more readily when using the inclusive education approach than when using the other four educational practice approaches, especially in light of the purposes of education, the need to support equity, and the importance of presuming competence. We also examined five learning mechanisms that can account for how learning occurs within complex ecological and interpersonal milieus.

To reiterate an important point, it is not our intention to offer arguments against separate, self-contained settings per se. Instead our intent is to provide evidence that context and curriculum choices matter, and that achieving desirable educational outcomes in children is more probable when using general education settings and curriculum. Our discussion of theory now provides us with a rationale for hypothesizing that, upon surveying the existing literature, we will find a strong body of evidence that there are practical and significant advantages with respect to learning and service provision when children are placed together for their instruction versus when children with extensive support needs are separated for their instruction based on determinations of competency. It is to this literature that we now turn.

With respect to the public education of these students, we do not have a long history from which to draw data. It may be helpful, therefore, to extract from the instructional practice literature some of the trends that reveal our own growth as a profession to help us better grasp as a field how our views of placement have been impacted by our practices. Along these same lines, we also can learn from our past experiences with providing residential and training services to people with disabilities in institutional settings. Hence, we will review in this section not only literature related to self-contained and inclusive general education contexts but also literature on institutionalization, deinstitutionalization, and community placement. Of course, as the final test, we must examine the emerging empirical data on what we know about outcomes associated with self-contained versus inclusive general education contexts.

Research on Institutionalization, Deinstitutionalization, and Community Placement

As previously described, the special education system for students with extensive support needs after PL 94-142 was completely separate from its general education counterpart. The system mirrored a 100-year legacy of completely separate services provided through residential placement of people with "severe disabilities" (Thompson & Wehmeyer, 2008). Generalizing from our background of providing services in the institutions,

special education services were founded on the rationale that separate schools and classrooms would be more feasible, efficient, and effective for meeting student needs. And yet, an examination of the history of institutionalization shows that, even by the time of PL 94-142, there was mounting evidence that such a rationale might be flawed (Larsen, 1976). The literature that we draw from now to depict this progression and its aftermath is often descriptive and historical because we are addressing something that we understand mainly in retrospect, with the wisdom of hindsight.

The rise of institutions

In 1847, a young physician named Hervey B. Wilbur (1820–1883), inspired by Edward Seguin's (1812–1881) program of instruction for "idiots," founded the first private school in the United States for students with intellectual disability in his home in Barre, Massachusetts. Later that same year, Samuel Gridley Howe (1801–1876) opened the first public school for students with intellectual disability at the Perkins School for the Blind in Boston (Scheerenberger, 1983). What emerged from these early educative efforts was our system of institutions, intended to both house and educate people with intellectual disability. Although institutions expanded rapidly during the late 19th and early 20th century, demand quickly outstripped availability. For example, Pennsylvania opened its second institution by 1897 in Polk to relieve the burden on the Pennsylvania Training School for Idiotic and Feeble-minded Children that was in Elwyn. Built originally to house 1,000 people, its size alone is indicative of the fact that small, school-like facilities were beginning to be replaced by larger facilities. By 1906, the Elwyn "school" had 1,200 and by 1913 it had grown to 2,300 residents, with a waiting list of 500 people (Wolfensberger, 1975).

Shifting purposes of institutionalization

As residential institutions grew in numbers and authority, and in conjunction with the growth of the medical model in the United States and elsewhere, they began to drop their educative functions and assume medical ones. Typically, they were run by physicians, and increasingly their names were changed from "school" to "hospital," the living units became wards, and the residents became patients (Wolfensberger, 1975). As they took on the aura of hospitals, the people who resided in them logically became viewed as sick, and their disabilities were increasingly categorized as diseases.

By the early decades of the 20th century, the transformation of institutions from educational to medical facilities was all but complete. The routines of workers were now increasingly governed by hospital-like procedures, and the treatments became those of the medical profession. Both because of the growing population in the institutions and because people were no longer being admitted for rehabilitative purposes, residents who had more capabilities were now put to work to "earn their keep." Older and more capable residents watched over

and cared for younger and more disabled residents, scrubbed and mopped the floors, and staffed the cafeterias. Increasingly, their labor became too valuable for the preservation of the institutions themselves, and instead of preparing them for living in the community, the more capable residents became an invisible work force (Trent, 1994).

Meanwhile, outside the burgeoning institutions, both public attitudes and those of persons within the "helping professions" were changing. Contributing factors included the migration of citizens from rural to urban areas and increased immigration, both of which contributed to greater population densities and intensified resource competition in the large urban centers. These developments affected the populace's disposition toward educative and assistive remedies for human concerns such as poverty, crime, and disease. In addition, the enthusiasm of professionals in fields such as social work and medicine also waned, as these social concerns appeared to multiply, seemingly without resolve. People with disabilities increasingly were perceived—along with immigrants and the poor—as intractable social problems, and social control began to govern attitudes and policy toward disability. These changes supported another shift in the purpose of institutions, from a medical mission to one of confinement.

The rise of eugenics

Perhaps some of the darkest moments of human history occurred during these same decades, with the emergence and blossoming of the pseudoscience of eugenics and its applications in social services. Eugenics refers to large-scale efforts at "hereditary improvement" of the human race by controlled or selective breeding. Although often associated with Nazism in Europe, many of the most rabid eugenicists were in the United States, and they focused on both limiting immigration and curtailing reproduction in people viewed as "poor genetic stock." The eugenics movement combined pseudoscientific research with propaganda dissemination to promote isolation and sterilization practices with persons who had disabilities (Gould, 1981; Scheerenberger, 1983; Witkowski & Inglis, 2008).

What arose during this period was a "perfect storm," leading to decades of gross human and civil rights violations in the lives of these citizens. Eugenics, coupled with other trends described above, formed an atmosphere in which people with disabilities were portrayed as menaces to society and blamed for social problems like poverty, crime, and moral decline. Institutions lost any semblance to places for educating or habilitating people with disabilities; rather, they were openly used for isolation and control, with a predominant purpose being the protection of society (Kühl, 1994; Scheerenberger, 1983; Trent, 1994). By 1967, state institutions were housing a daily average of 195,650 people with disabilities, with another 33,850 people living in psychiatric hospitals (Anderson, Lakin, Mangan, & Prouty, 1998).

Exposure, reform, and deinstitutionalization

The catalyst for reform came finally in several forms. In the economic and population boom of the post-WWII 1950s, there emerged a nascent parent movement that rejected the notion that their children would be better off in residential institutions. Advances in medical science and physical rehabilitation also improved the outcomes of rehabilitative services and changed public perceptions of disability. Influenced by the large numbers of veterans disabled in World War II, a community service system emerged and provided a base for community services to other groups. Programs initiated by President John F. Kennedy, whose sister, Rosemary, had an intellectual disability, funded such a system for people with intellectual disabilities. Legislation then was passed providing equal protection under the law for these citizens (Scheerenberger, 1987; Trent, 1994).

In 1966, Burton Blatt and Fred Kaplan published the photo essay *Christmas in Purgatory*, which brought to light the horrific conditions in institutions. Blatt and photographer Fred Kaplan gained access to the back wards of several institutions and surreptitiously photographed the appalling conditions within them. The stark, black and white images of people huddled in masses, standing naked in sterile rooms furnished only with benches, and rows upon rows of beds with children in them were accompanied by quotes from literature describing human suffering and injustice. In 1972, investigative reporter Geraldo Rivera brought his television cameras into the Willowbrook State School on Staten Island in New York City, and again, the images broadcast bore witness to the dismal conditions in which these people lived. The deinstitutionalization movement now had its momentum, and during the remaining quarter of the 20th century, institutions have closed and people have moved into the community in a mass exodus unprecedented in human history (Lakin & Bruininks, 1983; Scheerenberger, 1987).

Institutionalization in hindsight: What we have learned

In the years since the inauguration of the deinstitutionalization movement, evidence for the benefits of community life and the debilitating impact of contexts that separate and isolate have created a strong case that separate can be neither equal nor better. The dependent variables range widely, but findings from numerous studies point to a conclusion that institutional settings are inferior to integrated community living settings. Larson and Lakin (1989) reviewed the United States literature pertaining to deinstitutionalization between 1976 and 1988 to examine the impact of deinstitutionalization on adaptive behavior. They concluded that the "...available research denies support for the assertion that people obtain greater or even equal benefit in adaptive behavior from living in institutions. In fact, this research suggests that those benefits very consistently accrue more to the people who leave institutions to live in small community homes" (p. 331). Kim, Larson, and Lakin (2001)

reviewed identifiable studies published in the United States between 1980 and 1998 on changes in adaptive and challenging behavior associated with movement from institutional to community residences, and they reached the same conclusion.

More recently, Kozma, Mansell, and Beadle-Brown (2009) reviewed research on deinstitutionalization and community living from 1997 to 2007. Their analysis made clear that there are variations in living conditions, services, and outcomes within settings that are collectively called "community living," revealing that we still have more to learn about how differing contexts impact outcomes. Nevertheless, the weight of their evidence showed that people who lived in small-scale community settings had greater levels of community involvement; those who lived in small settings had more friends; the movement to community settings resulted in higher levels of family contact; people who lived in smaller, community-based settings had more opportunities to make choices and were more self-determined; people with extensive support needs who moved to community settings experienced improvements in adaptive skills that were not experienced by those who were left behind; and, last, relocation to the community meant a higher quality of life.

Research on Services in Self-contained and Inclusive General Education Contexts

We have previously stated that educational services for students with extensive support needs were first developed based on the rationale that self-contained schools and classes could provide efficient and feasible services leading to optimal outcomes. Factors considered included the view that services in self-contained settings could focus on individualized curriculum needs that differed from those of general education students, that such services allowed for more instructional time because of a better adult-to-student ratio, and that such services permitted more specialized instruction by personnel with appropriate expertise. As would be expected, early educational research studies with these students were conducted in self-contained classrooms and schools or in home and community settings.

Research on instructional methods

Because few studies existed on effective practices for these students at the time of PL 94-142, a significant proportion of research conducted in the years after its passage focused on identifying instructional procedures that resulted in student learning (Billingsley & Liberty, 1982; Doss & Reichle, 1989; Doyle, Wolery, Ault, & Gast, 1988; Nietupski, Hamre-Nietupski, & Ayers, 1984; Sailor & Haring, 1977; Voeltz & Evans, 1983). The early research on instructional methods fell into two overlapping branches, each approaching from a different direction how instruction should be conceptualized and delivered. One branch of research focused on teaching skills, which then could be used by a student in a variety of relevant activities across home, school, and community settings

(Breen & Haring, 1989; Brown et al., 1978, 1980; Harris-Vanderheiden & Vanderheiden, 1977; Sprague, Manlove, O'Neill, Albin, & Horner, 1987; Warren, Rogers-Warren, Baer, & Guess, 1980). The other branch of research focused on identifying activities that were relevant to a student within home, community, and school settings, then teaching the skills necessary for participation in those activities (Brown et al., 1979; Gee, Harrell, & Rosenberg, 1987; Halle, Baer, & Spradlin, 1981).

This early body of research determined that providing instruction resulted in more learning than not providing instruction. This finding may seem trite today; however, it was eye opening at a time when the "educability" of this group of students was being questioned. In addition, although perhaps not fully recognized at the time, this research was also significant because it brought into the instructional equation the principle that context was a relevant consideration, although whether it provided simply an occasion for responding or was an actual determinant of skill acquisition was not fully understood. This research also demonstrated that a student could be a participant in an activity and learn through his or her participation without necessarily performing all of the functions associated with the activity. This finding supported the "partial participation" of each student in any activity as well as the use of the student's participation as instructional opportunities (Ferguson & Baumgart, 1991).

In a world in which one-to-one instruction of skills in isolated settings prevailed and in which anything other than 100% performance of all aspects of a task was treated as instructional failure, the notion that a student could learn while being a participant in a naturally occurring activity was groundbreaking. It brought into question, for the first time, the value of instructional research in isolated, self-contained classes and schools (Meyer & Evans, 1993), even as it ushered in the view that striving for functional and meaningful skill development could imply "doing more of" rather than "doing all of" that which others are doing in natural contexts.

Shifting research emphasis and the emergence of inclusive practices

Findings such as those reported above set the stage for the community-based ecological practice approach identified earlier. This approach remains active today as a guide to how community-based research is framed and conducted and as a factor in transition services. However, during this same period, there also existed a trend in research and practice that conflicted with fully embracing a community-based approach to instruction. This trend was toward increasing the contacts and interactions between students with extensive support needs and their "typical" peers by immersing them in general education contexts and by cultivating peer supports. There were researchers, for example, advocating for greater access to typical peers via placement in neighborhood schools (Brown et al., 1989), and there were others describing how to

increase interactions between students with extensive support needs and their typical peers (Stainback, Stainback, & Wilkinson, 1992). Initially, however, this trend did not consider the option of changing the students' curriculum to reflect their peers' general education content.

The foregoing branch of research was less interested in identifying new instructional strategies and more in using instructional strategies already demonstrated to be effective, but now in general education schools and classes. This body of research represented the field's first forays into what came to be called *inclusion*. Although it initially was concerned with peer relationships, it had to find ways to engage students with significant support needs in the activities of general education to achieve its purposes (Ferguson, Meyer, Jeanchild, Juniper, & Zingo, 1992; Fisher & Ryndak, 2001; Hunt & Goetz, 1997; Ryndak & Fisher, 2003; Ryndak, Morrison, & Sommerstein, 1999).

Importantly, it was this research that provided us with early support for three findings that show differences between educational services in general education contexts and separate settings. First, in line with its initial purpose, it provided evidence that the amount, type, and quality of interactions between students with extensive support needs and their typical peers were better in general education contexts than in self-contained settings, including their participation in general education group learning activities (Fisher & Frey, 2001; Gilberts, Agran, Hughes, & Wehmeyer, 2001; McDonnell, Mathot-Buckner, Thorson, & Fister, 2001). Second, it provided evidence that services in general education contexts could be superior to those in self-contained settings with respect to (a) the quality of student Individualized Educational Programs, the aspects of instruction, and the overall program provided (Fisher & Frey, 2001; Hunt & Farron-Davis, 1992; Hunt, Farron-Davis, Beckstead, Curtis, & Goetz, 1994; Janney & Snell, 1996, 1997; McDonnell et al., 2001; Ryndak et al., 1999); (b) the amount of time that teachers provided instruction (Hollowood, Salisbury, Rainforth, & Palombaro, 1995); and (c) the amount of time students were engaged in instruction and social interactions with general education classmates (Hollowood et al., 1995; Logan & Keefe, 1997; Logan & Malone, 1998; Ryndak et al., 1999). Third and finally, it provided evidence that when these students received services in inclusive general education contexts, their learning outcomes could be better across skill areas and activities, including (a) social competence (Evans, Salisbury, Palombaro, Berryman, & Hollowood, 1992; Fisher & Meyer, 2002; Fryxell & Kennedy, 1995; Kennedy, Shukla, & Fryxell, 1997; Logan et al., 1998), (b) language development and use (Miles, Cole, Jenkins, & Dale, 1998), (c) literacy (Kliwer & Biklen, 2001; Ryndak et al., 1999), and (d) general education content areas (Hunt, Staub, Alwell, & Goetz, 1994; Miles et al., 1998). Surprisingly, this research also showed that even when services in general education contexts were not ideal, students could still make more progress in

general education contexts than when they were in self-contained contexts (Matzen, Ryndak, & Nakao, in press; Ryndak et al., 1999).

This research also demonstrated that instruction on functional activities, a mainstay of the curriculum in self-contained settings, could be embedded effectively within general education activities, resulting in an increase in instructional time for both functional activities and general education curriculum content (Fisher & Frey, 2001; Hunt & Farron-Davis, 1992; Hunt, Farron-Davis, et al., 1994; Johnson, McDonnell, Holzwarth, & Hunter, 2004; McDonnell, Thorson, McQuivey, & Kiefer-O'Donnell, 1997). In addition, because providing services to students with extensive support needs in general education contexts was a significant departure from past practices, practitioners and researchers alike were asking questions about how serving students with extensive support needs in general education contexts influenced or impacted the other students in these contexts. This research found that general education classmates were affected positively in relation to their understanding of, and attitudes about, people with disabilities and other types of diversity (Fisher, 1999; Helmstetter, Peck, & Giangreco, 1994; Krajewski & Hyde, 2000), and that the general education classmates performed at least as well, if not better, academically (Cushing & Kennedy, 1997; Dugan et al., 1995; McDonnell, Thorson, Disher, Mathot-Buckner, & Ray, 2003; Saint-Laurent et al., 1998; Staub & Peck, 1994).

Collectively, then, this body of research provided support for five findings that are important for educators responsible for determining where instruction should occur, and these findings simultaneously provide evidence that context matters in instruction. Specifically, the body of research showed that (a) effective services could be feasibly provided in general education contexts; (b) these services could result in learning outcomes for students with extensive support needs that could be superior to learning outcomes achieved in self-contained settings; (c) when services did not completely reflect current best practices, this factor did not offset the advantages of receiving educational services in general education contexts; (d) the need for students to learn functional skills did not have to be sacrificed; and finally (e) the learning of the general education classmates could remain on course.

Long-term outcomes research

More recently, several researchers have begun to study the long-term impact of receiving services in inclusive general education contexts for students with extensive support needs. Ryndak et al. (1999) followed a student for 7 years as her services changed from 15 years of services in self-contained settings to 7 years of services in inclusive general education contexts. This case study indicated that the student (a) acquired knowledge and developed skills at a faster rate when in inclusive general education contexts, (b) acquired grade-level knowledge

and skills in general education curriculum content areas that had been neither anticipated nor targeted for instruction in self-contained contexts, and (c) used her emerging knowledge and skills more frequently and consistently across contexts. When her overall progress was compared with predictions made by her education team during her years in self-contained settings, it was determined that she was more successful than her education teams had projected for 15 years, both during her remaining years of educational experiences and upon exiting the school system.

Fisher and Meyer (2002) used standardized measures to compare outcomes over a two-year period for matched sets of students across four states, with one set receiving services in inclusive general education contexts and the other receiving services in self-contained settings. They found that the students served in the inclusive general education contexts demonstrated more growth in independence and social skills than their counterparts in the self-contained settings.

Finally, in two case studies, Ryndak et al. (1999) compared the long-term outcomes for two dyads of individuals with extensive support needs. Ryndak, Ward, Alper, Storch, and Montgomery (2010) compared the performance of two brothers with similar diagnoses who were served in the same one-school district, one after 17 years of services in self-contained settings and the other after 17 years of services in inclusive preschool and general education contexts. Their findings indicated that although identified as having a more significant level of impairment than his brother from birth onward, the brother who received services in inclusive general education contexts used both functional and general education curriculum content more successfully in school as well as in the community. In addition, when compared with his older brother, he had a much stronger social support network, interacted more appropriately with grade-level general education classmates, and interacted better with both peers and strangers in the community. Similarly, Ryndak, Ward, Alper, Montgomery, and Storch (in press) compared long-term outcomes for two students with extensive support needs who, at age 15, received services in the same self-contained class but then received services for their remaining years of schooling in different types of contexts. Specifically, the higher functioning student remained in self-contained settings for 7 years, through age 22 years, whereas the lower functioning student received services in inclusive general education contexts for 7 years, through age 22 years. These students met again as adults 3 years after exiting the education system. At that time, the outcomes for the lower functioning student (i.e., the student who had been included in general education contexts) reflected a more independent and extensive participation in adult life than the outcomes for the higher functioning student (i.e., the student who had remained in self-contained settings). For instance, the student who had been included had been employed by the same employer for the last 3 years with episodic job

coach support, had lived alone with periodic Medicaid Waiver support, and had an extensive natural support network. The student who had remained in self-contained settings had lost many jobs, had finally been “employed” by a sheltered workshop, continued to live with his parents, and had a natural support network limited to family members.

Given theory, inclusive and self-contained contexts provide very different activity and relationship opportunities; hence, the findings of these four case studies are suggestive of how the differential expression of contextual and curriculum variables may result in contrasting cumulative and enduring affects on learners. Of course, given the complex and dynamic nature of causation, one cannot be certain which variables, including variables not accounted for, contributed to the reported differences in outcomes. Still, these studies are promising in their portrayal of the potential value of services provided in inclusive general education contexts.

From “context” to “context plus curriculum”

With the passage of No Child Left Behind Act and the 1997 and 2004 reauthorizations of the Individuals with Disabilities Education Act, there is now a growing impetus for conducting research that examines how student involvement with and, particularly, progress in the general education curriculum can be best realized. Wehmeyer, Lattin, Lapp-Rincker, and Agran (2003) examined these issues, observing 33 middle school students with intellectual disability for a total of 6,585 minutes across general education contexts and self-contained settings. During 70% of the observed intervals, students were engaged in a task related to a school district’s general education content standards. Of interest to us is that engagement in tasks linked to a content standard varied systematically by context; that is, students served in general education contexts were observed working on tasks linked to a content standard in 90% of intervals, whereas students served mostly in self-contained settings engaged in tasks related to a content standard in only 50% of the intervals.

Soukup et al. (2007) observed 19 elementary students with intellectual and developmental disabilities for a total of 1,140 minutes and recorded the occurrence of curriculum adaptations and augmentations. Although this research was conducted 4 years later, the results of this study mirrored the findings of Wehmeyer et al. (2003). In general, students with intellectual and developmental disabilities were observed working on grade-level content standards in 60% of the intervals, which was three times the frequency of intervals in which they were observed working on a content standard linked to just any grade (20%). Differences were especially apparent, however, in the frequency of intervals in which students worked on grade-level content standards as a function of their participation in general education contexts. Students in general education contexts were observed working on an activity linked to any general education content

standard in 97.5% of intervals, and they were observed working on an activity linked to their specific grade-level content standard in 83% of these intervals. Students not included in general education contexts were observed working on an activity linked to any general education content standard in only 46.11% of intervals, and there was not a single interval (0%) in which these students were observed working on a grade-level content standard.

In both of these studies, concerns can be raised about the degree to which appropriate curriculum modifications and universal design features were used. At the same time, both Wehmeyer et al. (2003) and Soukup et al. (2007) concluded that context (i.e., where students received instruction) was predictive of relative access to the general education content standards. In essence, students receiving instruction in general education contexts were significantly more likely to be working on activities linked to general education content standards than students receiving instruction in self-contained contexts. The unambiguous message from these studies is that the “context” or “place” in which students with extensive support needs gain access to the general education curriculum is in fact the general education classroom.

Conclusions

We begin our wrap-up with two caveats. First, the conclusions that we derived from our review of theory and research are not directed at individual practitioners or family members who are working to educate children in self-contained settings. We know many people who are working by choice or by mandate within the confines of self-containment, and they are making a difference in the lives of their children. A parallel with the civil rights movement is helpful here. There were many schools within African American communities that provided high-quality and valued educational services when they were, by law, serving only students of color (Walker, 2000). *Brown v. Board of Education* closed these schools or changed them irrevocably, often to the distress of the local citizenry (Walker, 2000). However, one would be hard pressed today to assert that legislation assuring civil rights in education should not have occurred, arguing instead that the instances of good and caring schools are proof that the African American community needed no such action on its behalf. The same is true for institutions; few would question today, on the basis of instances of exemplary care, that closing these facilities was a mistake. Our concern in this article is not with the good or poor work that some teachers, parents, or researchers are doing; rather, it is with the larger issue of location of services and how it impacts in broad strokes the educational experiences provided children with extensive support needs.

Our second caveat relates to misimpressions that a reader might form about our thinking—that we view general education contexts as cures for the ills of special education, and we think that inclusion in general education

contexts makes right what is wrong about education. We have no such illusions. We know full well that we are trading one set of problems for another. As Burton Blatt once said in reference to home living options: "...there is no empirical documentation that supports the contention that home life is *effective*" (Blatt, 1999, p. 115). We concur, suggesting that this applies to schools as well. We must expect that there will always be "good teaching and bad teaching" (Bloom, 1966, p. 217), regardless of the context in which it is delivered or the curriculum that is used.

What we believe we have shown is that there are sound reasons for rethinking reliance on self-contained settings as reasonable and feasible contexts for providing instruction to students with extensive support needs. Reiterating how we conducted our analysis, we first noted the federal government's concern for the absence of scientific evidence for some instructional practices and its call for public education to align its practices with best available evidence. We responded to this concern by conceptualizing instructional causality as a complex and dynamic process then constructing a theoretical framework consistent with this perspective for relating contextual and curriculum variables to learning. We also applied the theory's constructs to five widely used approaches to instruction for students with extensive support needs. Lastly, we examined the history of residential and educational services to see if our conclusions about the roles of context and curriculum and their implications for location of services were supported. A major part of the latter task was to review empirical data from the period of history in which transitions were occurring from institutions to the community and from the period now in progress in which some transitions are occurring from self-contained to general education settings.

Although our review of educational practices in schools has a clear connection with theory, one might question why we summarized the history of institutions and their demise. The common denominator is separation from the mainstream, and how this impacts not only the relationships and information flow among students but also the information flow among adults in the two systems, and this in turn affects the practices that impact children. We must ask ourselves how "developmental" and "functional" became goals of education without due consideration for the goals of education used with all other children, and "separate" comes to mind. We also must come to grips with why there is a body of evidence that raises concerns about questionable and harmful practices in self-contained settings that parallel those of the institutions (Jones & Feder, 2009; National Disability Rights Network, 2009), and why self-contained settings are used as "dumping grounds" in a manner that is not dissimilar to placement practices in institutions (e.g., Carter & Scruggs, 2001). We suspect that these and other concerns are far more prevalent in schools than presently reported, and we respectfully submit that "separate" is a key variable making these conditions possible. Although it seems certain that we will continue to

be separate systems in the foreseeable future (Richardson, 1994), it is in our best interest, and that of our children, to reduce the distance between our two systems by becoming more like one community in schools. This makes possible realizing the potential of the theoretical framework proposed in this work while simultaneously reducing the risks of the idiosyncrasies of practice made possible by isolation.

We believe that the inescapable conclusion that must be drawn from our review of theory and empirical research is that the interaction of context and curriculum can causally mediate the outcomes of instruction, and that its impact grows with each passing year. Our results further support the view that inclusive education, defined in terms of general education contexts and age- and grade-level curriculum content, can provide benefit to students with extensive support needs. Our results also support the contention that this cannot be said of the other practice approaches and that educational benefit is considerably less likely when children are educated using any of the other four approaches. Finally, our results support the view that the proportion of causality that can be attributed to contextual variables is significant and pervasive, and that although carefully planned, repeated instruction is important, it is essentially nonequivalent to the power of context in the control of learning outcomes. This means that the problems of educating students with extensive support needs in self-contained settings cannot be overcome by substituting potent forms of instruction. The implication is that placement in age- and grade-appropriate general education contexts and having special and general educators team to provide supports and modifications for all students are first-order research-based practice, and that the benefits of "proven" methods of instruction are realized in the long run only when this first step is implemented in the life of a child.

With respect to future research, we see value in long-term outcome research, in which students who are similar but who have experienced different school contexts or curriculum are followed for years or are studied at the end of their educational careers, using measures that are sensitive to real differences when they exist. It is anticipated that such studies often will be retrospective, and if any form of controlled interventions is included, it will not employ random assignment to placements because of ethical concerns.

We are less certain about the value of research that tries to justify one educational setting over another on the basis of differential response patterns associated with specific, discrete skills. Our review does indicate that there is a body of data favoring general education contexts, and we would predict that, on average, reviews now and in the future would yield similar findings. It seems to us, however, that discrete skills can be taught to acquisition just about anywhere, given enough effort and focus (Collins, Evans, Creech-Galloway, Karl, & Miller, 2007). The theoretical framework developed in this work suggests

that a much bigger picture must be considered when practitioners review these kinds of data. This framework implies that proof of quickly learning a single set of skills in, for example, a self-contained classroom does not change the more profound truth that, in the larger scheme of things, a child is being short changed if his or her services are being provided there.

What our field clearly needs is more research on how schools willing to make the change from relying on self-contained services to more inclusive services can make this transition. We also stress the need for research on how to adapt general education strategies and materials to engage learners with extensive support needs in the general education curriculum. With respect to the latter, however, we assert that "general education curriculum" must be interpreted more broadly, from being only that which is represented by content standards to include both the explicit and the implicit curriculum that is experienced by general education students (see Ryndak, Moore, Orlando, & Delano, 2008/2009, this issue). Finally, future research should examine how to achieve more effective building-level collaboration, encourage self-advocacy in relation to placement, and successfully transform resistant schools.

We also would like to see something similar to the research being done on school-wide positive behavior support (e.g., Horner & Sugai, 2000)—multiple studies at a national scale in which systems using inclusive education practices are promoted and studied, for purposes of identifying problems and ways for improving practice. These data then could be widely disseminated to help make these practices a reality for more schools and more children.

Although the findings from this review do not rely on data from large-scale studies with randomized designs, we have used the best available evidence in relation to theory and empirical research, and the implications for children who are in self-contained settings are significant. We urge the federal government to recognize the value of these findings and begin discouraging states and local communities from opening special schools, moving children into special classes on the basis of their labels and using special curriculum in place of general education curriculum with students who have extensive support needs. It can begin by first rethinking then changing to make more telling the ways that state report statistics on children served in general education versus separate settings. Another step would be to develop grant options, in relation to both the minimally competitive state grants and the highly competitive research grants, that more actively promote the inclusion of students with extensive support needs into general education contexts and curriculum. Grant offerings could do this by either delineating the kinds of practices that we have shown are supported by research as conditions important for funding or by making the implementation of these practices objectives for funded research.

It is said that science is not about proving truths; instead, it is about disproving the truths that have been established by earlier generations of scientists (Platt, 1964). The proposed theoretical framework describes broad patterns of causation that lead to educationally significant conclusions about how different configurations of context and curriculum affect learning across time; hence, one who is skeptical about our results must disprove aspects of the theory if he or she wishes to bring into question our interpretations of the empirical research and our conclusions. We are, however, confident that the constructs of the proposed theoretical framework are sound, that empirical research designed to test these constructs will tend to confirm them, and that our conclusions will hold as truths for generations to come.

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