

**CRITICAL COMPONENTS OF SUCCESSFUL INCLUSION OF STUDENTS WITH SEVERE DISABILITIES: LITERATURE REVIEW**

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*This paper examines the critical components of successful inclusion for students with severe disabilities. This review sets out to provide an overview of literature regarding effective practices for inclusion with a focus on critical components of successful inclusion that assist in preparing the stakeholders worldwide to work and engage effectively with students with disabilities in inclusive schools. The methodology used to conduct this review was to systematically search internet resources, abstracts and databases. The descriptors used include: students with severe disabilities/significant disabilities/ intellectual disabilities, inclusion, modification, adaptations, assistive technology, collaboration, instructional strategies, typically developing peers, and family support. This was followed by the application of two sets of criteria: (1) the article consists of subjects with inclusion/inclusive/general education setting/public schools and (2) the article examines critical components of successful inclusion of students with disabilities or equivalent concepts as the outcome. Seventy two studies met the two criteria and are presented in this review. The author provides an integrated overview of current knowledge regarding the critical components that enhance the quality of inclusive education programs for students with severe disabilities across the world. This review provides evidence that these components support students' access and progress, either in curricular or non-curricular activities in general education settings. Finally, the author identifies the need for future empirical studies to further examine how each of these components supports students with severe disabilities in general education settings.*

**Introduction**

The implementation in the past several decades of legislation in the US favoring the inclusion of students with disabilities in general education settings has increased the percentage of students with disabilities in public schools. According to the U.S. Department of Education (1998), almost a decade after the implementation of IDEA, students with disabilities spent more than 79% of a typical school day in the regular education classroom. Furthermore, the percentage of students with mild to severe disabilities who were placed in general education settings rose from 20.7% to 42.4% in 1998 (U.S. Department of Education, 1998). Additionally, in the 2004-2005 school year, approximately 96% of students with disabilities received their education in the general education classroom and half the students with disabilities spent their day in an inclusive setting (U.S. Department of Education, 2005).

The implementation of this law not only increased the percentage of students with disabilities attending their neighborhood public schools, but also further advanced the academic performance of students with disabilities. For instance, research indicates that reading skills for students with severe disabilities in elementary schools in inclusive settings improved by 31.7% and mathematics skills for these students in elementary schools improved by 23.9%. Additionally, the reading skills of middle school students increased by 13.8 % and mathematics skills improved by 12.5 % (Teigland, 2009).

Despite the positive outcomes for students with disabilities, particularly students with severe disabilities in the inclusive education setting, research shows that stakeholders in schools, as well as parents of

students with severe disabilities, are still advocating for improvement in the effectiveness and quality of inclusive education programs for their children (Downing & Peckham-Hardin, 2007). Therefore, there are several reasons why the author has chosen to focus on students with severe disabilities rather than students with mild disabilities. As concluded by Downing and Peckham-Hardin (2007) improvement in the effectiveness and quality of inclusive education programs for students with severe disabilities is still lacking, even though this education has been relatively successful for students with mild disabilities. An abundance of literature focuses on the fact that inclusion for students with severe disabilities requires a great deal of effort to accommodate and adapt content of the general curriculum, modify instructions, and use assistive technology (Janney & Snell, 2006). As also recommended by Cross, Traub, Hutter-Pishgahi, and Shelton (2004), more research is required to further discussions regarding important components of inclusive settings for students with severe disabilities.

Additionally, two essential issues face countries around the world who seek to address this matter: underlining the critical components of successful inclusion of students with disabilities for teachers, service providers, parents, and administrators, and emphasizing the need to develop knowledge and skills to better meet the challenges of the present school climate (Carroll, Forlin, & Jobling, 2003; Florian & Rouse, 2009). Therefore, these stakeholders should have certain knowledge and understanding about the needs of different learners, teaching techniques and curriculum strategies, and other components that *prepare them to enter a profession which accepts individual and collective responsibility for improving the learning and participation of all children in inclusive schools* (Florian & Rouse, 2009, p. 596). Accordingly, this review sets out to provide an overview of literature regarding effective practice for inclusion with a focus on critical components of successful inclusion that assist in preparing the stakeholders worldwide to work and engage effectively with students with disabilities in inclusive schools. The present review also provides an integrated overview of current knowledge regarding the critical components that enhance the quality of inclusive education programs for students with severe disabilities.

## **Methods**

### *Search Strategy*

A search in April 2010 was conducted on internet resources, abstracts and databases, including Educational Resource Information Center (ERIC) (1-2010), Academic Search Complete (2000-2010), Education Full Text (2000-2010), Proquest Dissertations and Theses (2000-2010), and professional organizations (e.g., TASH) and government documents (U.S. Department of Education); however, there are some exceptions made for research used for the historical view (e.g., the history of inclusion movement (1960-2010). It can be said this review is limited to the US context and literature due to the fact that this literature considered these components more than other nations. The descriptors include the following terms: (a) students with severe disabilities/significant disabilities/ intellectual disabilities/mental retardation ; (b) inclusion/inclusive/general education setting/public schools;(c) general curriculum, modification, adaptations, and accommodations; (d) assistive technology/ assistive technology devices; (e) collaboration; (f) instructional /teaching strategies;(g) typically developing peers; and (h) family support/involvement.

### *Selection*

The researcher combined these terms and identified 468 English publications that described empirical research or reviews of the above terms. Condensing the research, researcher selected the articles that included the previous terms in order to check the reproducibility and randomly repeated the selection of the articles that identified initially. The researcher also identified two criteria based on the title and abstract of selected articles in terms of: (a) the article consists of subjects with inclusion/inclusive/general education setting/public schools (b) the article examines critical components of successful inclusion of students with disabilities or equivalent concepts as the outcome. After that researcher synthesized the information from 468 studies, taking into consideration the above criteria, the result included 72 studies presented in this review.

This paper presents the definition of severe disabilities and then gives a brief historical overview of inclusion, taking into consideration differences between inclusion and mainstreaming. Second, this paper examines previous studies outlining positive outcomes of inclusion. Additionally, this paper discusses critical components likely to support successful inclusion of students with severe disabilities. Finally, suggestions as well as implications and guidance for future research are discussed.

### *Definitions of Severe Disabilities*

In the US, the definition of severe disability has been extensively discussed in the literature. For instance, Westling and Fox (2009) use this term to describe children with severe deficiencies that affect their abilities in different areas, such as learning, social, personal, and physical skills. Additionally, Collins (2007) described persons with severe disabilities as individuals *who have cognitive disabilities consistent with intelligence quotient (IQ) below 50-55 or a severe developmental disability that limits their functional ability to this range* (p. 19). Brimer (1990) also indicated the term severe disability as describing a condition that severely affects the developmental abilities of the person. Lastly, Sailor and Haring (1977) added that people with severe disabilities need extensive services to achieve self-independence. Thus, these definitions emphasize that individuals with severe disabilities have low cognitive abilities that affect their daily life activities.

The Association for Persons with Severe Handicaps (TASH) (2000) proposes the definition for persons with severe disabilities as follows: *These persons include individuals with disabilities of all ages, races, creeds, national origins, genders and sexual orientation who require ongoing support in one or more major life activities in order to participate in an integrated community and enjoy a quality of life similar to that available to all citizens. Support may be required for life activities, such as mobility, communication, self-care, and learning as necessary for community living, employment, and self-sufficiency. (para. 1)*

Similarly, the American Association on Mental Retardation (AAMR) (2002), known now as the American Association on Intellectual and Developmental Disabilities (AAIDD), identified three dimensions that determine the status of an individual's disability as a severe intellectual disability. First, the definition uses IQ scores as part of the determination of intellectual disability, with a cutoff score of approximately 40 and below. Second, adaptive behavior is a term used to describe the skills used to function in daily life. As indicated by the definition, an individual with an intellectual disability also lacks proficiency in a wide variety of adaptive skills including the following: (a) conceptual skills, including language, money, time, and number concepts, and self-direction; (b) social skills in terms of interpersonal skills, social responsibility, self-esteem, gullibility, social problem-solving, and the ability to follow rules/laws and to avoid being victimized; (c) practical skills, such as activities of daily living (personal care), occupational skills, healthcare, travel/transportation, schedules/routines, safety, use of money, use of the telephone. Finally, the individual must demonstrate these characteristics between the time of birth and 18 years of age. (AAMR, 2002, p. 190)

The American Psychiatric Association (APA) (2000) also classifies people with severe intellectual disabilities as having an IQ score range of 40 and below. Finally, the National Dissemination Center for Children with Disabilities (NICHY) (2004) describes people with severe disabilities as individuals who have severe to profound cognitive impairments or mental retardation. In summary, severe disability is a term used to refer to individuals with severe intellectual disabilities who have an IQ score of 40 and below and have significant limitations in social, learning, personal, and language skills.

#### *The History of the Inclusion Movement*

The philosophies guiding special education have changed in the last three decades and continue to change, particularly in the United States. A large part of this transformation is based upon the idea that students with disabilities should receive their education in the least restrictive environment (LRE). In fact, in the US the requirement that education takes place in the LRE was put forth in the Education for All Handicapped Children Act (EHA) in 1975. According to this Act, students with disabilities from ages 5-21 are required to be educated with their peers without disabilities to the maximum extent possible regardless of the nature and severity of their disabilities (Osgood, 2005). Therefore, the term *mainstreaming* emerged as a term to describe the practice of educating students in the LRE for students with disabilities at that time.

The practice of mainstreaming emerged in 1975 after EHA introduced a new philosophy designed to ensure that students with disabilities would receive their education in the least restrictive environment (LRE), particularly for students with mild disabilities. Initially, the mainstreaming philosophy emphasized that students with mild disabilities should receive their education in a general education setting, but did not take into consideration students with moderate or severe disabilities (Osgood, 2005). Mainstreaming was based on the concept that students would spend part of the day visiting the general education classroom and attending extra-curricular non-academic activities, such as lunch, recess, physical education, music, and art. Therefore, the major benefit of mainstreaming was allowing students with disabilities to receive special education services in a self-contained classroom while at the same

time participating with their typically developing peers in non-academic activities, allowing students with and without disabilities to learn from each other (Westling & Fox, 2009).

The EHA legislation was amended and renamed in 1990 as the Individuals with Disabilities Education Act (IDEA), which also supported educating students with disabilities alongside their peers in their neighborhood public schools. It was at this time that mainstreaming was replaced by the practice and term *inclusion*. The Individuals with Disabilities Education Improvement Act of 2004 (IDEIA) again mandated that students with disabilities should be educated with typically developing students in general education classes to the greatest extent possible. Additionally, IDEIA reemphasized that students with disabilities should only be placed in separate classes or schools when the nature or severity of their disabilities is such that they could not receive an appropriate level of education in a general education classroom with supplementary aides and services (Heward, 2003). Therefore, this law guaranteed the right of all students with disabilities to receive their education in the least restrictive environment (LRE).

Even though mainstreaming supported the rights of students with disabilities to receive their education in the least restrictive environment, it was not a guarantee for all students with disabilities to receive their education in the general education setting for all academic and non-academic activities all day with their typically developing peers. Several studies report some limitations of mainstreaming. The first type of limited mainstreaming is described as locational mainstreaming, which can be defined as a situation where students with disabilities were placed in special separate classrooms in public schools and deprived of contact with typically developing peers, except for social activities. A second limited type of mainstreaming, social mainstreaming is described as a situation where students with disabilities interact only in social activities, such as art time, meal time, and other activities. However, these students spent most of their rest time segregated from their typically developing peers (Osgood, 2005).

These obvious limitations of mainstreaming have led educators and parents to advocate for the rights of all students with disabilities, particularly students with severe disabilities, to receive their education full-time in an inclusive setting. The idea that the responsibility for educating students with disabilities should be shared by general education and special education teachers sparked another movement in what is known as the Regular Education Initiative (REI) led by Madeleine Will in the mid-1980s. Will, then director of the Office of Special Education and Rehabilitation Services, pursued the goal of having students with disabilities receive their education in traditional, general education classrooms, where they would have more challenging coursework and would require less funding from the state and taxes (Harrington, 1997).

#### *Mainstreaming versus Inclusion*

Existing literature summarizes the similarities and differences between mainstreaming and inclusion. According to Yell (2006), both inclusion and mainstreaming are philosophically grounded in the struggle for the extension of civil rights. Additionally, both are directed at placement for students with disabilities in general education settings with their typically developing peers. Lastly, both mainstreaming and inclusion share common elements of implementation.

In spite of the similarities, there are some differences between mainstreaming and inclusion that should be clarified. While mainstreaming involves placing students with disabilities, particularly students with mild disabilities, in regular classrooms for part of the day, inclusion involves allowing all students with disabilities to participate in the general education curriculum as well as in regular classes with their typically developing peers to the maximum extent possible (Osgood, 2005; Westling & Fox, 2009). Thus, while both mainstreaming and inclusion support the rights of students with disabilities to receive their education in the least restrictive environment as mandated by law, the philosophy of inclusion seeks to include a variety of students with disabilities, including students with severe disabilities, in general education setting with an opportunity to participate in curricular and non-curricular activities.

Adding to the literature clarifying the confusion regarding mainstreaming and inclusion, scholars define the philosophy of inclusion in a number of different ways. Villa and Thousand (2003) describe it as *the principles and practice of considering general education as the placement of first choice for all learners* (p. 20). Taylor (2006) mentions that inclusion means serving students with a full range of abilities and disabilities in the general education classroom with appropriate in-class support. With a more comprehensive view of the inclusion concept, Mitchell (2004) defines inclusion as students with disabilities having full participation in age-appropriate classes in their neighborhood schools with appropriate supplemental aids and support services. Finally, Smith (2006) describes the concept of

inclusion by stating that students with disabilities should attend their home school with their same age and grade peers all day in the regular education classroom. Overall, all of these definitions of inclusion emphasize that students with disabilities, particularly students with severe disabilities, should be educated in the general education settings with their typically developing peers.

Throughout the 1990s, many documents, including books, articles, newsletters and other sources, examined the concept of inclusion for students with disabilities as well as the significance of inclusion, and discussed the essential elements of practicing inclusion in schools (Osgood, 2005). Generally, most of these documents emphasize the importance of inclusion as an alternative to mainstreaming because the segregated setting is not an appropriate or effective way to educate students with disabilities. Inclusion challenges the stigma and isolation of these individuals and provides full rights for students with disabilities, regardless of the severity of their disability, to be educated in the general education setting. In summary, these three movements, mainstreaming and inclusion have improved and promoted the quality of education programs for all students with disabilities, particularly the inclusion movement that focuses on the education of all students in the general education setting. Accordingly, there are several studies that examined the outcomes of educating students with severe disabilities in a general education setting as discussed in the follows section.

#### *Positive Outcomes of Including Students with Severe Disabilities in Inclusive Settings*

In addition to the general advantages of inclusion that have been discussed, many studies report specific positive outcomes from inclusion for both students with severe disabilities. Much discussion has taken place in the literature noting that the general education setting plays an essential role in developing and meeting the needs of students with severe disabilities in many areas including academic, social, and communication skills. In general, students with disabilities educated in inclusive settings receive higher grades, and achieve higher scores on standardized tests than students with disabilities placed in separate classrooms (Rea, Mclaughlin, & Walther-Thomas, 2002). The inclusion of students with disabilities in the general education setting is a successful approach for ensuring that those students develop skills in many different areas of academic achievement, social development, and general communication, as explained in the following section.

#### *Academic Benefits of Inclusion*

Research reveals that the academic accomplishments of students with severe disabilities increase through interaction with typically developing peers in an integrated environment, and they meet the goals of their individual education programs (IEPs) (Brinker & Thorpe, 1984; Westling & Fox, 2009). Additionally, students with disabilities, including students with severe disabilities, increase academic performance in main academic skills, such as reading and mathematics, in the context of cooperative learning groups in an inclusive environment (Cole, Waldron, & Majd, 2004; Downing, Spencer, & Cavallaro, 2004; Hall & Wolfe, 2003; Katz & Mirenda, 2002; Hunt, Staub, Alwell, & Goetz, 1994). Another study conducted by Cole et al. (2004) indicates that achievement outcomes in math and reading for students with severe disabilities placed in 16 programs in general education settings in the state of California increased when compared with students with severe disabilities placed in special classrooms.

#### *Social Benefits of Inclusion*

In the same context, studies report that inclusion provides an opportunity for students with severe disabilities to build social skills in terms of establishing relationships with their typically developing peers. Some studies indicate that students with severe disabilities in inclusive education classrooms experience a higher level of interaction with peers than students with severe disabilities placed in separate classrooms (Hunt, Soto, Maier, & Doering, 2003; Katz & Mirenda, 2002; Westling & Fox, 2009). Finally, children with severe developmental disabilities in inclusive classrooms over a two-year period progressed on a measure of social competence, whereas matched counterparts in segregated settings regressed (Cole & Meyer, 1991).

#### *Communication Benefits of Inclusion*

In terms of communication skills, studies reveal that students with severe disabilities improve their communication skills in inclusive settings when compared with students with the same disabilities in self-contained classrooms. Snell and Eichner (1989) pointed out that students with disabilities placed in general education classrooms have a greater opportunity to develop their communication skills through interactions with typically developing peers. Foreman, Arthur-Kelly, Pascoe, and Smyth King (2004) indicate that students with significant disabilities experience more communicative interaction in inclusive settings than students with significant disabilities in special education classrooms. Finally, several studies

mention that students with disabilities develop their physical coordination and social skills by communicating and observing typically developing students in an inclusive classroom setting (Hunt et al., 1994; Westling & Fox, 2009). Overall, research findings indicate that the inclusive environment supports an opportunity for students with severe disabilities to increase and develop a variety of skills in terms of academic achievement, social interaction, and communication skills.

As demonstrated in the literature, including students with disabilities in the general education setting is a successful approach for ensuring that students with severe disabilities develop skills in many different areas, as well as obtain the same educational rights as their peers. These areas include academic achievement, life, communication, and socialization in their neighborhood schools (Cole et al., 2004; Foreman et al., 2004; Hunt et al., 2003; Westling & Fox, 2009). That being said, there are many views of how inclusion can be implemented for students with severe disabilities. Some researchers argue that full inclusion is the only way students with disabilities can be educated with their typically developing peers in the general education setting, regardless of the degree of disability or intensity of needs. On the other hand, others argue for partial or responsible inclusion, which is more in line with the principles of least restrictive environment (LRE), where placement decisions are made on a case-by-case basis and depend on the individual needs of the student. The following section presents a brief discussion regarding the various models of inclusion.

#### *Critical Components of Successful Inclusion for Students with Severe Disabilities*

The many theories that support the inclusion of students with disabilities, even severe disabilities, have been described and evaluated many times (Downing & Peckham-Hardin, 2007). Those in favor of inclusion have outlined plans to create and continue programs of inclusive education for students with severe disabilities, including collaboration among professionals (e.g., special education teachers, general education teachers, service providers and others), and adaptation and accommodation of schoolwork (Downing & Peckham-Hardin, 2007; Hunt et al., 2003). Other elements that can be considered essential components for the inclusion of students with severe disabilities are effective instruction practices to improve access to core general curriculum, peer support for students with severe disabilities, assistive technology, and administrative support, professional development training for educators, and effective involvement and support of parents or families in inclusive settings. The following sections discuss these components.

#### *Accommodations and Adaptations*

The general curriculum can be considered to be anything that a student does over the length of a single school day (Ryndak & Billingsley, 2004). Additionally, the general curriculum determines the way the school system decides how it will instruct its students. It seeks to develop schoolwork and present the ways in which educators will teach, what will be taught, what will be tested, and what knowledge will be produced from this work (Hitchcock, Meyer, Rose, & Jackson, 2002). IDEA states that students with disabilities have a legal right to interact with and be a part of the general curriculum. They are required to be allowed to pursue the same goals and objectives as their typically developing peers (Pugach & Warger, 2001). IDEA also indicates that any student with disabilities, no matter how severe the disability, must be provided with as much assistance as possible to help them access the general curriculum (Lee, Soukup, Little, & Wehmeyer, 2008).

More recent research has shown that students with severe disabilities who are able to access the general curriculum benefit because it promotes communication, motor, and social skills, and helps students build friendships (Copeland et al., 2004; Ryndak & Billingsley, 2004). Furthermore, some studies provide evidence that students with severe disabilities benefit academically from the general curriculum when they receive adequate and appropriate modifications that meet their unique needs.

Despite the potential benefits, there are many obstacles in the way for granting curriculum access to students with severe disabilities (Spooner & Dymond, 2006). As inclusive education has changed over time and legislation has sometimes failed to keep up with it, the regulations of the legislation have not been implemented in the schools. The goals of individuals trying to educate students with disabilities constantly change as the world changes, but more progress is being made towards improved inclusion of students with disabilities (Hitchcock et al., 2002). Teachers, typically developing peers, and service providers, as well as other professionals, should participate as a team in order to promote the access of students with severe disabilities, as well as further their progress in the general education curriculum. By considering many methods, including modifications in terms of curriculum accommodations and adaptations, teachers can achieve these goals.

The term *modification* has been used in different ways in the education literature (Koga & Hall, 2004). For instance, some literature defines curriculum modification as *the adapting or interpreting of a school's formal curriculum by teachers into learning objectives and units of learning activities judged most reasonable for an individual learner or particular group of learners* (Comfort, 1990, p. 397). Others present modification as a useful tool to support educators and students with and without disabilities in different learning activities in an education environment (Downing & Peckham-Hardin, 2007; Pugach & Warger, 2001). As a result, there are numerous kinds of modifications, including accommodations and adaptations that might be supportive for students with severe disabilities to access general education curriculum in an inclusive setting.

The term *accommodation* is used in the literature to describe ways to help students with disabilities accomplish something they would usually be unable to accomplish because of their disability (Janney & Snell, 2006). Additionally, some researchers use the term accommodations to describe anything employed to help a student gain more access to the general curriculum or assist in their overall education (Hitchcock et al., 2002). Section 504 of the Rehabilitation Act of 1973 suggests that accommodations are needed to ensure that an academic requirement does not discriminate on the basis of disability, and can include a change in the length of time needed to complete a degree, substitution of courses required to complete a degree, and adaptations in how courses are taught (Yell, 2006). Specifically, accommodations seek to change the way the course is taught, and not to challenge the educational facts taught in, or content of the curriculum (Hitchcock et al., 2002). Accommodations might include using specific teaching techniques, such as *audio or other formats as an alternative to print, technology, graphic organizers, and pictorial representation; and changing the amount of input, time-frame for learning, and levels of support for individual students' needs* (Koga & Hall, 2004, p. 4). Another example of an accommodation is changing the requirements so that only half of the problems on a math assignment need to be completed, or allowing a student to take an oral exam instead of a traditional pen and paper test (Vaughn, Bos, & Schumm, 1997). Finally, Janney and Snell (2006) suggested that educators might allow a student with a disability more time to finish an exam, allow a student with poor vision to be closer to the material presented, give the student assistive technology, or overlook spelling errors if that is not the point of the assessment in question. Overall, accommodations should not necessarily change what is taught or how difficult the coursework is, but should focus on changing the way the material is taught or aiding the student in ways that help him or her to deal with the disability in question (Koga & Hall, 2004).

*Curriculum adaptations* are another type of modification of the general curriculum for students with severe disabilities. Indeed, many studies emphasized that curriculum adaptations play a significant role to support students with disabilities in achieving access to and making progress in the general curriculum (Lee et al., 2006). For instance, York, Doel, and Kronberg (1992) mentioned that the general education curriculum can meet the unique needs of diverse learners when adaptations are considered. As Vaughn et al. (1997) also found, teachers can assist students, including students with disabilities, to achieve their goals if they adapt the general education curriculum. These findings provide evidence that curriculum adaptations can be a useful tool that enables students with disabilities to achieve access to and make progress in the general education curriculum.

The meaning of the term *curriculum adaptations*, as defined by some scholars, such as Lee and colleagues (2006), is to change or alter the method with which course materials are taught or the way the student learns from the curriculum, possibly using some aspects of Universal Design for Learning. Additionally, Janney and Snell (2006) describe curriculum adaptations as changes made to what is expected of the student, the way the course is taught, and the tools used to teach the course. Examples of adaptations that might be considered by stakeholders in schools include: allowing students with disabilities to use counting aids to help with difficult arithmetic problems or allowing the student to act out instead of write down the solution to a theoretical problem (Janney & Snell, 2006). Other examples of appropriate curriculum adaptations addressed by Cole et al. (2000) can be divided into three main categories: written assignment strategies, reading assignment strategies, and environmental strategies. The written assignment strategies include shortening or simplifying an assignment to allow the student more time to complete it. In addition, if the assignment does not focus on spelling, another option would be to not take off from the student's grade for those errors, and to give the student opportunities to speak or use dictation instead of writing out long assignments. Reading assignment strategies can be described as accommodations in the category of reading assignments, including giving the students written material on a tape so that they can listen instead of reading longer passages; providing students with reading

material in advance to allow them more time to read it and be on schedule with their typically developing peers; and putting all students into groups for more difficult reading sections. Finally, environmental strategies include rearranging seats for the best possible learning environment; providing small rest times for students to get drinks of water, socialize, and use the restroom if they need to; and varying the day's activities to provide small group work, solo work, and larger classroom work. As discussed above, accommodations and adaptations can be useful and supportive to collaborative teams in schools to assist students with severe disabilities to access and make progress in the general education curriculum. Clearly, curriculum accommodations and adaptations are useful components that enhance access to the general education curriculum in order to create successful inclusion for students with severe disabilities in the general education setting. Despite the occasional need for accommodation strategies or environmental adjustment, current research presents evidence that some instructional strategies support these students in accessing the general education curriculum as presented in the following section.

#### *Instructional Strategies*

Current research presents evidence that students with severe disabilities are able to access core general curriculum in the general education setting (Browder, Spooner, Wakeman, Trela, & Baker, 2006; Ryndak, Margaret, Orlando, & Delano, 2009). Current literature provides a great deal of discussion regarding instructional strategies that encourage students with severe disabilities to acquire functional skills; however, there is little research that considers instructional strategies that could better assist students in accessing the general education curriculum (Downing, 2008). Therefore, it is important to gain a better understanding of the effectiveness of instructional strategies that might assist students with severe disabilities in accessing the general curriculum. Copeland and Cosbey (2009) suggest a new approach to instructional strategies in order to support students with severe disabilities in accessing the general curriculum in a general education setting by combining effective typical instructional strategies with effective special education strategies. According to this approach, several instructional strategies that support students with severe disabilities in inclusive setting include cooperative learning (CL), inquiry learning and the environment which supports it (IL, IL environment), and universal design for learning (UDL) (Copeland & Cosbey, 2009). The following sections will outline and discuss these instructional strategies in more detail, according to the categories mentioned above.

*Cooperative learning.* Cooperative learning refers to the practice of having a *small group of students with mixed ability levels working together, with each member having equal stature within the group, to help each other accomplish a specified learning task* (Copeland & Cosbey, 2009, p. 218). As some researchers reported, this strategy improves the academic performance of both students without disabilities as well as students with mild disabilities (McMaster & Fuchs, 2002). Regarding students with severe disabilities, some studies note that cooperative learning aids in the development of social interaction skills in the general education settings (Jenkins, Antil, Wayne, & Vadas, 2003). Additionally, there is strong body of research showing that general education teachers are comfortable using cooperative learning with their students (Jenkins et al., 2003). Therefore, this finding may support general education teachers using this strategy with students with severe disabilities in general classrooms (Copeland & Cosbey, 2009). However, even though more studies have been done using cooperative learning as a useful strategy for improving students' with severe disabilities social interactions in general education settings, unfortunately, few studies have measured the effect of cooperative learning on academic accomplishments for students with severe disabilities in general education settings (Ryndak et al., 2009). With more attention from researchers, this strategy may demonstrate usefulness in helping students with severe disabilities access the core general curriculum.

*Inquiry learning.* Inquiry learning (IL) is an instructional strategy typically defined as *an educational activity in which students individually or collectively investigate a set of phenomena—virtual or real—and draw conclusions about it* (Kuhn, Black, Keselman, & Kaplan, 2000, p. 496). This method of learning focuses on group-based work and working together to find the bigger picture of a problem (Hmelo-Sliver, Duncan, & Chinn, 2007). The teacher's role in IL is to create and present the project and its background information to the students and then to help students solve the problem based on their own and their group's learning speed (Copeland & Cosbey, 2009). The group work learning speed, combined with differing levels of difficulty is what is best known about how students learn when applying this method. All activities in the IL method are placed in situations that require detailed rather than abstract explanations. These explanations help students with severe disabilities, as they learn best when they are in an open environment with many different ways to solve a problem and when they are given explanations and background information to solve problems (Copeland & Cosbey, 2009). Finally, Rapp (2005) showed that an IL environment can help students with severe disabilities learn what one



another is good at in an inclusive setting and focus on skills, which allows them to perform what they are good at, helps their self-esteem, and encourages their typically developing peers to view them in a more positive light, thus, encouraging constructive social interaction. Even though this strategy might be an instructionally supportive method for students with severe disabilities, as of yet, little research has examined whether this strategy is effective in assisting these students to acquire academic skills in a general education setting.

*Universal design for learning.* The Center for Applied Special Technology (CAST) (2010) defines UDL as *methods and materials that are flexible and powerful enough to help all students, regardless of their ability, to maximize their progress* (para. 3). Even though only a limited number of studies have examined the effectiveness of UDL as an instructional method to support students with severe disabilities in accessing the general education curriculum, Carroll, Blumberg, and Petroff (2008) indicate that UDL is a good method for encouraging students with severe intellectual disabilities to access general education curriculum. UDL also assists general and special education teachers to create successful activities for all students, including students with severe disabilities (Spooner, Baker, Ahlgrim-Delzell, & Browder, 2007). In UDL, all coursework is created to allow different methods for learning the curriculum in terms of videos, books, or images. In addition, UDL coursework tries to use different sizes of groups, like independent work and group work, and allows for multiple ways for the student to convey information, like writing a paper or making a slideshow (Copeland & Cosbey, 2009). Thus, UDL is possibly an effective tool to support learning for all students, including students with severe disabilities. While the previous paragraphs discussed several overarching strategies for special education classroom reform, other, more specific strategies exist as well. Copeland and Cosbey (2009) point out that there are other effective special education strategies that might assist students with severe disabilities to access the general education curriculum in inclusive settings. These techniques, which include simple changes to classroom format and interaction in the form of response prompting and embedded instruction, do not only benefit special education students. Interestingly, research has shown that even though students with disabilities need more individualized strategies, students without disabilities also benefit from these same strategies (Spooner & Dymond, 2006).

*Response prompting.* Response prompting occurs when an instructor helps a student find the correct answer with verbal or non-verbal cues while the student is trying to think of the correct answer, or after the student has already given an incorrect answer (Cooper, Heron, & Heward, 2007; Copeland & Cosbey, 2009). Many studies have shown that response prompting is a successful method that can help students with severe disabilities gain academic skills (Copeland & Cosbey, 2009; Rao & Kane, 2009). For instance, Evans-Cosbey and Johnston (2006) conducted a study examining the efficiency of response prompts when teaching time delay to students with severe disabilities in the general education setting. The study reported that response prompting assisted students in learning the target skills and generalizing them to a different setting. The response prompting strategy can include spoken, body language, or complete assistance, which is gradually taken away as the students show they no longer need the help (Copeland & Cosbey, 2009). This strategy is a useful method that can be used in the general education setting for students with and without disabilities.

*Embedded instruction.* Embedded instruction strategies provide strong, personally focused help to students with severe disabilities in the general education settings and assist students with learning difficulties during an entire class period (Westling & Fox, 2009). According to Copeland and Cosbey (2009), this strategy uses response prompts and time management allowing learners and instructors to achieve their objectives during class rather than outside the classroom. This method of instruction allows students with severe disabilities to learn at the same time as their typically developing peers, without giving them different tests or interrupting regular class time, practices that can make the student with severe disabilities feel isolated or singled out. Studies have shown that embedded instruction assists students with severe disabilities in acquiring academic skills in the general education setting (Jenkins et al., 2003; Westling & Fox, 2009). Overall, it introduces students to new techniques to develop their abilities and learn information (Copeland & Cosbey, 2009).

In summary, these instructional methods, whether applied to the entire classroom or via a one-on-one, student-by-student basis, can help students with severe disabilities make progress in the general education curriculum. Taking into consideration that these methods offer additional support for students with disabilities in the general education classroom, more attention should be given to examining the effectiveness of these methods in helping students (redundant; you have already described the students well enough) gain social, functional, communication, and academic skills. In addition to learning

strategies, assistive technology is another component that supports these students' learning. Several examples of this beneficial technology will be discussed in the following section.

#### *Assistive Technology*

Assistive technology (AT) encourages students with severe disabilities to more effectively participate in various activities (Langone, Malone, & Kinsley, 1999; Mistrett, Lane, & Ruffino, 2005). IDEA emphasized that during an IEP meeting, the IEP team must take into consideration assistive technology devices and services that meet the unique needs of students with disabilities when they plan the students' IEP (Westling & Fox, 2009). Indeed, there are two types of AT devices that could be useful for students with severe disabilities in facilitating their activities in various settings. The first type is low-tech, which includes adapted spoons, switches, and picture boards. Another type is high-tech, which includes computers, augmentative communication, and power wheelchairs (Mistrett et al., 2005). The literature suggests common AT devices that could be useful for students with severe disabilities in a general education setting include augmentative and alternative communication (AAC) devices, switches, touch screens, and alternative keyboards (John, Azar, & Jean, 1999; Sigafoos, 2010). The appropriate AT device should be determined based on the individual needs of each student. The following section provides a brief description of these AT devices.

*Augmentative and alternative communication (AAC).* Using assistive technology to assist students with severe disabilities with communication problems in inclusive settings is a significant consideration. For some students with significant disabilities, it can be a challenge to communicate effectively and appropriately with their peers in inclusive environment. AAC may be the only way for them to talk and interact with their typically developing peers (Sigafoos, 2010). According to Farrall and Lyon (n.d.), AAC strategies are divided into low technology or high technology systems. Low technology systems include communication boards, books, and object boards, while high technology communication systems utilize computers and specialized software. High technology systems often have the capacity to provide printed output as well as voice outputs.

*Switches.* There are many types of equipment available that can help students with disabilities with limited body movement. A switch is simply a physically activated device that connects the student with a disability with a piece of electronic assistive technology (Farrall & Katie, n.d.). Usually some sort of actual switch is used by the student, allowing him/her to look at pictures, words, or other pieces of data until the one he/she wants is found. A second use of the switch is to select the desired piece of data (Farrall & Katie, n.d.).

*Alternative keyboard.* Students with disabilities are often challenged when using a conventional keyboard either for visual, cognitive, or motor disabilities. For instance, when there are many keys on the keyboard, students with severe disabilities have difficulty locating the appropriate key for a number or letter the student wants to press. Students with severe disabilities also have difficulty remembering the order of the keys on the keyboard (Kincaid, 1999). Therefore, some studies report that adaptive or alternative keyboards can be useful to assist students with severe disabilities when using the computer and accessing the internet (Farrall & Katie, n.d.). For instance, Kincaid (1999) concludes that there is some effectiveness with the use of adapted or alternative keyboards for students with severe disabilities.

Custom hotkey overlays allow the student with disability to enter numbers, words, and phrases by pressing one key; it can be set up with smaller keys for the student with limited range of motion. Some can function as both keyboard and mouse, and the rate at which key strikes are repeated can be lowered for the student who continues to press on a key, reducing unwanted numbers or letters. (p. 3)

*Touch screen.* Finally, as defined by the National Centre for Technology in Education (2009), touch screens are an example of assistive technology that can be used by students with severe disabilities to help them use and access information on computers. They can be used by students with physical or cognitive disabilities who struggle with fully using a mouse to direct what they see on the computer. Different touch screens can either be accessible directly on the monitor of the computer device, or can be implanted in a supplementary device. Touch screens can either be made to work with pressure, or by sensing a student's finger, so the technology can be adjusted to meet student's needs. As discussed earlier, AT can play a significant role in assisting students with severe disabilities to be successful in inclusive setting, taking into consideration that some teachers might prefer to use low-tech devices with less

expensive cost, such as picture boards, different colored ink and marking tape, different paper for marking, highlighters and other simple tools.

#### *Collaboration Among Professionals and Para-educators*

Along with the need for more inclusive learning strategies and the integration of assistive technology for these students, there is another, equally important factor that requires consideration: that which is provided outside of and in tandem with the work done in the classroom. Aside from teachers, many other professionals provide different services and play different roles in inclusive settings, including special education teachers, general education teachers, related services providers (e.g., occupational therapists, physical therapists, and speech/language pathologists), para-educators and nurses, among others. Therefore, collaboration among professionals is essential for successful inclusion (Carter, Parter, Jackson, & Marchant, 2009). In other words, the major purpose for collaboration among professionals in these settings is to increase the quality and effectiveness of education programs (Westling & Fox, 2009). Most research defines collaboration as *the process by which people with different areas of expertise work together to identify needs and problems and then find ways to meet the needs and solve the problem* (Westling & Fox, 2009, p. 63). Collaboration is also defined in the field of education as different workers helping each other and coming up with plans to reach their objectives (Friend & Cook, 2006).

A successful collaboration team should take into consideration the unique needs of students, ways to meet their needs, and ways to provide appropriate services to students with disabilities (Dettmer, Thurston, & Dyck, 2002). A great deal of literature addresses the characteristics of successful collaboration teams in an inclusive setting to deliver the services for students with severe disabilities (Dettmer et al., 2002; Friend & Cook, 2006). For instance, individuals on a successful collaboration team use effective communication skills and believe that *all students can learn and that school personnel share responsibility for their success* (Choate, 2004, p. 459). Additionally, successful teams identify annual goals or objectives that meet the needs of students with severe disabilities. The team also recognizes and acknowledges their knowledge and skills as experts. The team tends to address the same goals; thus, the team shares their experiences in order to achieve those goals. Moreover, of equal importance is the role of each member as part of the team. In other words, each member of the team has the responsibility to provide services for students with severe disabilities to assist them in achieving their goals. Thus, the essential characteristics of collaboration should be considered when creating a successful inclusive environment for students with severe disabilities. Both collaboration and administrative support have to do with the *human element* of teaching, as do the professional development, peer roles, and family support; therefore, the following section will outline and discuss the administrative support in more detail.

#### *Administrative support*

Inclusive service delivery models require effort and support from other staff in schools, especially administrators (Carter & Hughes, 2006). Therefore, administrators are key players in creating a successful inclusive environment for students with severe disabilities through collaboration with other staff members in the schools. The literature emphasizes that administrators can be supportive of collaboration teams in inclusive classrooms through *joint problem solving, maintaining data, facilitating staff development programs, providing emotional support in tough times, modeling collaborative traits and communication, providing resources, providing advocacy, providing time for staff to engage in collaboration, and assessing program efforts* (Bartlett, Weisenstein, & Etscheidt, 2002, p. 242). Furthermore, administrators can provide activities that support collaboration efforts by facilitating the meeting time of collaborative teams in terms of flexible scheduling and allowing for time to collaborate. Carl and Maryann (1996) suggest that school administrators be actively involved in the planning and implementation of activities to support the inclusion of students with severe disabilities in terms of a) determining the appropriate number of students with severe disabilities that should be educated in general education settings, b) providing necessary training for the school staff to participate effectively in service delivery for students with severe disabilities in a general education setting, as well as c) providing optional costs, and d) identifying potential sources of support for general education settings. Thus, school administrators' roles or activities can be an important element leading to successful inclusion of students with severe disabilities.

#### *Professional Development/Pre-Service Programs*

Professionals who provide services for students with severe disabilities can improve the quality of general education programs (Giangercio, Edelman, Broer, & Doyle, 2001). Many professionals play a significant role in achieving this improvement, namely, special education teachers, general education

teachers, physical therapists, speech-language pathologists, occupational therapists, and school psychologists (Giangerco et al., 2001; Smith-Davis & Littlejohn, 1991). Therefore, it is essential that professionals gain adequate skills to provide appropriate and effective services for students with severe disabilities in general education settings. Generally, the literature suggests that knowledge and staff preparation are important to the success of any inclusion program (Giangerco et al., 2001; Mcleskey, Henry, & Axelrod, 1999).

There are various forms of training available to professionals; seminars, workshops, traditional class work, courses, and classes available on the internet are but a few potential resources. Education should be an ongoing process, led mainly by experts on the subjects. Ongoing training can be supplied by documents, team meetings, or other methods of education. IDEA requires these meetings take place with the advice and consent of an expert participant (Giangerco et al., 2001).

Other studies recommend strategies that may improve the role of educators either in pre-service educator programs or at the in-service stage. Readyng educators for their role in teaching students with severe disabilities is a difficult task, one further complicated by the disconnect between training and real world challenges (Rainforth, 2000). As a result, university special education programs should consider designing specific courses that focus on educating students with severe disabilities in a general education setting. These courses should address the needs of students with severe disabilities in inclusive settings and appropriate methods to teach them in these settings. These courses might also include different assignments that assist students in gaining appropriate skills in teaching methods for students with severe disabilities in general education settings, in terms of assessments for general education environments, reflective essays, and lesson plans (Rainforth, 2000).

#### *Role of Typically Developing Peers*

The general education setting allows students with disabilities to interact with typically developing peers and to observe them so that they might further their own development (Grubbs & Niemeyer, 1999). The positive effect of typically developing peers on students with any level of disability has been the focus of many studies (Downing, 2008). Typically developing students can fulfill many roles such as those of tutors, helpers, readers, and guides. They can help by providing role models or by actively guiding students with disabilities to develop coordination, social, and communication skills (Downing & Peckham-Hardin, 2007). The interaction of students with disabilities and their typically developing peers' helps students manage the general education curriculum and develop social skills they might not develop in a less inclusive setting (Kennedy & Itkonen, 1994).

Studies suggest peer strategies that can provide support for students with severe disabilities in the general education setting. Carter and Kennedy (2006) recommend: (a) adapting class activities to facilitate their participation; (b) contributing to the attainment of IEP goals; (c) supporting behavior intervention plans, when appropriate; (d) providing frequent, positive feedback; (e) modeling age-appropriate and contextually relevant communication skills; and (f) facilitating interactions with other students in the class (p.285)

Other studies advocate for the use of specific techniques that might be useful in supporting peers with severe disabilities in an inclusive setting. For instance, Peterson and Hittie (2003) suggest a technique called *clock partners* to pair students for various activities. Essentially, all students in a classroom have numbers like the numbers on a clock. Students would switch partners for different class work, and would have to ask each other to be partners for this hour. This gives students with disabilities the opportunity to practice starting conversations with other students, as well as practice with numbers on a clock. Variations of this could be used with nonverbal students. For instance, they could use cards with written invitations to seek out their partners so students can learn from each other and have opportunities for social skill development. With techniques such as these, students with severe disabilities can become more successful in the inclusive classroom.

#### *Family Support*

Research has shown that parents or families of students with and without severe disabilities are important allies in the successful inclusion of their children (Childre, 2004). Educators should be aware of many aspects regarding the involvement of families of students with severe disabilities in general education settings. First, educators must understand families in terms of how they view and understand the need for certain educational approaches for students with severe disabilities (Childre, 2004). Second, educators must improve their skills to create successful communication as well as partnerships with families of

students with severe disabilities (Defur, Todd-Allen, & Getzel, 2001). These considerations might encourage families of students with severe disabilities to involve themselves efficiently and appropriately in an inclusive setting. As the literature suggests, there are some useful effective strategies for families of students with and without disabilities to support students with severe disabilities in an inclusive setting. Salend (2005) and Shapiro (1999) outline some of the strategies that include: (a) the student's relatives can describe the child in ways that help and are good for the child, by telling what they are skilled at and what they have accomplished while avoiding any negative or harmful descriptions, and (b) families of typically developing peers can help their students learn different and more effective ways of interacting with students with disabilities. They can be taught how to use the assistive technology that students with disabilities use to communicate.

Family members can help improve how students with disabilities are viewed and help others to understand and include students with disabilities in the classroom. Specific strategies for families of students with severe disabilities to support their children in general education settings include collaborative problem solving and education plans. Collaboration is important to problem solving; therefore, when a problem arises, the families as well as other professionals should work together to solve it. In resolving any issues, family members should work with traditional experts at describing the issue, coming up with ways to solve the issue, deciding what to do, and finally working together to enact the desired plan. Families and the educators should meet often to decide what issues are being met and how to work on those that are not (Childre, 2004).

Finally, families of students with severe disabilities should effectively involve themselves with individual education programs (IEPs) teams in many stages including the determination of student needs and appropriate goals to meet his or her needs, the implementation of IEPs, and evaluation of IEP goals. Educators have a limited ability to effectively work without the assistance of the student's family. Working with families is therefore an important part of an educator's role. A successful educator can help students and their families achieve their goals by providing resources to meet those ends (Childre, 2004).

### **Discussion**

A great deal of the literature examines the importance of inclusion for students with severe disabilities and explores the attitudes of stakeholders regarding their inclusion. However, this review identified the critical components supportive of inclusion for students with severe disabilities through a synthesis of significant findings from the research. The information provided in this review is useful and practical for teachers, parents, administrators, and others worldwide to consider when improving the quality of education programs for students with severe disabilities. The studies presented in this review can be generalized to include other nations in order to support these students in educating in the general education setting as much as possible. Providing accommodations and modifications for students with severe disabilities to access the core general education curriculum has become more challenging for school staff to address (Hitchcock et al., 2002; Vaughn et al., 1997).

Another area that needs more attention from researchers, as well as from teachers, is effective instructional strategies that improve students' access and progress in the general education curriculum. Clearly, as this review discussed, collaboration between professionals in schools has become an essential key to creating a successful inclusive environment for students with severe disabilities (Westling & Fox, 2009). Collaboratively, AT devices and services, administrators, and families can work toward successful inclusion for students with severe disabilities. Additionally, colleges of education and special education departments should consider revising their training of pre-service teachers to address the importance of inclusion and effective methods to create successful inclusion for students with severe disabilities. Workshops, conferences, and other professional development pertaining to inclusive education for students with severe disabilities should also be considered by administrators and school districts to improve the knowledge and the skills of educators and staff. Overall, these components cannot be achieved without the combined effort of all parties. Through such efforts, students can make progress in their learning. Students who have stronger support networks are more likely to work hard to support their own learning process.

To conclude, even though the evidence-based research has shown that there are several advantages of inclusive education for students with severe disabilities in terms of increasing their academic, social, and communication skills, these students are still facing challenges in this setting and their families are strongly advocating for improvement in the effectiveness and quality of inclusive education programs for their children. Therefore, this study examined the critical components of successful inclusion for students

with severe disabilities. Through synthesizing the literature, the author provides an integrated overview of current knowledge regarding the critical components that enhance the quality of inclusive education programs for students with severe disabilities. The findings of the literature pointed out that accommodations and adaptations can be useful and supportive to collaborative teams in schools to assist students with severe disabilities to access and make progress in the general education curriculum. Additionally, instructional strategies can help students with severe disabilities make progress in the general education curriculum by combining effective typical instructional strategies with effective special education strategies. The essential characteristics of collaboration also should be considered when creating a successful inclusive environment for students with severe disabilities. Typically developing students can fulfill many roles such as tutors, helpers, readers, and guides. They can help by providing role models or by actively guiding students with disabilities to develop coordination, social, and communication skills. AT can play a significant role in assisting students with severe disabilities to be successful in inclusive settings. Furthermore, school administrators' roles or activities can be an important element leading to successful inclusion of students with severe disabilities. Finally, parents or families of students with and without severe disabilities are important allies in the successful inclusion of their children.

#### *Suggestions for Future Research*

In this paper, the significant components of successful inclusion for students with severe disabilities were examined. Future research should examine each of these components in a separate study that allows researchers to explore the effectiveness of each component in enhancing inclusion for students with severe disabilities. Particularly, a future study should consider the effectiveness of either typical instructional strategies or special education strategies that might assist students with severe disabilities in accessing and progressing in the general education setting.

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