JAASEP

JOURNAL OF THE AMERICAN ACADEMY *of* SPECIAL EDUCATION PROFESSIONALS

Spring/Summer 2015

JOURNAL of the
AMERICAN ACADEMY
of
SPECIAL EDUCATION PROFESSIONALS
(JAASEP)

Spring/Summer, 2015

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Learning Disabilities Today: An Examination of Effective and Not-So-Effective Interventions

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Abstract

The classification of "Specific Learning Disabilities" has experienced revision in the last decade due, in no small part, to the changes provided in IDEIA 2004. The "discrepancy clause" has been replaced with "…response to scientific, research-based intervention," for example. As a result, two new frameworks have been developed to ensure that students at risk for a learning problem or behavioral problem receive effective, research-based interventions to pre-empt the unwarranted classification of those students; namely, "Response to Intervention" relative to academic instruction, and "Positive Behavior Intervention and Supports" regarding student behavior. The article examines both these systems critically and suggests practical applications in today's schools. Similarly, the author provides some effective strategies to address the characteristic learning challenges students with learning disabilities face in the classroom. The article concludes with an analysis of "Differentiated Instruction" and provides the reader with a "practical" way to differentiate the curriculum at all academic levels.

What are Learning Disabilities and How do They Manifest in Children?

Since the 1980s, the definition of "specific learning disabilities" has been fraught with controversy. For example, one group of researchers want to continue to acknowledge its cause as a central nervous dysfunction, another group want to disregard etiology and simply include any learning problem that is not easily understood or explained. Likewise, there has always been debate over diagnostic criteria, such as "a significant discrepancy between aptitude (IQ) and [academic] achievement" (e.g., Adelman & Taylor, 1986; Callinan, Cunningham, & Theiler, 2013). There were three sets of defining characteristics in use in 1986, when these disparate groups developed their own criteria; specifically, the Federal definition, the definition prepared by the National Joint Committee for Learning Disabilities (NJCLD), and one developed by the Association for Children and Adults with Learning Disabilities (ACLD). All three of these agencies agree that learning disabilities are not "constructs" that excuse laziness and provide free test preparation assistance for learning able children – they are a cluster of related neurobiological based challenges prompted by processing deficits, typically centered in the language processing areas of the brain (i.e., Broca's and Wernicke's areas). So, based on this understanding, a true learning disability would be neurological and therefore organic to the individual and, presumably, a lifelong disorder. A "learning problem" would, ostensibly, be a "temporary" learning challenge that *can* be corrected and eliminated over time, with the application of "effective research-based" interventions.

According to the most recent iteration of IDEA; namely, IDEIA 2004, fully operationalized in 2006, the following are the identification criteria for determining the existence of a *specific learning disability* (§ 300.309):
(a) The group described in § 300.306 may determine that a child has a specific learning disability, as defined in § 300.8(c) (10), if—

> (1) The child does not achieve adequately for the child's age or to meet State-approved grade-level standards in one or more of the following areas, when provided with learning experiences and instruction appropriate for the child's age or State-approved grade-level standards:
> (i) Oral expression, (ii) Listening comprehension, (iii) Written expression, (iv) Basic reading skill, (v) Reading fluency skills, (vi) Reading comprehension, (vii) Mathematics calculation, and/or (viii) Mathematics problem solving.
> (2) (i) The child does not make sufficient progress to meet age or State-approved grade-level standards in one or more of the areas identified in paragraph (a)(1) of this section when using a process based on the child's response to scientific, research-based intervention; or

(ii) The child exhibits a pattern of strengths and weaknesses in performance, achievement, or both, relative to age, State-approved grade-level standards, or intellectual development, that is determined by the group to be relevant to the identification of a specific learning disability, using appropriate assessments, consistent with §§ 300.304 and 300.305; and
(3) The group determines that its findings under paragraphs (a) (1) and (2) of this section are not primarily the result of: (i) A visual, hearing, or motor disability; (ii) Mental retardation; (iii) Emotional disturbance; (iv) Cultural factors; (v) Environmental or economic disadvantage; or (vi) Limited English proficiency.
(b) To ensure that underachievement in a child suspected of having a specific learning disability is not due to lack of appropriate instruction in reading or math, the group must consider, as part of the evaluation described in §§ 300.304 through 300.306—
(1) Data that demonstrate that prior to, or as a part of, the referral process, the child was provided appropriate instruction in regular education settings, delivered by qualified personnel; and
(2) Data-based documentation of repeated assessments of achievement at reasonable intervals, reflecting formal assessment of student progress during instruction, which was provided to the child's parents.
(c) The public agency must promptly request parental consent to evaluate the child to determine if the child needs special education and related services, and must adhere to the timeframes described in §§ 300.301 and 300.303, unless extended by mutual written agreement of the child's parents and a group of qualified professionals, as described in § 300.306(a)(1)—
(1) If, prior to a referral, a child has not made adequate progress after an appropriate period of time when provided instruction, as described in paragraphs (b) (1) and (b) (2) of this section; and
(2) Whenever a child is referred for an evaluation.
(Authority: 20 U.S.C. 1221e-3; 1401(30); 1414(b) (6))Describe IDEA (2004)

Further complicating the issue of definition is the reference in (2)(i) above to "a child who does not make sufficient progress to meet age or State-approved grade-level standards… when using a process based on the child's response to scientific, research-based intervention [i.e., Response to Intervention (RtI)]." This clause has opened the way to the proliferation of Response to Intervention practices in many schools throughout the U.S., which its supporters claim is a preventative approach that will mitigate the effects of the current "wait to fail" practice. Currently, a student must demonstrate that he or she "…has not made adequate progress after an appropriate period of time when provided [appropriate] instruction (Fuchs, 2003; Reschly, 2014; Speece, Case, & Molloy, 2003; Vanderhayden, Kovaleski, Shapiro, & Painter, 2014).

Others see RtI as a "watch them fail" approach that seems to ignore the neurological basis of a specific learning disability, such as dyslexia and, instead focuses on ruling out ineffective instruction by providing effective, research-based interventions of various intensities (i.e., small group-individualized) and observing the student's "response." Opponents and critics of RtI have expressed concern that only after months of trying various preemptive interventions without demonstrated success would a child in need of special education and related services receive them (e.g., Vaughn & Fuchs, 2003; Reynolds & Shaywitz, 2009). Others have argued for the use of valid and reliable cognitive assessments as a viable alternative to RtI and the discredited "discrepancy model" (a significant discrepancy between a child's learning aptitude and her academic achievement as determined by standardized assessments such as the WIAT or Stanford-Binet-R) (Callinan, Cunningham, & Theiler, 2013; Colker, 2013).

To reiterate, the essential element in the identification of a specific learning disability that differentiates it from a learning problem is that a true learning disability is a neurobiological condition and is therefore a lifelong disorder. Based on analyses of the "common denominators," associated with most learning disabilities, the author can report four : (a) problems with language comprehension receptive and expressive issues, (b) information encoding for storage and efficient retrieval, (c) organizational and management deficits skills: problems with organizing information in a meaningful way and effective time management: identifying what is most important in a data set from what is of less importance, and (d) represents a challenge in employing abstract reasoning, a difficult time transitioning from the concrete to the abstract, as is the case with moving from basic operations and calculations to algebraic equations and word problems.

Different Learning Needs: Different Classroom Approaches

While there is clearly no "cure" for a learning disability, there are some strategic approaches that can make a difference. Some of the more effective of these strategies are provided below.

One scientifically-based, well-documented strategy to enhance reading comprehension is that of reciprocal teaching, also referred to as reciprocal reading (Palincsar & Brown, 1984; Klingner & Vaughn, 1996) This technique involves several key components; specifically, four types of questions that readers ask of the text, and the opportunity to teach the text employing these questions, strategically, to enhance comprehension. These four question types include: (a) summarizing, (b) text-based inferential and opinion question generating, (c) clarifying, and (d) predicting. The teacher and students take turns assuming the role of teacher during this process. Research conducted by Palincsar and Brown (1985) has demonstrated that 71% of students who used reciprocal teaching strategies achieved criterion performance as compared with 20% of the control students, given the same reading comprehension assessment.

Another characteristic that appears to impact most students identified with a learning disability is the challenge to effectively encode information for easy identification and access at a later time. Encoding starts with perception through the senses, then this sensory information is encoded with the aid of the thalamus and prefrontal lobe. Emotional elements of events are processed in the amygdala, decoded in the cortex, and then recombined with other aspects of the experience in the hippocampus where the resulting experiential data are processed, analyzed, and exported to various parts of the brain, such as the primary cortexes, for storage (Norden, 2007). The process is rather complex and, as with much of brain function, not precisely understood; nevertheless, a simplified way to conceptualize this process is through the "attic model." Simply stated, this schema compares the information encoding process to the purposeful storage of materials in an attic. For example, most of us place items we often need to retrieve *strategically* for easy access, while unused or rarely used items are placed in out of the way locations in the outer recesses of our "attic" (i.e., the hippocampus and other regions of the brain). However, the model suggests that persons with information encoding difficulties tend to place high demand items in a disorganized, helter-shelter fashion, making them much more difficult to retrieve.

Some effective strategies for enhancing information storage and retrieval, which we refer to as "remembering" include the following: (a) chunking, (b) rote learning, with rhymes, music, and movement, (d) the "silly story" and the Greek room, and (e) mnemonic devices (Carruthers, 1998; Luria, 1969; Spence, 1984; Yates, 1966).

The first of these strategies, "chunking," involves organizing information into smaller sub-list, based on common characteristics or criteria. For example, take a seemingly unrelated list of terms: 1. giraffe, 2. violets, 3. squash, 4. elephant, 5. roses, 6. lion, 7. peppers, 8. petunias, 9. onions, 10. zebra, 11. sunflowers, and 12. carrots. Employing the "chunking" method to this series of terms would involve creating three sub-lists based on categories developed through an analysis of common criteria. A quick examination of the list reveals three easily identifiable sub-categories; namely, flowers, mammals, and vegetables. Thus, the three sub-lists would be organized as follows:

Vegetables	**Flowers**	**Mammals**
1. squash	1. violets	1. giraffe
2. pepper	2. roses	2. elephant
3. onions	3. petunias	3. lion
4. carrots	4. sunflowers	4. zebra

These smaller lists would be much easier to recall, because they contain fewer elements and each category has a common characteristic or identifying feature.

In a similar vein, researchers suggest that the number of direct and unrelated items a person can recall by simply using "rehearsal" or "rote learning" is approximately seven ±2 ("Miller's Law," Miller, 1956). This notion is reflected in the telephone numbers we are assigned, which typically consist of seven, randomly selected numerals, not including the area code. Once required to recall more than 7 discrete bits of information, most people must use a mnemonic or memory strategy.

Music, specifically non-lyrical melody, helps us remember words or terms because it activates the right hemisphere, which tends to be the most engaged one in persons with dyslexia, a specific type of learning disability. If we combine melody and movements with words, we significantly increase our ability to encode and recall those lyrics because their retrieval is stimulated by the melody and associated kinesthetic positioning or movement. Let's examine a few examples to underline the value of this approach. First, consider the use of the "acronym" or "acrostic" as information encoding facilitators. To clarify, an acronym is a series of letters that each begin a word or term and, taken together, form a real word. In contrast, an acrostic is a term that describes a series of letters, each of which begin a word, but does not form an actual word. We frequently employ both and they are effective for many persons, helping them to encode and retrieve a series of important terms. For example, the acronym "Homes" helps us recall the five great lakes of North America: Huron, Ontario, Michigan, Erie, and Superior. Since the first letters have been arranged to create an acronym, they are much more easily recalled than if we organized them in a random way to form an acrostic such as "MESHO," for example. Most of us can recall learning the acrostic "PEMDAS," which was further amplified and thus more easily retrieved when the letters were used to begin words in a meaningful sentence, i.e., "Please excuse my dear Aunt Sally." Adding melody or rhythm to a series of terms to be encoded enhances the process and ensures easy and accurate recollection. For example, most of us were taught the 26 letters of the alphabet by reciting them in sequence to the tune of Mozart's "Twinkle, Twinkle, Little Star." Another example, sung to the tune of "Home on the Range" helps students recall the function of various regions of the human brain: "*The cerebrum does much, Sensing temperature and touch, Sending signals to muscles as well. The cerebellum you'll find In the back of your mind. It controls every move that you make. Your balance is fine.*
And your posture's in line. The cerebellum guides each step you take." A further example of the effective use of melody to help encode information is provided by the following ditty describing the parts of a plant and sung to the tune of "The Muffin Man:" *Flowers grow the seeds that shoot. A flower has parts that may include: Petal, stamen, pistil, anther, fruit. They help the seeds to grow* (Hayes, 2009).

Two additional information encoding techniques include: (a) the "Silly Story," or the "von Restorff effect" (von Restorff, 1933), and (b) the Greek room or "Method of Loci" (Yates, 1966). The first of these works on the principle that imagery, particularly atypical or bizarre imagery, is a powerful tool in encoding information (Yates, 1966). Consequently, the more unusual the image conjured, the more easily the information is encoded and retrieved. An example of this technique is provided below:

The Silly Story: An Information Storage Technique

Example: Use the following 20 seemingly unrelated words sequentially in a "silly story:"

Rules: You will have 3 minutes to create a "silly story" and then recount it to your partner using all 20 words in the exact order in which they appear below!

1. Orca
2. Denmark
3. lava
4. corn
5. marathon
6. moonlight
7. joy
8. Russia
9. football
10. cranium

11. oatmeal
12. Napoleon
13. freedom
14. Voltaire
15. human rights
16. wonder
17. South Africa
18. Dalai Lama
19. Mt. Kilimanjaro
20. love

A Sample "Silly" Story: "A huge black and white Orca decided to swim from Alaska to Denmark one day. On route, he passed by Iceland, in which a volcano erupted, spewing lava into the ocean. Nearing the British Isles, a freighter loaded with corn capsized and our Orca was able to snack on the cobs. As he approached Denmark, the Orca encountered another who remarked in amazement at his marathon swim from Alaska to Denmark. Reaching his destination at night, the Orca enjoyed a peaceful moonlight swim into the harbor. He felt such joy at his accomplishment that he decided next year he would swim to Russia and play in a championship Orca football match. He decided to remember to wear a helmet to protect his cranium, however. Later, while eating his favorite breakfast food, oatmeal, he met an old friend, named Napoleon. His friend loved the freedom to wander the seven seas at will and to read the works of Voltaire, who was a champion of human rights. During their conversation, they began to wonder about another destination and discussed a future trip to visit friends in South Africa. Napoleon remarked that he had contemplated Buddhism and hoped to meet the Dalai Lama someday. Regretfully, they both acknowledged one destination they could never visit for obvious reasons: Mt. Kilimanjaro. Nevertheless, they took consolation in the fact they both enjoyed the love of friends, family, and world travel."

The "Greek Room," or "Method of Loci" (Yates, 1966) was reportedly derived from a historic event in ancient Greece, (447 B.C.) in which a poet/philosopher named Simonides was hosting a feast. All of his guest were seated according to a carefully arranged plan, at the banquet table. At some point during the evening, Simonides was called away, and during his absence, a massive earthquake struck, which collapsed the ceiling on his guests, killing them instantly. Sadly, as the story goes, none of the victims was recognizable; however, because Simonides had seated each guest according to a plan, he was able to provide the names associated with each of the victim's remains. He realized that this technique had broad applications, relative to information recall, and recorded his memory device for posterity.

The application for students with learning disabilities is to either imagine a room or location that is very familiar or physically go to such a place and visually rehearse the details of the location. Next, students are encouraged to associate a term or word to be recalled, and place that item or term at a specific "location" within their "Greek" room. For example, let's imagine that you are very familiar with your bedroom and need to recall a list of terms for tomorrow's global studies quiz. You could simply "associate" each term with a physical object in your bedroom. In order to effectively encode the term for easy recall, you would need to ensure that you could make a meaningful connection between the term to be recalled and the object with which it will be associated. A variation of this technique that involves following a well-used route is known as "The Journey" or "the Familiar Path" (http://thememoryinstitute.com/loci-the-roman-room-and-the-familiar-path.html). This approach simply requires that students recall or actually retrace a well-used route and associate objects or terms to be remembered with specific "way" points enroute. For example, suppose a person was tasked with obtaining groceries from a local supermarket. The route to the market is well known to the individual and she has a list of items needed. At strategic points on the journey, she associates each food item with a corresponding location or "terrain feature." Let's suppose she needs a loaf of bread, as she passes her mailbox, she associates that physical object with the "bread" item on her grocery list because its shape reminds her of a loaf. She repeats this process until she has effectively associated every item on her grocery list with a meaningful, representative location or object along the route to the grocery store.

The purposeful organization of information represents another challenge common to students with learning disabilities. One way to address this learning obstacle is through the use of graphic organizers, which include outlining techniques, semantic webs, dioramas, and diagrammatic tools such as the Venn diagram. These graphic organizers are most effective in note-taking, outlining essays and papers, and reviewing for tests and exams. Several examples are provided below (See the following examples; Figures 1-4).

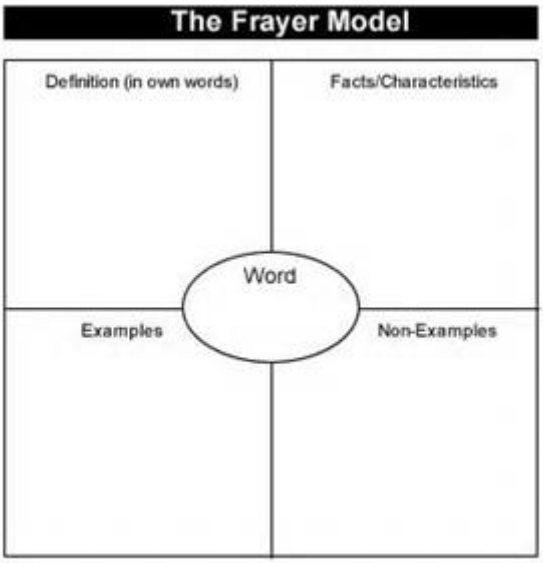


Figure 1. The Frayer model exemplar.

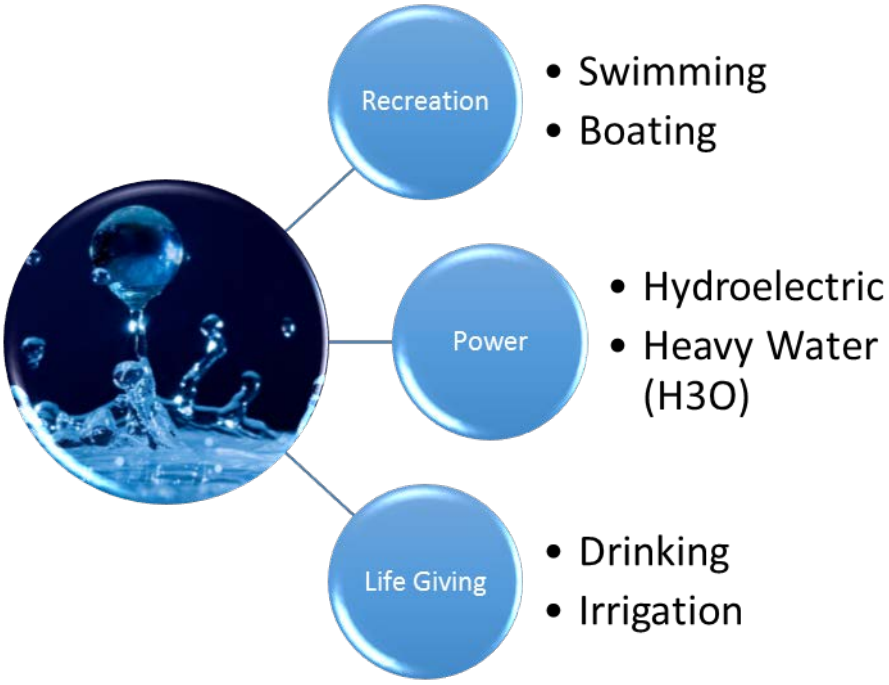
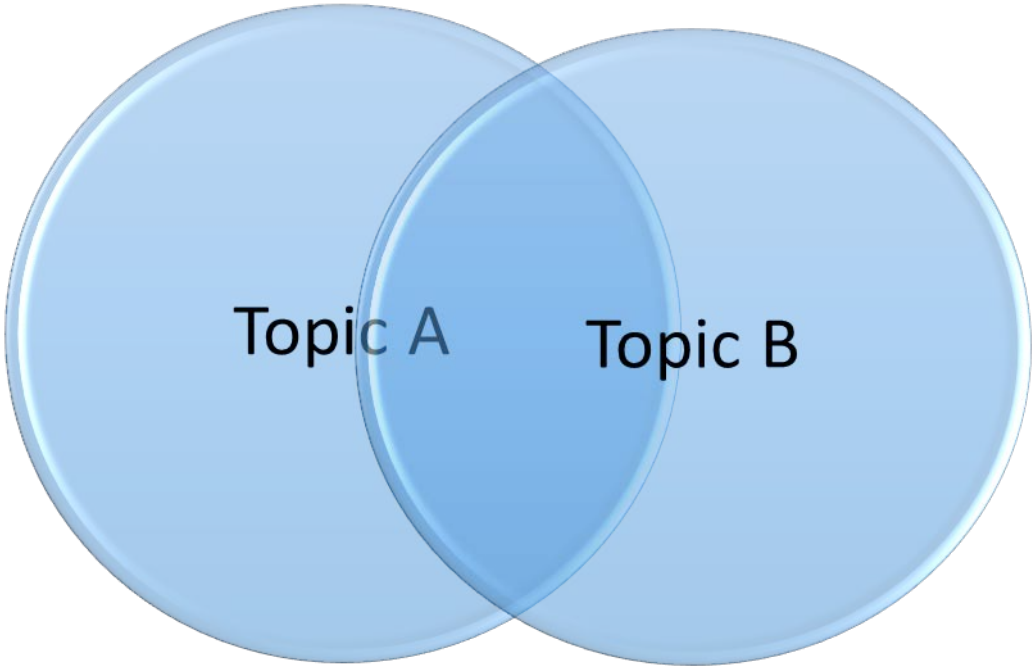


Figure 2. A sample semantic word web.



Contrasting Details Comparisons Contrasting Details

Figure 3. A sample Venn diagram.

To further elaborate these techniques, we have chosen one example: the use of the Venn diagram (see Figure 3 above) to facilitate the organization and composition of a comparison-contrast essay. A notable example in literature is the essay “Grant and Lee: A Study in Contrast” by Bruce Catton (1955). The author used this essay to demonstrate in a deconstructive process, a possible outline for the essay, using a Venn diagram (see Figure 4 below).

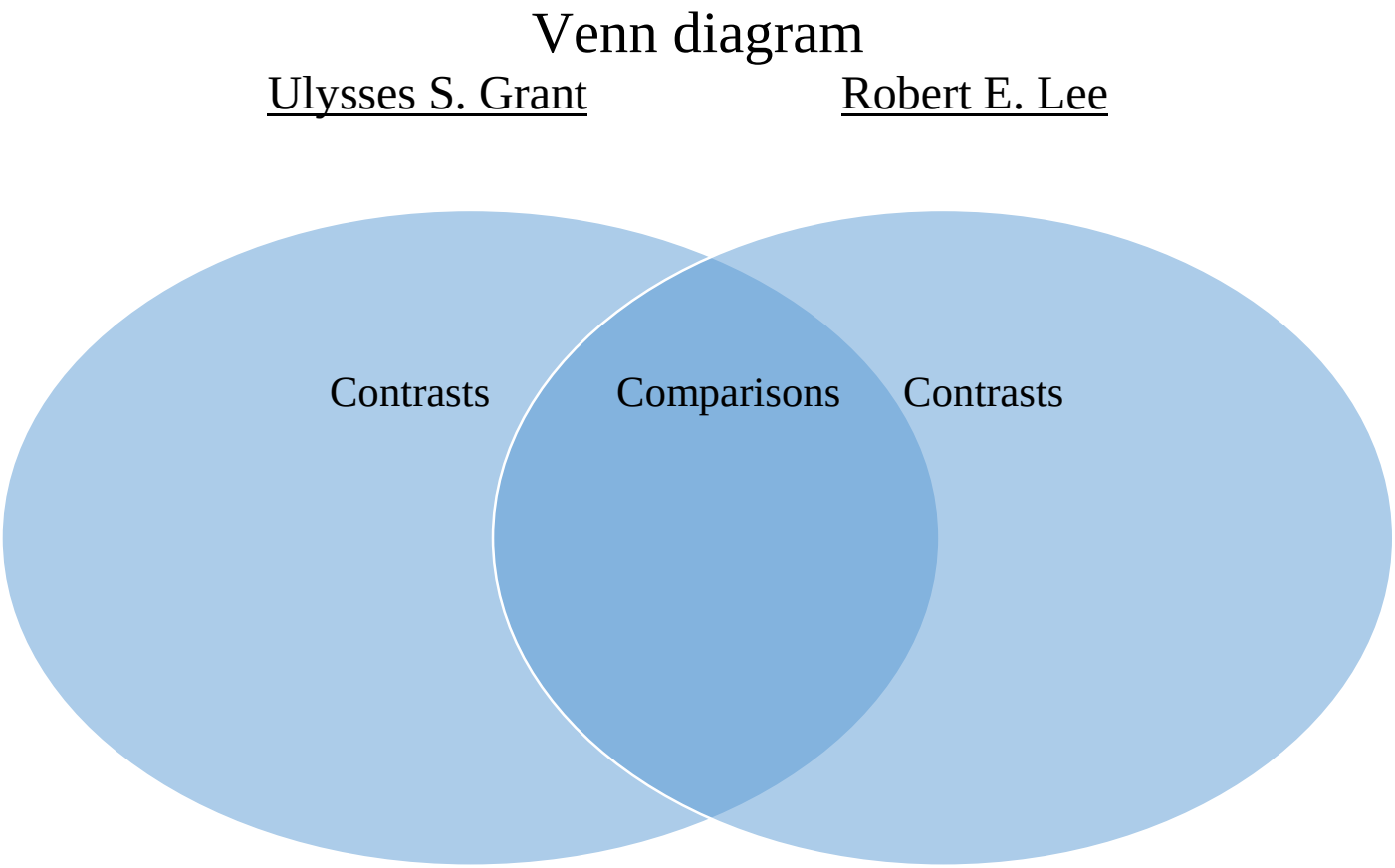


Figure 4. Using a Venn diagram to organize information for a comparison/contrast essay.

Using the points provided by the students in the "comparisons" and contrasts" areas of the diagram, the teacher can easily help them develop a five-paragraph comparison and contrast essay. Similarly, the Venn diagram and sematic web may be used to help students with organizational challenges compose coherent, well-developed essays and papers.

Since reading and writing are widely regarded as recursive processes, it is not surprising that most students with learning disabilities struggle with writing. Writing, fundamentally, involves the organization of ideas into a meaningful, coherent whole product. Whether that product is a narrative essay, an expository composition, or research paper is immaterial, the idea must be themed and organized meaningfully into paragraphs, each with a topic supported with relevant details. Typically, each written product should have an introduction and a well-derived or logical conclusion.

However, regardless of the mechanics of competent writing, students must be motivated to write! So often as when teaching a language in middle and high school, we tend to focus on the grammar and syntax, the spelling and semantics, rather than encouraging our students to just write…anything. We don't seem to be as rigid when encouraging our students to read: teachers often share that they employ graphic novels, newspaper and magazine articles, as well as the "funnies." However, our assessment of student writing is often far more rigorous. In the author's experience, students who struggle to write and finally produce a heartfelt narrative, poem, autobiography, or rap lyric, only to have it dissected and critiqued in red ink, will not likely be motivated to write in the future. Here are a few tips for teachers to encourage students with learning disabilities to write, period! Red is, in western culture, regarded as signifying discontent or displeasure– red ink looks angry! The author's suggestion is to use a pencil or a blue or black ink pen. The pencil is especially recommended, because it is not permanent and thus is more respectful of fragile writers' egos. Next, provide engaging writing prompts to help students get started. "Writer's block" is often visited upon students who struggle with writing, and prompts such as the ones provided below that are relevant, appealing, and grade/age appropriate are critical in motivating them to begin to write.

High School Writing Prompts (A Sample)

1. A middle-age man is waiting at a bus stop. He has just learned that his son has died violently. Describe the setting from the man's point of view WITHOUT telling your reader what has happened. How will the street look to this man? What are the sounds? Odors? Colors? That this man will notice? What will his clothes feel like? Write a 250 word description.
2. Write the first 250 words of a short story, but write them in ONE SENTENCE. Make sure that the sentence is grammatically correct and punctuated correctly. This exercise is intended to increase your powers in sentence writing.
3. Write a dramatic scene between two people in which each has a secret and neither of them reveals the secret to the other OR TO THE READER.
4. Write a narrative descriptive passage in a vernacular other than your own. Listen to the way people speak in a bar, restaurant, barber shop, or some other public place where folks who speak differently ("He has an accent!") from you, and try to capture that linguistic flavor on the page.

Lastly, the writer has found that teachers who demonstrate that they are writers, too and are engaged in the *process* of writing set a tremendous example for their students. The author encourages teachers to share their own creative writing with their students and invite them to provide constructive feedback. Writing is a process, as we all know, and, consequently, there is always some aspect of our written work that can be revised and improved (Murray, 1972).

Math Disabilities

Abstract reasoning, as found in math word problems, can also be a stumbling block for students with learning disabilities. There tends to be a misperception among some teachers and administrators that students can progress intuitively from the concrete to the abstract and that older students must have a sufficient grasp of numeracy and math operations that these skills need not be addressed by middle and high school math teachers; however, research shows this assumption to be patently incorrect (Miller, 1997; Patton, Cronin, Bassett, & Koppel, 1997). In fact, many older students who experience a math disability struggle with math problems involving the most basic math skills. The solution, therefore, is to ensure that their students have acquired the most fundamental skills, beginning with numeracy, or numbering, through to basic math operations such as addition, subtraction, multiplication, and division. Research shows that often, students with math disabilities have never been able to make the transition from the concrete to the abstract (Maccini & Hughes, 2000).

Typically, students with math disabilities need the help of math manipulatives to make the gradual transition from the concrete (the manipulatives) to the abstract (Arabic numerals, etc.). Once these students have successfully achieved that transition, they can then move progressively to more advanced levels of math. Studies suggest that students with math disabilities progress as they acquire mastery from numeracy skills, to basic math operations, to word problems, geometry, and basic algebra (Maccini & Hughes, 2000; Maccini & Mulcahy, 2007). Researchers also recommend that students with math disabilities learn the concept of “properties” or math characteristics, which are thought to be critical in understanding and mastering more complex mathematical concepts (e.g., Patton et al., 1997).

Some of the suggested strategies to facilitate the teaching of “properties” as they pertain to mathematics include: the use of manipulatives (e.g., creating upper case letters of the alphabet from playdough and the classification of “no hole,” “one-hole,” and “two-hole” letters & “How are coffee cups and doughnuts related?”-see illustrations below provided in Figures 5-9), the creation of Mobius strips out of adding machine tape, ‘balloon” geometry (geometric shapes drawn or uninflated balloons, which are later inflated to compare and contrast various “properties”), and knot theory, which again helps to teach the notion of ‘properties’ in a concrete way.

Figure 5. “Properties” in the alphabet.

Figure 6. The “properties” of a mobius strip.

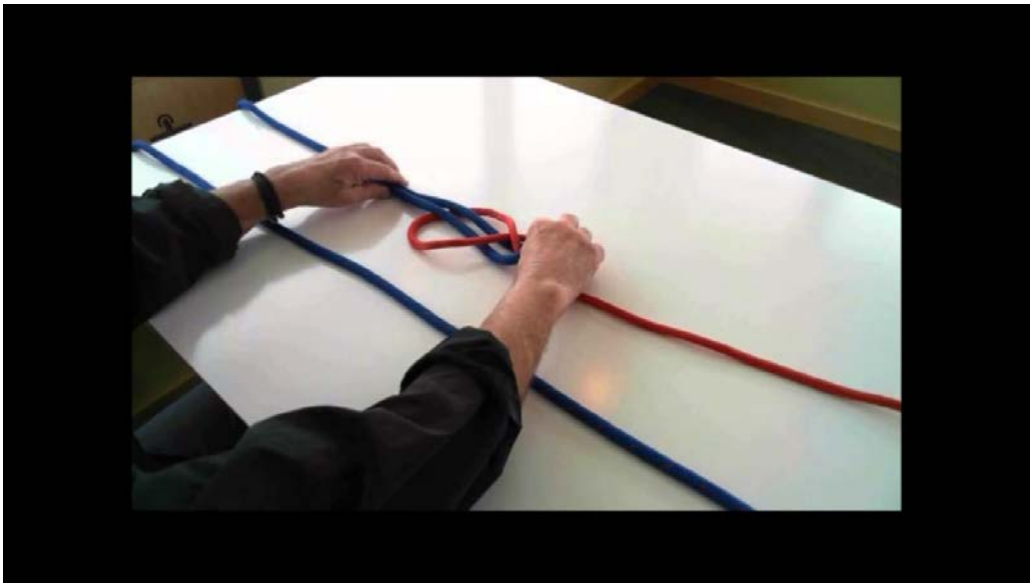


Figure 7. “Properties” evident in “knot theory.”

Figure 8. “How are coffee cups and doughnuts the same?” A study of math “properties.”

Figure 9. Balloon geometry ("properties" of geometric shapes).

This list of strategies, though by no means exhaustive, has demonstrated success in the acquisition of math skills for students with disabilities. Central to each is the understanding that students with learning disabilities require concrete, multi-modal approaches to instruction in reading, writing, and mathematics.

How to Practically Apply Response to Intervention (RtI)

What is RtI? And what are Its Origins?

RtI evolved in the 1970s in response to concerns over the validity of the aptitude/achievement discrepancy determinant in identifying students with specific learning disabilities (SLDs). Researchers and practitioners were alarmed at the apparent over and misidentification of ELL students and students of color and the percentage of these students classified as learning disabled began to increase disproportionately.

In the 2004 reauthorization of IDEA, the "architects" of the act added "failure to respond to scientific research-based intervention," and "alternative research-based procedures" to the "discrepancy" model as criteria for determining whether a child has a specific learning disability, also referred to as a "learning strength and weakness approach" (Flanagan, Fiorello, & Ortiz, 2010). Fuchs and Fuchs (2006) and others investigated the efficacy of RtI and it appears that the balance of research suggests it is a viable alternative to the traditional "wait to fail" approach. However, researchers and parent organizations have not fully embraced RtI, citing concerns over the possible latency in identification of students with a bona fide SLD. Most "experts" agree that RtI represents an effective intervention for students *at risk* for learning problems in reading and math, but there appears to be little quality empirical evidence to support it as a diagnostic tool (e.g., Hale et al., 2010). Hale and others (2010) in an "Expert White Paper Consensus" suggest that comprehensive evaluations should be used for the identification of a SLD. These researchers contend that children with SLDs need individualized interventions based on their specific learning needs. Others recommend using RtI for preventive purposes and comprehensive cognitive assessments for students who do not respond to research-based interventions (e.g., Hale, 2006). Essentially, the proponents of the RtI model assert that all students should be provided effective, research-based curricula in the general education classroom with differentiated instruction to accommodate all levels of learner proficiency. The research conducted by its supporters suggests that approximately 85% of students will be successful at this foundational level, referred to as "Tier 1." The 15% of students who are unsuccessful at this level will require more intensive, small group instruction involving, once again, effective, research-based interventions (Tier 2). Of this group, advocates suggest that approximately 5% of students will continue to struggle and will require even more intensive, individualized instructional interventions, which *might* involve special education and the provision of an individualized education plan (IEP). This level of intense, individualized academic intervention would be considered "Tier 3" in the RtI schema (see Figure 10 below) (Reschly, 2014; Sugai & Horner, 2009).

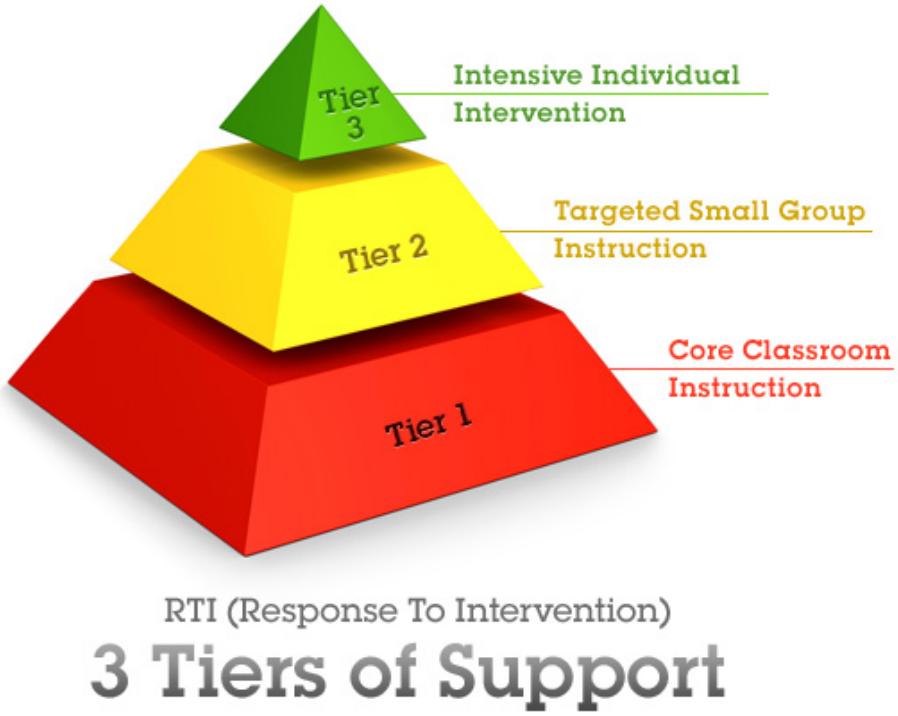


Figure 10. Three tiers of the response to intervention framework.

Positive Behavioral Intervention Supports (PBIS): A Behavioral Corollary

PBIS is, essentially, the behavioral counterpart to RtI and evolved almost simultaneously as a way to pre-empt behavioral problems among students. Like RtI, the model employs a 3-Tier framework, in which the first tier provides differentiated instructions and employs strategies that are scientifically-based. Students are continually assessed to provide authentic data from which teachers and educational professionals can make informed decisions about how to provide students at-risk for behavior problems with effective behavioral interventions to facilitate successful learning experiences. The second Tier of intervention is activated for students who do not respond successfully to Tier 1 interventions over time, as evidenced through assessment monitoring. The Tier 2 level of intervention typically involves the application of research-based strategies in a small group setting. Once again, students' performance is carefully assessed and monitored to determine whether the student is ready to return to the regular classroom curriculum, needs further intensive intervention, or might need to be screened for special education classification. The Third Tier of interventions are reserved for students who do not respond satisfactorily to Tier 2 interventions. These consist of more intensive, individualized approaches that may be applied for up to 12 weeks, during two or more 30-minute sessions weekly. Ostensibly, students who do not respond to Tier 3, intensive, individualized instructional techniques may qualify for screening for special education services (Fuchs & Fuchs, 2006).

Positive Behavior Interventions and Supports (PBIS)
Tier 1 school-wide behavioral expectations are explicitly taught and reinforced by all school staff. Theses behavioral expectations are widely displayed and discussed and positive reinforcement is consistently provided for compliance.

Tier 2 is designed to address the problem behaviors of students who are non-compliant with the school-wide behavioral expectations. Typically, a very simple FBA is implemented for not-compliant individuals and a BIPs is developed. An example of a Tier 2 intervention would be "Check in, Check-out" (CICO), in which the student's target behavior is monitored and his behavioral performance is recorded on a card by caregivers referred to as "checkers." This "card" is transmitted to guardian(s) at home, who must acknowledge receipt through their signatures, thus ensuring home-school collaboration. Important aspects of this Tier 2 intervention are: self-monitoring, and scaffolding (Filter et al., 2007).

Tier 3 interventions are more intensive and employ individualized, evidence-based approaches, predicated on an effectively developed FBA and resulting in an "actionable" BIP. Examples of Tier 3 interventions include: individualized counseling sessions, daily report cards, and the implementing of self-monitoring skills.

A concern expressed by stakeholders is that the Tier 3 interventions appear to be synonymous with those provided as related services in an IEP for students receiving special education (Sugai & Horner, 2009).

How to Meaningfully Apply RtI and PBIS

The most effective use of RtI is as a preventative measure in preempting the early development of learning problems through the application of scientific, research based instructional methods in the general education classroom. Methods such as differentiated instruction also help to prevent the development of learning problems. Student performance is assessed through universal school-wide screening measures that are criterion or norm referenced and administrated frequently. Students can then be provided differentiated curricula that address the needs of those who are in the advanced, above average, and below average performance ranges. In addition, the curriculums should be research-based and field tested as with the new, widely implemented state-wide Common Core Curricula and the related Learning Standards. These curricula should be taught by 'highly qualified" teachers who provide "scientifically-based" interventions. According to recent studies, if effectively implemented at the Tier 1 level, approximately 85% of students showed they performed successfully at grade level. The approximately 15% for whom this level of intervention was unsuccessful would benefit, according to the literature, from more intensive, research-based, interventions implemented in small groups at several intervals during each week. Examples of such interventions include: Reciprocal Reading, DISTAR Math, and the Gillingham phonics-based Literacy Programs. Researchers acknowledge, further, that of the 15% who receive Tier 2 interventions, approximately 5%, may need even more intensive, individualized approaches, these would be considered Tier 3 interventions and examples might include Reading Recovery and one-to-one Math tutoring (e.g., Fuchs & Fuchs, 2006). Students who do not benefit from these intensive, individualized instructional approaches would be recommended for comprehensive cognitive evaluation for classification as a student with a bona fide learning disability. However, if any staff, caregiver, or guardian feels, based on valid performance data, that a particular child may have a specific learning disability, that child can be evaluated, using comprehensive assessments that measure cognitive and neuropsychological processes to determine the presence of a specific learning disability (Fuchs & Fuchs, 2006).

Similarly, PBIS can be used as a school-wide approach to obviate potential behavioral issues. Such an approach can substantially reduce behavioral problems, school wide, if the program is implemented with fidelity. Such a program, adopted by an entire school or school district, would be considered a Tier 1 behavioral intervention. As with RtI, designed to address academic performance issues, PBIS would likely preempt the majority of behavioral issues as evidenced in the research shared above as well as office referral data provided by schools using PBIS models. In this framework, students are awarded points for exhibiting key prosocial behaviors during each class period. Incentives or rewards are provided to students commensurate with their weekly point totals. An example of a school-wide PBIS behavioral rubric with explicit criteria is provided below (see Figure 11). Students whose behavioral needs are unmet by the school-wide Tier 1 intervention (PBIS), might be provided a more intensive and individualized program, an example of which is the "Check-in, check-out" (CICO) plan as previously mentioned (e.g., Filter et al., 2007). In addition, students might also be enrolled in group therapy sessions, or special social groups. Finally, for the exceptional students who require even more intensive interventions, a Tier 3 model might be implemented, which would simply involve more individualized approaches such as individual counselling sessions, family therapy sessions, and the use of a daily behavior report card system (e.g., Filter et al., 2007; Sugai & Horner, 2009).

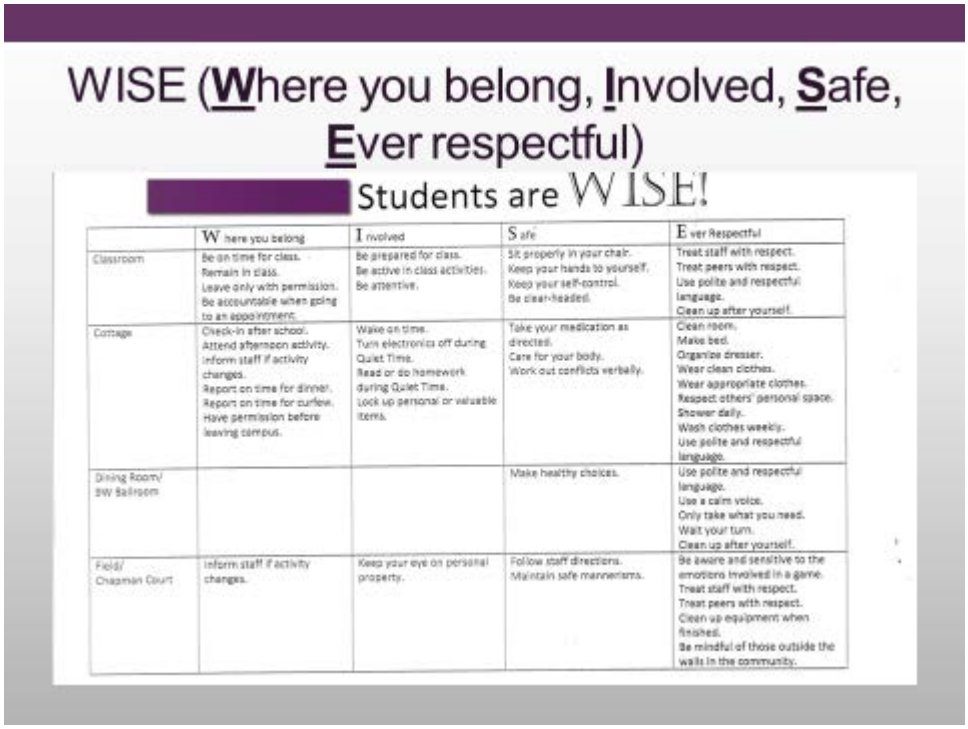


Figure 11. Student assessment rubric exemplars (PBIS).

Differentiation Instruction: Practically Implemented

Differentiated Instruction (DI) has been in existence in a form called "Ability Groups" since the 1970s (Slavin, 1987) and has its origins in brain-based learning research (Willis, 2007; Wolfe, 2001) as well as the theory of multiple intelligence espoused by Gardner (1983). Tomlinson (1999) advanced her notion of its application to the classroom as a means of individualizing instruction for students with diverse abilities. Her area of focus has been at the childhood level and frequently with gifted and talented programs.

It is important to understand her teaching background because critics of the DI model cite its challenges in secondary classrooms, given the shorter periods and the fact that teachers are content-based instructors (Ansalone, 2010; Joseph, 2013). Also, many teachers at the secondary level only see their students for one year, making true individualization of the curriculum very challenging. In addition, the stringent requirements to prepare students at the secondary level for various standardized, "high stakes" assessments mean that opportunities for continuous evaluation and curricular adjustment are much more difficult, if not altogether impossible for middle and high school content-area teachers (Ansalone, 2010; Joseph, 2013). Nevertheless, many schools and school districts report that they engage in differentiated instruction wherever and whenever feasible (McTighe & Brown, 2005; Subban, 2006; Tomlinson & McTighe, 2006).

Essentially, according to Tomlinson (1999; 2000), teachers can differentiate instruction relative to: (a) the content (what is taught), (b) the process (how it is taught), and (c) the product (i.e., how the content/curriculum is assessed.). Tomlinson and McTighe (2006) further assert that teachers need to really get to know their students' readiness to learn new skills, their interests, and their learning profile or aptitudes. One can see how such individualized and detailed information might be challenging for a middle or high school teacher to obtain when teaching a class of 30+ diverse learners (ELLs & ELNs) for a 40 minute period, five times per week. The task of differentiation is exacerbated by the fact that most public and private school teachers must devote a significant percentage of their curriculum and instructional time to review material relevant to the surfeit of standardized assessments their students are required to take.

Furthermore, Tomlinson (1999) suggests that individual student performance needs to be consistently assessed or "continuously evaluated" to monitor growth in regard to the acquisition of skills taught, to ensure students are motivated to learn these skills as they are presented, and are performing the skills efficiently. The DI approach acknowledges three typical ability levels in response to the acquisition of a

specific academic skill; namely, (a) the students struggling with the skill, (b) those on level (average), and (c) those students who acquire the skill readily and demonstrate that they are highly able (Tomlinson, 1999). Proponents of DI insist that it addresses all learning differences and ability levels, but is not a tracking system, because each student will vary in her ability to acquire a specific academic skill.

Some examples of differentiated instructional strategies for teachers that require *greater* preparation include: use of tiered lessons, flexible grouping, use of multiple intelligence organizers, and use of graphic organizers. Similarly, examples of DI strategies that require *less* preparation include: reading and study buddies, anchor activities, think-pair-share, choice of books and interest surveys, and multiple levels of questioning (FloridaInclusionNetwork.com) [see Table 1 below].

Table 1

Examples of "High Prep." and "Low Prep." Differentiated Instructional Strategies

High Prep	**Low Prep**
Tiered Lessons	Reading and Study Buddies
Flexible grouping	Think-Pair-Share
M.I. Organizers	Choices of books
Graphic Organizers	Interest Surveys
	Multi-Levels of Questioning

On a personal note, as a high school and middle school teacher for over 30 years, the author has employed differentiated instruction with modest success in his classes that primarily consist of students who are from diverse backgrounds, many of whom are English language learners (ELLs) as well as many students with exceptional learning needs (ELNs). After studying the model as presented by Tomlinson (1999) and others, he has found a *few* ways to implement DI with some success. First, in a 40-45 minute middle or high school period with a class of 20-30 students, many of whom have SLDs or EBDs, individualizing instruction may be impractical. Logically, the MS or HS teacher can differentiate, as noted in *some* of the literature (e.g., Tomlinson & McTighe, 2006) according to three ability levels: high, on level (average), and low. As Tomlinson and others have conceded, differentiation may *not* be flexible across all three areas of instruction: "Content, Process, and Product" (Tomlinson, 1999). However, as appropriate to the skill being taught in the curriculum objective, a teacher may choose to differentiate in one of the areas deemed feasible and appropriate. For an example of this, see the lesson plan template and differentiated lesson plan sample provided in Figures 12-14 below. Note that the author uses the more curriculum-based terms, "Enrichment," "Standard," and "Mediated" to denote procedures and activities intended for "high," "on level average," and "low" ability levels. Also, consider completing the exercise included after these examples for practice in differentiating a lesson plan.

A Differentiated Lesson Plan (Exemplar)
Social Studies
Global 10

Lesson Objective: At the conclusion of the lesson, the students will:

1. Be able to define the term "mummification."
2. Explain its significance to the Ancient Egyptians.
3. Describe the main steps in the process.
4. Discuss the importance of mummification in authenticating and verifying recorded historical events pertaining to Ancient Egypt.

Motivation (Prior Knowledge):
The teacher will present pictures and a video clip that explain the process of mummification.
The teacher will ask students if they have ever seen similar pictures of the process, what they might already know about it, and what knowledge they have of Ancient Egyptian Culture in general.

Materials:
Video clip of mummification process.
Relevant pictures of each step of the process.
Pictures and sketches of the mummified remains of the great pharaohs and high-ranking officials of Ancient Egyptian society.

Procedures:

1. Show video clip.
2. Explain each step using pictures and a power point.
3. Provide a handout with the steps delineated.
4. Provide a definition for the process of "mummification."
    a. "The systematic preparation of a corpse using organic preservatives and linen in conjunction with the surgical removal of specific organs in order to retard decomposition and retain physiological structure."
5. Explain its religious significance to the society:
    a. The process will ensure that the deceased will enter the afterlife in a preserved state with riches, valuables, and "ceremonial" possessions to facilitate resumption of a privileged, joyous life.
    b. In the case of the Pharaoh, this process was essential in his/her deification to ensure that he/she would enter the afterlife intact as a god. The pyramid would point the way to heaven and act as a beacon to the greater and lesser gods of Egypt and thus ensure the safe passage and reception of the deceased.
    c. The tomb, with mummified body of the pharaoh would serve as a temple or shrine for his/her acolytes.
6. Discuss the significance of mummification to archaeologists as well as Egyptologists (historians who concentrate exclusively on studying ancient Egypt).

Guided Practice:

Enrichment:

Provide relevant elaborative questions and ask enrichment groups to use web sites and reference materials to explore and inform them.

Standard:

Create a web “scavenger hunt” providing minimal clues for each question posed.

Mediated:

Create a similar web “scavenger hunt” and supply more clues to include the web address of the most demanding and, potentially, confusing terms.

Assessment:

Enrichment:

A research project on the topic of mummification.

Standard:

A multiple-choice quiz, with short answer questions requiring elaboration.

Mediated:

A Cloze exercise with a word bank containing the correct terms for the various fill-in-the-blank responses.

Extended Practice:

Enrichment:

A research paper on Ancient Egypt that includes a section devoted to “mummification.” Present key findings to the class.

Standard:

A report on a significant archaeological expedition that uncovered an ancient Egyptian mummy of great significance. Present report to class.

Mediated:

Develop a scale model of a mummified corpse with appropriate labeling. Be prepared to use it to explain the process of “mummification.

Figure 12. A differentiated lesson plan exemplar.

A Differentiated Lesson Plan Template (Sample)
Lesson Topic: _____
Grade Level: _____
Subject: _____

Lesson Objective: At the conclusion of the lesson, the students will:

Motivation (Prior Knowledge):

Materials:

Procedures:

Guided Practice:

Enrichment:

Standard:

Mediated:

Assessment:

Enrichment:

Standard:

Mediated:

Extended Practice:

Enrichment:

Standard:

Mediated:

Figure 13. A differentiated plan template.

A Differentiated Lesson Plan Exercise (Sample)

Imagine that you and your partner have been assigned to co-teach in an inclusive classroom. Your classroom assignment is an 8th grade inclusive class of 25 students; 20 of these individuals do not have a disability and 5 have an emotional/behavioral disorder. Of the five with a disability, ***two*** have been assessed with a ***conduct disorder***, characterized by:
(a) The initiation of aggressive behavior and reacting aggressively towards others; (b) Displays of bullying, threatening, or intimidating behavior;
(c) Deliberate destruction of the property of others;
(d) Little empathy and concern for the feelings and well-being of others,
(e) Showing callous behavior towards others and a lack of feelings of guilt or remorse, and
(f) A tendency to blame others for their own misdeeds,
…and ***three*** have been assessed with ***ADHD: predominantly hyperactive- impulsive type,*** characterized by:
(a) An inability to remain seated for more than a few minutes,
(b) An inability to control impulses,
(c) Evidence of significant disinhibition,
(d) An inability to sustain focus and discriminate between relevant and irrelevant information, and
(e) A heightened metabolism and frenetic activity level.

In addition, **15** students in the class are female; however, only **one** of the students with disabilities is a girl, and she has been diagnosed with ***ADHD***.

Using the attached lesson plan format as a guide, develop an abbreviated ***differentiated lesson plan*** that would be effective for this class whose constituents present diverse challenges. Select any subject area and lesson topic you prefer (it should be one for which you have prior knowledge and interest). Refer to your prior knowledge of the topic as well as the notes provided in the class for guidance.

Figure 14. A differentiated lesson plan exercise.

To conclude, while there are aspects of "Ability Grouping" and "Differentiated Instruction" that make sense, admittedly, there is very little well-designed research that supports its superiority over other approaches. And because, as Tomlinson concedes, D.I. is an amalgam of many different approaches and theoretical frameworks, it is very difficult to design a study that will provide measurable and thus meaningful results, since there are too many uncontrolled variables to be addressed (Tomlinson, 1999).

Differentiated instruction appears to be most effectively implemented in childhood-level classrooms, given the extended time elementary school teachers spend with their students. It is far more challenging to employ at the secondary level for the reasons previously stated. Nonetheless, there are *some* potential benefits for students with disabilities and consequent diverse learning needs, if its principles are applied in a reasonable, flexible way, as suggested above. Whereas Tomlinson and others insist on fidelity of implementation of the differentiated instruction model, such strict compliance is simply not always practical at the secondary level, given the limitations described.

Summary

In this article, the author has guided the reader in an investigation of learning disabilities and current approaches to prevention and intervention. Together, we have examined the essential challenges common to most students properly identified with a bona fide learning disability, and what distinguishes a true learning disability from a transitory learning problem. We also learned several effective, research-based strategies designed to help students with LD overcome these learning challenges as they affect reading, writing, math, information encoding and retrieval, and organization. Next, we investigated the learning framework of a preventative approach referred to as "Response to Intervention" and how it can be meaningfully applied as a prophylaxis for the development of learning problems affecting the acquisition of reading, writing, and math

skills. Lastly, we explored the history and principles of the popular approach used in inclusive classrooms known as Differentiated Instruction, pioneered and developed by Tomlinson (1999) and others, and its practical application to students with disabilities in the classroom. It is the author's hope that this unburnished examination of the classification, specific learning disabilities, will prove helpful to teachers, related service providers, and the parents and guardians of students with exceptional learning needs.

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Teaching Algebraic Equations to Middle School Students with Intellectual Disabilities

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Abstract

The purpose of this study was to replicate similar instructional techniques of Jimenez, Browder, and Courtade (2008) using a single-subject multiple-probe across participants design to investigate the effects of task analytic instruction coupled with semi-concrete representations to teach linear algebraic equations to middle school students with intellectual disabilities. Over the past decade, instructional strategies used to teach academics to students with intellectual disabilities have seen a dramatic change. Federal laws (e.g., IDEA, 1997; 2004) and state assessments have assisted in creating a balance of functional and academic instruction with this population. Data were analyzed using visual inspection and descriptive comparison between baseline and intervention phases for each student. Results suggest a functional relationship across all participants. Generalization measures and limitations are discussed.

Teaching Algebraic Equations to Middle School Students with Intellectual Disabilities

Since the introduction of federal mandates such as No Child Left Behind (NCLB, 2002) and the Individuals with Disabilities Education Improvement Act (IDEIA, 2004) there have been increased efforts to build student knowledge in the area of mathematics. The United States Department of Education (2009) has invested in public schools across the nation and has made a conscious effort to establish math excellence. These measures have been taken with good reason. According to the final report provided by the National Mathematics Advisory Panel (NMAP, 2008), mathematic literacy has been a consistent problem in the United States, specifically in the content area of algebra. The NMAP has stated that algebra is "a gateway to later achievement" (p. 3), suggesting that being able to master algebraic principles leads to acquiring more advanced mathematical skills.

Teaching how to solve algebraic equations is not only critical for improving mathematical literacy for typically developing students but it is equally important for students with intellectual disabilities (ID). If in fact learning algebraic principles leads to acquisition of more advanced mathematical skills then it becomes essential that students with ID learn these skills in a way that is meaningful to them, especially since federal mandates (e.g., NCLB, 2002; IDEIA, 2004) entail access to the general curriculum and require that students make progress in content areas (e.g., Algebra). Currently, in spite of strides made to improve age-appropriate content focused on math excellence, students with ID are often taught functional math skills (Browder & Grasso, 1999; Browder, Spooner, Ahlgrim-Delzell, Harris, & Wakeman, 2008; Jimenez, Browder, & Courtade, 2008). For example, Browder, Spooner, et al. (2008) conducted a meta-analysis to determine the types of mathematical interventions/skills that have been taught to students with moderate to severe ID. The results yielded 68 experiments, of which 54 were single subject design studies. Of these interventions, 48 of the studies concentrated on functional math skills such as money, number matching, counting, and basic calculations, and only two studies focused on algebra instruction (e.g., solving story word problems, quantifying numbers; Miser, 1985; Neef, Nelles, Iwata, & Page, 2003). Functional skills are

needed and should be considered for this population; however when teachers are required to meet content standards, the age-appropriate academic component should not be neglected.

Despite the lack of instruction on algebraic skills, several studies found by Browder, Spooner, et al. (2008) successfully used systematic instruction to teach functional math skills to students with ID (e.g., Akmanoglu & Batu, 2004; Colyer & Collins, 1996; McDonnell, 1987; McDonnell & Ferguson 1989). In addition to Browder, Spooner, et al. a more recent review by Spooner, Knight, Browder, and Smith (2012) also found that these systematic instruction components (e.g., task analytic instruction, prompting procedures, corrective feedback, discrete response training) could be recognized as evidenced-based practices used to teach age-appropriate academics to students with moderate to severe ID. Since there is a need for additional research for successful teaching strategies for this population, especially in math (Browder, Spooner, et al.), the use of evidence-based practices suggested by Spooner et al. (i.e., systematic instruction components) should be considered when teaching math to this population.

Several studies related to teaching algebra to students with learning disabilities (LD) and emotional and behavioral disorders (EBD) have been conducted (Mancl, Miller, & Kennedy, 2012; Witzel, 2005; Witzel, Mercer, & Miller, 2003), however a limited number of studies exist for students with ID. Findings from these studies support a framework for the systematic and explicit instruction of components of algebra that include the use of a graduated instructional sequence (e.g., concrete, semiconcrete/representational, abstract) and graphic organizers (Dexter & Hughes, 2011; Ives, 2007; Mancl et al., 2012; Miller & Hudson, 2007; Rotter, 2004; Strickland & Maccini, 2010; Witzel, 2005; Witzel et al., 2003). The graduated instructional sequence, often defined as either the concrete-representational-abstract (CRA) or concrete-semiconcrete-abstract (CSA) sequences, have been found to have large impacts on the mathematics achievement of students with disabilities (Mancl et al., 2012; Witzel, 2005; Witzel et al., 2003). In this sequence, instruction begins with the use of concrete manipulative devices, representing abstract mathematics, which students use in order to develop conceptual understanding of a mathematical principle (Witzel et al., 2003). Once mastery has been developed at the concrete level, students move into the representational or semiconcrete stage where they use drawings or structures (e.g., graphic organizers) to support their continued mastery of the mathematical principle (Strickland & Maccini, 2010). The final stage of the process, the abstract stage, removes all scaffolds and students complete the mathematics with mathematical symbols alone (Witzel et al., 2003).

Graphic organizers are commonly used in algebra classes to support the semiconcrete understanding of concepts being taught, as much of algebra is difficult to represent at the concrete level (Dexter & Hughes, 2011; Strickland & Maccini, 2010). A graphic organizer acts as a visual cue that includes graphic elements (e.g., color-coded boxes) that can systematically guide students through the problem solving process. Graphic organizers have been found to have large impacts on the reading comprehension of students with disabilities, and when applied to mathematics, similarly support students in developing a clear understanding of the relationships of different mathematical concepts (Dexter & Hughes, 2011; Ives, 2007). Strickland and Maccini (2010) suggested that graphic organizers may address deficits in the language of mathematics and in working memory to support students in solving multistep problems common in algebra. This framework allows students to develop strong conceptual understanding of the components of algebra, thereby increasing their understanding of the steps that should be completed to solve specific types of problems (Ives, 2007; Witzel, 2005).

To this end, Jimenez et al. (2008) conducted, what the authors suggested, the first experimental study employing a framework of systematic and explicit instruction that examined how to teach an algebra skill to students with moderate ID using the graduated instructional sequence. Jimenez et al. used a multiple-probe across participants design to evaluate the efficacy of a task analytic intervention, paired with concrete representations (e.g., Mancl, Miller, & Kennedy, 2012; Strickland & Maccini, 2012; Witzel, 2005; Witzel, Mercer, & Miller, 2003), objects or materials that can be manipulated by a student in order to aide in the acquisition of academic or functional skills, on the acquisition of algebraic equations for high school students with moderate ID in an urban self-contained setting. Data were collected on the correct independent number of steps students completed using an algebraic equation task analysis to solve for *Y*. Students in the

study were given a demonstration on how to complete an algebraic equation using manipulative devices (e.g., a color coded number line, erasable markers, additional objects for counting) in order to provide them with concrete (e.g., objects to count) and semiconcrete (e.g., color-coded number line) experiences. During the intervention phase, results of the study demonstrate an increase in the steps completed to solve algebraic equations across all participants as compared to the baseline phase. Two of the three participants were able to maintain skills in follow up sessions and were able to generalize skills across different materials and settings.

The findings from Jimenez et al. (2008) provide two important implications on what algebra instruction may need to include for students with ID. First, instruction may need to incorporate manipulative devices and semi concrete representations to make abstract concepts more concrete (e.g., Witzel, et al., 2003; Witzel, 2005). According to Witzel (2005), the use of concrete or semi concrete materials during math instruction helps to increase the probability that children will learn sequential steps that are typically associated with problem solving. Secondly, instruction may need to utilize prompting procedures (e.g., time delay, a system of least-to-most prompts, a system of most-to-least prompts), repeated trials, and task analyses (e.g., Browder, Spooner, et al., 2008; Spooner et al., 2012). By taking these current implications into consideration, and knowing the need for additional research in this particular subject area, the purpose of this study was to strengthen the reliability and generality of the implications for algebra instruction suggested by Jimenez et al. The current study examined the effects of task analytic instruction with concrete and semi concrete representations, including the use of color-coded sequencing and graphic organizers, on the acquisition of simple linear algebraic equations (e.g., $5 + Y = 15$) for students with ID.

Method

Participants

Three middle school students with ID met the following requirements to be included in the study. The students: a) had an IQ score with a confidence interval that fell within the mild moderate range (i.e., < 70), b) were verbal, c) were able to write numbers legibly, d) had basic calculator skills (i.e., recognize numbers, addition, subtraction, & equals buttons), and e) participated in the state's alternate assessment. The students who participated (pseudonyms used below) met the aforementioned requirements and were also identified by their classroom teacher as having deficits in functional math skills (e.g., identifying numbers, counting in sequence, using money for purchases, telling time). Ashlynn was a 15-year-old Caucasian female. Jim was a 15-year-old Caucasian male and Ronald was a 12-year-old Caucasian male. All students received daily life skills instruction, primarily in a one-on-one format, in a self-contained setting, and were only included into the general education environment for a small percentage of the day. IQ scores for each student were 63 (*Wechsler Abbreviated Scale of Intelligence,* 1999), 56 (*Kaufman Brief Intelligence Test,* 2004) and 43 (*Wechsler Intelligence Scale for Children -IV,* 2003) respectively, with a mean of 53.

Setting

The setting was in a rural public middle school in the southeastern United States. The middle school was a Title One school that served grades sixth through eighth and had a population of over 800 students. Eight students in this class met the eligibility requirements for the state's alternative assessment and a majority (i.e., 14 out of 15) received free and reduced lunch. The study took place in a self-contained classroom for students with ID during the teacher's planning period (i.e., 7:45 A.M and 8:45 A.M). During this time of the school day the students were at breakfast. Each student participating in the study was taken from the breakfast setting and taken to the classroom in order to solve the equations one-on-one with the teacher. Each data collection session was approximately 15 minutes long with a range between 5 to 20 minutes.

Experimenter

The fourth author of this study was the teacher and the primary experimenter. She has a Master's degree in special education, and over 15 years of experience working with students with disabilities as an educator, department chair, Special Olympics coordinator, and alternative assessment chair.

Data Collection Procedure

Dependent variable. The research team used the implications for algebra instruction suggested by Jimenez et al. (2008) by pairing concrete and semi concrete representations paired with systematic instruction to teach algebraic equations. This intervention identified 10-steps of solving an equation using a task analysis (see Table 1) in addition to concrete manipulative devices (e.g., number flip cards) and semi concrete representation (e.g., graphic organizer using color-coded sequencing) (see Figure 1). The dependent measure for this study was the number of correct steps the students completed independently on the 10-step task analysis to solve for *Y* in a simple algebraic equation. The researchers recorded a "+" if students completed a step independently, and a "-" was recorded if students needed any level of prompting, or omitted a step. The total number of steps students completed independently was graphed during baseline and intervention phases.

Inter-rater reliability (IRR). A second member of the research team (i.e., the first author) and the paraprofessional in the classroom served as second data collectors during baseline and intervention sessions for each student. Inter-rater reliability (IRR) was calculated using an item-by-item method, by dividing the total number of agreements by the total number of possible agreements plus disagreements and multiplying by 100. As recommended by Kratochwill et al. (2010), IRR was collected during 20% of sessions for Ashlynn resulting in a 100% agreement rate. For Jim, IRR was collected during 20% of sessions with a 100% agreement. Finally for Ronald, IRR was collected during 40% of sessions with a 95% agreement. Overall, IRR was completed for 23% of the baseline and intervention sessions and resulted in a 98.5% agreement rate.

Social validity. At the end of the study, a social validity survey was emailed to the parents of the three students to examine the practical significance. The surveys intent was to provide the parents with the procedures of the study and to assess parent and student satisfaction. The survey required the parents to read the survey's questions to their child and answer the questions using a 5-point Likert scale. The brief survey found that the students enjoyed learning about algebra and reported the intervention to be entertaining and beneficial.

Materials

Most of the materials used in this study were teacher made and/or easily accessible and included: a) an 8 X 11 laminated color-coded graphic organizer to support student understanding of the algebra concepts being taught (i.e., semi concrete representation) with Velcro removable numbers that were called "flip cards," (i.e., concrete manipulative devices) b) dry erase markers (to write their answers and make notes if so desired), c) dry erase boards that served as "scratch paper," for their notes if needed, for problem solving, d) calculators, and e) a 10-step task analysis. Each graphic organizer (see Figure 1) contained a specific laminated linear equation (e.g., $5 + y = 12$; $y - 11 = 28$) that was stapled to yellow (i.e., addition problems) and red (i.e., subtraction problems) folders. Velcro was attached to each box on the individual graphic organizers with the exception of the gray boxes that followed the expression "$Y =$" in which the students were instructed to write the answer to the equation. A total of 10 equations were made for the baseline and intervention phases of this study (i.e., 5 addition and 5 subtraction), and two additional were designed for the teaching phase.

Research Design

A single-subject multiple probe design across participants was implemented to evaluate the effectiveness of a task analysis coupled with concrete and semi concrete representations to teach middle school students with ID simple linear algebraic equations. Before the study began, the three participants were randomly assigned to see who would receive the intervention first. Baseline data followed for all of the students for three consecutive days. Since a stable baseline trend was established for all students, the first student (i.e., Ashlynn) that was randomly assigned to the intervention entered the training phase. Once Ashlynn completed the training phase, the intervention began and the researchers examined the number of independent responses made. Once Ashlynn was able to master six out of 10 steps on the task analysis for three consecutive sessions the second student, Jim, was then introduced to the training phase and then the intervention. These steps were also followed for the final participant.

Research Procedure

Baseline phase. Baseline data were collected on all three students for three consecutive days. The researchers felt that it would have been unethical to collect baseline data for additional sessions due to the frustration and difficulties students experienced when required to complete the algebraic equation without training. During the first three baseline sessions each student was given a calculator, a dry erase board, dry erase markers, and the same equations (i.e., $5 + y = 12$; $y - 2 = 14$; $10 + y = 30$) following the data collection routine described previously. For example, on the first day, Ashylnn was given $5 + y = 12$ to complete. After her attempt, Jim and Ronald were obtained at different periods during the allotted time. Additional probe data were deemed appropriate to collect on Ronald to examine a possible threat of treatment diffusion since many data collection sessions had passed (i.e., approx. 15 sessions) before he was able to enter the training and intervention phases.

Training phase. Before students were introduced to the intervention phase, an errorless learning procedure was used to assure that students had a chance to complete the desired responses successfully. The researchers used a 0-second delay method to teach each student the steps on the task analysis in order to complete two algebraic equations (i.e., one addition and one subtraction equation). During the training phase the teacher followed a written script (i.e., procedural fidelity checklist) of the task analysis to teach students an addition equation (e.g., $5 + Y = 12$) and a subtraction equation (e.g., $Y - 2 = 14$). The script followed the task analysis and consisted of the following constructs: a) what the teacher says (e.g., we are going to complete an algebra equation), b) material presentation (e.g., make sure all of the manipulative devices and the graphic organizer were available), c) instructing student responses (e.g., the steps required to complete the algebraic equation) and d) prompting (i.e., errorless learning during the teaching phase; least to most prompts during the intervention). The students were instructed how and when they will use their calculators to help them complete the algebraic equations. Additionally a dry erase board and marker was given to the students (to serve as "scratch paper") in case they wanted to write any additional information pertaining to the problem.

Intervention phase. After the students were introduced to the teaching phase, intervention data were collected on the following session (i.e., the next day) and continued for the duration of the study. Similar to baseline, the intervention data were collected on the number of steps completed on the task analysis. Calculators, dry erase boards, and dry erase markers along with the laminated equations were given to the students. During the intervention, a system of least to most prompts was introduced with a 3-second delay. A 5-second delay between prompts was used with Ronald because it was noted that he needed more time to process and respond to information. At the beginning of the intervention session students were given an algebraic problem with their number flip cards (e.g., concrete representation) and graphic organizer (i.e., semi concrete representation). They were first given the opportunity to complete the steps independently. If a step was missed or omitted the researcher would give an indirect verbal prompt (e.g., "What is the first thing we do when we have to complete an algebra equation?"). If needed, a direct verbal prompt was then provided (e.g., "Read the equation aloud"). Further assistance included modeling (e.g., "I am going to flip this number to the same color. Now you try.") followed by, if necessary, a physical prompt (e.g., "Let me help you flip this number."). Besides the additional response time Ronald was given, all students were provided the same level of prompts.

Generalization phase. During the generalization phase the researchers chose to make adaptations to the provided materials as the students became more proficient on the steps of the task analysis. The researchers wanted to evaluate if the task analysis and the semi concrete representation could have served as a scaffolding technique in order to eventually promote complete independence and problem completion. During this phase, portions of the semi concrete representation materials in conjunction with the task analysis were faded away. For example, the researchers systematically made adaptations to the materials by: a) removing the Velcro from the equations (e.g., transition from concrete to semi concrete), b) removing the Velcro and omitting the color boxes by using gray boxes only, c) removing the Velcro omitting the grey boxes by using white boxes only (e.g., transition from semi concrete to abstract), and d) deleting some of the steps of the task analysis in order to make the problem solving process more "natural."

Procedural fidelity. A second member of the research team (i.e., the first author) as well as the paraprofessional in the classroom collected procedural fidelity. Procedural fidelity assessed whether the teacher researcher followed the designed task analysis and to assure that each step was being completed in the original order using a least to most prompting system (i.e., indirect and direct verbal, model, and physical prompts). Procedural fidelity occurred for 19% for Ashlynn, 33% for Jim, and 27%, for Ronald. Procedural fidelity was collected during baseline, teaching, and intervention phases resulting in 100% completion across all three students.

Results

Student performance data for independent steps completed on the task analysis are displayed in Figure 2. All three students showed an increase in the number of correct responses on the steps of the task analysis throughout the duration of the intervention. An increase is demonstrated when comparing the number of steps the students' completed during the baseline phase (*M*=1; range from 0 to 2) to the number of steps completed during the intervention phase (*M*=7.2; range from 2 to 9).

Ashlynn. During instructional sessions, Ashlynn increased the number of correct responses from baseline (M=1.3; range from 1 to 2) to intervention (M=7.9; range from 5 to 9). She required assistance during initial instructional sessions; however, Ashlynn quickly mastered 60% of the steps by the second intervention session. She was able to complete 90% of the steps by the 8th session of the intervention phase. It was found that Ashlynn always omitted step 2 (i.e., match the given variables and function with the corresponding colored box), which prevented her from completing 100% of the desired steps.

Jim. During instructional sessions, Jim increased the number of correct responses from baseline (M=.67; range from 0 to 1) to intervention (M=7.4; range from 3 to 9). During the intervention phase, Jim needed a number of prompts during the first three sessions in order to complete the equation. More specifically, due to his communication difficulties, Jim was given additional prompts when required to read the problem aloud (i.e., step 1) as well as to confirm if they matched (i.e., step 10). As a result, the primary researcher often provided Jim with a prompt to help him confirm that the answers matched (i.e., 10th step). Despite his difficulties, Jim was able to meet the research criteria and correctly completed six or more steps of the task analysis independently for more than three consecutive sessions.

Ronald. During instructional sessions, Ronald increased the number of correct responses from baseline (M=0) to intervention (M=5.2; range from 2 to 8). Due to time constraints, Ronald was only in the intervention for 4 sessions, and the school district's spring break required a 10-day lapse in data collection between his second and third intervention session. Although Ronald did not get to spend as much time in the intervention phase, he started showing a slow increase in trend by completing 70% of the steps independently on his last session.

Generalization/Adaptations

As previously mentioned, the researchers wanted to evaluate if the task analysis and the pairing of concrete and semi concrete representation could have served as a scaffolding technique in order to eventually promote complete independence and problem completion. At the start of the study it was determined that the components of the graphic organizer would be faded by: a) removing the Velcro from the equations, b) removing the Velcro and omitting the color boxes by using gray boxes only, c) removing the Velcro omitting the grey boxes by using white boxes only, and d) deleting some of the steps of the task analysis in order to make the problem solving process more "typical" and efficient. After implementing the adaptations it was determined that the researchers would omit the 3rd generalization step (i.e., removing the Velcro omitting the grey boxes by using white boxes only) because of the students' difficulty completing the steps after the color boxes were faded during the 2nd step (i.e., using grey boxes). Table 2 shows the percentage of required steps completed during the generalization/adaptation stage.

It is important to note, due to time constraints and student absences, that every student was not given an equal amount of time using the intervention adaptations. Ashlynn was provided with the most instruction showing that 77% of the required adaptation steps were completed across steps 1, 2, and 4. Again, it is

important to note that it was determined that adaptation step 3 was omitted due to Ashlynn's decrease from the no Velcro step (i.e., step 1; 90%) to the gray box only step (i.e., step 2; 40%). Jim was only given adaptations 1 and 4 and completed 55% of the required steps. Jim was not given the 2nd adaptation (i.e., gray boxes only) due to his absences during this planned step. Ronald was only given adaptation 1 and 2, due to time constraints, showing a required completion mean of 50%. Similar to Ashlynn it was found that Ronald decreased from step 1(i.e., 90%) to step 2 (i.e., 10%).

Discussion

Similar to Jimenez et al., (2008), the results of this research suggest that students with mild and moderate ID are able to demonstrate the acquisition of new math skills that are grade and age-appropriate when provided systematic instruction through the use of task analyses, prompting, and pairings of concrete and semi concrete representations (i.e., graphic organizers). This study adds to the small body of literature supporting the use of standards-based instruction in math for this population of students (e.g., Browder, Jimenez, & Trela, 2012; Browder, Spooner, et al., 2008; Jimenez et al., 2008) by demonstrating gains in acquisition of mathematical content. While all students performed well during the intervention phase, compared to baseline, it is important to note that Ashlynn did not have to complete all the steps in the task analysis in order to answer the equation. Ashlynn often omitted step 2 which required her to match the given variables and function with the corresponding colored box. On the other hand Jim and Ronald needed all the steps to complete the equations successfully. Despite the omission of step 2, on behalf of Ashlynn, this study verifies the usefulness of the intervention package. It is also important to note that there are possibly two main elements to the intervention package that may have contributed to overall student success.

First, the intervention package included the use of concrete and semi concrete representations, which for example, have been used by Mancl, Miller, & Kennedy (2012), Witzel (2003), Witzel et al. (2005), and Jimenez et al. (2008) to teach abstract mathematical concepts to students with and without disabilities. Concrete and semi concrete materials, as stated earlier, help to simplify the process of learning algebraic equations, increasing the likelihood that students can remember critical steps that are involved in the problem solving process. However, unlike Witzel's studies and Jimenez et al., this study used a hybrid of concrete and semi concrete representations to teach equations to students with ID. For example, the current study incorporated the use of concrete (e.g., numerical flip cards) and semi concrete representations (i.e., color-coded graphic organizers). The incorporation of graphic organizers, during academic instruction, is often used to teach mathematical skills to students with learning disabilities and emotional behavior disorders because of its positive empirical value (Ives, 2007; Maccini & Gagnon, 2006). The use of this hybrid model of concrete and semi concrete representations (i.e., flip cards, graphic organizers) may be beneficial for helping students with mild and moderate ID acquire the necessary skills for learning to solve algebraic equations because it provides both visual and physical supports, extending the literature on using such a model for this specific population.

Secondly, an important aspect of the intervention package was the use of a task analysis paired with a least-to-most prompting procedure. According to Spooner et al. (2012) systematic instructional procedures such as the use of a task analyses have been used to teach a variety of academic skills (e.g., literacy, math, & science) to students with ID. In fact, recent research in literacy has suggested that TAs can be monumental in teaching emergent literacy skills to students with IDD or ASD (Browder, Trela, & Jimenez, 2007; Spooner, Rivera, Browder, Baker, & Salas, 2009). These skills can include print concepts (e.g., opening a book, tuning a page, text pointing), alphabet knowledge, and phonological awareness (Browder et al. 2009; Browder, Ahlgrim-Delzell, Courtade, Gibbs, & Flowers, 2008; Browder & Spooner, 2006; Justice & Kaderavek, 2002; Spooner et al., 2009). Since later conventional forms of literacy (e.g., story problems in math) are influenced upon the success of students' ability to master early literacy skills it is important to teach emergent literacy to students with ID and ASD. In a recent study by Browder et al. (2012) students with ID were taught math units that aligned with the national math standards. The math standards were taught using story-based math problems pairing key math vocabulary with semi concrete symbols (i.e., graphic organizers) and manipulative devices to assist with student comprehension. Similar to the current study, Browder et al. (2012) found that the use of multiple graphic organizers paired with task analytic instruction increased the students' acquisition of math skills.

A unique aspect of the current study was the attempt to fade the use of the concrete representations. Although the use of graphic organizers and TAs have been found effective for this population across academic (e.g., Browder et al., 2012) and functional skills (e.g., Gaule, Nietupski, & Certo, 1985), the current study attempted to fade the organizers as well as the steps of the TA to promote student independence. This study attempted to examine the use of systematic procedures to fade aspects of the hybrid intervention. Past research has examined the use of fading when teaching reinforcement (Kelley, Lerman, Fisher, Roane, & Zangrillo, 2011), self-management (Rock & Thead, 2007), as well as sight word instruction (Didden, de Graaff, Nelemans, Vooren, & Lancioni, 2006) and some have found the difficulty in fading visual aids (Sigafoos et al., 2007). Research by Zisimopoulos (2010) found that students with moderate ID were able to acquire, maintain, and generalize basic multiplication facts when concrete and semi concrete representations were faded. The study by Zisimopoulos, introduced multiplication facts paired with visual representations that were systematically faded across sessions. Upon completion of the intervention both students were able to generalize and maintain most of the math facts without the pictures. Although all of the adaptations made for this study did not show large gains, some progress was found as the intervention package was faded (see Table 2). Future research may consider using fading techniques in order to promote student independence and decrease student dependence on treatment packages.

Limitations and Future Research

Several limitations to the study should be considered and used to advance the research in this particular subject area. First, although the students were randomly assigned to the intervention phase, by chance, the students with higher IQs, communication skills, and processing abilities were introduced to the treatment first. Though it did not appear to show a decrease in trend during the intervention phase, it should be noted that the students' individual differences might have impacted the gains on the desired task. Future research may need to account for the individual differences of the students and stratify the selection of students to the intervention to assure that there is an equal representation of abilities entering the treatment phases.

The second limitation of the current study is that the instruction was taught in a self-contained environment that was not during normal instruction time (e.g., breakfast). Although, the researchers made sure the students had eaten breakfast and finished their morning routine before training, the students may have not been mentally ready to complete math outside their normal daily routine. Future research may suggest a more typical environment to implement similar strategies.

A third limitation was time constraint. Since it was late in the school year, the researchers had to take into account school breaks and end of year assessments. Furthermore, the study ended as the third student started to show positive gains in instruction. Future research should plan enough time, taking into consideration school functions, and breaks in order to collect a similar amount of data across all students. A final limitation to the study was that the generalization phase, also described as the adaptation phase, was not equally implemented across all of the students. Due to student absences, lack of time, and a failed conceptual design of one of the aspects it was difficult to capture a good understanding of the adaptations that could be made to insure independence. It was the researchers' intentions to slowly modify the graphic organizer in order for the students to complete the task without concrete assistance. However, although this is a limitation, some required skills were found across all students during this phase. Future research, again, should take time constraints into consideration in order to examine the completed research design.

Conclusion

The purpose of the following study was to examine the effects of the use of a task analysis with the incorporation of concrete and semi-concrete representations to teach middle school students with ID how to solve simple linear algebraic equations. All three students, despite variability in IQ range, age, and grade level, were successfully able to solve basic linear equations. Results from the study help to support research from Jimenez et al. (2008), Witzel, (2005), and Witzel, et al. (2003) about the importance of utilizing concrete and semi concrete representations as aides in explaining abstract concepts while also incorporating explicit and systematic instruction to students with disabilities. Moreover, it demonstrated the usefulness of

graphic organizers for such populations. This study showed positive gains, however there is a need for additional research in this area that may examine the use of these strategies across grade levels, additional math content, and/or the use of technology to provide additional supports. As noted before, there is a lack of data driven research in algebra for this population (Browder, Spooner, et al., 2008). Due to the increase of accountability measures and the need for teachers to access the general education curriculum, more studies need to examine age-appropriate strategies that can be used with students with ID to promote access.

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Table 1

Task Analysis of Steps to Solve an Algebraic Equation

Student:				Student will be able to follow the steps to answer an algebraic equation independently.				
Steps (below)	Date	Worksheet Number _						
1. Student will *read the equation aloud** (if necessary with assistance) *5+Y=8*								
2. Student will *match the given variables and function with the corresponding colored box.*								
3. Student will *move the function and flip it to the corresponding color on the opposite side of the equation.*								
4. Student will move *the number variable to the opposite side of the equation.*								
5. Student *will type in calculator the new equation.* (*e.g.*, 8-5=)								
6. Student will *write the answer in the gray text box.*								
7. Student will *check answer by placing the original equation on the corresponding boxes* and will *write in answer for Y.*								
8. Student will *type in calculator, equation with answer for Y.*								
9. Student will *write in answer from calculator.*								
10. Student will *confirm if answer in the corresponding white text box matches original sum.*								

(+) Independent correct; (V) Verbal; (M) Model; (P) Physical; (0) no response; (-) Error

* Note: The verbal prompts provided to the students are in bold.

Table 2

Adaptations made Post-Intervention to the Graphic Organizer, Percentages of Required Steps Completed, and Means

Student	Adaptation	Mean Percentage of Required Steps Completed	Mean Percentage Of Steps for Each Student
Ashylnn	No Velcro	90%	
	No Velcro Gray Box Only	40%	
	*No Velcro White Boxes Only	*N/A	
	**No Velcro without Steps 2,7,8,9,10	100%	
			77%
Jim	No Velcro	70%	
	No Velcro Gray Box Only	N/A	
	*No Velcro White Boxes Only	*N/A	
	**No Velcro without Steps 2,7,8,9,10	40%	
			55%
Ronald	No Velcro	90%	
	No Velcro Gray Box Only	10%	
	*No Velcro White Boxes Only	*N/A	
	**No Velcro without Steps 2,7,8,9,10	N/A	
			50%

*It was determined that this step was not feasible due to the percentage decrease during the gray box only step

**This step was added to assess accuracy and fluency. It was determined that these were the steps needed in order to get the answer correct.

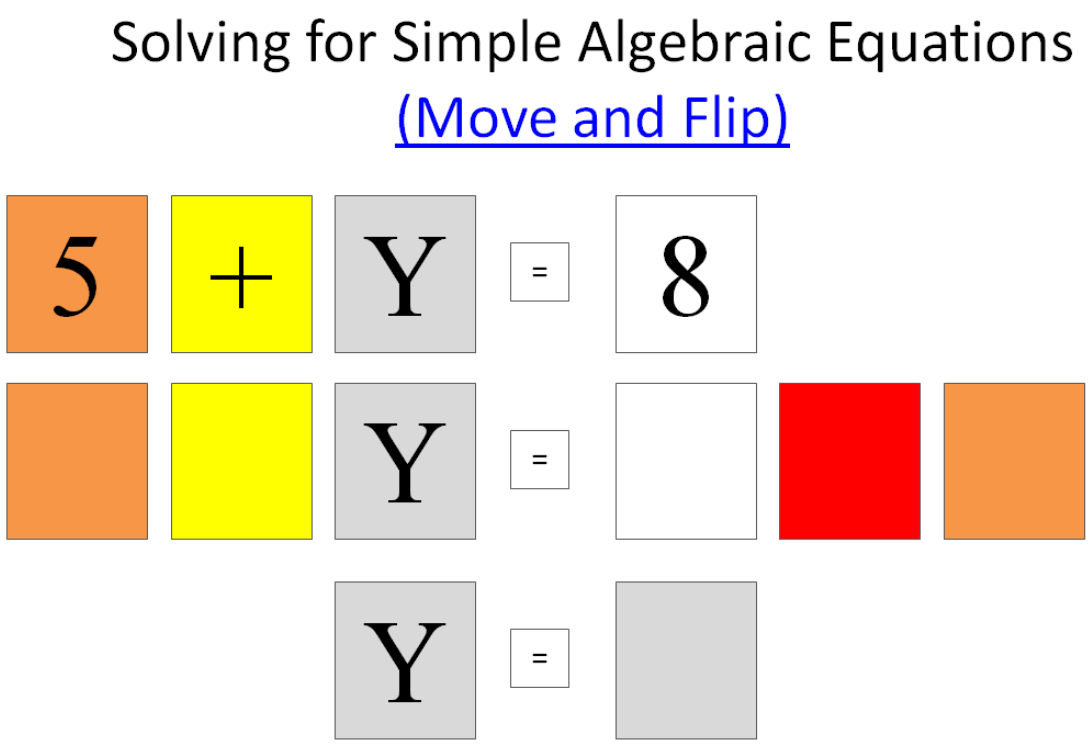

Figure 1. Example of concrete representation.

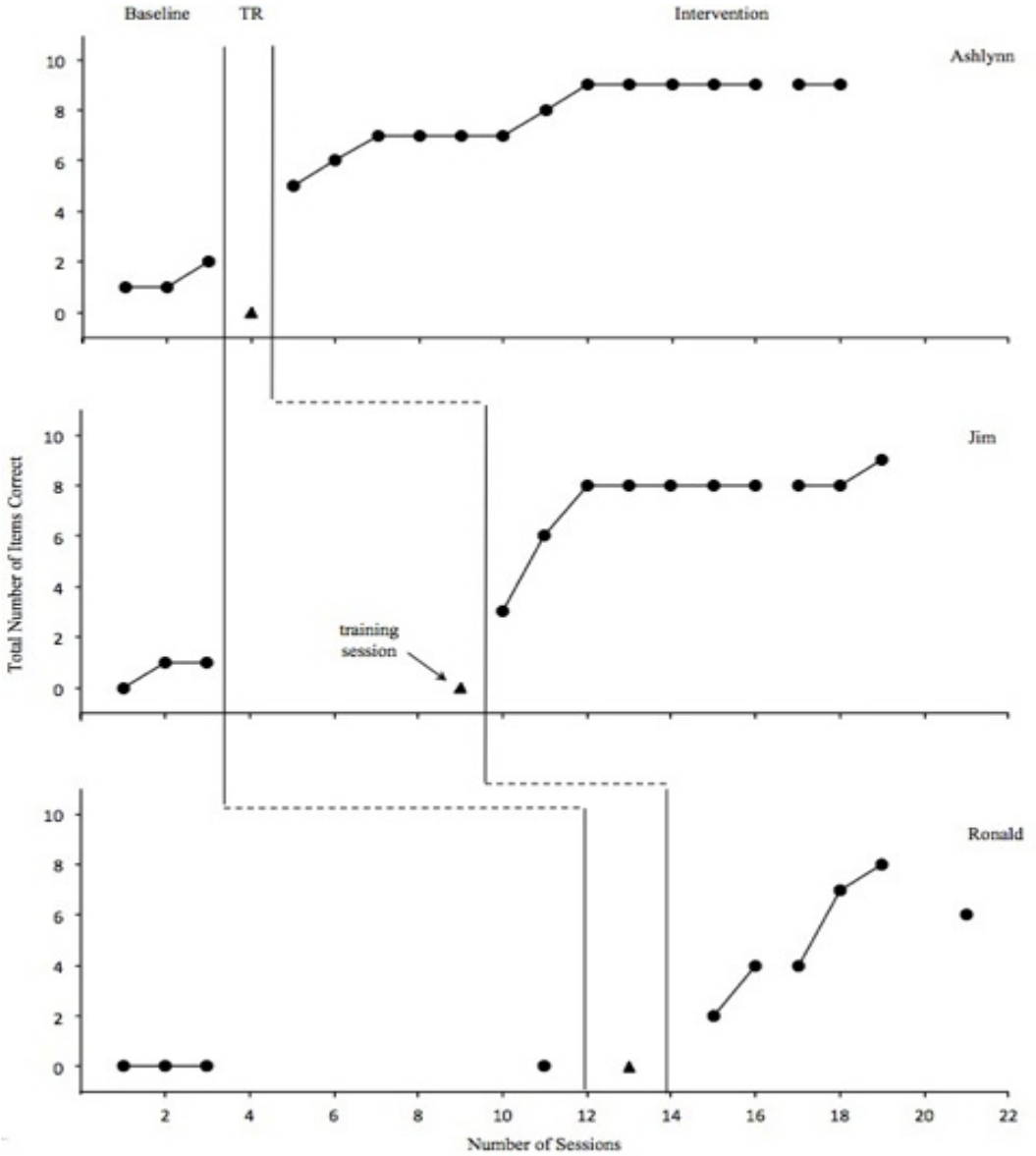

Figure 2. Results across student participants.

Students with Disabilities in the Polish Educational System After the Political Changes (2007 - 2012)

Danuta Apanel

The Pomeranian Academy in Słupsk

"Society can only step up the pace as a whole, if each individual will be able to develop their abilities and talents optimally, if each individual will have the knowledge and skills, values and criteria of judgment which enable them to achieve the optimum of abilities in every life situation"

J. Szczepański

Introduction

In the period of the People's Republic of Poland, there were almost no students with disabilities at universities. The legislative, organisational, social and educational conditions at universities and students' dormitories made it impossible for people with disabilities to start higher education.

In the period of serious socio-political, economic, and educational crisis which took place in Poland in the eighties, students and lecturers, as well as the whole society, fought for broadly defined freedom, and also the access to education in open-access institutions, without restrictions in the field of social background or state of health. The actions of a student organisation, the Independent Students' Association (Niezależne Zrzeszenie Studentów - NZS), were of great importance during the implementation of these changes. The organisation was founded in 1980 and it was an expression of a protest of student community against policies of the People's Republic of Poland. NZS worked mainly in the field of politics and propaganda, organised demonstrations and strikes – it was opposed to the communist government, the lack of democracy, injustice and the lack of freedom of speech. The program of NZS aimed at changing communist political system, education and economic system.

After the year 1989, the Independent Students' Association begun the next phase of its activity and the profile of the organisation was changed. The aim was to fight for the interests of students and the development of cultural and entertaining activity, as well as social and educational conditions for students with serious problems resulting from their state of health.

Students with disabilities at Polish universities

Even in the eighties of the last century, at all Polish universities it was unusual to see a student moving in a wheelchair or with a white cane. Today, it can be considered a great success that universities have simply begun to fulfil the obligation imposed on them by the Polish Constitution of 1997. It is not easy, however, to make up for many years of backlog, and what is more to eliminate permanently the practice of treating people with disabilities as if they were absent in the society. The period of the People's Republic of Poland was the time when segregation and isolation - both in the field of education and employment - were elements of state policy, which resulted in the lack of interest in creating conditions for people with disabilities enabling them to participate in social life, and that, in turn, led to the overall maladjustment of the external environment and infrastructure (architecture, transportation, etc.) to the needs of this social group. It was also time of creation and dissemination of stereotypes and prejudices associated with disability and people with disabilities.

Unfortunately, the academic environment wasn't also free from this influence. Even today, many of us think about people with disabilities mostly as people in need of help, incapable of independent life, who are not able to meet all requirements. This concept is often associated with a certain fear of direct contact with them, but also compassion and overprotection.

It should be kept in mind that people with disabilities want to decide and make choices for themselves, as well as use the rights to which everyone is entitled – when it comes to universities, each student has the right

to make decisions ranging from the choice of studies to the forms of taking exams. They differ in abilities, ambitions and temper the same way as the able-bodied people. We should try to think about people with disabilities in terms of their capabilities, and not limitations. In addition to good will, however, we need to possess specific knowledge, which will allow the society to treat students with disabilities and patients with chronic illnesses in an appropriate manner, providing them with the necessary adaptations, so that later on they can be expected to have the same knowledge as the able-bodied students. It should be remembered that the knowledge and skills they acquire in the course of study, may influence the success or failure in starting their professional work and the pursuit of other goals in life.

While recognising the equal right of students with disabilities to fully participate in life of the academic community, universities take various measures to remove barriers which make the participation difficult.

Scientific and technical progress, changes of globalisation, as well as democratisation of social and educational life in Poland after 1989, have introduced many changes in the functioning of people with disabilities. Numerous legislative documents have secured the same rights to education for people with disabilities as for the able-bodied people (Constitution of the Republic of Poland, the Universal Declaration of Human Rights, the Act on Higher Education and other laws).

In connection with the global "Education for All" program, there are implemented various forms of integrated and inclusive education for people with special educational needs, including students with disabilities.

In Poland, within the framework of the "University for All" program, universities pursue an open-door policy in relation to people with disabilities. They become friendly to students with various types of disabilities.

The implemented changes do not only relate to overcoming architectural barriers, but also to stereotypes. In university buildings, there appeared ramps, elevators, modernised sanitary units, induction loops for people with hearing loss, computer labs for people who are blind or visually impaired, and multimedia rooms, where classes are held for people with hearing and visual impairment. Students' dormitory buildings are also modernised.

Universities organise offices in their structures, where university candidates or students with disabilities can seek advice, information and assistance regarding specific support (adjustment) during entrance exams to universities as well as during the course of study. Some universities also appoint, within the autonomous decisions of their authorities, a rector's proxy for affairs of the people with disabilities. The role of the proxy is to represent, among others, the rector in operation connected with people with disabilities, and to collect data as well as to prepare information regarding students with disabilities at the university.

Various forms of integrated and inclusive education are becoming an increasingly common form of educating students with disabilities, and universities provide more favourable forms of education and support for such students. It becomes, therefore, an important problem to ensure continuity of education for people with disabilities from preschool to higher education.

In literature of the subject, there are many case studies referring to the functioning of students with disabilities at universities in Poland. They present a reporting nature and relate to initiatives undertaken by various academic centres for solving problems connected with education of people with disabilities (J. Stochmiałek, 2001; H. Sariusz- Wolska, 2003 [3]). The other studies deal with the psychosocial and educational aspects of people with disabilities functioning as students (J. Bąbka, 2001; B. Olszak-Krzyżanowska, 2005; M. Garbat, 2005; M. Sendyk, 2005; H. Ochonczenko, 2005; G. Miłkowska, 2005 [4]).

[3] J. *Stochmiałek, „* Koncepcje edukacji studentów niepełnosprawnych" , „Szkoła. Specjalna". 2001 nr 5, s. 259-266; H. *Saryusz- Wolska H. (red.), „* Niepełnosprawność a edukacja akademicka : materiały konferencyjne", Łódź *2003;*

[4] J. *Bąbka, „*Edukacja integracyjna dzieci pełnosprawnych i niepełnosprawnych", Poznań 2001; *Olszak-Krzyżanowska B.*, „Formy pomocy doraźnej i wsparcia społecznego studentów niepełnosprawnych", (w:) Ochonczenko H., Miłkowska G., „ Osoba niepełnosprawna w społeczności akademickiej", Kraków 2005; M. Garbat, „ Programy celowe PFRON szansą osób niepełnosprawnych na zdobycie wykształcenia", (w) Ochonczenko H., Miłkowska G., „ Osoba niepełnosprawna…"; M. Sendyk, „ Psychiczne przystosowanie studentów niepełnosprawnych na wyższej uczelni", (w:), Ochonczenko H., Miłkowska

Education at the tertiary level is regulated by the Act of 27 July 2005 [5] and the Act of 18 of March 2011 [6] - the Higher Education Act. Therefore, in accordance with the act, students, including the ones with disabilities, have the right to:

- obtain a leave from classes at the university under the procedure and in line with the principles specified in the regulations of studying;
- be transferred from another university, including the foreign one, upon the consent of the dean at the host university, if they fulfilled all the obligations arising from the regulations of the university which they leave;
- study more than one field of study, or study other subjects, also at various universities;
- study according to an individual plan and program of study in accordance with the principles established by the faculty council or other authority specified in the statutes of the university;
- material aid from the funds allocated for this purpose in the state budget in the form of: a social scholarship, a special scholarship, a scholarship for academic or sporting performance, a scholarship of a minister for academic achievements, a scholarship of a minister for outstanding sporting achievements, a scholarship for meals, a scholarship for accommodation, a supplement, the 50% reduction in fees for journeys by public transport.

Under the Act, each university offers various forms of assistance and support for students with disabilities. Here are the detailed rules:

Support in the process of recruitment for studies:

- each university candidate with disabilities is asked to contact an office for the people with disabilities or an office of rector's proxy for the students with disabilities in order to obtain assistance in reaching the station, or accommodation at the time of recruitment (in case of practical exams), or to obtain information how to provide documents;
- in justified cases, the assistance in a recruitment process can be adapted to individual needs of a student;
- providing a student with accommodation at the time of recruitment;
- a care of an assistant in a properly prepared student dormitory.

Support in a didactic process arising from the regulations of study:

- each student with disability is entitled, after obtaining the approval of a dean of the faculty, to an Individual Course of Studies. It gives the right to: an individual adjustments of particular exams listed for passing in the course of study; change a practical class group (after consultation with a lecturer), in order to adapt it to therapeutic needs of the student; higher absenteeism (after consultation with a lecturer); additional consultations relating to current issues discussed; study in a form of continuous session in particular situations connected with ill health (frequent hospitalisations);

G., „ Osoba niepełnosprawna…"; H. Ochonczenko, „ Od inwalidy do osoby niepełnosprawnej", (w), Ochonczenko H., Miłkowska G., „ Osoba niepełnosprawna…"; G. Miłkowska, „ Aspiracje życiowe studentów niepełnosprawnych", (w:), Ochonczenko H., Miłkowska G., „ Osoba niepełnosprawna…";

[5] Dz. U. 2005, Nr 164 poz. 1365, z późn. zm.

[6] Dz. U. z 2011 r. Nr 84, poz. 455, Nr 112, poz. 654, z 2012 r. poz. 1544

- each student who has health problems, after obtaining an opinion of an appropriate medical committee, may be granted a sick leave, and the leave can last for a semester or a year depending on the current state of health;

- in justified cases, sick leave may be renewed;

- if student's health improves and he is able to take some of the tests or exams, he may apply to a dean for a special kind of sick leave with the right to take exams.

Universities provide also support for students with disabilities during the educational process, which doesn't result from the regulations of studying. The data obtained by the author in the research indicates that students with disabilities at Polish universities can use the help of an assistant. He shall take notes during the lectures, help in the development of materials, help to get to rehabilitation centres or faculties, as well as help to move at the places. The assistant drives student to necessary places, does the shopping and helps in the library or in other institutions.

People with disabilities may rely on medical care in academic medical clinics, or additional care, such as a care of a neurologist or a neuropsychologist. The students with disabilities can also receive help from a nurse who are on duty mostly in students' dormitories where students with disabilities live. In the period from October to the end of June, medical rehabilitation is provided. Additionally, students may use a swimming pool or a gym free of charge, at stated times. Students are entitled to a sick leave for a longer period of treatment and rehabilitation. Thanks to it, a status and privileges of a student can be retained. Students with disabilities who have mobility problems in some students' dormitories (e.g., Nicolaus Copernicus University in Toruń), can rely on room service, which includes: room cleaning, doing laundry and ironing.

In terms of material assistance, students with disabilities are entitled to a monthly social scholarship. In addition, they can apply for a scholarship for meals or accommodation. Two times in an academic year, they can apply for a supplement for the purposes of covering the costs of rehabilitation, treatment and unexpected expenses.

In a situation when there is a need for co-financing of taken courses, additional training, trips to conferences and a purchase of rehabilitation equipment, students with disabilities may apply for aid from the special funds allocated for such students.

Students with disabilities, with help of offices for the students with disabilities, use the aid from the State Fund for Rehabilitation of People with Disabilities within the frameworks of numerous programs, including:

- *Student II – a lifelong education of people with disabilities* - funding may cover tuition fees, the costs of accommodation and commuting to school, participation in activities designed to improve physical or mental abilities, the Internet access, as well as the cost of a purchase of objects facilitating or enabling learning, and the costs of trips organised within the classes;

- *Pythagoras – an assistance program for people with hearing* **loss** - the aim of the program is to ensure that all hard of hearing students, student with both visual and hearing impairment as well as students who are only visually impaired, depending on their needs, can use the help of sign language interpreters, and it is possible for them to use assistive devices during classes and examinations;

- *University for All* - a program for universities which adapts the infrastructure for students with disabilities, and promotes the preparation of information and didactics for their needs;

- *Junior* - a program of professional activation of graduates with disabilities, a part of the national program: 'First Job'. It complements the work of employment offices aimed at graduates, career advisors and employers who have disabilities;

- *Computer for Homer* - the aim of this program is to purchase computers for people who are blind or are visually impaired, provide loans for the purchases as well as finance trainings;

- *Road sign* - the aim of this program is to help students with disabilities in providing them with specialised equipment, particularly with electric wheelchairs.

In terms of teaching aid during examinations, students can apply for: changing a form from written to oral, a larger font on examination sheets as well as extending the duration of exams. An individual course of studies is a standard solution, which allows to balance the necessary trips connected with treatment or rehabilitation, with deadlines of exams and pass marks.

On request, hard of hearing people and people with complete hearing loss can use the help of sign language interpreters during academic classes (e.g., the Jagiellonian University). Student with disability may also, lend voice recorders and FM sets within the academic year. At some universities, there are special computer stations for people with disabilities. They provide students with disabilities, among others, with special, large computer screens and keyboards, as well as the software adapted for the visually impaired. In computer and workshops rooms, there are also created favourable conditions for learning for people with disabilities. There are interactive boards with electronic tablets for writing, which allow you to participate in classes without having to move from where you sit. At many universities (e.g., the Podlasie Academy - now Siedlce University of Natural Sciences and Humanities) students can rent from the Education and Rehabilitation Centre for the People with Disabilities the following equipment: braille machines, laptops with JAWS and MAGic Plus software, miniature enlargers (Mono Mouse, Compactplus) and Milestone 311 Daisy (a device comprising a voice recorder and an MP3 player).

Universities additionally offer a variety of course types, such as: a language course, a course for Driving Licence Category B, and a spatial orientation course in cooperation with Polish Association of the Blind, thanks to which students with disabilities can acquire additional skills needed in everyday life and improve the quality of their life.

Students with impaired hearing can attend speech therapy and also a course of Polish language.

Rehabilitation classes are organised for students with reduced mobility, and also other forms of sporting activities are offered instead of physical education classes. Students have the opportunity to rent such equipment as: wheelchairs, walking frames and crutches. They also have the opportunity to use the library equipped with specialised equipment: Big Keys, Smart Nav and Trackball. Each university also offers students a specialised psychological help.

Polish universities establish and develop cooperation with foreign universities which refers to making the access to school curricula gradually more available for the needs of students with disabilities. One of the projects is Project DARE, which aims at developing and carrying out trainings for academic and administration staff in order to increase awareness and competence related to the functioning of people with disabilities at universities.

When it comes to financing of education for young people with disabilities at university level, preferences aren't applied as automatically as in the education system of primary schools. The higher education is much more financially independent and on a larger scale private. Students pay tuition for their education in the non-public schools which are territorially more accessible. Young people with disabilities can use the support programs offered for example by PFRON, in order to be able to study their preferred faculty. Without this support, they must rely on help of their parents, otherwise it's impossible to study at a university [7].

[7] Informacje pochodzą z badań własnych autorki, przeprowadzonych w latach 2007 – 2012 wśród Pełnomocników Rektora ds. Osób Niepełnosprawnych lub Biur Rektora ds. Osób Niepełnosprawnych publicznych uczelni wyższych w Polsce.

Table no. 31

Students with disabilities in the years 2007 - 2011

Specification		Total	Including women	Deaf and hard of hearing	Blind and partially-sighted	with reduced mobility		Other types of disability
						able to walk	not able to walk	
Year 2007 in total		22 988	13 499	1 491	1 874	5 316	503	13 804
Incl.	Full-time studies	12 569	7 029	872	1 063	2 818	251	7 562
	Part-time studies	10 419	6 470	619	811	2 498	252	6 239
Year 2008 in total		25 256	15 126	1 723	2 042	6 367	560	14 573
Incl.	Full-time studies	13 089	7 364	914	1 137	3 066	277	7 695
	Part-time studies	12 176	7 762	809	905	3 301	283	6 878
Year 2009 in total		27 975	16 661	1 891	2 357	7 368	599	15 760
Incl.	Full-time studies	14 552	8 161	1 029	1 314	3 642	298	8 269
	Part-time studies	13 423	8 500	862	1 043	3 726	301	7 491
Year 2010 in total		30 096	18 117	1 990	2 630	8 069	607	16 800
Incl.	Full-time studies	15 872	8 986	1 104	1 481	4 030	294	8 963
	Part-time studies	14 224	9 131	886	1 149	4 039	313	7 837
Year 2011 in total		30 249	18 357	2 017	2 638	8 051	610	16 933
Incl.	Full-time studies	16 394	9 436	1 175	1 490	4 200	307	9 222
	Part-time studies	13 855	8 921	842	1 148	3 851	303	7 711

Source*: „Szkoły wyższe i ich finanse w 2007 r.* ‘’, GUS (“Higher Education Institutions and their Finances in 2007.”, the Polish Central Statistical Office - GUS)
Source*: „Szkoły wyższe i ich finanse w 2008 r.*‘’, GUS (“Higher Education Institutions and their Finances in 2008.”, the Polish Central Statistical Office - GUS)
Source*: „Szkoły wyższe i ich finanse w 2009 r.* ‘’, GUS (“Higher Education Institutions and their Finances in 2009.”, the Polish Central Statistical Office - GUS)
Source*: „Szkoły wyższe i ich finanse w 2010 r.* ‘’, GUS (“Higher Education Institutions and their Finances in 2010.”, the Polish Central Statistical Office - GUS)
Source*: „Szkoły wyższe i ich finanse w 2011 r.* ‘’, GUS (“Higher Education Institutions and their Finances in 2011.”, the Polish Central Statistical Office - GUS)

The research carried out in 2007 by the Polish Central Statistical Office (GUS) and by the author show that at Polish universities studied a total of 22,988 students with disabilities, including 12,569 full-time students and 10,419 part-time students. Among full-time students, there were 7,029 women, and among part-time students there were 6,470 women. Among students with disabilities, there was a total of 1,491 students with hearing loss and hard of hearing students (872 full-time and 619 part-time students); 1,874 of visually impaired and partially visually impaired students (1,063 full-time and 811 part-time students); 5,819 students with reduced mobility (a total of 5,316 students who were able to walk, including 2,818 full-time and 2,498 part-time students; a total of 503 students who were not able to walk, including 251 full-time and 252 part-time students), other types of disability were reported by 13,804 students (7,565 full-time and 6,239 part-time students).

In 2008, at Polish universities studied a total of 25,265 students with disabilities, including 13,089 full-time and 12,176 part-time students. Among the full-time students, there were 7,364 women and among the part-time students there were 7,762 women. Among students with disabilities, there was: a total of 1,723 students with hearing loss and hard of hearing students (914 full-time and 809 part-time students); 2,042 of visually impaired and partially visually impaired students (1,137 full-time and 905 part-time students); 6,927 students with reduced mobility (a total of 6,367 students who were able to walk, including 3,066 full-time and 3,301 part-time students; a total of 560 students who were not able to walk, including 277 full-time and 283 part-time students), other types of disability were reported by 14,573 students (7,695 full-time and 6,878 part-time students).

In 2009, at Polish universities studied a total of 27,975 students with disabilities, including 14,552 full-time and 13,423 part-time students. Among the full-time students, there were 8,161 women and among the part-time students, there were 8,500 women. Among students with disabilities there was: a total of 1,891 students with hearing loss and hard of hearing students (1,029 full-time and 862 part-time students); 2,357 of visually impaired and partially visually impaired students (1,314 full-time and 1,043 part-time students); 7,967 students with reduced mobility (a total of 7,368 students who were able to walk, including 3,642 full-time and 3,726 part-time students; a total of 599 students who were not able to walk, including 298 full-time and 301 part-time students), other types of disability were reported by 15,760 students (8,269 full-time and 6,878 part-time students).

In 2010, at Polish universities studied a total of 30,096 students with disabilities, including 15,872 full-time and 14,224 part-time students. Among the full-time students, there were 8,986 women and among the part-time students, there were 9,131 women. Among students with disabilities there was: a total of 1,990 students with hearing loss and hard of hearing students (1,104 full-time and 886 part-time students); 2,630 of visually impaired and partially visually impaired students (1,481 full-time and 1,149 part-time students); 8,676 students with reduced mobility (a total of 8,069 students who were able to walk, including 4,030 full-time and 4,039 part-time students; a total of 607 students who were not able to walk, including 294 full-time and 313 part-time students), other types of disability were reported by 16,800 students (8,963 full-time and 7,837 part-time students).

The research carried out in 2011 by the Polish Central Statistical Office (GUS) and by the author show that at Polish universities studied a total of 30,249 students with disabilities, including 16,394 full-time students and 13,855 part-time students. Among full-time students, there were

9,436 women, and among part-time students there were 8,921 women. Among students with disabilities, there was a total of 2,017 students with hearing loss and hard of hearing students (1,175 full-time and 842 part-time students); 2,638 of visually impaired and partially visually impaired students (1,490 full-time and 1,148 part-time students); 8,661 students with reduced mobility (a total of 8,051 students who were able to walk, including 4,200 full-time and 3,851 part-time students; a total of 610 students who were not able to walk, including 307 full-time and 303 part-time students), other types of disability were reported by 16,933 students (9,222 full-time and 7,711 part-time students).

Taking into account the type of higher education institutions, the research carried out by the Polish Central Statistical Office (GUS) and by the author showed that in the academic year 2010/2011 at Polish higher education institutions studied a total of 30,249 students with disabilities, including 10,259 students with disabilities at universities (7,151 full-time and 3,108 part-time students); at technical higher education institutions studied 4,387 students (including 3,352 full-time and 1,035 part-time students); at agricultural higher education institutions studied 968 students (including 745 full-time and 223 part-time students); at higher education institutions of economics studied 4,036 students (including 848 full-time and on-time 3,188 students); at other types of higher education institutions studied 1,771 students (including 858 full-time and 913 part-time students); at medical academies studied 783 students (including 609 full-time and 174 part-time students); at maritime higher education institutions studied 101 people (including 61 full-time and 40 part-time students); at physical education academies studied 180 people with disabilities (including 123 full-time and 57 part-time students); at higher education institutions of art studied 231 students (including 151 full-time in 80 part-time students); at higher education institutions of theology studied 158 people (including 103 full-time and 55 part-time students), at other higher education institutions studied 7,208 students (including 2,253 full-time and 4,955 part-time students); at higher education institutions of the National Defence department studied a total of 157 students (including 134 full-time and 23 part-time students).

Summary

"The higher education should be available for people with disabilities" - this principle, which was formulated by Professor Lesław Szczerba and a group of his colleagues (the Podlasie Academy - now Siedlce University of Natural Sciences and Humanities) is adopted and implemented by a growing number of Polish universities.

"Education is a value, hope and a mission as well as the important tool of development of a society and every human being. People in Poland and in Europe are becoming a 'learning society'. It is our right, duty and opportunity. Opportunity also for people, to whom the fate was not as favourable as to others" [8].

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FAPE and LRE in Online Learning: Special Education Directors' Perspectives

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Abstract

While the provision of a "free appropriate public education" (FAPE) has contributed significantly to the educational experiences of students with disabilities, little is known about how services are actually provided in an online learning setting. Thus, telephone and face-to-face interviews were conducted with state directors of special education from 16 states to explore their knowledge of and experiences with FAPE in online learning. After interviews were transcribed, researchers reviewed 15 transcripts to identify common experiences and issues. Preliminary findings indicate that additional guidance or information is needed about FAPE and how to provide related services in an online environment.

FAPE and LRE in Online Learning: Special Education Directors' Perspectives

Prior to the 1970s, students with disabilities (SWDs) were at a disadvantage when it came to receiving a public education. For the most part, SWDs were often not educated in public schools, and those who were, did not receive education relative to their individual needs (Yell, Katsiyannis, & Hazelkorn, 2007). The authorization of several laws, including the Elementary and Secondary Education Act of 1965 (ESEA), the Rehabilitation Act of 1973, and the Education for All Handicapped Children Act of 1975 (EAHCA), helped facilitate access for SWDs to general education.

FAPE and LRE

At the beginning of the 21st century, the ESEA (1965) was reauthorized and renamed as the No Child Left Behind Act of 2001 (NCLB). A key component of the reauthorization is the greater focus on accountability, in addition to federal support for education (Paige & Gibbons, 2004). In order to increase accountability, states are required to identify academic standards specific to grade level and measure students' progress and attainment of those standards by annual assessments. Furthermore, states must provide achievement data for subgroups of the student population, which means separating data by race/ethnicity, disabilities, and English-language learners (Michelman, 2012). Thus, the progress of students with disabilities on state and district

assessments must be measured and reported as it relates to the content areas of reading and mathematics.

Further support for access and accountability resulted from the EAHCA (1975), which was renamed Individuals with Disabilities Education Act (IDEA) after its reauthorization in 1997 (Turnbull, 2005). While the IDEA of 1997 offers participation of SWDs in the state and district assessments, the amended IDEA of 2004 [known as Individuals with Disabilities Education Improvement Act (IDEIA)] allows for accommodations and alternative testing for SWDs. In 1997, IDEA required that states accepting federal funding for special education adhere to several terms, one of which is schools must ensure that students with disabilities have access to a "free appropriate public education" (FAPE; Apling & Jones, 2002). A greatly misunderstood phrase, FAPE means that students with disabilities must have access to both general education and specialized educational services with no charge to students or parents/guardians. School districts are required to either provide FAPE to qualified students residing within the district or cover the fees associated with finding a program that could offer a FAPE relative to the students' needs (IDEIA 2004, 20 U.S.C. § 1401). Therefore, SWDs should receive an appropriate education and necessary accommodations regardless of whether they attend a public or private school (Turnbull, Stowe, & Huerta, 2007). While FAPE services for those enrolled in a private setting do not have to be offered at the private school, services must be made available and the details regarding how and where is based on a compromise between the private school and district (IDEIA 2004, 20 U.S.C. § 1212). The same can be said for SWDs enrolled in charter schools, as they must be provided special education services if they qualify for them under IDEIA (Turnbull, Stowe, & Huerta, 2007).

Additionally, FAPE ensures that students must receive necessary services in the Least Restrictive Environment (LRE), meaning SWDs are included in educational environments with their nondisabled peers to the greatest extent possible (Crockett & Yell, 2008). Thus, instead of SWDs receiving education in separate classrooms or settings, accommodations and special education services should be implemented to ensure inclusion in several settings: general classroom, sports, clubs, recess, school transportation, etc. (Turnbull & Turnbull, 2000). The extent of inclusion in the various settings is decided after considering individual needs and how best to meet those needs, and any decision lacking in full inclusion must be justified. This range of possible educational settings is referred to as continuum of services, ranging from most to least restrictive, and is represented in Figure 1.

As a result of laws like the NCLB (2001) and IDEIA (2004), more attention has been directed at the education and progress of SWDs. Furthermore, public schools are now able to offer services that better meet the needs of SWDs in the traditional brick-and-mortar classroom. However, public schools are currently faced with a new challenge: with the advent of online learning as a new medium of education, questions about how FAPE and LRE apply to online environments are emerging. Specifically, questions arise regarding who is responsible for FAPE, how online learning falls within LRE, and how FAPE is funded in online environments.

Online Learning

Online learning is a broad term, generally defined as "education in which instruction and content are delivered primarily via the Internet" (Watson & Kalmon, 2005, p. 127). As such, online

learning programs can take several forms: fully online, blended/hybrid, and supplemental. Fully online learning programs indicate that the student is typically engaged in an online school as his/her primary means of education, whereas supplemental means that a student is taking a small number of courses to accompany his/her education at a separate school (Watson, Murin, Vashaw, Gemin, & Rapp, 2012). Horn and Staker (2011) define blended learning as "any time a student learns at least in part at a supervised brick-and-mortar location away from home *and* at least in part through online delivery with some element of student control over time, place, path, and/or pace" (p. 3). Furthermore, online instruction can be delivered as synchronous, meaning student-teacher interaction is occurring in real time, or asynchronous, meaning it is on the student's own time (Lips, 2010).

The most recent Keeping Pace with K12 Online and Blended Learning: An Annual Review of Policy and Practice report identifies three types of *programs* providing online services: single-district online programs, blended programs, and multi-district fully online programs (Watson, Murin, Vashaw, Gemin, & Rapp, 2013). Single-district online programs are created by a single district to serve the students of that particular district, and can encompass either fully online or blended options. The single-district online programs represent the largest venue for online learning options, and continue to grow faster than other venues (Watson et al., 2013). Blended programs are schools in which students participate in both online and traditional classrooms. Lastly, the multi-district fully online programs provide education that is fully online (i.e., no requirements to attend a physical brick-and-mortar setting) and serve students from multiple districts.

Watson et al. (2013) report that participation in online and blended learning has grown beyond last year's prediction of several million students in the United States. Furthermore, 49 states offer either supplemental or fully online options for students in elementary, middle, or high school settings. Online learning is expected to continue in its expansion, as the number of students participating in online learning is predicted to reach 5 or 6 million by 2016 (Picciano & Seaman, 2009). Today, approximately 310,000 K-12 students are thought to be enrolled in fully online programs, a slight increase from last year's 275,000 (Watson et al., 2013).

Not only is participation in online learning rising, but so is recognition of its benefits. In a meta-analysis of distance education for Kindergarten through adult learners, Bernard et al. (2004) reported distance education was, on average, comparable to traditional classroom learning. However, the authors noted the variability of effect sizes included in their analysis, and discussed differences in asynchronous and synchronous learning. Means, Toyama, Murphy, Bakia, and Jones (2010) conducted a meta-analysis encompassing 50 effect sizes, and concluded that online learning is generally more effective than traditional learning. Furthermore, student outcomes were greater when face-to-face instruction was supplemented with online instruction, in comparison with instruction only offered face-to-face. However, most of the studies included in the meta-analysis were of higher education with a small number of K-12 studies represented; thus, generalizability to K-12 population is limited. That being said, distance education[1] was found to be just as effective for K-12 students as face-to-face instruction in a meta-analysis of 80

[1] In this meta-analysis, studies were included as involving distance education if they used "web-based telecommunications, such that at least 50 percent of the students' participation in the course or program occurred at a physical distance from the instructor" (Cavanaugh et al., 2004, p. 10).

empirical studies (Cavanaugh, Gillan, Kromrey, Hess, & Blomeyer, 2004). Other perceived benefits for students in online learning include a greater variety of classes, increased learning opportunities for at-risk students, additional access to instruction, personalization, and greater flexibility and autonomy (Barbour & Reeves, 2009; Watson, 2007). More global benefits include reduced educational costs and reduced load on taxpayers (Lips, 2010).

Special Education Services in Online Settings

To date, several researchers have investigated the expansion of special education services to online settings, as well as highlighted issues related to the provision of services and funding. Müller and Ahearn (2004) explored the implementation of the IDEA and services to students with disabilities enrolled in virtual schools. As a result, the authors reported variation in the delivery of special education services, with methods related to evaluation, IEP meetings, supports, modifications, and accountability differing by the structure of the virtual school. Furthermore, they concluded that several shortcomings existed in special education policies, two of which include determining what duty local education agencies (LEAs) have for providing services and providing training related to special education services in virtual schools. In a separate study, Müller (2009) reached out to state education agencies to collect information about special education services in state virtual school programs. Most respondents indicated their state offered either guidance or resources related to SWDs in virtual school programs and provided assistive technology (AT) for students with IEPs; however, challenges were noted as well. For example, respondents reported challenges related to the provision of special education services, making curricular changes to provide accessibility, ensuring support from LEAs, and receiving funding for providing services.

Funding seems to pose quite a quandary in providing FAPE to SWDs in both brick-and-mortar and online settings. Bernstein (2013) highlights the discrimination of and failure to appropriately accommodate SWDs in for-profit charter schools, as providing special education for the students is too expensive. While the continuum of placements offers instruction based on full inclusion in general education classrooms to home-based instruction, charter schools may not have the financial resources to offer instruction or services beyond full inclusion in general education classes since many operate as a single LEA rather than as part of a school district (Bernstein, 2013). If charter schools were included in a district with several other schools, they would have the option to offer their SWDs resources or services from the other schools. However, by operating independently, they are required to serve students with special needs, even if it means the resources for doing so are limited and the financial burden is heightened. This is likely to happen in online settings, as well. Brady, Umpstead, and Eckes (2010) speak to funding concerns in *cyber* charter schools, which receive monies from the public school district. Furthermore, the ability to provide special education services in single-district online programs and blended programs may be limited due to available resources and funding; thus, students may be receiving less than ideal special education service in online programs (Watson et al., 2013). As mentioned earlier, multi-district fully online programs enroll students statewide, and therefore, receive funding from the state education agency (SEA). As full-time schools that receive state funding, they are held accountable in the same manner as brick-and-mortar public schools; thus, they must provide state assessments and report the results for all students enrolled (Watson et al., 2013).

Brady et al. (2010) highlight accountability concerns and legislative irregularity in cyber charter schools. It is feared that cyber charter schools will escape state regulations, and may not monitor student progress and ensure quality services as would be expected in the brick-and-mortar sector. Furthermore, as identified in the Keeping Pace report, each state has different ways of handling policies related to online learning, including learning in cyber charter schools (Watson et al., 2013). Charter schools usually fall under state domain, which means the laws and policies governing cyber charter schools vary by state (Brady et al., 2010). Or, in some cases, states do not address online instruction for cyber charter schools, leaving room for interpretation. Furthermore, different schools can adopt different policies, adding additional variability to the structure of the system and implementation of material. The authors of Keeping Pace call attention to the importance of policy in the years ahead, and suggest looking to current regulations with the intent of "simplifying, cutting out archaic underbrush, and establishing common principles" (p. 43). On a similar vein, funding should be addressed when establishing policy, with suggestions that funding be formula-based to ensure adequate resources for FAPE in the LRE for students with disabilities.

Recently, Burdette, Greer, and Woods (2013) conducted a study in which 46 special education directors completed a survey about online learning for K-12 students. Special education directors were asked to respond to a variety of items: 1) what they viewed as primary drivers to offering more online instruction, 2) guidance related to online education, 3) tracking of SWDs and services in online settings, and 4) issues in providing FAPE to SWDs in online settings. While directors of 27 states reported offering guidance, only 17 had guidance information related specifically to offering special education services in online settings. Furthermore, only 11 had data on SWDs who were engaged in online learning, and only four had data on whether SWDs received services in online setting. Common issues in providing FAPE online as reported by the directors included providing related services and accommodations to SWDs in addition to the monitoring of those services. Based on their findings, the authors concluded that uncertainty exists in terms of how SWDs should receive special education and services in online settings. In considering the previous studies, variability and uncertainty exist in the offering of special education services to SWDs in online settings. The researchers of this paper hoped to expand upon the work of Burdette, Greer, and Woods (2013) by focusing explicitly on FAPE and least restrictive placements in online settings and using an interview method to elicit more information from state directors.

Current Study

While laws like IDEIA (2004) have contributed significantly to the education of students with disabilities, a preliminary literature search reveals sparse information regarding FAPE and determining placement in online settings. Additionally, existing research on providing services to SWDs in online settings suggests ambiguity. Therefore, researchers from the Center on Online Learning and Students with Disabilities organized a study to interview state directors of special education. The purpose of the study was to provide preliminary data on how states were providing FAPE and determining placement in online settings.

Method

Participants

Researchers chose 20 states to participate in this study. States were chosen based on the size of their K-12 student population. Seven states were selected because they had the largest number of K-12 students in the United States, and 12 states were selected because they had the smallest number of K-12 students. By involving states with the largest and smallest number of K-12 students, researchers hoped to obtain a greater representation of experiences. One additional state was included in this survey due to its interest in providing FAPE in online learning environments. The state directors of special education for all 20 states were identified and asked to participate in the survey. Sixteen individuals chose to participate.

Measure

Researchers created a semi-structured interview protocol that included 10 questions related to students with disabilities in online settings. The questions covered such topics as state policies, the allocations of funds for support services, and tracking procedures. Questions also covered challenges faced by the members of individualized education program (IEP) teams, and the IEP team members' knowledge about online learning and assistive technology[2]. All questions are reported in the Results section.

Procedure

The executive director of the National Association of State Directors of Special Education (NASDSE) sent a letter describing the purpose of the study to the special education directors in the 20 states chosen to participate. The letter invited the directors to participate in the study, and asked them to contact the initial researcher by e-mail in order to schedule interviews. After one week, the initial researcher contacted each director by e-mail in order to schedule interviews, offering the option of a phone or face-to-face interview. Twelve interviews were completed by phone by the initial researcher, three were conducted face-to-face by an additional researcher, and one was completed by e-mail due to scheduling conflicts. The phone and face-to-face interviews were recorded and transcribed. Due to an incomplete transcript resulting from recording issues, 1 of the 16 interviews was dropped from the study, resulting in 15 interviews for analysis.

In order to analyze the responses, two researchers separately analyzed each transcript and coded responses. Then the researchers met to cross-reference initial codes. Based on the identified codes, themes emerged from the interviews.

Results

The first question asked, "Has your state drafted policy or regulations with regards to providing services to students with disabilities in online settings?" Fifteen state directors said no. However,

[2] As part of a FAPE, students have the right to assistive technology devices. Such devices are identified as "any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities" (IDEIA 2004, 20 USC § 1401 Sec. 602). The appropriateness of these devices is determined when developing each child's IEP (Smith, Kelly, & Kapperman, 2011).

one of those directors indicated the existence of a guidance document, while another reported an initiative on accessibility within virtual schools.

The second question on the survey asked, "Within your state, which of the following educational entities are legally responsible for providing FAPE (special education services) to students who have active individualized education program (IEPs) enrolled in fully online schools?" Options for answers included the LEA where the student resides, the online school where the student is enrolled, the LEA where the online school is located, or a separate entity. Most directors said that the LEA where the student resides was responsible for providing FAPE (see Figure 2). However, several directors reported instances in which other entities were responsible. For example, if the student was enrolled in a full-time virtual school, the responsibility belonged to the virtual school. In another case, responsibility could vary depending upon the structure of the program.

The third question on the survey asked, "Given the responsibility you just talked about [who is responsible for providing FAPE], how does the redistribution or allocation of funds take place to support services or programs for student with disabilities enrolled in online schools?" Responses to this question varied greatly. Five directors said that the funds followed the student to his/her placement, two said that funding for online enrollment hadn't been determined yet, and another said that he didn't know. Other directors indicated the following:

- There was no funding for support services because online schools acted as private, brick-and-mortar schools (e.g., "But online school right now is treated just like brick and mortar school that is a private school, and so there is no distribution of state funds to those schools.").
- Funding was based on an agreement between the district and online school.
- Parents paid for support services because funding was not offered for online services.
- There was no incentive for districts to offer special education services because they didn't receive more funding for the services.
- Funding depended on where the online school was located.
- Funding came from IDEA.
- Funds were distributed from the state special education office.

The fourth question on the survey asked the following: "Within your state, do you track or monitor the placement of students with disabilities enrolled in online schools/courses?" Fourteen of the 15 directors disclosed that their states did not track the placement of students with disabilities enrolled in online schools or courses (see Figure 3), and only two of those 14 planned to do so in upcoming years. Three directors noted that the idea of tracking SWDs in online settings had been previously discussed, but they believed tracking should take place at a district level rather than a state level. One state director mentioned that the state would track SWDs in online settings if required by law, while another commented that tracking would only be beneficial if outcomes were tracked. Commonly cited benefits to tracking SWDs in online settings included keeping track of student progress, meeting student needs, and ensuring FAPE. However, directors also recognized funding, staffing, and technology as limitations to doing so.

The researchers then asked, "Based on your experience, what do you think are the primary factors an IEP team considers in making decisions about FAPE in online settings?" The most frequent response to this question was "support of the student" (n=7).[3] As a follow up to this question, directors were asked what they considered the primary challenges IEP teams face when making decisions about a FAPE in online settings. The most frequent response to this question was determining LRE/services (n=6).[4] More specifically, directors indicated confusion with or disbelief in the ability to provide such services to students enrolled in online schools. For example, one director asked, "How do you treat special ed[ucation] instruction when you're not physically with them…?" Another stated the challenge as figuring out "how to effectively deliver the services to student's needs." A few directors from smaller states indicated that concerns surrounding this decision did not arise frequently, due to the low number of students involved in online education.

The sixth question on the survey asked for the directors' opinions. Specifically, this question asked, "Do you think the average IEP team has the knowledge of online education to make decisions about FAPE in online settings?"[5] The predominant response to this question was "no" (see Figure 4). Directors thought that most team members needed more training, experience, and guidance on online education, as well as more information on accessible resources. Of the three directors who felt that IEP teams did have the knowledge necessary to make these decisions, two were from large states and one was from a small state.

The seventh question on the survey contained two parts. The first part asked, "Do you think the average IEP team has the knowledge on assistive technology (AT) to make considerations and suggestions relative to assistive technology?" Six directors responded "yes," while three said that the teams had some knowledge. Two directors answered "no," one responded "I don't know," and the other three didn't directly respond to the question. A few directors thought this knowledge would vary by district. The second part of the question asked if the directors thought IEP teams had the AT knowledge "relative to providing access to these devices, systems, or services in online settings." Here, the directors' confidence levels dropped. Two directors reported yes, six responded no, and three reported that it varied by district. For the four remaining directors, it was unclear if their responses referred to fully online or blended settings.

The eighth question asked, "Does your state provide guidance to LEAs, specifically IEP teams, related to placement options and other issues associated with online learning?" Thirteen directors responded "no" to this question, one said "yes," and another said "on a case-by-case basis." Directors often reported that it was the districts' responsibility to provide guidance in this area. The director who responded "yes" offered material on the guidance provided by the state, but this information was never received.

The ninth question on the protocol was "Within your state, are online placements considered

[3] Other responses included accessibility (n=3), accommodations (n=3), available staff (n=2), student needs (n=1), technology (n=1), nature of instruction (n=1), and monitoring of progress (n=1).

[4] Other responses included funding (n=3), the support of student (n=2), understanding of online education (n=2), access (n=2), parental preferences (n=2), evaluation (n=2), lack of guidance/access to teacher (n=2), and if student was new to online environment (n=1).

[5] "Average IEP team" was defined as a team that did not include an online education specialist.

within the least restrictive environment (LRE) continuum?" Responses to this question varied greatly. Seven directors reported that online placements were not considered within the LRE continuum (although two indicated the IEP team or parent could determine otherwise). Four responded "yes," three stated that either they didn't know or it hadn't been discussed yet, and one said that fully online placements were not an option but did have blended online learning. As a follow-up question, the directors were asked if they viewed online education and LRE as interrelated. Again, responses varied. Some directors responded "yes," but others said that they didn't know and that this was an area to explore and redefine.

The last question on the protocol was, "Within your state, are online schools required to have various LRE options within the online environment for students with disabilities?" (see Figure 5). Four directors responded "yes," and seven responded "no." Three other directors said they didn't know, and another indicated he or she could not answer because the state had no online schools. Of the seven directors who responded "no," one specifically reported that the LEA would be responsible for determining LRE, and another suggested that an online setting might be an option for LRE, but various LRE options were not typically provided within online environments. As a follow-up question, directors were asked if they saw inclusion as an issue within online environments. While seven directors reported no issues, three reported "yes," one of which likened online placement to a step backwards for SWDs as they would be relegated to the home environment. One responded unsure, and four respondents were not asked this question due to the display logic of the interview protocol.

Discussion

Based on the findings from this study, additional guidance or information is needed about FAPE, what it means to provide LRE options, and how to provide related services in an online environment. None of the state directors in the study indicated that their state had a policy or regulation for providing services to SWDs in online settings. Written regulations that relate to training, professional development, access, accommodations, LRE, and funding could go a long way in making sure that online environments are truly suitable for SWDs. Furthermore, only one of the 15 directors interviewed reported tracking or monitoring SWDs in online settings, meaning there is no way to track student outcomes or ensure that student needs are being met in the other states. Tracking SWDs enrolled in online settings would provide the ability to monitor progress and the effectiveness of interventions to assist in IEP development, placement decisions, and meeting student needs. Not only could this benefit student achievement, but it is consistent with IDEIA (2004), in which it is indicated that states establish performance indicators (20 U.S.C. § 1412 Sec. 612), collect data on graduation and dropout rates (§ 1412 Sec. 612), review IEPs annually to determine progress of goals (§ 1414 Sec 614), report the progress of SWDs as it relates to goals identified by the state (§ 1412 Sec. 612), and identify interventions based on scientific evidence that will aid in access to and progress in general education (§ 9567b Sec .177).

Moreover, further attention should be focused on the decision-making process within IEP teams. State directors cited funding, understanding online learning, access, meeting students' needs, and determination of LRE as challenges when making decisions about FAPE in online learning.

Limited funding poses challenges for districts in offering services to students with disabilities in online settings, which is noted in this study and previous literature (Brady et al., 2010; Watson et al., 2013). If cyber charter schools, single-district online programs, and blended programs are limited in the provision of services due to budgetary concerns, SWDs may not receive the necessary accommodations to excel in online settings or those with severe disabilities may be turned away due to the high costs associated with serving these students. This possibility was noted in this study, with one director commenting, "a district has no real incentive to provide special education service…because you get the same amount of funding and you are providing more services." In some cases, then, it seems as though some programs may receive the same amount of funding, but be expected to stretch it more to offer SWDs the services they require as a part of FAPE. Though this information was gathered via informal interviews, it is alarming is that some programs are reported to receive no state funding for support services, and in other states, parents/guardians may have to assume these costs. However, according to IDEIA (2004) a *free* appropriate public education (FAPE) including special services should be provided to SWDs at *no cost* to the parents, which causes concern for how to provide these services when students are enrolled online (20 U.S.C. § 1401 Sec. 602).

Additionally, from the state directors' perspectives, the average IEP team could benefit from additional knowledge about online education and AT in online settings. However, based on findings in this study, IEP teams are generally not offered guidance regarding online education and issues, and no guidelines exist regarding various LRE options in online placements. Under IDEIA (2004), it is suggested that a SEA receiving state funds could provide professional development for teachers, administrators, and other personnel in several areas, some of which include the use of technology, effective instructional strategies, implementing IEPs, and academic needs of students (20 U.S.C. § 1454 Sec. 654). By increasing knowledge on the online environment and FAPE in online settings, educators, administrators, and others involved in IEP construction might feel more confident in making decisions regarding FAPE and LRE placement in online environments. Furthermore, this knowledge might inform decisions about appropriate accommodations and support for SWDs in these settings. Online learning is a promising academic venue for SWDs and their families; thus, training and resources should be offered to those involved in this area. Educators could benefit from information about the online environment to make sure goals can be met in relation to the student's IEP, as well as their state standards and the general education curriculum, to ensure accessibility, accountability, and meeting the intent of IDEIA.

An additional topic emerged during interviews in relation to decision-making: parental choice and preference in placing the child in an online course or program. Based on what some state directors shared during the interviews, IEP teams can, and do, offer suggestions regarding accommodations and education within online instruction, but placing a child in an online course is ultimately the parents' choice. However, the parents and the rest of the IEP team can differ about how to meet the needs of the student. One state director highlighted this by saying, "The main challenge people are dealing with now, in a situation where the online school isn't any better for the student, but it is the parents' insistence that they are in that setting." This raises a noteworthy question in relation to who covers the educational expenses for the student. Limited information exists for how to address this issue in online placement; however, in a traditional private-school placement, the LEA is not required to pay for the education if the parent enrolled

the student voluntarily (Turnbull, Stowe, & Huerta, 2007). However, the LEA must still provide special education services to the student either on-site or in conjunction with another school. On the other hand, if the LEA failed at providing an adequate education with appropriate services to the student, the parent could seek reimbursement for the private education. Lastly, if the LEA seeks out a private school placement for the student in order to ensure appropriate services, the parents are not accountable for the cost. State directors might be interpreting online placements as similar to private placements. For example, one director stated that "…online school right now is treated just like a brick and mortar school that is a private school…" With this in mind, questions arise regarding whether online placements would operate similarly to private placements, or if additional courses should be considered.

A resonating view that the researchers found interesting from the analysis of the interview responses was the impact that federal law has on data collection, reporting, and practices. When discussing making decisions about FAPE in online settings, one director stated, "Because we are so much focused on what the law requires, and online is not a requirement, I don't think it comes up much." Another director referred to the lack of federal regulation as a reason why his/her state does not monitor or track the placement of SWDs in online settings. This idea can be highlighted by the comment: "I'm not really sure we have a reason to (track SDWs in online settings) now. If it was a federal requirement, we would." By reflecting upon online learning in policy and guidance, there would be an increased awareness and subsequent attention to training and support for SWDs in online learning settings. For example, in this study, IEP teams were viewed as having adequate knowledge of AT. It is possible that because AT is a required component of providing FAPE, educators have acquired more AT training and experience. Also, one should consider the influence of social desirability in responses to this question, since AT is written into the law. By addressing FAPE and LRE for online learning environments via regulation and policy, more attention might be directed towards training and accountability in online education for SWDs.

Encouragingly, many state directors felt confident in IEP teams' overall knowledge of AT and reported the availability of supports on this topic. Furthermore, most felt it would be beneficial to track/monitor SWDs in online learning, and some disclosed either plans or discussions to do so. The state directors seemed aware of the limited knowledge of online learning and its implications for FAPE. Additionally, they conveyed openness to the idea of guidance and training.

Limitations

The first limitation of our study included the use of purposive sampling in recruiting participants. States were selected, and directors identified, based on their identification as having a significantly large or small student population and one other state volunteered, which did not allow for random selection. Furthermore, this sampling method resulted in a smaller sample size and lack of representation of middle-sized states. It should be noted that small states provided a larger representation in the study than larger states (11 small states and 4 large states).

Conclusion

Most of the state directors of special education who participated in the study were aware of issues related to FAPE in online environments, as indicated by ongoing discussions within their states and initial steps to strengthen involvement in this subject. However, level of awareness was not consistent across all states. The apparent lack of consensus concerning offering FAPE in online settings and the absence of direction in addressing surrounding issues translates into a need for guidance and professional development in this area. As a result of this study, researchers recommend that more information and regulation be offered in relation to (a) making well-informed decisions about FAPE in online settings, (b) deciding placement options associated with online learning, (c) determining LRE and inclusion in online settings, and (d) discerning funding in online placements.

While these findings are preliminary, they shed light on the opportunity for growth in relation to FAPE and LRE in online settings. Policies, regulations, and guidelines, of which FAPE in the LRE is a part, seem to be trailing behind certain practices within online learning, and will continue to do so as the development of online learning continues. Future research could expand upon this study by obtaining greater representation of states, discussing these topics with educators in special education and members of IEP teams, and considering the impact on SWDs in online settings. Overall, more information is needed on providing a FAPE and determining LRE in online environments in order to assist IEP teams, including teachers, administrators, and parents/guardians in making decisions that will impact student placement, accommodations, and outcomes.

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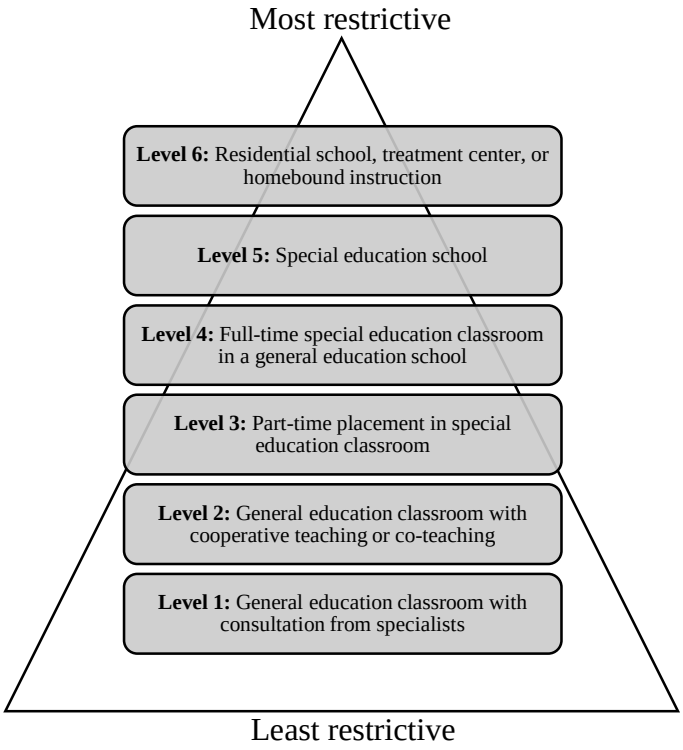
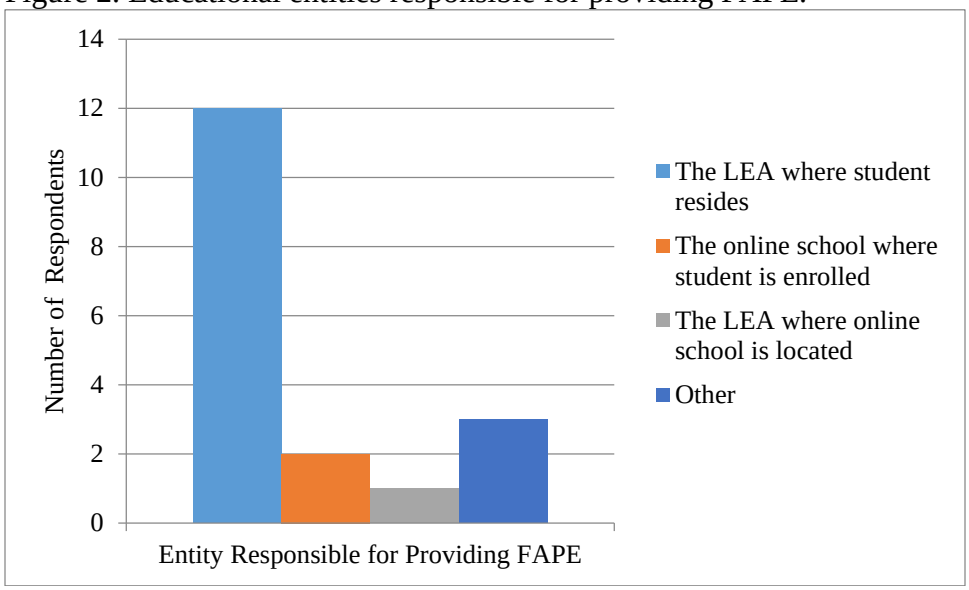
The contents of this paper were developed under a grant from the U.S. Department of Education [#H327U110011]. However, the content does not necessarily represent the policy of the U.S. Department of Education, and you should not assume endorsement by the Federal Government. Project Office: Celia Rosenquist.

Figure 1. Continuum of Least Restrictive Environment



Note: Adapted from Vaughn, S. R., Bos, C. S., & Schumm, J. S. (2011). *Teaching students who are exceptional, diverse, and at risk in the general education classroom* (5th Ed.). Upper Saddle River, NJ: Pearson Education Inc.

Figure 2. Educational entities responsible for providing FAPE.



Note: Responses exceed n=15 because participants had the ability to indicate multiple options. "Other" category included the following responses: there is no legal responsibility, there is no fully online school in the state, it's the responsibility of the Department of Education.

Figure 3. Does the state track or monitor placements of SWD in online settings?

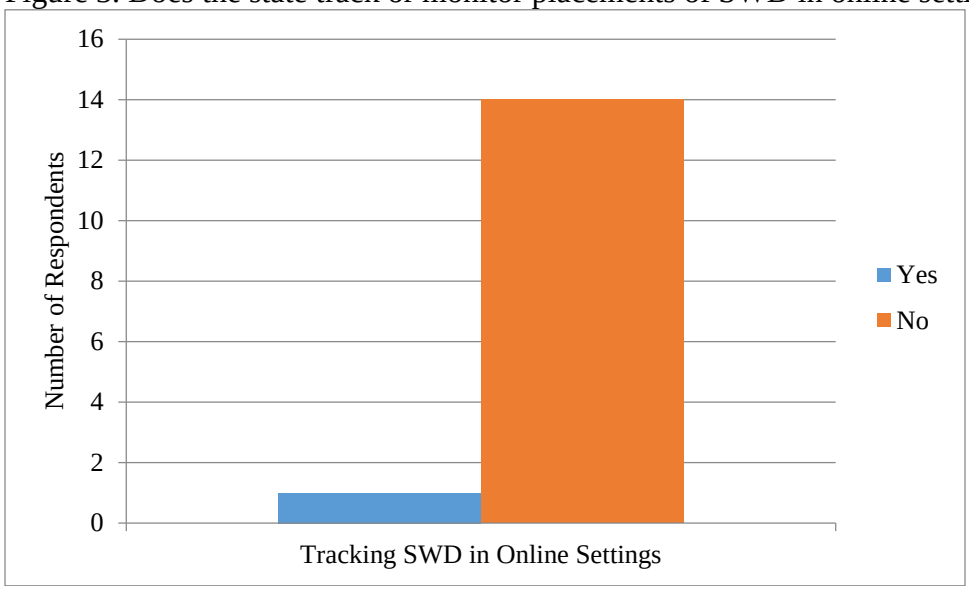
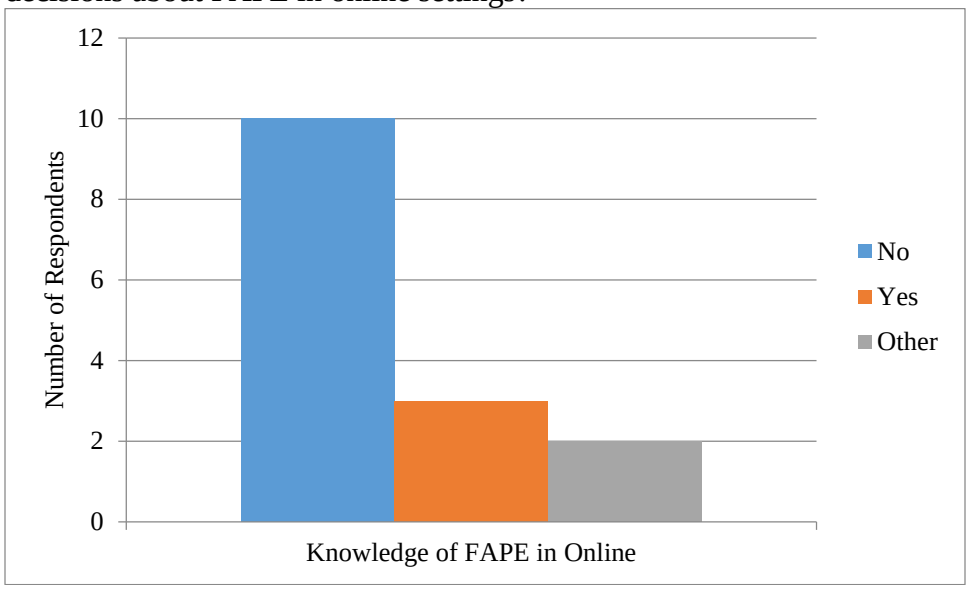
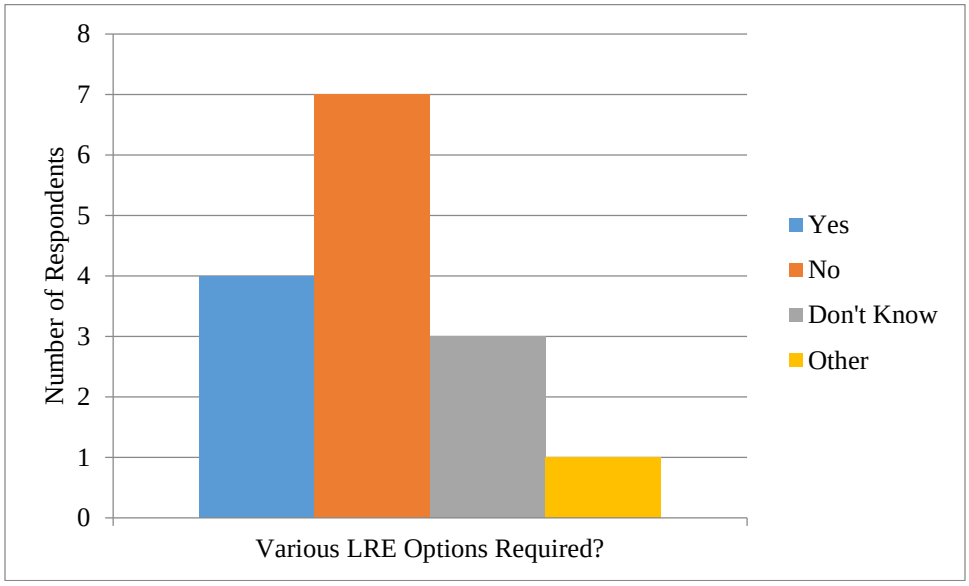


Figure 4. Do you think the average IEP team has the knowledge of online education to make decisions about FAPE in online settings?



Note: “Other” responses included “I don’t know” and “Everyone could learn more.”

Figure 5. Are online schools required to have various LRE options within the online environment for students with disabilities?



Note: “Other” response was that “online placements are not an option.”

A Preliminary Investigation of the Benefits of Computer-Aided Instruction in Reading Decoding for Students with Autism Spectrum Disorder and Other Developmental Disabilities

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Abstract

For students who have limited expressive language skills, both verbally and in writing, it is difficult for a teacher to assess the acquisition of reading skills. The authors examined the effects of computer-aided instruction (CAI) on the early reading and reading comprehension skills of six students with autism spectrum disorder, and other developmental disabilities during four weeks in an extended school year (ESY) services classroom setting. The purpose was to examine Headsprout Early Reading™ and Headsprout Reading Comprehension™ as an intervention to supplement instruction and assess early reading skills and make recommendations for use during the regular school year. While three students made progress in the program, focus and ability to attend impacted results with the other three.

A Preliminary Investigation of the Benefits of Computer-Aided Instruction in Reading Decoding for Students with Autism Spectrum Disorder and Other Developmental Disabilities

Research indicates that systematic instruction in five core elements of reading (phonemic awareness, alphabetic principle, oral reading fluency, vocabulary, and comprehension) facilitates the building of competent readers (National Institute of Child Health and Human Development, 2000). Print awareness, knowing that text is read or followed from left to right and top to bottom, is also important (Huffstetter, King, Onwuegbuzie, Schneider, & Powell-Smith, 2010). All students must have access to appropriate reading curricula and instruction in order to develop a society that is literate (Whitcomb, Bass & Luiselli, 2011). Identifying reaserch-based curricula for teaching students when the students have autism spectrum disorder (ASD) and other developmental disabilities (DD) that make reading progress difficult to measure, is necessary to comply with legistlative mandates such as No Child Left Behind (2001). Teachers have struggled to identify appropriate curricula for students with ASD and DD, especially for those with limited (or without) verbal communication skills and/or limited use of sign language and assistive technology communication devices, making it difficult to measure reading acquisition and progress. It is often difficult to determine if these students are identifying words, learning to read, or comprehending what they read.

Several published findings regarding computer-aided instruction have been published in the United States and abroad for students with ASD and DD. Colby (1973) conducted one of the earliest attempts to stimulate language development through computer instruction for 17 children with autism who were non-verbal, showing positive gains in motivation to participate in computer instruction and use of some voluntary speech. Panyan (1984) reviewed computer use

for students with ASD, finding that computers could be used to improve interaction and in other areas as well. Clarfield and Stoner (2005), investigated the use of Headsprout™ as a beginning reading intervention for 3 boys (grades K-1) with ADHD and focused on oral reading fluency and task engagement using a multiple baseline design with successful outcomes (compared to teacher-directed instruction).

The use of computer-aided instruction (a technology-based treatment intervention) that adapts to students needs and provides educators with real-time accurate information on reading progress (Simba Information, 2009) has been identified as an emerging treatment worthy of additional research, according to the National Autism Center (2009). The goal of this project is to investigate the use of a data-based, computer-assisted reading program that targets the 5 essential elements of reading (phonemic awareness, alphabetic principle, oral reading fluency, vocabulary, and comprehension), and monitors student progress through the curriculum (Layng et al., 2003; Twyman et al. 2005). It is an important goal of this study to investigate whether Headsprout is such a program designed using behavior analytic principles to accelerate early reading skills for students in preliminary grades (Whitcomb, Bass, & Luiselli, 2011).

The purpose of this study was to a) determine whether a computer-aided data based program would assist students with ASD and DD to identify words with the goal of learning to read beyond instruction typically provided in the classroom, and b) facilitate outcome measurement for teachers evaluating reading progress for students with ASD and DD, for whom traditional methods to measure reading acquisition and comprehension has often been difficult.

Traditionally, students with moderate and severe developmental disabilities (DD) have not received instruction in reading decoding; the emphasis of instruction has been functional reading and sight-based instruction (Katims, 2000). In a comprehensive review of reading research for students with moderate and severe DD, Browder, Wakeman, Spooner, Ahlgrim-Delzell, and Algozzine (2006) found that the majority of research in this area is related to sight word instruction with few studies involving code-based instruction. However, researchers have recently advocated for a change in instruction for students with moderate and severe intellectual disabilities. Bowder et al. (2009) describe a new framework for reading instruction that includes decoding and emphasis on literacy and independence. Research has shown that students with moderate and severe intellectual disabilities benefit from decoding instruction. Flores, Shippen, Alberto, and Crowe (2004) taught elementary students with moderate DD to decode CVC (consonant, vowel, consonant; e.g., bat, dog) words using portions of a Direct Instruction (DI) decoding program. Bradford, Alberto, Shippen, Houchins, and Flores (2006) taught middle school students with moderate intellectual disabilities decoding skills using Direct Instruction. Based on these initial findings, there is a need for additional research related to decoding instruction for students with moderate and severe DD.

In a 2005 study using CAI, a student with autism achieved mastery fastest using CAI when compared to teacher instruction (Coleman-Martin et al.). Children with autism may benefit from reading interventions using CAI since students with ASD often prefer solitary activities, have trouble making eye contact, and have poor expressive and/or receptive language skills, making participation difficult for them in reading groups with others, or in one-to-one lessons with adults (Boutot & Myles, 2011). While statistical significance is important for researchers, instructional

significance is of practical value for educators seeking interventions for students with significant disabilities (Twyman, Layng, and Layng, 2011). Therefore, the present study was undertaken to investigate the benefits of CAI for reading decoding in students with significant ASD and DD.

Materials

Headsprout™ targets the early reading needs of students K-2 (Headsprout™ *Early Reading*) and reading comprehension for students in grades 3-5 (Headsprout™ *Reading Comprehension*) focusing on reading comprehension as defined by knowledge of vocabulary and active use of multiple comprehension strategies and real-time assessment of progress (Simba Information, 2009). This interactive software program consists of 80 online lessons for *Early Reading* and 50 online lessons for *Reading Comprehension*, each lasting approximately 20-30 minutes (Leon, Layng, & Sota, 2011). The goal of the present study was to expose students to lessons each day during a 20 day program and assess outcomes for these students. Explicit instruction in phonics and phonemic awareness (including segmenting and blending), sounds fluency building exercises, building sight word vocabularies, and cues to punctuation are all incorporated into the Headsprout™ program (Clarfield & Stoner, 2005). Reading comprehension, oral reading with sound elements, vocabulary, print awareness, and deriving meaning from text are also embedded in the program and are known predictors of reading achievement (Huffstetter et al., 2010; Layng, Twyman, & Stikeleather, 2003). Nine patented teaching routines (Table 1) are incorporated into Headsprout™ early reading and include a component that adapts to the strenths/weaknesses of individuals students (Doe, 2005). Headsprout™ *Reading Comprehension* targets specific strategies for reading comprehension (e.g., literal, inferential, main idea and vocabulary) which are sytematically and explicitly taught. During development testing with 150 learners, consistent progress was demonstrated, and more than 35,000 school users have been taught these skills through Headsprout™ , according to the developers (Leon, Layng, & Sota, 2011). The Florida Center for Reading Research selected Headsprout™ because it is (a) designed for independent use without intensive teacher supervision, (b) does not require a beginning reading vocabulary, and (c) requires less teacher training. In an initial study, researchers found that children entering kindergarten who completed 80 episodes reached an average grade equivalent of 2.1 on the Woodcock-Johnson Word Identification subtest (Layng, Twyman, & Stikeleather, 2003). The What Works Clearingouse (WWC) found that this study met their evidence standards based on doctoral research (2009). Another study found that seven of nine participants with dyslexia improved oral reading fluency performance. All parents involved in the study indicated high satisfaction with the Headsprout™ *Early Reading* program (Wochos, 2011).

Table 1
Nine teaching routines of Headsprout™ Early Reading

Routine	Description
Establishing	Teach sound-letter correspondence and sight words through explicit instruction
Adduction	Teach skills through a discovery learning method
Vocal Potentiation	Teach speaking out loud and becoming one's own listener
Blending and Segmenting	Teach blending sounds together into words and segmenting words into their individual sounds
Sentence and Story	Teach skills such as reading from left to right and reading for meaning
Fluency	Involve guided, timed reading practice
Motivation	Involve both extrinsic and intrinsic reward components
Application	Apply skills and strategies to new words, stories, and contexts
Overall Sequencing	Develop an interlocking set of skills and strategies and to allow to begin reading quickly

Method

Participants

Students between the ages of 9 and 14 enrolled in a university extended school year (ESY) summer program were the participants in the study. Computer-aided decoding instruction was incorporated into the curriculum for use as a literacy intervention. The typical schedule for all students enrolled in the program included three hours a day, five days a week instruction for four weeks, with a daily schedule that included direct reading instruction, discrete trial teaching, math, social skills, incidental teaching, and snack. The classroom had a lead teacher (master's student who was a full-time teacher) and 3 other adults (2 undergraduate students and a school district employee). There were 8 students assigned to the classroom. Two of the students in the classroom were successful verbal readers (although below grade level) and communicators and not part of the Headsprout™ intervention. The 6 students selected for participation are described in the paragraphs that follow.

Amy was a 9-year old Latina female with autism. Her IEP goals included increasing reading comprehension and communication. She communicated using a Dynavox™, pictures, or spoke using one word responses. In the area of reading, she was able to segment simple words into phonemes, identify consonant-vowel-consonant patterns in words, read and respond to simple sentences describing actions, sequence 3-4 events in a story and read color and number words. Her overall Test of Language Devlopment Score (TOLD) was a standard score of 48 at the time of the study.

Josiah was an 11 year-old White male with ASD. He was able to consistently and accurately isolate initial and final sounds in phonemic tasks, identify all consonant and vowel sounds and label real life objects. He was working on identifying the first event in a story read out loud and reading high frequency words. He had not mastered blending letter sounds into one-syllable words, matching 2-3 letter blends with their most common sound, reading regualar one-syllable words with fluency, and identifying events from a story. Josiah spoke using single words or used a speech-output device (Dynavox™). Josiah's overall TOLD score was a standard score of 44.

Jack was a 10 year-old African-American male with ASD. Jack could match some letter sounds to objects. He would benefit from instruction to develop phonemic awareness to blend and read words. He communicated using pictures and the iPad™ to request snacks and to use the restroom. He often cried when he frustrated, tired, or not feeling well. His overall TOLD score was a standard score of 43.

Misty was a 10 year-old White female with ASD. She identified letters and sounds and matched pictures to the correct beginning sound. She had difficulty demonstrating phonemic awareness (blending sounds to reading words). Misty used some single words and will, at times use three word requests. She also used pictures to communicate. Her TOLD score at the time of this study was a standard score of 43.

Adelle was a 12 year-old African-American female diagnosed with DD including cerebral palsy, epilepsy, hydrocephalus, and visual impairment. She was working on letter identification, segmenting and spelling 3 letter words using cards, basic comprehension and sequencing skills.

She had difficulty writing and her parents desired a move toward typing in lieu of writing . She had difficulty staying on task. Her TOLD score was a standard score of 42.

Connie was a 14 year-old White female diagnosed with ASD. She could read sight words and short sentences. She was able to answer "wh" questions about books read with an familiar adult. She used her speech-output device (Dynavox™) to spell some words when asked. Her TOLD score was a standard score of 55.

Prerequisite reading skills were assessed to determine the appropriate reading intervention (Headsprout *Early Reading™* or Headsprout *Reading Comprehension™*). Headsprout *Early Reading™* is used to build the necessary reading skills before beginning the reading comprehension program. The goal of the program was to provide students with computer-assisted reading instruction during ESY services that can be easily transferred to the home school where the intervention could be continued, providing continuity of reading instruction and data collection procedures. Pre-test/post-test data were collected using the Headsprout™ Readiness Assessment.

Results

Students accessed Headsprout™ during the time allocated for direct reading instruction. The teacher worked with each student individually at first to assess pre-requisite computer skills, and introduced each student to the structure of the program and the episode indicated by the pre-test, if applicable. The results of successful Headsprout™ *Completed Episode Performance* data as well as the adult assistance required are indicated in the following paragraphs.

Amy initially needed redirection to stay with the Headsprout™ *Early Reading* program. If left unattended, she would exit the program and enter another familiar game program. As she progressed through Headsprout™ she began to request to use Headsprout™ as a reinforcer choice, and there were no further attempts to exit the program during use. Amy was placed in episode 57 to begin Headsprout™ as recommended by the results of her pretest score. Amy completed the *Early Reading* program in 7 school days (episodes 57 to 80), scoring between 91% and 99% on all 23 episodes. Amy moved to Headsprout™ *Reading Comprehension* for the remainder of ESY services, completing 9 lessons. Scoring for reading comprehension is different than in Early Reading. The printout showed scores over 75% in green, scores between 50-74% in purple, and scores below 50% in red. Most of Amy's scores were purple (50-74%) for the first 4 lessons, perhaps because she was getting used to the format of the new program. She scored in the green range (greater than 75%) for 11 of 13 areas for lessons 5-8. In lesson nine, she had red scores (below 50%) in questions regarding main idea, inferences, and in total correct first attempts. It would be recommended that she restart this lesson and try again. Lesson 9 focused on strategy application, which was not part of lessons 1-6. Amy was able to complete the post-test increasing her words read correctly from 85 to 147 (significant for a four week intervention!). Amy was the only student to complete *Early Reading* and move into Headsprout™ *Reading Comprehension.* The other five students began and ended the study using the Headsprout™ *Early Reading* program.

As a result of the pre-test, Josiah began at lesson one and progressed through lesson eight in Headsprout™ *Early Reading*. He scored above 80% on lessons 1,3, and 6. He scored between 70-79% for the other 5 lessons. Josiah was able to work independently and did not require redirection. Josiah accessed the computized lessons over 24 sessions.

Jack also began Headsprout™ *Early Reading* at the first lesson. He was unable to read any words during the pretest or post-test. Jack had difficulty attending to the program and would not engage, even when prompted by an adult. He completed 2 lessons over 7 sessions. While his scores were above 80% for both lessons at completion, he had a large number of timeouts (opportunities to click but did not) during the first 4 attempts at Headsprout™ *Early Reading*. The percent of timeouts declined sequentially over the course of the 7 sessions, going from 66% to 9%, which could mean he was beginning to independently engage and attend to the program toward the end of ESY services.

Misty also began Headsprout™ *Early Reading* at the first lesson. She did not read any words correctly during the pretest or post-test, and it was difficult to ascertain if she were attending to the reading material. She did not appear to look at or directly attend to the words she was asked to read during the two minute pretest. Misty needed one-to-one adult supervision to stay focused and to click on the answers using the mouse while using Headsprout™. She had 5 sessions with Headsprout™ *Early Reading* during the ESY period. It is of note that she also had a high percentage of timeouts (opportunities for the learner to click but did not) which reduced significantly during the sessions and ranged from 94% to 46% (indicating that she was responding more freqently to program prompts resulting in fewer timeouts).

Adelle began at lesson one of Headsprout™ *Early Reading* since she was unable to read any words during the pretest. She was able to complete 2 lessons over the course of 10 sessions. She completed lessons 1-2 and began lesson 3 at the end of the ESY program.The teacher reported that unless one-to-one supervision (often with hand over hand support) was utilized, Adelle did not demonstrate an ability to focus on the task.The timeouts to the program ranged from 87% to 4%. She did not read any words during the post-test.

Connie began Headsprout™ *Early Reading* at lesson one. She needed adult prompting until she was totally engaged in the program, at which point she would work independently. When beginning a lesson, she would exit out of Headsprout™ *Early Reading* in search of other preferred websites. Once engaged in the program, she would then progress independently and the adult prompts were faded. Connie was able to complete 5 lessons, 4 above 80% accuracy, one with 79%. She engaged in 13 sessions during ESY services. Her timeouts ranges from 50% (lesson 1) to 0% (lesson 5) (Table 2).

Table 2
Results for Students

	Amy	Josiah	Jack	Misty	Adelle	Connie
TOLD						
Standard Score	48	44	43	43	42	55
Pretest						
Total Words Read	93	0	0	0	0	0
Words Read Correctly	85	0	0	0	0	0
Post-test						
Total Words Read	153					
Words Read Correctly	147					
Total Lessons Completed	ER-23 RC-9	8	2	1	2	5
Lesson Scores 80% or above	ER-23 RC-4	3	2	1	2	4
Lesson Scores 70-79%		5				1
50-75% RC	RC-4					
Below 50% RC	RC-1					
Accessibility	VP, I	VP, I	VP	PP, VP	PP	VP, I

*Amy had difficulty with lessons 1-4 scoring between 50-75%. She also had difficulty with lesson 9 scoring below 50%
TOLD-Test of Language Development; ER-Early Reading Program; RC-Reading Comprehension; VP- Verbal Prompt, I-Independent; PP-Physical Prompt
*Amy's pretest scores placed her in lesson 57 of Headsprout™ Early Reading to begin the program. She quickly completed this program and moved to the next series, Headsprout™ Reading Comprehension.
The others started at lesson 1.

Discussion

This opportunity for investigation of computer-aided instruction (CAI) is needed because it is critical that school districts, service providers, and parents have information about the effectiveness of interventions before they invest in these computer-based products. The CAI Headsprout™ *Early Reading* and *Reading Comprehension* programs assisted the students involved in the intervention to identify words by clicking the mouse, and by beginning to learn much needed reading skills including the 5 core elements of reading (phonemic awareness, alphabetic principle, oral reading fluency, vocabulary, and comprehension). The researchers used CAI program data-based measures to provide progress data directly generated by the program to the home schools.

The teacher in this study reported that several students "enjoyed interacting with the computer instead of participating in small group instruction." The technology itself served to reinforce the reading learning process. She also stated that the students who were most successful could attend and interact with the program independently. This teacher worked with 5th and 6th grade students with ASD and DD in her home school self-contained classroom. She thought the autonomy of learning with Headsprout™ and the ability of the student to work at an individual pace was key. She also noted that each student would get the instruction needed without exposing reading limitations to peers. Headsprout™ gave teachers data driven progress results for students who's progress is typically difficult to measure.

It was noted that focus and attention (ability to independently attend to the program) impacted the ability to successfully navigate the program for 3 students. While a reduction in timeouts was noted for several students, whether the reduction in timeouts was due to increased attending or increased prompting from an adult, would need to be examined further. Three students were able to ultimately engage in the program independently, freeing the teacher and adults to work with other students while still able to collect data on student learning for those using the program.

While computer aided-instruction might not be appropriate for all students with ASD and DD and progress may vary, the progress shown by these six students in four weeks is of note. With continued use and familiarity with the program, it is possible that independent reading skills could emerge for them. The ability for the teacher to assess this progress without adult interface (which can be distracting in itself for students with autism) makes it a viable supplement to the reading curriculum. If the outcome sought is to develop independent reading and comprehension skills, both for academic and liesure, the positive outcome of CAI needs to be explored further and over longer periods of time. The fact that CAI gives teachers a way to measure reading comprehension progress for students who previously could not be readily measured is valuable as a data-driven intervention and valuable for all stakeholders providing services for students with ASD and DD.

The investigation of computer-aided instruction for students with ASD and DD expands the body of knowledge regarding interventions that work effectivel. By using the computer-based reading instruction, teachers will be able to determine progress in reading for students with ASD and

DD. Utilizing the Headsprout™ reading intervention continues the line of research regarding reading and technology-based interventions and will add to the research that determines "best practices" and emerging treatments for students with autism and developmental disabilities (National Autism Center, 2009).

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Perspective Taking Through Film: Educating Pre-Service and In-Service Teachers About Autism

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Abstract

When it comes to educating students with autism in the classroom, teachers' perceptions and attitudes toward inclusion are essential. Professional development that enhances perspective taking about autism is powerful if it leads to depth of understanding and action. Instructional media can play a role in raising viewer awareness; unfortunately, there are significant difficulties locating appropriate media concerning autism spectrum disorders (ASD) for developing teacher perspective taking skills. A film was developed for this project that shows a first person perspective of a student with autism in a classroom. Findings from 500 teacher participants on a post-test instrument regarding the film's content show increased perspective taking regarding ASD deficits after the film. Results showed that through this approach, teachers were able to deepen their understanding about the deficit areas. Post-test results and feedback from reflective, post-film discussion show teacher understanding of deficits that may be present in those with ASD.

Perspective Taking Through Film: Educating Pre-Service and In-Service Teachers about Autism

Teachers involved in social relationships base their actions, at least in part, on their understanding of others' perspectives. When it comes to children with disabilities, many pre-service educators have yet to encounter the nature and severity of disabilities and deficits they will work with in the field; subsequently, teachers' understanding of why children engage in certain behaviors can potentially influence their social relationships with their students, such as those with an autism spectrum disorder (ASD). Perspective taking, an ability to perceive someone else's feelings, thinking, motivations, behaviors, and so forth, is a dispositional necessity for teachers who are educating numerous students with diverse learning needs, styles, interests, and abilities. Teachers need to see things from another person's perspective in order to understand and engage their students.

This project was based on the belief that pre-service teachers will benefit from a sensory experience that allows them to dig deeper into their own learning and reflection to better serve a diverse population of learners. The researcher of this project believes media and the use of an instructional case study can support the development of perspective-taking skills within pre-service teachers. However, in the field of special education, it is often difficult to locate engaging, technically accurate media tools that authentically present characteristics of disabilities such as ASD that allow viewers to encounter what a student experiences in a classroom setting. This experience could support teachers developing a better sense of what challenges his or her learners encounter first hand.

While there are some effective media tools available in the areas of learning disabilities, speech/language impairments, and emotional disturbance, the field lacks media resources that address other disability categories classified under the Individuals with Disabilities Act (IDEA). New teachers need to be able to understand their students and film-based case studies and models illustrating characteristics of learners with disabilities can support this skill. Thus, a video simulation of a child with a disability would allow teachers to have an understanding of the inner-workings of the mind of a student living with the challenges encountered in a mainstreamed classroom.

A well-designed video simulation can give a visual and auditory experience of what makes for a positive or negative experience in a classroom learning environment. For example, Iovannone, Dunlap, Huber & Kincaid (2003) identify key characteristics of effective appropriate services for students with autism that will likely include the general education teacher, supportive and structured learning environments, specialized curricula focused on communication and social interaction, integration with typical peers, and systematically carefully planned instruction. Seeing how these elements work together and understanding the rationale for why these are necessary will only be of benefit to the viewer; further, powerful learning can occur in viewing what happens if these elements are not effectively in place. Case study film tools can provide this experience. When it comes to preparing teachers for practice, field experiences are the primary vehicles for developing a sense of self as a teacher; however, not all experiences are created equal and it may take complex simulations to bridge the gaps between educational theory and classroom practice, particularly concerning working with learners with complex educational challenges (Dotger & Smith, 2009). Subsequently, the goal of this project was to deepen an understanding of the needs of a child with ASD in a classroom environment so teachers are more apt to purposefully select appropriate instructional strategies and ensure modifications to meet individual student needs. Another goal of this project was to enhance a required special education course with the inclusion of film-based media designed to promote perspective-taking dispositions concerning low incidence disabilities, specifically ASD. Using the literature on deficit areas in children with autism (social, communication, behavior), the research team created a film depicting deficits related to ASD through an instructional case study specially designed to prepare pre-service teachers to understand the characteristics.

As in other states, Connecticut general educators are often not prepared to meet the needs of students with disabilities such as ASD. For example, Connecticut certification regulations require teacher candidates preparing as general educators to take just one special education course or at least 36 clock hours of training in special education, which may or may not contain critical information relevant to educating a child with an ASD, currently the fastest growing special education eligibility category in the State. As cited in Busby, Ingram, Bowron, Oliver & Lyons (2012), increasing numbers of students on the spectrum are being fully included in the regular education classroom where the regular education teacher serves as the primary teacher. The concern remains that regular educators typically do not have special preparation and may feel ill-equipped to meet the complex, unique needs of a child with autism. Film-based media is a solution.

Teacher Preparation: Needs of Teachers in Understanding Autism

The IDEA is clear that addressing the needs of eligible children and youth – in all areas of the suspected or documented disability - should be part of comprehensive (and procedurally compliant) program planning and involve multi-disciplinary teams. Educators, individually and as part of a multi-disciplinary team, are critical team members and should know or be able to determine the needs of students with exceptionalities. For example, in working with students with ASD, they should be aware of characteristics of behavioral and other developmental deficits, such as social reciprocity and interaction, repetitive behaviors, and communication, if they are to partner in individualized program planning. Additionally, they should be familiar with characteristics such as resistance to changes in routine or environment, sensitivity to sensory stimulation, and stereotyped movements may also be observed in varying degrees. According to the Connecticut Guidelines for Educating Children and Youth with Autism Spectrum Disorders (2008), teachers needs to be able to understand the characteristics of ASD; identify the individualized needs of the child and develop a program reflecting needs; recognize strengths and build on these capacities; evaluate evidence-based practices; know when and how to advocate for training; collaborate with other school-based staff on a team; and, ensure accommodations and modifications for their students. Given that the general educator is likely to educate a child with autism in a learning environment with multiple sensory experiences, it is important for him or her to be aware of sensory processing deficits in addition to the triad areas of the disability: communication, behavior, and social reciprocity. As cited in Case-Smith, Weaver & Fristad (2014), sensory processing problems in autism are believed to be an underlying factor related to behavioral/functional performance problems.

Existing practices in delivering evidence-based, content knowledge to and supporting skill development of school-based personnel are inconsistent at best and fall short of what is needed for the professional working with students with ASD. Teacher training programs must include components on the complexity of working with individuals with autism if they are to prepare professionals for the realities of inclusive classrooms. For teachers, new and veterans, to grow professionally, they must be part of learning communities that engage in “examination of assumptions, exploration of existing practice, and formulation of new possibilities” (National Research Center on English Learning and Achievement, 1998). Being grounded in a meaningful activity such as film analysis can be a rich opportunity to address these variables in the context of autism.

Importance of Perspective Taking in Teaching

In a global society, students with diverse backgrounds and learning needs are educated in the same classroom. In order to assist children in developing their own understanding of various values, cultures, motivations, and perspectives, teachers should possess their own knowledge and understanding. If teachers are to provide appropriate opportunities for their students to build these skills, they have to figure out the extent to which diverse learners comprehend context, expectations, directives, and so forth. Teachers are also tasked with developing and/or cultivating dispositional qualities for working with children, particularly those with learning deficits. This can happen more readily when the “shoe is on the other foot”, and teachers have a sense of what the “other” is experiencing in every day contexts.

Social perspective taking (SPT) is both an art and a science. Gehlbach (2012) looked at SPT from data collected on experts and nonexperts through surveys and in-depth interviews. These participants were screened for their SPT abilities, selected based on an SPT criteria, and tasked with viewing video segments of where they had to take the perspective of the individuals viewed in the video and interpret how he or she felt or provide rationale for certain actions. Gehlbach found that the likelihood of demonstrating SPT was a function of whether participants viewing the segment had a level of connection with the content of the video, or viewed the content as important to them. He also found that the role participants take on in a given situation also impacts SPT – if a role requires someone to consider the perspective of someone else, they are more likely to attempt considering the thoughts of others. Gehlbach also concluded in this study that to develop accurate SPT of others, participants tend to rely on social cues such as facial expressions, tone of voice, gestures, body position, movement, and so forth. This additionally impacts our study since these particular variables are common deficit areas of those with autism. Teachers need accurate understanding of characteristics of autism in order to interpret cues correctly. Another Gehlbach study (2011) shows SPT improves teacher student relationships, and that accuracy of the perspective of one for the other makes a difference. Motivation for taking the perspective of each other also plays a major role.

Relationships between teachers and students matter; relationships are considered a critical psychological need in strengthening bonds and improving student outcomes (Gehlbach, Brinkworth & Harris, 2011; Ryan & Deci, 2000). This is an important factor to consider in preparing educators to work with disabilities, and in the focus of this study, educators educating students with ASD.

Perspective Taking and Building Inclusive Environments

In their study examining beliefs and attitudes of teachers educating students with disabilities in a general education setting, Swain, Nonness & Leader-Janssen (2012) found the more positive the attitude, the more likely there will be inclusive practices and individualized, appropriate instruction. Their work focused on meaningful learning experiences at the pre-service level, particularly a 24-hour practicum paired with a special education course. Future general education teachers participating in this pairing increased their knowledge of disability deficits and showed an increase in positive attitudes toward this population of learner. Scwartz & McElaudin (2012) found that pre-service teachers who reported higher levels of perspective taking on self-reports had a more supportive reaction and approach to young children demonstrating negative emotions and difficult behaviors as observed by evaluators in an early childhood education study.

De Oliveira (2011) describes a math simulation experience designed to deepen educator understanding of the needs of an English Language Learner (ELL). She created a series of math tasks that were designed to immerse teachers in a language they do not understand in order to experience linguistic difficulties and recognize that content areas are highly dependent on language for making meaningful connections in learning. The researcher reported themes that emerged from collecting reflective statements from 152 pre-service and in-service teachers. The researchers found themes as a result of the study which included reports of frustration, helplessness, fatigue, feeling lost, rushed, overwhelmed, confused, and so forth.

Use of Media to Enhance Perspective Taking

Studies and commentaries support the use of film, documentaries, and other media visual aids as effective pedagogical tools both in terms of skill development and learner engagement (Shalamah, 2009; Remender, 1992). The use of case study methodology as a teacher tool enhances the learning experience for teachers as they visually experience a scenario and apply theory to their practice being witnessed, particularly when utilizing reflective practice. Unfortunately, there is very little research regarding effective media uses to enhance perspective-taking in disability studies, particularly concerning professional development and teacher education (Kale & Whitehouse, 2012). As cited by Burden, Tinnerman, Lunce & Runsche (2010), there is some information on the use of digital simulation with medical and business students to offer "e-learning" opportunities, but the field of education has not been as prolific in studying instructional uses of technology for simulating affective and reality-based experiences for teachers. Burden et. al (2010) created a video simulation of an IEP meeting which was viewed and discussed by pre-service K-12 special education teachers depicting three difference meeting scenarios; viewing these pieces increased participant understanding of what could be expected when participating in an actual meeting. Further, follow-up dialogue with participants revealed that their comfort level in "real" IEP meetings was increased as a result of reviewing the simulation videos. Dotger & Smith (2009) saw improved reflections and personal critiques on professional interactions and boundaries as a result of simulated parent-teacher conferences and related situations. In using a case study and simulation experience, novice teachers had the opportunity to develop a sense of self in a contrived social context where they could make mistakes, learn the rules of appropriate engagement, experiment with ways of reasoning, and reflect on each other's points of view in a controlled experience; the researchers reported that this experience led to participants becoming educators who are "aware of the breadth and fluidity of teacher identity." (p. 178)

Research Questions

There is a need for research on the use of film as a tool to develop perspective taking in teachers, particularly concerning the perspectives of those with diverse learning needs. If a role requires professionals to consider the perspective of someone else, they are more likely to attempt considering the thoughts of others and perhaps build better relationships and rapport. Can this be accomplished – the understanding of such a need- through the viewing of a film? Perhaps an understanding of deficits can lead to an improved attitude and belief system toward the individual with autism or related disability. Research questions were based on the task of viewing an instructional, simulation film on autism by teacher and other school-based candidates. Will preserivce teachers demonstrate knowledge/understanding of the deficit characteristics exemplified by children and youth with autism? Will the film lead to perspective taking skills concerning individuals with autism that are aligned with known needs in the literature?

Method

This project undertook three different aspects. There were specific methods used for film development, film field-testing, and post-testing of teachers and teacher candidates viewing the final film segment.

Film production: The development of the simulation. For the production of the film, the researcher worked with two individual students with autism and their father in the film development and production process, since all had experience in filmmaking and with autism spectrum disorders. Film activities ranged from scriptwriting to storyboarding to casting. Children with autism took the lead on concept formation, film writing, narrating, and directing. The researcher with her film crew engaged in blocking, rehearsal, film shoots, editing, and formatting to complete a nine-minute short film. The film was shot first person, meaning that is was shot through the lenses of a child possessing this disorder. The setting is in a middle school math classroom. A teacher candidate with a background in theater portrayed the math teacher. The researcher portrayed the paraprofessional. All other actors portraying teachers, instructional assistants, or general education students, had an autism spectrum disorder or were a family member of someone on the spectrum.

The film was shot with special care to simulate the experience a child with autism has navigating the general education environment. The filmmakers attended to filming techniques such as speed time, blurring of images, emulsification of noise, fast cut technology, and other editing features to create a feeling of disorientation or hyper-focus. Most of the film shots were captured in one take to give the feeling of being in the body of that child, most often focused on the floor or on seemingly superfluous details like what contents were on the teacher's desk or what peers were wearing or vocalizing (particularly concerning video games or other adolescent activities). The simulation shot through the eyes of a child with autism involved walking down the hall and entering a math classroom. There is a math lesson that is conducted as the child experiences an onslaught of sensory experiences, anxiety, distractions, and literal experiences. There is a fire drill event leading to the child having a "melt down" or physical shut-down due to sensory overload and being brought to the special education teacher who guides the child gently to safety away from the sensory stimuli. The aim of the film was to present typical areas of difficulty faced by a child with autism, such as pragmatics, obsessive interests, literal/concrete thinking, sensory integration, attention, executive functioning, anxiety, and emotional regulation.

Field-Testing and Piloting. Upon completion of the initial product, field-testing was conducted with an initial screening of the footage. A total of 11 experts reviewed the film for field-testing and gave feedback on accuracy, clarity, relevance, impact, and potential as a professional development tool in the field of education. In addition to three general educators and two special educators, the film was reviewed for content by a(n) psychologist, literacy specialist, occupational therapist, autism specialist, autism advocate, and social worker. Most feedback was related to the placement of written text and some of the audio. A majority requested a longer length film that included other sensory experiences such as the lunchroom, bus, recess, and hallway transitions. Field-testers, upon informal interview, made recommendations for critical discussion questions to use in facilitating dialogue post viewing such as communication skills, inclusion, sensory overload, literal thinking, accommodations and modification for general education teachers, and collaboration between general and special educators (and related service staff).

After making suggested revisions to the film and post-test, the researcher piloted the film for qualitative feedback with 30 post-baccalaureate initial certification teacher candidates during two Special Education introductory classes over two summer sessions. The candidates were graduate

students. They were asked to reflect on the simulation as a reflection located in an electronic course management system. These reviewers overall reported a deepened understanding for what children on the spectrum can go through in terms of core deficits of communication, behavior, and social reciprocity, as well as sensory overload. Most expressed a sense of empathy and willingness to make modifications in their classrooms to support their specific needs. Viewers reported feeling "very stressed out", "confused", "overwhelmed", and "exhausted" from the film and reported an understanding that those with autism may come away from the general education classroom with a similar affect. These reactions helped solidify the final post-test instrument and final film edits.

Results

As a result of the completion and dissemination of this film on autism revised on reviewer feedback, pre-service and in-service teachers demonstrated improved perspective-taking with respect to children and youth with ASD during the pilot process of film review.

Participant Post-testing. The film was presented to pre-service and in-service teachers in Connecticut. Five hundred participants were comprised of 400 pre-service teacher candidates, 38 pre-service administrator candidates, and 52 other school-based personnel candidates (occupational therapy, physical therapy, speech-language, and so forth). Immediately following the viewing, participants completed a 10-item "test" with items specific to the lecture content delivered by the general education "teacher" from the film. Viewers were not told in advance they would receive a "test" on the lecture they were about to view in the film. This was done purposefully so as not to direct their attention to details other than the affective experience of "being in the classroom as a child with autism". Additionally, participants were asked to reflect on their own learning given the content of the film and information presented, both in class and as part of an electronic discussion board.

Table 1.
Responses to Math Lecture Quiz

#	Item /prompt	**Don't Know**	**Math**	**Literature**	**Left Blank**	**Other**
1	*What topic (s) did the teacher present in the classroom lecture? List topics and explain how you know these were covered using*	425	28	3	14	30

	*specific examples from film clip.**					
		Don't Know	**chocolate**	**candy**	**Left Blank**	**Other**
2	*What was inside the red cup on the teacher's desk?#*	12	426	15	17	10
		Don't Know	**Yes**		**Left Blank**	**Other**
3	*Was the teacher's explanations for any theories described within the lesson accurate? How do you know? Use examples.**	424	16		28	30
		Don't Know	**Math is calling**	**math**	**Left Blank**	**Other**
4	*What was the title of the worksheet assigned in class?#*	14	420	15	29	22
		Don't Know			**Left Blank**	**Other**
5	*What details did the teacher use to describe Einstein in the class lesson? List as many details as you can remember.**	459			9	32
		Don't Know	**Until 2:15**	**15 minutes**	**Left Blank**	**Other**
6	*How much time was given to complete assigned math problems? #*	375	55	61	9	0
		Don't Know	**Dragon**	**Toy/Mythical creature**	**Left Blank**	**Other**

7	*What creature was on the teacher's desk? #*	85	378	45	11	66
		Don't Know	**Nothing**		**Left Blank**	**Other**
8	*What do you remember or understand about the content presented in the classroom lesson you just viewed?**	50	420		20	10

Note. Item prompts are items taken from the post-viewing quiz and viewer responses are listed to the right of the items. This table consists of a frequency count of viewers and responses. Items focused on * = academic-focused details or # = superfluous details.

Due to the multitude of sensory distractions and heightened anxiety often experienced by children and youth with autism, these students tend to focus on what may be considered unimportant by the teacher. These data demonstrate that this was the case for viewers put in this simulated experience viewing this film on ASD. They focused on details that were not important to the academic content with such precision and memory, yet were unable to capture the essentials of the standards-based lecture. Viewers were able to experience the root of why this was the case and identified sensory overload at the root cause of learner issues.

The use of electronic reflections allowed participants to continue the dialogue outside of the classroom simulation experience and comment on each other's reactions and feedback. Teachers' comments on the filmed lesson simulation experience through the electronic submissions indicated themes of perspective-taking of students with ASD (Table 2).

Table 2.

Qualitative Feedback on the ASD Film Post-Viewing [Themes]

As a result of watching this film, I experienced…

Perspective	Sample Quotes/Comments
Empathy	(How) Hard (it is) to be a learner with all the sights and sounds getting in the way – felt confused. (I) Could not understand lecture, directions, or content topics. Felt distracted by chocolate and medieval images. (I had) Sadness for the student. I had empathy for what the student had to go through during the lesson. It would be hard to communicate my needs if I was a student in this situation.
Sensory Needs	I had sensory overload. Startling. Jolting. Muffled noises and glaring lights – wanted them to go away. Wanted to adjust volume or the color on the images to make them clearer. More aware of how much the learning environment has sensory input that might bother a student or trigger something in them.
Physical Discomfort	It aroused my anxiety levels. I felt uncomfortable. What it feels like to be confused – I wanted to run and scream and shout to get away from the film footage.
Awareness	Gained perspective on how paying attention to everything can interfere with learning. Could remember the name brand for the candy in the cup but could not remember any items from the math worksheet because of the classroom experience.

	Desire to learn more about helping a child with autism now that the needs are understood. A student with autism may not be able to pay attention given everything else going on around them. Behaviors of kids with autism may be their way for communicating in a stressful situation.
Need for Accommodations/Modifications	Encouraged – I am beginning to understand why a student with autism acts a certain way so I think I can try to make adjustments that will meet his or her needs. Teachers can make a difference by anticipating how their students with autism may get distracted by aspects of the learning environment and can make adjustments prior to the lesson or during the instruction.

In general, participants reported high levels of perspective-taking for their "student" with autism presented in the classroom film simulation. Many reported a desire to support him or her and create an inclusive environment to prevent some of those anxiety-provoking moments. Viewers responded thematically of feeling helpless, lost, and frustrated as a result of their experiences in the simulated film classroom. A majority of viewers commented on the power of media to enhance perspective-taking given the chance to view this film. Given the lecture quiz on content, participants failed on items related to academic-focused detail and exceeded in superfluous detail.

Conclusions and Implications for Future Use

This project focused on the development and dissemination of an instructional case study film for use in a special education course for general education teachers. Teacher educators must be equipped with innovative tools for general and special educators to develop the knowledge, skills, and perspective-taking necessary to meet the needs of increasing numbers of children with disabilities. Simulations such as the film described herein can become part of the solution to breaking down barriers of not knowing the extent to which core deficits impact the educational experience for a child with a disability.

As a result of the completion and dissemination of this instructional video on autism, teacher candidates and advanced teachers demonstrated knowledge/understanding of the deficit characteristics exemplified by children and youth with autism. The film leads to perspective-taking skills concerning individuals with autism that are aligned with known needs in the literature. Further there was evidence of strengthened perspective-taking skills concerning individuals with exceptional needs. We also learned about the increased need for multi-media research in the areas of disabilities studies, particularly preparing teachers to work with diverse populations, and how multi-media simulations have the potential to increase the understanding of candidates and take down barriers.

Approximately 50% of viewers requested a version of the simulation that showed best practice approaches using the same scenario. They were interested in how the educators could have supported the child more or been more proactive in preventing the melt-down occurrence. De Oliveira (2011) offered a second phase to her math simulation research project where participants got to experience accommodations, modifications, and instructional strategies that aided their performance in solving math puzzles in languages they did not know and greatly benefitted by reflecting on specific tactics such as modeling, small step directions, paraphrases with extra information, and so forth.

Connecticut faces a compelling problem in the area of teacher education and preparing practitioners to work with the rapidly growing autism community. It is important to note that Connecticut has a set of guidelines for educating children and youth with autism; however, tools like film and webinars capturing perspective-taking revelations do not exist. Not every state has state autism teaching competencies, leaving schools and districts to their own devices in figuring out how to serve this population. Film tools as the one described in this study are an important approach to meeting the needs of Connecticut and every other state and nation tasked with educating children with autism and other exceptional learning needs. In conclusion, there were

clear albeit simple data to answer our research questions that have far reaching implications. Candidates demonstrated knowledge/understanding of the deficit characteristics exemplified by children and youth with autism. The film led to perspective-taking skills among pre-service and in-service teachers concerning individuals with autism that are aligned with known needs in the literature.

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Comparing Student and Teacher Perceptions of the Importance of Social Skills in a Self-Contained Setting

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Abstract

Implementation of social skills deemed appropriate for use in school is important for student success. Students with emotional and behavioral disorders often fail to use these social skills, requiring intervention to facilitate their use. Results related to social skills interventions have been mixed; one suggested reason for this is the lack of cultural relevance these social skills have to the lives of students. This study was designed to determine (a) the perceptions of students and teachers in a self-contained school setting of the importance of commonly taught social skills and (b) if there were any differences between age, ethnicity, gender, or role (teacher or student) related to perceptions of importance. Although some differences were found among the categories of skills, results of this study indicated that, overall, students and teachers in a self-contained school setting felt social skills were important. Implications for research and practice related to social skills interventions are discussed.

Comparing Student and Teacher Perceptions of the Importance of Social Skills in a Self-Contained Setting

The use of effective and appropriate social skills is essential for academic success in school, during post-secondary transition (e.g., employment, higher education), and for independent living as an adult (Cumming et al., 2008; Herbert-Myers, Guttentag, Swank, Smith, & Landry, 2006; Konold, Jamison, Stanton-Chapman, & Rimm-Kaufman, 2010; Segrin & Taylor, 2007). Students who use social skills appropriately at school are perceived more positively by teachers and peers, which is correlated with higher achievement and more positive feelings about school (Konold et al.; McClelland, Morrison, & Holmes, 2000; Meier, DiPerna, & Oster, 2006; Segrin & Taylor; Warnes, Sheridan, Geske, & Warnes, 2005). Students who fail to use social skills appropriately are often linked to a variety of negative school outcomes, including rejection by peers and teachers, academic deficits in academic instruction, and higher rates of problematic

behaviors (Gresham, Elliott, Cook, Vance, & Kettler, 2010; Lane, Barton-Arwood, Nelson, & Wehby, 2008; Mikami, Huang-Pollock, McBurnett, & Hagnai, 2007).

Social skills are defined as those that are exhibited by students to access a particular social task within a particular environment (Gresham, Sugai, & Horner, 2001; Gresham et al., 2010). The social skills needed for access vary greatly depending on the context in which students interact (e.g., collaborating during a group activity, collaborating on the playground to play basketball). Social competence is defined as a student's ability to interact within varying social environments in a positive manner that maintains strong interpersonal relationships (Gresham et al., 2001; Gresham et al., 2010; Warnes et al., 2005). Mastery of these individual social skills in a variety of environments assists in the development of social competence (Grehsam et al., 2001).

The research defines a variety of social skills deemed appropriate and effective for use in school (Herbert-Myers et al., 2006; Konold et al., 2010; Lane, Pierson, & Givner, 2004; McClelland, Morrison, & Holmes, 2006; Rutherford, DuPaul, & Jitendra, 2008). These skills include (a) teacher-pleasing behaviors (e.g., raising hands, waiting quietly for instructions), (b) assertion of opinion and needs in an appropriate manner, (c) self-control of emotions, (d) cooperation, and (e) peer-pleasing skills (e.g., communicating with peers appropriately, following rules) (Lane, Pierson, & Givner; Herbert-Meyers et al.; Meier et al.). Implementation of these social skills in a manner deemed appropriate by teachers and administrators in the school environment leads to positive outcomes; students who fail to do so are often at-risk for rejection by teachers and peers (Murray & Greenberg, 2006; Rutherford et al.).

This rejection can lead to deleterious effects on student engagement and achievement (Herbert-Meyers et al., 2006; Konold et al., 2010; Rutherford et al., 2008). Students who are socially rejected at school often feel less connected to their peers and the school environment, causing them to have issues with attendance and engagement (Panacek & Dunlap, 2003). Additionally, as communication and collaboration have been identified as the most important skill needed for postsecondary employment, rejection by peers can limit these students opportunities to practice communication and collaboration with others which in turn impacts postsecondary outcomes (Cumming et al., 2008; Elksnin & Elksnin, 2006; Lane et al., 2006).

Students with emotional and behavioral disorders (EBD) often utilize social skills that are not appropriate within school contexts; in fact, one of the identifying characteristics of EBD is the inability to interact appropriately with peers and teachers (IDEA, 2004). Students with EBD may display verbal and physical aggression, impulsivity, and deficits in communication that impact their ability to maintain relationships (Gresham, Sugai, & Horner, 2001; Hill & Coufal, 2005; Johns, Crowley, & Guetzloe, 2005). Therefore, it is important for educators working with these students to address their social interactions with others through individualized intervention.

When considering social skills interventions for students with EBD, it is important for educators to remember that social skills are very closely aligned with culture and context (Cartledge, Kea, & Simmons-Reed, 2002; Cartledge & Loe, 2001; Hart, Cramer, Harry, Klingner, & Sturges, 2009). The expectations for social skills and behaviors exhibited in the home or community may be very different than those expected at school (Hart et al.; Siperstein, Wiley, & Forness, 2011). Social skills used with peers may vary drastically from those used with adults in a school setting.

Additionally, social skills and behaviors may vary by student characteristics within the school environment (e.g., socioeconomic status, demographics) (Siperstein et al., 2011). Interventions for students with EBD should consider these cultural and contextual variations in order to increase their effectiveness (Hart et al.; Siperstein et al.).

Social Skills Interventions in the School Environment

In order to address the development of school social skills, teachers in the general education environment often embed learning opportunities for these social skills as a part of the natural school day (Elksnin & Elksnin, 2006; Korinek & Popp, 1997). These experiences occur within group activities (e.g., participation in games, directions related to working in groups), incorporation of social skills as a part of the curricula (e.g., reading a story about a character who uses or does not use appropriate social skills), and through conversations with teachers (Elksnin & Elksnin, 2006). Little direct instruction of social skills happens, as teachers report a lack of training concerning social skills instruction in general education (Dobbins et al., 2010).

Students with disabilities often struggle with the mastery of social skills embedded in the general education curricula, simply because modeling and explanation are not explicit (Maag, 2005). Specifically for students with EBD, the appropriate approach to teach social skills is through direct and explicit instruction of the targeted skills (Barton-Arwood et al., 2005; Bullis, Walker, & Sprague, 2001; Johns et al., 2005; Goldstein & McGinnis, 1997; Gresham, Sugai, & Horner, 2001; Lane et al., 2006; Maag, 2005; Rotheram-Borus et al., 2001; Rutherford, DuPaul, & Jitendra, 2008). Direct instruction of social skills includes (a) discussion of inappropriate examples of the social skills, (b) direct instruction of implementation of appropriate examples of the skill, (c) modeling of the skill, (d) role-play of the skill with immediate corrective feedback by the teacher and peers, and (e) practice with the generalization of the skill to other people or environments (Johns et al; Goldstein & McGinnis; Gresham, Sugai, & Horner; Maag, 2005).

Effectiveness of Typical Social Skills Instructional Techniques

Although direct instruction of social skills is the accepted intervention for students with EBD, researchers have reported mixed results of its effectiveness (Bullis, Walker, & Sprague, 2001; Gresham, Sugai, & Horner, 2001; Lane et al., 2006; Maag, 2005). Several conclusions and recommendations for practice relative to these mixed results have been suggested. First, social skills interventions often are universally applied to students with EBD without consideration of (a) whether the instruction is needed (e.g., pretest of student skills, observations of student) or, (b) the reason behind the skill deficit (e.g., knowledge related to the implementation of steps in the social skill, fluency in implementation of the skill, motivation to implement the skill) (Bullis, Walker, & Sprague; Gresham, Sugai, & Horner; Maag, 2005).

Another suggestion concerning social skill intervention effectiveness maintains that most direct instruction of social skills occurs in environments unrelated to natural implementation of the skill, which limits generalization into other situations (Johns, Crowley, & Guetzloe, 2005). Additionally, the skills being targeted for instruction may not be an appropriate or relevant replacement for the skills that students exhibit (Barton-Arwood et al., 2005; Maag, 2005). This may be because the replacement skill being taught does not provide the same reinforcement to the student as the skill being exhibited or the replacement skill is not culturally relevant to the

student, thereby limiting a student's motivation to use the skill (Cartledge, Kea, & Simmons-Reed, 2002; Cartledge & Loe, 2001; Hart et al., 2009).

Impact of Cultural and Linguistic Diversity on Social Skills Instruction

The literature related to interventions for teaching social skills in the school environment to students from culturally and linguistically diverse backgrounds is limited in scope (Cartledge, Singh, & Gibson, 2008). However, researchers agree that it is important to understand the culturally-based social skills that students are taught in the home and how they might be discrepant from the skills appropriate for school (Cartledge & Kourea, 2008; Cartledge, Singh, & Gibson, 2008). It is important for educators to make these differences and discrepancies noticeable to students from culturally and linguistically diverse backgrounds, and to support the development of skills appropriate for school while honoring the home cultures of the students by building skill development on skills that students' view as important for them to learn and relevant to their personal interactions.

Direct and explicit instruction of social skills to students from culturally and linguistically diverse backgrounds is an effective method for increasing understanding of targeted social skills (Cartledge & Kourea, 2008; Cartledge & Loe, 2001; Cartledge, Singh, & Gibson, 2008; Chamberlain, 2005; Lo, Mustian, Brophy, & White, 2011). During this direct instruction, educators must make it obvious to students that learning school-appropriate social skills does not mean that the culturally-based social skills learned at home are inappropriate, rather they may not be the most effective skills to implement in the school environment (Cartledge & Loe, 2001); additionally, educators can make it clear that social skills being targeted for instruction are often closely related to the skills students' view as important within their home environments. Critical conversations about social skills used within different environments are important to show students that different sets of social skills, or varied nuanced implementations, operate at different times. One way to engage students from culturally and linguistically diverse backgrounds in this conversation is to include peer models from a similar background in the intervention (Lo et al., 2011).

When implementing social skills interventions for students from culturally and linguistically diverse backgrounds, research indicates it is important to consider the students' experiences and how they understand appropriate social interaction (Cartledge, Singh, & Gibson, 2008). To increase the effectiveness of the intervention, materials used during instruction should reflect the language and communication style of students as well as experiences relevant to their natural environment (Cartledge & Loe, 2001; Chamberlain, 2005). Interventions should reflect the cultural values of the home and community and should consider student perceptions of a skill's importance and relevance to their lives (Cartledge, Singh, & Gibson, 2008). Students who view a skill being learned as relevant and important are more likely to be engaged with the intervention process (Cartledge & Kourea, 2008; Cartledge & Loe, 2001; Chamberlain, 2005).

To this end, the purpose of the present study was: (a) to identify perspectives of teachers and students with EBD in a self-contained school setting related to their perceptions of the importance of school-appropriate social skills and (b) to explore differences that may exist in these perceptions across gender, age, and ethnicity of students. Specifically, the following research questions were addressed: (a) What perspectives do teachers and students with EBD in a

self-contained school setting have related to the importance of school-appropriate social skills? (b) Are there any differences in the perceptions of students with EBD placed in a self-contained school setting related to the importance of social skills appropriate for use in the school environment among students of different genders, ages, and ethnicities? (c) Are there any differences in the perceptions of importance of social skills among teachers and students with EBD in a self-contained school setting?

Method

In order to answer the research questions, a survey research design was used to collect information about the perceptions of teachers and students with EBD in a self-contained school setting related to the importance of social skills. Participants were recruited from a self-contained school for students with EBD in a large urban school district located in the Southwest. Respondent data were analyzed both descriptively and using an analysis of variance to determine if there were any significant differences between groups of students based on age, ethnicity, or gender, and also if there were any differences between students and teachers.

Participants

The participants in this study were 50 students identified as having an emotional or behavioral disorder by a multidisciplinary team and who were receiving their educational services in a self-contained school setting; this setting was chosen as social skills interactions are important for this population to learn to move into lesser restrictive environments. All grade levels (e.g., elementary, middle, and high school) were reflected in student participants. Additionally, 18 teachers who worked at this self-contained school participated. Parent consent forms and a letter describing the study were discussed and sent home with students at the school by the principal and teaching staff. One week after the initial distribution of these consent materials, a second round of letters and consent forms were sent to parents. Once consent forms were signed and returned to the school, the teaching staff reviewed assent forms with the students and they were signed on the school site. Teacher consent forms were discussed and distributed by the research team at a faculty meeting after school. Only licensed special education teachers were included in this study. Demographic information for all participants is located in Table 1.

Table 1

Demographic Information for Student Participants

Demographic Characteristic	Number of Participants
Student Demographics (n = 50)	
Sex	
Male	42
Female	8
Ethnicity	
White	16
Non-white	34
Age	
9-14	29
15-22	21
Teacher Demographics (n = 18)	
Sex	
Male	3
Female	15
Ethnicity	
White	13
Non-white	5
Number of Years Teaching	
1-3	1
4-7	4
8-11	3
12 or more	10

The school in which the study was conducted is a self-contained school for students with emotional and behavioral problems. The school provides instruction for grades kindergarten through 12th grade. A special education teacher and an instructional assistant are assigned to each classroom, and a variety of intervention and behavior specialists also work at the school to support the emotional and behavioral needs of the students. The focus of instruction is on the emotional and behavioral needs of the students through academic, standards-based instruction. All students at the school are placed through an IEP team decision.

Instrumentation

To answer the research questions posed in this study, an adapted version of the adolescent and elementary *Modified Teacher/Staff Skillstreaming Questionnaire* (Dobbins et al., 2010; Goldstein & McGinnis, 1997) was used by teacher and student participants to determine their perceptions of the importance of social skills commonly taught through direct instruction curricula. Dobbins et al. (2010) granted permission to adapt the *Modified Teacher/Staff Skillstreaming Questionnaire* for use in this study. The modified questionnaire was developed from the original *Teacher/Staff Skillstreaming Questionnaires* from the elementary and adolescent versions of the *Skillstreaming* curricula (Goldstein & McGinnis, 1997; McGinnis & Goldstein, 1997). The modified questionnaire combined skills from the two versions of *Skillstreaming* and contained questions related to 87 social skills found in the curricula (Goldstein & McGinnis, 1997; McGinnis & Goldstein, 1997). The teachers were asked to rank the type and level of instruction they received in their preservice or inservice training related to these social skills. The statements were categorized into six categories, following the schema developed by the authors of *Skillstreaming* (Dobbins et al.). These categories were: (a) Classroom Survival Skills/Beginning Social Skills, (b) Friendship-Making Skills/Advanced Social Skills, (c) Skills for Dealing with Feelings, (d) Skill Alternatives to Aggression, (e) Skills for Dealing with Stress, and (f) Planning Skills.

The *Modified Teacher/Staff Skillstreaming Questionnaire* was revised to shorten and streamline the survey, which resulted in the *Perceptions of the Importance of Social Skills Questionnaire* used in this study. The final version of the revised questionnaire contained 47 statements (see Appendix A for the final version of the instrument); the categories used in the original questionnaire were maintained. Two versions of this questionnaire were developed (one for students and one for teachers), but both versions followed the same structure. Participants were provided with a stem at the beginning of each group; for students, the statement read "I think it is important for me to learn how to…" and for teachers it read "I think it is important for students to learn how to…". The stem was followed by a statement of the different social skills commonly taught to students with EBD (e.g., "I think it is important for me to learn how to make a complaint against someone else."). Participants were asked to rank their agreement with each statement on a 5-point Likert scale.

Since the participants in this study represented a wide grade-level span (e.g., elementary, middle, high), skills from the elementary and adolescent versions of the *Skillstreaming* curricula were analyzed. Specific statements that were found in both versions of the curricula were selected for inclusion in this study to ensure that the skills being analyzed were appropriate for the different age groups represented. Statements that were included in only the elementary or secondary versions were eliminated. Most of the skills addressed at the two different levels were similar in

structure. All statements were written at a 3rd-grade reading level to ensure access to the written material for all students participating.

In addition to the questions on the survey, students were asked to self-identify their ethnicity from a series of eight categories (e.g., African American, Asian American, Caucasian American, Latino/a American, Middle Eastern American, Native American, Pacific Islander, or Other); for age, students were asked to identify with one of four age categories (e.g., 9-11, 12-14, 15-18, 18-22). After data collection, it was found that there was not a large enough *n* in all categories of ethnicity for analysis, and some categories had an $n = 1$ (e.g., Latino/a American, Native American, Pacific Islander). For age, there were only 9 respondents in the 12-14 category and 5 respondents in the 18-22. Therefore, these categories were collapsed for analysis purposes. Students were given an identity code of White or Non-White based on their original identification, and were given an age code of 9-14 or 15-18.

Procedures

At this self-contained school, social skills instruction is a component of the daily schedule. With the assistance of the principal, teachers who taught social skills in grades 3-12 were recruited to conduct the survey during social skills instructional time. Only responses from students who had returned signed parental consent and student assent forms were included in the data analysis. Participating students were assigned an anonymous identification number that was used to deidentify their responses to the survey.

Paper versions of the surveys were distributed to students during their social skills instruction time during one instructional day; students who were not in attendance on that day were given the survey to complete on a make-up day later in the week. Teachers were given a protocol to read to students that stressed the voluntary nature of this survey and provided directions for its completion. Following the directions, the teachers read each statement aloud to support the comprehension of students who had reading difficulties; students could request the teacher reread statements for clarification. The research team was on campus during data collection to ensure the protocols were being followed and to address any concerns. Following the completion of the survey, teachers placed the student surveys in an envelope that was delivered to the research team for analysis. Teachers maintained a checklist of all students who returned consent and assent forms and ensured that all students completed the survey.

Results

Demographic information and responses from teachers and students to the *Perceptions of the Importance of Social Skills Questionnaire* were collected using the procedures described. The responses were entered into a database for descriptive and statistical analysis. A member of the research team verified 25% of the entered responses in the database to ensure the research team typed results correctly with a reliability of 100%.

The first research question focused on the perceptions of teachers and students with EBD related to the importance of the skills. Descriptive data were analyzed to determine the range and mean of scores of both groups of participants for each of the six categories of social skills; individual questions were not analyzed (see Table 2). Although there was a wide range in the mean

response score for each category of social skill, it is important to note that both students and teachers reported that they believed each of the social skills were important to know. Overall, respondents indicated that they agreed or strongly agreed that the skills within the category were important to learn (student average of 3.87 or higher for each category; teacher average of 4.27 or higher for each category).

Table 2

Descriptive Statistics of Student and Teacher Responses for Social Skills Categories

	Classroom Survival or Beginning Social Skills	Friendship-Making or Advanced Social Skills	Skills for Dealing with Feelings	Skill Alternatives to Aggression	Skills for Dealing with Stress	Planning Skills
Student						
Range	1.00 – 5.00	2.17 – 5.00	1.00 – 5.00	1.18 – 5.00	1.07 – 5.00	1.50 – 3.50
Mean	4.22	4.08	3.90	4.28	3.87	4.23
Teacher						
Range	4.00 – 5.00	3.60 – 5.00	3.00 – 5.00	3.60 – 5.00	2.79 – 5.00	3.50 – 5.00
Mean	4.62	4.45	4.54	4.54	4.27	4.58

Note. The range reports the mean low-and high scores related to the importance of social skills found in each of the six categories.

To determine if there was a statistically significant difference of overall student perceived importance of social skills across categories, a one-way analysis of variance (ANOVA) was conducted (see Table 3). The results indicated there was a significant difference between reported perceptions of the importance of social skills across categories [$F(1,5) = 7.481$, $p < .001$]. Follow-up pairwise comparison tests indicated that there was a significant difference in respondents' perceptions of the importance of category 1 (Beginning Social Skills) and category 3 (Skills for Dealing with Feelings) ($p < .01$), as well as between category 1 and category 5 (Skills for Dealing with Stress) ($p < .01$) (see Table 4). This indicates that respondents felt that skills related to beginning social skills were more important than skills related to dealing with feelings and dealing with stress.

Table 3

Tests of Within-Subject Effects for Student Perceptions of the Importance of Social Skills

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Category	8.77	5	1.75	7.48	.000*
Error	49.22	210	.234		

Note. *$p < .05$.

Table 4

Pairwise Comparison Between Categories of Social Skills

Social Skills Categories	Mean Difference	Standard Error	Significance
Category 1 (Beginning Social Skills) and Category 3 (Skills for Dealing with Feelings)	0.36	0.84	.002*
Category 1 (Beginning Social Skills) and Category 5 (Skills for Dealing with Stress)	0.39	0.11	0.01*

Note. *$p > .05$.

The second research question attempted to ascertain if there were differences in the perceived importance of social skills across ages, genders, and ethnicities of students. Following data collection and analysis of student demographic data, it was determined there was not a large enough *n* across age and ethnicity groups to conduct an analysis. Therefore, the data were recoded within these two categories. For ethnicity, students were coded as either White or Non-white; for age, students were coded as either 9-14 or 15-21. To determine if there was a significant difference related to the perceived importance of social skills across age groups, a 6 (categories) x 2 (age) ANOVA was conducted (see Table 5). The results indicated that there was no significant difference between age groups [$F(1,1) = 1.00$, $p = .321$].

To determine if there was a significant difference related to the perceived importance of social skills across ethnicity groups, a 6 (categories) x 2 (ethnicity) ANOVA was conducted (see Table 6). The results indicated that there was no significant difference between students from different ethnic groups related to their perceived importance of social skills [$F(1,1) = 2.73$, $p = .105$). Finally, to determine if there was a significant difference related to the perceived importance of social skills across genders, a 6 (categories) x 2 (gender) ANOVA was conducted (see Table 5). The results indicated that there was no significant difference between students of different genders related to their perceived importance of social skills [$F(1,1) = 1.210$, $p = .277$).

Table 5

Tests of Between-Subject Effects for Student Perceptions of the Importance of Social Skills

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Age	17.32	1	5.77	1.00	0.32
Error	151.54	48	3.16		
Ethnicity	0.94	1	0.94	2.73	0.11
Error	16.56	48	.0.35		
Gender	3.80	1	3.80	1.21	0.28
Error	150.91	48	3.14		

Note. $p > .05$.

The final research question dealt with any differences between students and teachers related to their perceived importance of social skills. To determine if there was a significant difference between the roles of participants related to their perceived importance of targeted social skills, a 6 (categories) x 2 (role) ANOVA was conducted (see Table 6). The results indicated that there was a significant difference between students and teachers in their reported perception of social skills [$F(1,1) = 5.054$, $p < .03$)]. This indicates that teachers felt that the social skills were more important to learn than students.

Table 6

Tests of Between-Subject Effects for Student and Teacher Perceptions of the Importance of Social Skills

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Social Skills x Role	5867.46	1	13.06	5.05	0.03*
Error	170.52	66	2.58		

Note. $*p > .05$.

Discussion

This study provides introductory evidence about the perceived importance of social skills that are commonly taught to students with EBD from both the student and teacher perspective. All participants felt that the social skills targeted for instruction were important, although teachers felt the skills were more important than students. There was some significant difference in perceived importance of specific categories of social skills, but students felt similarly about these social skills regardless of varied demographic variables. The findings from this study provide evidence that students with EBD find social skills to be important, thereby suggesting that motivation to learn these skills may not be a factor that is inhibiting mastery of the skills.

Overall Perceived Importance of Social Skills

The first research question explored the overall perceived importance of social skills that commonly targeted for instruction for students with EBD from both the perspective of the students and teachers who work with this population. Among students, there was a wide range of responses (2.83 to 4.00 point differences) across the six categories of social skills. For teachers, the range of responses was less drastic (1.00 to 2.21 point differences) across the categories. However, the average response for each category for both participant groups (e.g., students, teachers) was quite high (3.87 to 4.28 for students; 4.27 to 4.62 for teachers). These numbers indicate that both students and teachers felt that the commonly taught social skills were important to learn. Previous research suggests that one reason that the social skills interventions lack overall effectiveness could be that students have a lack of motivation to learn the skill or that the skill may not be culturally relevant to the student (Cartledge, Kea, & Simmons-Reed, 2002; Cartledge & Loe, 2001; Gresham, Sugai, & Horner, 2001; Hart et al., 2009). Although this may be true for specific skills or based on the way the skill is taught to students, it appears that students think it is important to learn the social skills that have been identified by social skills curricula (e.g., Goldstein & McGinnis, 1997). This is important for teachers, as they may be able

to determine previous knowledge or experience with a particular social skill and make real-life connections for students when implementing social skills interventions.

Because the analysis of descriptive statistics suggested a larger range of means for student responses, an analysis of variance (ANOVA) was conducted to determine if there was a significant difference in student perceptions of the importance of specific categories of social skills. This analysis indicated that students felt that the skills within the category of Beginning Social Skills were significantly more important to learn than skills within the categories of Skills for Dealing with Feelings and Skills for Dealing with Stress. These findings support research that suggests that specific skills may not be as important or culturally relevant to students with EBD (Carledge, Kea, & Simmons-Reed, 2002; Cartledge & Loe, 2001; Hart et al., 2009). It is important to compare the findings from this ANOVA with the overall rankings of the perceived importance of social skills. Although students feel that the overall concept of social skills is important to learn, there may be specific skills that are targeted for intervention that are not relevant to students for a variety of reasons. This is important to consider when targeting social skills for instruction. It may be that the gathering of background information or discussion prior to instruction is necessary so that students understand why a specific skill is being targeted to increase the effectiveness of the overall intervention. Students who understand the reason behind the social skill instruction may be more likely to incorporate the prosocial skill into their overall interactions within their natural environment.

Perceived Importance of Social Skills across Demographic Categories

The second research question focused on determining whether or not there were any differences among the students with EBD of different ages, ethnicities, or genders in their perceptions of the importance of targeted social skills. Findings from the analysis of the student responses indicated that there was no significant difference in the perceived importance of social skills among students of different ethnicities, ages, or genders. In fact, the mean scores of students from different ethnic groups and ages were all within 0.2 points of each other in all categories except for the category of Advanced Social Skills, where there was a 0.5 point difference between the age categories. Although there was no significant difference between genders in the perceived importance of social skills, the mean score of female respondents was higher than that of male respondents by a range of 0.25 to 0.60 points in all categories except for the category of Planning Skills, in which male respondents had a higher perception of its importance than did female respondents. The lack of significance could be related to the small sample of female students who participated in the study ($n = 8$).

These findings are important as they provide further evidence that students with EBD appear to believe the targeted social skills commonly taught are important for them to learn, regardless of their demographic variables. Although the specific methods or steps in teaching these social skills were not analyzed in this study, students with EBD appear to feel that the overall social skills were of high importance for them to learn and master. All categories of social skills for all demographic groups had a mean of 3.70 or higher. Knowing that students with EBD, with a variety of demographic backgrounds, find social skills important to learn in the school environment, should provide educators with motivation to identify common ways that students use the social skills in natural environments.

Perceived Importance of Social Skills Among Teachers and Students

The final research question focused on determining whether or not there were differences between the importance of social skills as perceived by students with EBD and their teachers. The analysis indicated that the teachers felt that the social skills, overall, were more important for students to learn than the students did. The teachers indicated that the social skills within the category of Beginning Social Skills were more important for students to learn than social skills within the category of Skills for Dealing with Stress. When planning for social skills interventions, teachers should ensure that they develop a rationale for learning the targeted social skill, why it is important to learn, and where the social skill can be used within the students' everyday lives. Showing the overall connection of social skills and social competence, allows teachers to develop student understanding of the skills and how the skills will assist students in their natural environments. These findings also indicate that teachers may need to spend additional time developing the rationale and relevance behind social skills.

Limitations

This study had several limitations. First, the sample size was small (n = 50 for students, n = 18 for teachers) and was not balanced relative to demographic variables compared. In particular, the number of male students far outnumbered female students (n = 42 and n = 8, respectively). The sample was chosen from a population of students with EBD who attended a self-contained school and their teachers. Although return rates for students and teachers were both high (67% for students; 80% for teachers), the sample sizes were still low.

Second, the generalizability of findings is limited as the sample used in this study was students with EBD in a self-contained school setting. However, McLeskey, Landers, Williamson, and Hoppey (2010) found that students with EBD are much more likely to be educated in the general education or resource environment than segregated settings. Therefore, the perceptions of the importance of social skills of students in a separate school environment may not be reflective of the overall population. Future research should focus on the perceptions of importance of students with EBD from a variety of placement settings. This group of students was chosen for participation because they have been identified by IEP teams as having such severe emotional and behavioral problems that they cannot be educated on a regular school campus and their responses may provide important information about teaching students with EBD in self-contained settings. As such, the research team felt that the information provided by this sample would be reflective of the perceived importance of an extreme subsection of the population of students with EBD and would provide a baseline for further analysis of the perceived importance of commonly taught social skills. Future research should focus on a larger sample of students with EBD and should balance the demographic variables of respondents.

Conclusions and Implications for Research

To be academically and socially successful in school, it is important for students with emotional and behavioral disorders to understand and use social skills that are appropriate within these environments (Cumming et al., 2008; Konold et al., 2010). Interventions designed to address the social skills of students with EBD should focus on skills educators believe are appropriate for the school environment, but must consider the cultural and linguistic background of students in order

to determine if there is conflict between the implementation of the skill in school and at home (Cartledge et al., 2002; Hart et al., 2009; Siperstein et al., 2011). When planning for social skills interventions, a good starting point is to discuss the skills with students with EBD to determine their thoughts on the skill and the relevance of the skill to their lives.

This study is a beginning in understanding the perceived importance of social skills commonly deemed important to use within the school environments from the perspective of students with EBD and the teachers who work with them. Additionally, this study was designed to determine if there were any significant differences between students of different ethnicities, ages, and genders related to the perceived importance of the skills. The results of this study indicate that the students with EBD perceived certain social skills as being more important for them to learn than others (e.g., Beginning Social Skills are deemed as more important than Skills for Dealing with Stress). However, overwhelmingly, the students felt that all social skills were important for them to learn. This was true for all students regardless of their ethnicity, age, or gender. Therefore, the relevance of the skills themselves to the targeted student population may not be of issue. Findings from this study seem to indicate that commonly targeted social skills are relevant and important to students from a variety of different backgrounds.

Future research should continue to explore not only student perceptions of the importance of commonly targeted social skills, but also explore student perceptions of the way the social skills are taught within the school environment. Although the general skills discussed in this study were considered important by the student population, there was no information related to the methods used to teach the skills or the content of skill implementation within the natural environment. In order to increase the effectiveness of social skill intervention for students with EBD, it is important that the content of the skill be clearly linked to the cultural and natural environments in which students commonly engage (e.g., school, home, community) (Cartledge & Kourea, 2008; Chamberlain, 2005; Maag, 2005). While students might feel the skill is important, the topography of the skill being addressed should mirror the interactions that students have with individuals in their environments to allow for generalization of that skill. Future research should consider the divergence between social skills deemed appropriate for interaction in the school environment and the manners in which the skills are used in everyday life. Identification of these patterns can help target social skill interventions for the particular natural environment in which students interact, and, work towards increasing the likelihood that students will use the skills to impact the academic, social, and transition outcomes for this population.

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Appendix A.

Perceptions of the Importance of Social Skills Questionnaire

Directions. Read each statement. Rate your level of agreement with that statement based on the following scale:

- Circle 1 if you strongly disagree with the statement.
- Circle 2 if you somewhat disagree with the statement.
- Circle 3 if you are unsure of how you feel about the statement.
- Circle 4 if you somewhat agree with the statement.
- Circle 5 if you strong agree with the statement.

Group 1: Beginning Social Skills					
I think it is important for me to learn how to:	*Strongly Disagree*	*Somewhat Disagree*	*Unsure*	*Somewhat Agree*	*Strongly Agree*
1. Listen to others.	1	2	3	4	5
2. Start a conversation.	1	2	3	4	5
3. Have a conversation that is of interest to both people.	1	2	3	4	5
4. Ask an appropriate question.	1	2	3	4	5
5. Say thank you.	1	2	3	4	5
6. Introduce myself.	1	2	3	4	5
7. Introduce other people.	1	2	3	4	5
8. Give a compliment.	1	2	3	4	5

Group 2: Advanced Social Skills					
I think it is important for me to learn how to:	*Strongly Disagree*	*Somewhat Disagree*	*Unsure*	*Somewhat Agree*	*Strongly Agree*
9. Ask for help.	1	2	3	4	5
10. Join in on a desired activity.	1	2	3	4	5
11. Give instructions to others.	1	2	3	4	5
12. Follow instructions.	1	2	3	4	5
13. Apologize after doing something wrong.	1	2	3	4	5
14. Convince others that my idea is the best.	1	2	3	4	5

Group 3: Skills for Dealing with Feelings					
I think it is important for me to learn how to:	*Strongly Disagree*	*Somewhat Disagree*	*Unsure*	*Somewhat Agree*	*Strongly Agree*
15. Know and understand my feelings.	1	2	3	4	5
16. Express my feelings to someone else.	1	2	3	4	5
17. Understand the feelings of others.	1	2	3	4	5
18. Deal with someone else's anger.	1	2	3	4	5
19. Appropriately express affection.	1	2	3	4	5
20. Deal with fear.	1	2	3	4	5
21. Reward myself.	1	2	3	4	5

Group 4: Skill Alternatives to Aggression					
I think it is important for me to learn how to:	*Strongly Disagree*	*Somewhat Disagree*	*Unsure*	*Somewhat Agree*	*Strongly Agree*
22. Ask for permission.	1	2	3	4	5
23. Share things with other people.	1	2	3	4	5
24. Help others.	1	2	3	4	5
25. Negotiate ideas when I have a disagreement.	1	2	3	4	5
26. Use self-control when I am upset.	1	2	3	4	5
27. Stand up for my rights.	1	2	3	4	5
28. Respond to teasing.	1	2	3	4	5
29. Avoid trouble with others.	1	2	3	4	5
30. Keep out of fights.	1	2	3	4	5
31. Problem solve.	1	2	3	4	5
32. Accept the consequences of my behavior.	1	2	3	4	5

Group 5: Skills for Dealing with Stress					
I think it is important for me to learn how to:	*Strongly Disagree*	*Somewhat Disagree*	*Unsure*	*Somewhat Agree*	*Strongly Agree*
33. Make a complaint against someone else.	1	2	3	4	5
34. Answer a complaint against me.	1	2	3	4	5
35. Be a good sport during games or competitions.	1	2	3	4	5
36. Deal with embarrassment.	1	2	3	4	5
37. Deal with being left out.	1	2	3	4	5
37. Stand up for a friend.	1	2	3	4	5
38. Respond to persuasion from someone else.	1	2	3	4	5
39. Respond to failure.	1	2	3	4	5
40. Deal with contradictory messages or confusion.	1	2	3	4	5
41. Deal with an accusation.	1	2	3	4	5
42. Get ready for a difficult conversation.	1	2	3	4	5
43. Deal with group pressure.	1	2	3	4	5

44. Deal with boredom.	1	2	3	4	5
45. Decide on the cause of a problem.	1	2	3	4	5

Group 6: Planning Skills					
I think it is important for me to learn how to:	*Strongly Disagree*	*Somewhat Disagree*	*Unsure*	*Somewhat Agree*	*Strongly Agree*
46. Arrange problems by their importance.	1	2	3	4	5
47. Make a decision.	1	2	3	4	5

Inclusive Education Practice in Southwestern Nigeria: A Situational Analysis

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Glorious Hope Resources International

Abstract

This study presented situational analysis of inclusive educational practice in southwestern Nigeria. The study employed descriptive survey research design. Samples of 131 teachers, 51 parents and 51 head teachers/principals were purposively selected from State Grammar School, Ipakodo Junior Grammar School, Methodist Grammar School, Ijokodo High School and St. Peter College in Southwestern Nigeria. Three research questions were answered. A questionnaire tagged inclusion assessment inventory with reliability coefficient of 0.71 was used to collect data. The data collected were analyzed using frequency counts and simple percentage. The results revealed positive attitude of teachers and negative disposition on the parts of government and parents to inclusive education practice in Southwestern Nigeria. Strong advocacy and re-orientation were recommended.

Inclusive Education Practice in Southwestern Nigeria: A Situational Analysis

Background to the Study

A major problem often encountered by exceptional child in the regular education programme is that of acceptance unto group relationships (Ojo & Adebiyi, 2012). The problem of acceptance remain prevalent as a result of the age long notions and some myths attributed to the existence of special needs persons in many societies, especially in Africa. However, the last three decades have witnessed international debates particularly in developing countries like Nigeria on inclusive education; that is educating students with special needs and non-special needs in the same classroom (Fakolade & Adeniyi, 2009). Inclusion is an educational practice based on a notion of social justice that advocates access to equal educational opportunities for all students regardless of the presence of any visible or obscure challenges. Steinback (2005) defined inclusion as the process of allowing all children the opportunity to fully participate in regular classroom activities regardless of disability, race or other characteristics. The participation here is focused on their capabilities and abilities to bring about productive accomplishment. In this regard, inclusion represents the belief that students with special educational needs should be fully integrated into general education classrooms and that their instruction should be based on their abilities, not their disabilities (Al Zyoudi, 2006 & Alkhatteb, 2003). Thus, inclusive education aim at restructuring schools activities in order to respond to the learning needs of all children (Ainscon, 1995).

For inclusive education to succeed, there are numbers of factors that must interplay. Studies have revealed that some variables could predict the success or failure of the programme. In preparing

for inclusion, attitude, beliefs, expectation and acceptance of people are very paramount. In Nigeria, a number of factors can inevitably prompt the success or failure of inclusive education. These ranges from family, school partnerships, collaboration between general and special education teachers, government disposition, well-structured and constructed individualized education programme plan, parental involvement and disposition as well as societal perception.

Researches by Fakolade & Adeniyi (2009), Arif & Grad (2008) & Jung (2007) have in various instances and locations investigated attitude of teachers towards inclusion. There are some research evidences that reported that positive attitude of teacher could predict successful inclusion of students with disabilities in regular classroom (Sharma, Florin, Lowerman & Earle, 2006, Al-Khatteb, 2004 & Mowes, 2000). For instance Kisanji (1999) reported the finding of UNESCO on teacher education in 14 countries involving all world regions in early 80s, the finding showed that regular classroom teachers were willing to take on responsibility for special needs children, but were not confident whether they have the skills to carry out that tasks. The fear exercised here came out of little knowledge and supportive psychological base.

Furthermore, Desforges & Abouchaar (2003) have submitted that pupils' achievement and adjustment are influenced by parents, family, peer groups and neighborhoodss. Early studies often showed strong positive links between parental involvement and students' academic progress (Desforges & Aboucharr, (2003). Therefore, if there is strong link between the achievement of students without special needs and parental involvement, it can then be inferred that such characteristic will influence the performance of students with special needs in inclusive setting. Furthermore, studies have revealed preconditions for success or failure of inclusion. One of such is parents living in poverty are more likely to be stressed and depressed and this may affect their support for their children with special needs (Larzelere & Patterson, 1990; Harris & Marmer, 1996). Another is the stigma likely to experience by parents of special needs children (Smith, 1996 & Kissane, 2003).

Another critical concern in the implementation of inclusive education is government disposition to the policy statements. With the world declaration on education for all 1990 in which it was mandated for all countries to provide basic education to all children. To this end, basic educational services of quality should be expanded, and consistent measures must be taken to reduce disparities (UNICEF, 1998). Hence, Nigeria government came up with a declaration of universal basic education for all Nigerians not minding their disadvantages in 1999. The revised National Policy on Education (2004) clearly stated that the education of children with special needs shall be free at all level. It further declared that all necessary facilities that would ensure easy access to education shall be provided. The expectation is that, with the proactive implementation of the policy statement, Nigeria government would have moved towards achieving millennium development goals.

However, since the declaration of Universal basic education for all, implementation of this policy statement is far below the expected target now that 2015 is fast approaching in view of deadline set by Millennium Development Goals (MDGS). It is therefore imperative to assess the level of implementation of inclusive education in Nigeria especially in the Southwestern zone that has been setting pace in the educational development programmes in Nigeria.

Research Questions

1. Do attitudes of teachers in inclusive schools in Nigeria favor successful implementation of inclusive educational practice?
2. Do attitudes of parents in Southwestern Nigeria favor inclusive education practice?
3. To what extend has government in Southwestern Nigeria encouraged inclusive education practice?

Methodology

Population

The target population for this study were parents, teachers that are directly involved in inclusive education practice and Head or principals of schools where inclusive education are being practiced in the six states of southwestern Nigeria..

Sample

The samples comprised 131 teachers, 51 parents and 51 head teachers/principals purposively selected from State Grammar School, Eric Moore, Ipakodo Junior Grammar School, Ikorodu (Lagos State) Methodist Grammar School, Bodija Ibadan, Ijokodo High School, Ibadan (Oyo State) and St. Peter College, Abeokuta (Ogun State), Nigeria. The locations selected were schools practicing inclusion/integration.

Research Instrument

The instrument used was structure questionnaire tagged Inclusion assessment inventory (IAI) that is subdivided into four parts (ABCD) Section A was used to generate demographic data. Section B measured teachers attitudes, C measured parental disposition toward inclusion while D measured the extent of government participation in inclusive education practice. The instruments was prepared in four (4) Likert scale (SA, A, D, SD) SA means Strongly Agree; A means Agree; D means Disagree; and SD means Strongly Disagree; Mostly Applicable (MA), Sometimes Applicable (SA); Rarely Applicable (RA); and Not applicable (NA).

Examples probing questions in each of the sections are: Section B **"***Apart from time wastage, there is also wastage of fund on inclusive education,* section C. *"I believed that teachers in conventional school will not attend to the needs of my special needs child"* and Section D. *"Government buys materials / books needed in our school for inclusive education services"*.

Method of Data Collection

Before distributing the structured questionnaire among the participants, the researchers visited each location and explained the intent of the assessment. Parents of the special needs children were consulted during Parents Teacher Association Meeting. Thereafter, the questionnaires were distributed among participants that cooperated with the researchers. Their responses were collected after they have adequately attended to the items in the questionnaire.

Research Design

This study employed a descriptive survey research design to present a situation analysis of inclusive educational practice in Southwestern Nigeria. There was no manipulation of any variable.

Data Analysis
The data collected were collated, coded and analyzed using simple percentage to present situational analysis of inclusive education practice.

Results and Discussion

Research Question One
Do attitudes of teachers in inclusive schools in Southwestern Nigeria favor successful implementation of inclusive educational practice?

Table 1: Frequency counts and percentage showing attitudes of teachers towards inclusive education in Southwestern Nigeria.

S/N		SA	A	D	SD
1	Inability of the teacher to have positive attitude towards inclusive education has great effect on the policy implementation	61 (46.6%)	37 (28.2%)	14 (10.7%)	19 (14.5%)
2	There is nothing wrong in introducing inclusive education services in schools	55 (420%)	56 (420%)	6 (4.6%)	14 (10.7%)
3	The inclusive education services in the school are those I like in the Nigeria educational system	25 (19.1%)	53 (40.5%)	21 (16.0%)	32 (24.4%)
4	If I have my way, inclusive education practice would be given more priority than any other practices in the educational system	46 (35.1%)	38 (29.0%)	16 12.2%	31 23.7%
5	Apart from time wastage, there is also wastage of fund on inclusive education practice	16 (12.2%)	18 13.7%	36 27.5%	61 46.6%
6	The fund spent on inclusive education practices/services could have been used on other aspects of educational systems	21 16.0%	23 17.5%	34 26.0%	53 40.5%
7	It is difficult for teachers to cope with the amount of work that inclusive education practice entail	30 22.9%	32 24.4%	33 25.2%	36 27.5%
8	Inclusive education is difficult to practice because it requires more specially trained teachers	65 49.6%	40 30.5%	17 13.0%	9 6.9%
9	It is difficult to cope with inclusive arrangements because of	70 53.4%	40 30.5%	9 6.9%	12 9.2%

	lack of specialized equipment for teaching children with special education needs in my school				
10	Government does not motivate teachers in inclusive settings, so many teachers left inclusive setting for conventional arrangement	84 64.1%	27 20.6%	7 5.3%	13 9.9%

Results from Table 1 above revealed that on item no 1, 74.8% were in support of the opinion that inability of teacher to have positive towards inclusive education will affect the practice while 25.2% held contrary opinion. Item no 2 revealed that 84.7% supported that these is nothing wrong introducing inclusive education, 15.3% have negative opinion. On item no 2, 59.6% likes inclusive educational practice while 40.4% will not support the practice. The result of item no. 5 revealed that 25.9% believed that the practice waste fund and time whereas 74.1 opined that it is a worthwhile programme. The result on item no 4 revealed that inclusive education should be given higher priority. On item no 6, 66.5% believed that adequate funding should directed toward the programme while 33.5% held contrary opinion. On item no 7, 47.5% believed that it is difficult to cope with amount of work in inclusive system while 52.7% believed that coping with work in inclusive setting is not difficult. Item no 8 revealed that inclusive education will be difficult to practice 80.1% supported the opinion of the item while 19.9% had contrary opinion. Item No 9, revealed that it is difficult to cope in inclusive setting because of lack of supporting equipment. On item 10, 84.7% believed that personnel left inclusive setting because of lack of motivation while 15.2% held contrary opinion.

Summarily, from all the responses, the results indicate that teachers' attitudes favor inclusive education in Southwestern, Nigeria.

Research Question two
Do attitudes of Parents in Southwestern Nigeria favor inclusive education practice?

Table 2: Frequency Counts and Percentage showing Parents Attitude to Inclusive Practices

S/N		**SA**	**A**	**D**	**SD**
1	I will allow my child with special needs to attend non-special schools	6 11.8%	4 7.8%	33 64.7%	8 15.7%
2	If my child with special needs attend non-special school, it will aid his/her psychological wellbeing	3 5.9%	3 5.9%	17 33.3%	28 54.9%
3	If my child with special needs attend conventional school, his/her academic performance will improve	3 5.9%	2 3.9%	7 13.7%	39 76.5%

4	I believe if my child with special needs attend non-special school, it will change his/her orientation about society	2 3.9%	3 5.9%	13 25.5%	33 64.7%
5	I believe that teachers in conventional schools will attend to the needs of my special needs child	2 3.9%	3 5.9%	16 31.4%	30 58.8%
6	I believe that other students that are non-special needs will not maltreat my child with special needs in conventional school	3 5.9%	3 5.9%	18 35.3%	27 52.9%
7	I believe that inclusive education will build inclusive society	3 5.9%	2 3.9%	16 31.4%	30 58.8%
8	Societal orientation about special needs children will change if special needs children are allowed to attend conventional schools	4(7.8%)	2(3.9%)	20 (39.2%)	25 (49.0%)
9	I believe that my child with special needs will achieve his/her full potentials if allow to go to conventional school	6 11.8%	- 0%	21 41.2%	24 47.0%
10	I will not support the idea of allowing children with special needs to attend conventional school	2 3.9%	2 3.9%	23 (45.1%)	24 (47.1%)

Results from Table 2, as revealed by item No 1, indicates 19.6% of the parents with special needs children will like their children attend conventional schools while 80.4% held contrary opinion. Response to item 2 revealed that 11.8% believed that if special needs children attend conventional school, their psychological wellbeing will improve, but 88.2% had contrary idea. Item No 3 revealed that larger percentage (90.2%) did not believe that academic performance of special needs children could improve in conventional school. Responses to items 4 revealed that larger percentage of parents of special needs children opined that the orientation of their children will not change by attending conventional school. Item 5 revealed that 9.8% believed that teachers in conventional school will attend to their children while 90.2% believe not. Item 6 revealed that 88.2% have the fear that non-special needs in inclusive setting will maltreat their children while 11.8% believed not. Item 7 revealed that 90.2% believed that inclusive education cannot build inclusive society while 9.8% held contrary opinion. Responses to item 8 revealed that 88.2% believed that societal orientation will not change even if special needs children attend conventional schools. Item 9 revealed that 88.2% believed children with special needs cannot achieve their full potential by attending conventional schools. While 11.8 held contrary notions. Item 10 revealed that larger percentage do not support the idea of allowing children with special need to attend conventional school. It can be generally inferred from the responses that parents' attitudes to inclusion may not favor successful implementation of inclusive education.

Research Question three
To what extent has government in Southwestern Nigeria encouraged inclusive education practice?

Table 3: Frequency Counts and Percentage that showed the Extent of Government Participation in Inclusive Education Practice

S/N		MA	SA	RA	NA
1	We practice inclusive education in our school	32 62.7%	17 33.3%	2 3.9%	- 0%
2	Government sponsors our teachers on training for quality inclusive education services	7 13.7%	22 43.4%	11 21.6%	11 21.6%
3	Government recruits staff for inclusive education practices	9 17.6%	20 39.2%	14 27.5%	8 15.7%
4	Government monitors/supervises inclusive education programme by constantly visiting schools	8 15.6%	11 21.6%	21 41.2%	11 21.6%
5	Our schools are properly consulted during problem identification associated with inclusive education	4 7.8%	7 13.7%	19 37.3%	21 41.2%
6	Government buys materials / books needed in our school for inclusive educational services	6 11.8%	8 15.6%	18 35.3%	19 37.3%
7	Government equips schools with infrastructure and other learning materials needed in our schools for inclusive education	8 15.7%	6 11.8%	11 21.6%	26 51.0%
8	Government extends financial subsidy for us for inclusive education	7 13.7%	1 2.0%	15 29.4%	28 54.9%
9	Inclusive education practice is considered crucial by government	6 11.8%	6 11.8%	12 23.5%	27 52.9%
10	Non-government organizations assist the schools in promoting inclusive education service	6 11.8%	8 15.7%	8 15.7%	29 56.9%

From Table 3, item 2, 56.8% of the respondents agreed that government sponsors teachers on in service based on the needs for implementation of inclusive education while 43.2% disagreed. Responses to item no 3 indicated that the government recruits staff for inclusive education with positive opinion recording highest percentage i.e. 56.8% against 43.2%. Item no 5 revealed that government did not take supervision of the programme serious with 62.8% agreeing that the programme is not well attended to. Responses to item 4 revealed that government do not mostly

consult different head of schools before the purchase of materials to the schools. The result of item 6 revealed that books and other materials are rarely bought for various inclusive centers with 72.6% of the respondents indicating that materials are not bought. Item 7 revealed that government do not care about necessary infrastructure and other learning materials in the center for inclusive education (72.6% against 27.4%). Item 8 revealed that the centers are not adequately funded. Item 9 and 10 revealed that inclusive education are taken less important in the agenda of government and non-governmental organizations in Nigeria. Summarily, government disposition towards inclusive education in Southwestern Nigeria is not encouraging.

From the above results, research questions two and three revealed the negative stand of parents and government to inclusive education in Southwestern Nigeria. By implication, inclusive education has not enjoyed the needed attitude and support which might be the reason for the less popularity of the programme. Obviously, students with special needs in this region will be socially and emotionally stigmatized by parents who are supposed to provide the necessary support for them. It must be noted according to Desforges and Abouchaar (2003) that there is positive link between pupil achievement and parents support. The evidence of lack of support may constitute major barrier to academic progress of these individuals. Also, government inability to provide necessary assistant may be a major barrier to inclusive education in Southwestern Nigeria.

On the other hand, the positive attitudes demonstrated by teacher as revealed by the result of research question one provides hope because positive attitude and disposition are needed by caregivers to implement the programme of inclusion. This result is in line with Jung (2007), Shippen, Houchins, Ramsey & Simon (2005) and Campbell Glmored & Cuskdily (2003) who all believed that positive attitude is needed by teachers in training and the ones on the job for successful integration of students with special needs in regular classrooms.

Conclusion and Recommendations

Inclusive education is a programme of action for total integration of persons with special needs. This has been advocated for by UNESCO, UN and other international bodies as reflected in various international conferences and conventions. However, major setback to this in Southwestern, Nigeria are perception and attitude of parents and level government participation which are inimical to the success of the program. Hence there is the need for change of orientation toward this programme.

In view of the results of this study, the following are recommended;

- Mass awareness of the plight of special needs should be carried out by the concern agencies and association.
- Parents of special needs as well as public should be educated and reoriented about the right of this excluded group.
- The implementation of the right of people special needs as recommended by united nation should be advocated for through local, state and national assemblies by various associations responsible for the plight and needs of persons with special needs.
- Government should be ready to live up to their responsibility on the issues of persons with special needs through advocacy, lobbying and human right organizations.

Acknowledgement

We acknowledged all the authors we have cited in this study. Also we recognized the contribution of teachers and parents used for this research work as well as our research assistants in person of Mrs. Bukola, Olufemi-Adeniyi, Cythia Adeyemi, Tomi Oluwalade and Sister Titilope Asifat.

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Parent Perspectives on Home-Based Intervention for Young Children with Developmental Disabilities: The Parent-Implemented Communication Strategies (PiCS) Project in Illinois, USA

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Abstract

Parents' perspectives on a home-based, parent-implemented social-pragmatic communication intervention for young children aged 37 to 60 months with limited expressive language are presented in this report. The researchers analyzed the perspectives of seven parent participants in the Institute of Education Sciences-funded Parent-Implemented Communication Strategies (PiCS) project and their family members. Data included individual interviews with the parent interventionists, their spouses, and siblings of the target children, external evaluator findings, and survey responses. The research team employed qualitative research methodology to examine family perspectives on the PiCS project. Three major findings emerged concerning the PiCS intervention: (a) the intervention resulted in changes in the interaction between the parent interventionists and the target children, (b) the changed interaction had a positive effect on the children's social-pragmatic communication skills, and (c) the intervention resulted in positive changes in entire families' interactions with the target children.

Parent Perspectives on Home-Based Intervention for Young Children with Developmental Disabilities: The Parent-Implemented Communication Strategies (PiCS) Project in Illinois, USA

Teaching communication skills to children in their natural environments and involving parents in their children's interventions are important components of current early intervention approaches (Bruder, 2010; Kaiser & Hancock, 2003). Since young children with disabilities typically spend many of their waking hours at home with their parents it is important to partner with parents and provide them with strategies they can use to enhance their children's communication skills. Teaching parents to use instructional strategies that support their children's language development is an important component of an effective and enduring early communication intervention (Roberts & Kaiser, 2011). In addition, some researchers have found that parents can learn new strategies readily and implement them with fidelity (Dunlap, Ester, Langhans, & Fox, 2006; Kashinath, Woods, & Goldstein, 2006; Romski et al., 2010).

Although researchers (e.g., Dunlap et al., 2006; Kaiser & Hancock, 2003; Kaiser, Hancock, & Nietfeld, 2000; Kaiser & Roberts, 2013) have demonstrated that parents are able to learn new

strategies and implement them accurately with their children, it is important to understand parents' perspectives on intervention goals, procedures, and outcomes. If parents do not have positive perspectives on the intervention, the chances they will maintain the use of the newly learned strategies beyond the period of the intervention are low (Reimers, Wacker, Derby, & Cooper, 1995; Turan, Ostrosky, Halle, & DeStefano, 2004). Wolf (1978) referred to the validation of practices as "judgments of social validity" (p. 207). He suggested three levels of *social validity*, namely: (a) the social significance and importance of the goals, (b) the acceptability of the intervention, and (c) satisfaction with the results of the intervention. Historically, intervention programs have been evaluated primarily in terms of outcomes; in other words, did the intervention result in desired changes in behavior? However, this preoccupation with outcomes, which are undeniably important, is limiting. Interventionists also need to gain family perspectives about interventions, which include the social validity of the goals of the intervention and the acceptability of the procedures used as well as the outcomes of the intervention (Gresham & Lopez, 1996; Turan & Meadan, 2011).

Empirical Context for the Current Social Validity Study

The Parent-Implemented Communication Strategies (PiCS) project was a 3-year data-based project funded by the Institute of Education Sciences and focused on the development of family-specific, parent-implemented naturalistic and visual strategies designed to improve the social-pragmatic communication skills of young children with developmental disabilities (DD; see Meadan, Angell, Stoner, & Daczewitz, 2014 for a report of empirical results). By emphasizing family-specific interventions that caregivers can implement in their home environments, the PiCS project aimed to not only teach parents naturalistic and visual teaching strategies but also enhance parents' maintenance of teaching skills and the sustainability of the interventions.

During the first 2 years of the PiCS project seven families with young children (aged 37 to 60 months) with disabilities and very limited expressive language (no more than 10 functional words or manual signs as indicated by the Communication Development Inventory (CDI; Fenson et al., 2007) participated in the project. Parents were trained and coached, in their homes, on the use of four naturalistic teaching strategies (environmental arrangement, modeling, mand-model, and time delay) and three visual teaching strategies (visual schedules, visual rule reminders, and visual task analysis).

Prior to coaching, parents developed social-pragmatic communication objectives appropriate for their children's home routines (e.g., meal time and free play) in collaboration with the PiCS coaches. Two or three coaching sessions on each strategy were conducted each week. Data were collected on both parent and child behavior during naturally occurring parent-child interactions. In addition, parents were asked to self-evaluate their use of the naturalistic and visual teaching strategies.

The primary empirical study employed a single-case multiple baseline research design across strategies within each family to evaluate the effects of the PiCS intervention. The outcomes of the PiCS project were found to be positive (Stoner, Meadan, Angell, & Daczewitz, 2012); parents learned and successfully implemented naturalistic and visual teaching strategies in their homes with their children with DD. The secondary data collected through both formal and informal assessments of the children's language indicated growth in social-pragmatic

communication skills. The outcomes of the PiCS project are reported in another paper (Meadan et al., 2014). One of the goals of the PiCS project was to assess the feasibility and acceptability of the intervention developed within the project. The current report focuses on the social validity of the PiCS intervention.

Purpose of the Study

The purpose of the current qualitative study was to explore the perspectives of family members regarding the PiCS intervention and answer the following research question: What are the perspectives of family members regarding the PiCS Project, a home-based intervention program designed to train and coach parents to implement naturalistic and visual teaching strategies in the natural environment? In other words, do family members perceive the PiCS intervention as socially valid?

Method

Qualitative Research Design

We employed qualitative research methodology to examine family perspectives on the PiCS project obtained through in-depth interviews; specifically, we used a grounded theory approach in which researchers identify categories and concepts that emerge from the data and link those concepts into theories (Strauss & Corbin, 1998). Several qualitative researchers (e.g., Brantlinger, Jimenez, Klingner, Pugach, & Richardson, 2005) have contended that studying multiple cases can lead to better comprehension and better theorizing, and gives the assurance that events in one case are not "wholly idiosyncratic" (Miles & Huberman, 1994, p. 172). In the current study we used both social comparison and subjective evaluation methods (Kazdin, 1977) to triangulate and validate the findings. Table 1 includes information about the purposes and types of assessments we conducted.

Participants

The participants in the PiCS project during the first 2 years were members of seven families and all participated in this social validity study. The seven parent interventionists (those who implemented the intervention) included six mothers and one father between the ages of 32 and 55. The seven noninterventionist parents were six fathers and one mother between the ages of 30 and 54. All families earned income placing them in a middle socio-economic status. The target children included three girls and four boys, between the ages of 37 and 60 months with very limited expressive language (fewer than 10 functional words). Five of the children had been diagnosed with Down Syndrome, one with developmental delays, and one with autism spectrum disorder (ASD).

Table 1
Methods Used to Evaluate Family Members' Perspectives on the PiCS Project

	Perspective on the Goals	Perspective on the Procedures	Perspective on the Outcomes
Social Comparison: Purpose	Identify behaviors of target children that distinguish them from	Identify interventions or procedures used with young children with disabilities	Evaluate the outcomes of the intervention by comparing the behaviors

	peers who are similar demographically	targeting the same or similar behaviors	of the target children to those of peers
Social Comparison: Assessment	Formal assessments, preintervention	Literature Review	Formal assessments, postintervention
Subjective Evaluation: Purpose	Survey the opinions of family members regarding socially important skills/deficits of the target children	Assess the social acceptability of the procedures by family members	Survey the opinions of family members regarding the outcomes of the intervention
Subjective Evaluation: Assessment	In-depth interviews with family members	In-depth interviews with family members	In-depth interviews with family members
	Parent survey	Parent survey	Parent survey
	Interviews by external evaluator	Interviews by external evaluator	Interviews by external evaluator

Three of the children were adopted. Five siblings of the target children also participated in the interviews. A few siblings did not participate in the interviews due to their young ages or their limited verbal communication. Specific demographic information for all participants is presented in Tables 2 and 3.

Table 2
Target Children's Demographic Information

Child*	Age at beginning of study	Gender	Ethnicity	Disability
Kim	37 months	Female	Black	Down Syndrome
Aaron	24 months	Male	Asian	Developmental Disability
Janice	48 months	Female	White	Down Syndrome
Anita	48 months	Female	White	Down Syndrome
George	38 months	Male	White	Down Syndrome
Harold	60 months	Male	White	Down Syndrome
Mike	42 months	Male	White	Autism Spectrum Disorder

Note. *All names are pseudonym names.

Table 3
Family Members' Demographic Information

Parent / (Child)	Relationship	Age	Highest Education	Family Income ($K)
MK* (Kim)	Mother	45	Master's Degree	65-85
DK (Kim)	Father	50	Master's Degree	
KK (Kim)	Sister	14		
GK (Kim)	Brother	11		
CK** (Kim)	Brother	7		
NB* (Aaron)	Mother	55	Master's Degree	65-85
CB (Aaron)	Father	45	Doctorate Degree	
RM (Janice)	Mother	32	Bachelor's Degree	65-85
WM* (Janice)	Father	32	Associate Degree	
JM (Janice)	Brother	3		
AH* (Anita)	Mother	37	Master's Degree	86-100
TH (Anita)	Father	36	Bachelor's Degree	
NH (Anita)	Brother	7		
CH (Anita)	Brother	5		
MH** (Anita)	Sister	3		
KC* (George)	Mother	38	Bachelor's Degree	65-85
JC (George)	Father	38	Bachelor's Degree	
JC (George)	Brother	5		
LM* (Harold)	Mother	48	High School	26-45
DM (Harold)	Father	54	High School	
JN* (Mike)	Mother	32	Bachelor's Degree	>100
DN (Mike)	Father	30	Doctorate Degree	

Note. *Parent interventionist. **A sibling with a Down Syndrome

Qualitative Data Collection

To assess the family members' perspectives, an external evaluator who was not directly involved in the PiCS project conducted individual in-depth interviews with both parents and siblings. The interviewer was an evaluation expert with a doctoral degree who was employed at a university not affiliated with the researchers' university and was a paid consultant on the PiCS project. He was hired to conduct evaluations that served both formative and summative purposes. He interviewed each parent interventionist twice, once after the parent completed coaching on the naturalistic teaching strategies and once after the parent completed coaching on the visual teaching strategies. These interviews were conducted by phone and lasted approximately 30 min. The external evaluator took field notes during the interviews. Appendix A includes the questions he asked each interviewee.

In addition to the interviews, parent interventionists completed research team-developed surveys at three points during the project: (a) before the intervention began, (b) after completion of the first phase of the intervention which included coaching the parents on naturalistic teaching strategies, and (c) after completion of the second phase of the intervention which included coaching the parents on visual teaching strategies. The preintervention survey included questions related to parent perceptions of social-pragmatic communication skills and strategies they were using with their children. The postintervention surveys (following the first and the

second coaching phases) included questions related to parent perceptions of the goals, procedures, and outcomes of the PiCS project. Survey questions are presented in Appendix A.

At the conclusion of the intervention we individually interviewed seven parent interventionists, seven noninterventionist parents (the spouses of the parent interventionists), and five siblings who were able to share their thoughts with us. During the face-to-face semi-structured interviews, the primary data source for this study, we purposefully asked broad, open-ended questions to allow our participants to voice their perspectives. We also asked follow-up questions to clarify, broaden, or expand responses. All interviews were video recorded either in the parents' homes or in their workplaces and transcribed to ensure accurate analysis of the participants' responses. We were careful to interview each family member separately so that responses from one family member did not influence responses from another family member. The interviews with the adults lasted approximately 45 min and the interviews with the siblings of the target children lasted approximately 15 min. To ensure objectivity, each interview was conducted by a member of the research team who had not been directly involved with the family during the coaching phases of the study.

Data Analysis

PiCS research team members who participated in the data analysis process consisted of three faculty members at a Midwestern USA university, the PiCS project coordinator, a speech-language pathologist who worked for the project, and three graduate assistants.

To analyze the data from the in-depth interviews the team conducted a cross-case analysis (Miles & Huberman, 1994) to study each family member as a whole entity and we coded each family member's responses line-by-line and then compared responses across all family members. As we examined the individual family members' responses we used a constant comparative method (Charmaz, 2000; Glaser & Strauss, 1967) to identify emerging themes. This allowed us to compare cases and to refine, expand, or delete themes as needed. We continually studied the interview data (Charmaz, 2000) during the coding process, discussed disagreements about emergent categories, and returned to the interview data continually until the team reached concordance on all themes. This process of cross checking the coding of the major themes provided "thoroughness for interrogating the data" (Barbour, 2001, p. 1116).

Because there was a large amount of data to analyze, we assigned sets of interviews to members of the research team to ensure thorough, consistent, and accurate analysis. We initially formed four research teams. One team, consisting of a faculty member and one graduate assistant, analyzed the seven parent interventionist interviews and five sibling interviews. A second team, consisting of another faculty member and graduate assistant, analyzed the seven noninterventionist parent interviews and the parent interventionist interviews conducted by the external evaluator. A third team, consisting of a faculty member, the project coordinator, and the speech-language pathologist for the grant project, read all the interviews to ensure credibility through peer debriefing (Brantlinger et al., 2005). The final team member, a graduate assistant, analyzed results from the parent interventionist surveys that were completed at three points during the project.

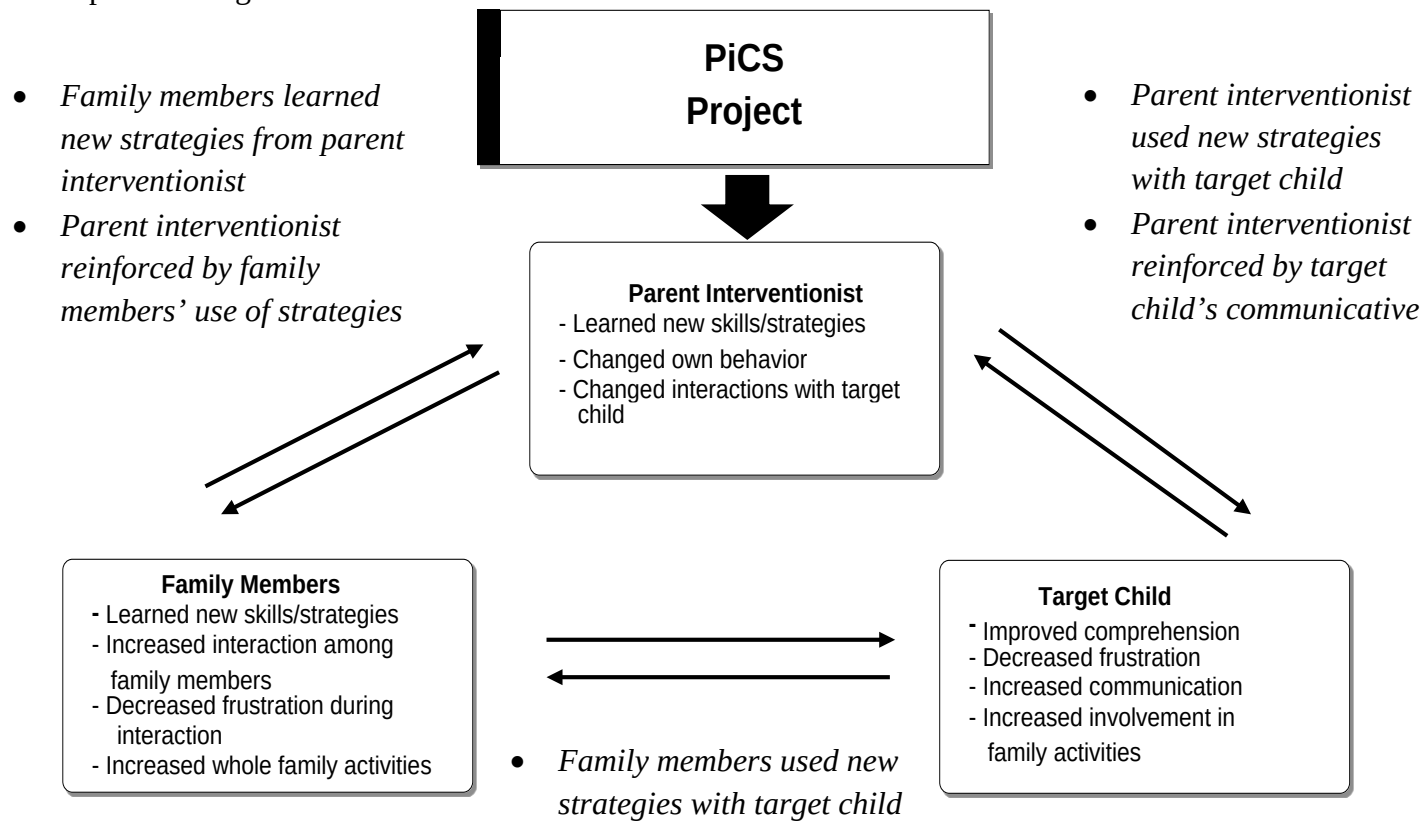
The members of the first two teams separately analyzed their assigned interviews using line-by-line coding and then the two members of each team met to establish major themes from the line-by-line coding. The third team, consisting of the peer debriefers, was responsible for reading all interviews and identifying broad themes; they did not line-by-line code the interviews. The full research team then met as a group to discuss and reach concordance on the major themes the first two teams had identified. We triangulated and confirmed our findings using researcher-developed surveys, the external evaluator's field notes, and the peer debriefers' input. The data from the parent postintervention surveys were analyzed by calculating the averages across all parents for each question. Since the preintervention and postintervention surveys were different we were not able to compare the results of the two surveys.

Findings

The findings were complex and multi-faceted and as we delved into the data, returning to them to constantly verify the findings, three common themes emerged across all data sources, concerning the PiCS intervention. Family members reported that: (a) the intervention resulted in changes in the interaction between the parent interventionists and the target children, (b) the changed interaction had a positive effect on the children's social-pragmatic communication skills, and (c) the intervention resulted in positive changes in entire families' interactions with the target children.

Findings from Interviews with Family Members

We want to emphasize that this study's findings are circuitous rather than linear. A graphic representation of the findings from the in-depth interviews, the primary source of data, is depicted in Figure 1.



Effects of the PiCS project on parent interventionists. Three primary themes emerged about the effects of the PiCS project on the parent interventionists: (a) parent interventionists learned new teaching strategies that they perceived as effective for enhancing their children's communication, (b) parent interventionists changed their own behavior as a result of learning the new teaching strategies, and (c) the use of the new strategies caused changes in the interaction between the parent interventionists and the target children. Since the intervention focused on teaching and coaching the parent interventionists to use research-based naturalistic and visual teaching strategies, it was not surprising that all participants spoke about learning new teaching strategies. Yet, the PiCS participants also shared their perspectives on changes in their behavior that were outside the realm of the intervention.

The parent interventionists talked about the new strategies they learned. George's mother explained, "I feel like I have learned so much and there's so much that I've been able to help George with that I think just would have never even come to me or I never would have even known to do these things." Parents also described their "favorite" teaching strategy; however, there was no one teaching strategy that was preferred across parents. For example, Kim's mother stated that she liked the naturalistic teaching strategies since they were "so easy to incorporate into our lives." Aaron's mother explained that she rarely used the visual teaching strategies since "by the time we got the visuals, it just wasn't necessary." Conversely, Anita's mother spoke of using the visual teaching strategies with all of her four children: "and the visual strategies of hand washing and brushing teeth have been really effective for all the kids." Anita's father, a noninterventionist parent, described the positive aspect of using and understanding multiple teaching strategies: "The PiCS project gave a variety of ways [teaching strategies]; it wasn't always the same…so you had this repertoire of things you can try and kind of go through."

In addition, the participants either self-reported or were described by the noninterventionist parents as experiencing marked changes in their interactions with their children. Anita's mother stated that she "went into this [the PiCS project] thinking it was going to be about Anita, but really it was about me and how I communicate with all the kids." George's mother described how she now gives her child opportunities to communicate and make choices on his own.

> *One of the things they showed me [during coaching with video feedback] was the wait time [giving her child time to respond]. Because in the beginning I was talk, talk, talk, talk. And it was good to see that, okay, if I wait a little bit he will respond.*

Similarly, Mike's father, a noninterventionist parent, described changes he noticed in his wife's interaction with their son: "I see her just kind of reaffirming what he is asking for or 'do you want this one or do you want this?' and then making sure she is getting a response out of him." Kim's older brother described changes in his mother's interaction with Kim: "Sometimes she [Mom] like repeats stuff, instead of just giving her [Kim] what she wants. She'll like repeat it - like - 'What do you want, Kim?' and she'll make Kim say, --like-- use a sentence." Anita's 7-year-old brother also noticed changes in his mom: "My mom talks a little different so Anita can understand her."

In addition, the parent interventionists themselves frequently described changes in their interactions with their children that were outside the realm of implementing the strategies. For example, Anita's mother stated,

> *It [PiCS project] has helped our relationship because she doesn't get as frustrated with not being able to express herself and I am not so quick to do it for her, which I think has helped her to be a little more independent and a little more confident in what she is trying to accomplish.*

Specifically, based on family members' interview data, the parent interventionists perceived themselves as more aware of their children's communication attempts, more deliberate in their interactions with their children, more confident in using the strategies, and less frustrated when communicating with their children.

Effects of the PiCS project on the target children. Participants reported several effects of the PiCS project on the target children. These children were between the ages of 37 and 60 months and had very limited expressive language and no more than 10 functional words or signs based on parents' reports and formal baseline assessments. All family members spoke unequivocally about the positive changes they observed in the target children. Family members identified (a) increased comprehension, (b) decreased frustration and a corresponding decrease in challenging behavior (for example, hair pulling while playing with others), (c) more attempts to communicate (i.e., initiate and respond) and interact with others, and (d) increased involvement in family activities.

Janice's father summarized his daughter's progress: "The joy that I get to see Janice being so happy because she can talk is immeasurable, really." Mike's father, a noninterventionist parent, spoke of the positive changes he noticed in his son's receptive language. Mike, who is on the autism spectrum, was nonspeaking at the beginning of the PiCS project and essentially remained nonspeaking, but his father noted definite changes in his comprehension: "I think we are able to communicate with him so much better; he can't tell us back that he understands, you know, he's showing us that he understands what we're telling him." Janice's mother, a noninterventionist parent, identified the decrease in her daughter's frustration as her social-pragmatic communication skills increased:

> *She has more patience with it [communication] because she would get upset if you couldn't understand ...but she tries to say words now and they are so much more understandable, not just to us but to other people. And so when other people are understanding her she doesn't have that frustration.*

The target children's improvement in communication skills was noticed not only by family members. Janice's mother, a noninterventionist parent, described comments she received at a monthly meeting of parents in the local Down Syndrome support group:

> *You know, even the parents that we go and do breakfast with every month have remarked about how much she has improved in the past few months, and how much clearer her words are and how many more words she is saying.*

These examples illustrate what is likely a circuitous reinforcing process of facilitating children's social-pragmatic communication skills. As the parent interventionists implemented the naturalistic and visual teaching strategies in a structured manner, giving their children time to respond and reinforcing those responses, the children began communicating more; this reinforced the parents' use of the teaching strategies which continued to facilitate the children's communication. As communication increased, the children's frustration decreased along with challenging behaviors. In addition, as the children were encouraged to communicate, their communication was recognized, and the children began communicating more with others within and outside their families.

In addition to enhanced communication skills, family members explained that due to the increase in the social-pragmatic communication skills the target children could be more involved in family activities. Kim's brother explained:

> *It's a little more fun because instead of Kim just saying random words- random, they're not even words, random stuff - then she can actually get involved in the conversation and we can understand what she's trying to say and what she's trying to tell us and she says – like -- some funny stuff so then it makes us laugh and stuff.*

Kim's older sister talked about this increased involvement, too:

> *She does a lot more with us kids and just plays with us a lot more. It's not just her and her toys, but, you know, we go places. Me and her walk to the park because if she wants to do something we can. She can ask now.*

Effects of the PiCS project on entire families. Even though the parent interventionists were the ones receiving the intervention, the effects extended to the entire participant families, and several participants also spoke of the positive effect on extended family members, such as grandparents, aunts, and uncles. Effects on the family were identified as (a) use of the strategies by family members, (b) increased communication between family members and the target children, (c) less frustration from family members when interacting with the target children, and (d) increased whole-family activities and an overall happier family life. Kim's mother described how everyone in her family used the strategies with Kim:

> *I never really sat down and taught it to anyone else in the family or said, 'This is what you should do,' but just from watching my interaction with Kim I see all the time the rest of the kids or my husband saying, 'Oh, Kim, say this,' or not giving her something until she verbalizes. So they all picked up on it and I think that's because it is so natural. And it's worked out great because she knows that everybody expects it of her now and that she's not going to be able to just get her way without talking.*

Some of the parent interventionists deliberately taught their spouses the teaching strategies. For example, Janice's mother stated that her husband "would bring back what he learned to the rest of us and so we would all try. So we would be working with Janice and it was a family effort."

George's father described how his wife, the parent interventionist, encouraged him to use the visual schedule with their son in the morning:

> *I used to never come down [the father gets the children their breakfast in the morning] with the little cards [visual schedule] and, you know, she's – like – 'Take these down, take these down, because when he's done doing something, you need to show him because he needs to know what's going on.' So I take them down.*

Use of the teaching strategies, both naturalistic and visual, extended to the siblings. Kim's 14-year-old sister described her use of the strategies: "I've actually done the modeling. And if she can't say something, you know, trying to say it to her and then having her say it back."

Noninterventionist parents and siblings also reported more interaction with the target children. Kim's 11-year-old brother reported:

> *I think I'm her favorite. Like – sometimes she'll come up and knock on my door and she's just learning how to open it. So she'll knock on my door and I'll go – like –, 'Who is it?' and then she'll be – like – 'Kim.'*

Harold's father, a noninterventionist parent, described his child's increase in persisting to communicate his wants and needs: "When he wants something, he stays on it." Kim's father talked of his daughter's increase in communicating when she wants to go with him: "I'll take my son with me because he likes going along because we usually stop and get a donut. So Kim will start putting her coat on and now she'll actually say, 'Me, too.'"

Kim's mother talked about the changes in the family: "It's just a lot happier lifestyle that she has so many words and can be a part of all of the communication that goes on because we are a talking family." Several of our participants reported that extended family members were more relaxed with their children. George's father, a noninterventionist parent, reported that the grandparents aren't "afraid to take him overnight and are much more relaxed around him." He attributes this change in behavior to the fact that they are "finally asking him [George] things and not us."

Identified Advantages and Challenges of the PiCS Project

Participant perspectives on the PiCS project were overwhelmingly positive. Parents spoke of the benefits of having (a) the opportunity to set goals for each session with their coaches, (b) access to permanent materials to remind them of the naturalistic strategies and assistance with creating visual strategies, (c) immediate feedback on strategy use from their coaches, and (d) coaches coming to their homes and using the home environment to teach the strategies. As one parent stated:

> *The thing I liked best, I guess, about the program is, it was so natural. It was – it wasn't hard to put it into my life or to have people come in to film or anything because it was just playing and eating and everything was natural. So to me that was a great benefit that it wasn't work to do it. It does fit into your life and I could see it fitting in with anybody's life because it can conform to any lifestyle at all.*

Mike's mother spoke of the benefit of coaching and immediate feedback:

> *The feedback that we got was really good and it was nice to be able to see on video from previous sessions and when, you know, when you're kind of in the moment. And I liked the videos because I saw, 'Wow, he really did that' since when you are in the moment sometimes you don't really pick up on things and so that was really neat.*

However, when asked about challenges of being involved in the PiCS project the participants identified two primary concerns: (a) frustration with "not knowing" what was coming next and (b) the time required for the family to participate. Since the PiCS project was a research project that involved a single-subject multiple baseline design, the research team could not tell the parent interventionists about the teaching strategies before it was time to begin training for each strategy. This created frustration for some as exemplified by Anita's mother, who stated,

> *I would have liked, like, a syllabus. I like a syllabus, you know when every date and every project and everything is laid out. That is comforting to me because I know exactly what I am getting and so my need for the details caused me frustration.*

Other participants spoke of the time commitment required for visits from the research team 2 nights a week. Janice's father stated,

> *I think it is a catch 22, I gotta get home and you know you're running between school and so the time constraint was kind of hectic but the two nights a week was really quality time with her, too.*

George's mother also identified the amount of time required: "It is a lot of time commitment, which is fine, and they [PiCS team] were more than accommodating to make our schedule work but it was a lot of time." While the time was significant, overall the parents felt it was worth the time and effort they put into working with their children.

Confirmability

Survey results. On the pre-intervention survey all parent interventionists indicated that the social communication skills of their children were "extremely" or "very" important. Kim's mother stated, "I find it very important because social communication/skills are lifelong needs." Aaron's mother said, "It helps young children learn and gives them access to the world. It is the foundation of other important skills and is a developmental need." When asked about strategies they were using prior to intervention, parents reported using primarily sign language and verbal communication, but that these strategies were "somewhat effective (for example, "we have our good days and our bad days") or not effective in improving communication ("nothing has helped").

The parent interventionists ranked, on average, their knowledge of social communication teaching strategies before the intervention, as 2.4 (range: 1-3) on a scale of 1-5 with 5 as the highest level of perceived knowledge. The parents ranked, on average, their competence in

implementing social communication teaching strategies as 2.5 (range: 1-4) on a scale of 1-5 with 5 as the highest perceived competence.

Average ratings of the parents' responses to the statements in the post-intervention surveys (that is, post-naturalistic teaching strategies coaching and post-visual teaching strategies coaching) are presented in Table 4. Parents rated all statements with an average of 4 or higher on a 5-point Likert scale and indicated strong levels of satisfaction with the project's goals, procedures, and outcomes, thus confirming the findings from the face-to-face interviews

Table 4
Average Ratings in the Parent Questionnaires Across all Parent Interventionists

Phase / Questionnaire Statement	Post-Naturalistic Strategies Coaching	Post-Visual Strategies Coaching
The information provided to you during training	4.5	4.5
The guidance provided to you during coaching	5.0	4.9
How satisfied you are with the overall project procedures	4.8	4.5
How easy it was to incorporate the naturalistic/visual strategies into your daily home routine	4.7	4.0
How useful the strategies were in meeting your child's goals	4.4	4.3
How satisfied you are with the overall project outcomes for your child	4.7	4.4
How satisfied you are with the overall project outcomes for you	4.7	4.7
Your knowledge of the naturalistic/visual teaching strategies	4.4	4.5
Your competence in implementing the naturalistic/visual teaching strategies	4.3	4.3
Your enjoyment in using the naturalistic/visual teaching strategies with your child	4.3	4.1

Note. 1=low/not useful/poor; 5=high/very useful/excellent.

Analysis of external evaluator field notes. The external evaluator asked parent interventionists about their perceptions of (a) the goals of the PiCS project, (b) the procedures used in the project (e.g., training, coaching, and video feedback), and (c) the outcomes of the project for themselves and their children (see Appendix A for interview questions).

Parent interventionists reported that they understood that improving their children's communication was the goal of the intervention and that it was very important and one of their primary goals. A few of the parent interventionists reported that although the goal was to help their children communicate they realized that the focus was on changing their own behavior, as one of the mothers explained, "I did not realize it was me they were making better."

Parent interventionists reported that they were very satisfied with the intervention procedures. They appreciated the materials they received during training and the guidance provided to them during coaching. In addition, they felt the naturalistic teaching strategies were easy to implement

and the visual teaching strategies were concrete. The strategies, along with the coaching support, appear to have helped the parents be intentional when supporting their children's communication development. Parents felt that one of the biggest advantages of the target teaching strategies was that they were easy to incorporate into their daily home routine. One of the mothers stated, "It is natural and easy to do. You don't have to have certain expertise. When I think about my day, I am amazed at how much I use it. I think back and realize I used it there and there and there and didn't even plan to do it."

The external evaluator also asked parents about components of the intervention that were not effective. Although they stated that they were very happy with the intervention, parents did mention a few components they felt were not as effective as others. A few parents talked about the intensity of the intervention (for example, three home visits per week) and their low comfort levels about being filmed in their own homes.

Parent interviews by the external evaluator confirmed that the parent interventionists believed that the intervention/strategies supported them and led to improvements in their children's communication skills. In addition to increased communication skills, parents felt that the intervention led to improved child behavior (that is, decrease in challenging behavior), increased social interaction with peers, and that it impacted the entire family (for example, all family members used the strategies resulting in increased communication among family members).

Discussion

This study focused on social validity specifically the methods we used to establish social validity and the corresponding results. Our discussion is organized into three areas, (a) social validity, (b) limitations, and (c) recommendations. The PiCS project results (Meadan et al., 2014) and a report on the evaluation of the PiCS project (Stoner et al., 2012) have previously been published.

Social Validity

Since analysis of social validity is one of the "top priorities" of research (Hurley, Wehby, & Feurer, 2010), the primary goal of this study was to examine the perspectives of family members related to the social validity of the PiCS project. We strongly value family input and wanted to systematically evaluate our project goals and procedures, in addition to the outcomes, to comprehensively obtain family members' perspectives and assess the social validity of the PiCS project. Wolf (1978) referred to the validation of practices as "judgments of social validity" (p. 207). He suggested three levels of *social validity*: (a) the social significance and importance of the goals, (b) the acceptability of the intervention, and (c) the satisfaction with the results of the intervention. In addition, we wanted to be responsive to our participants' needs, which have been identified as important to program sustainability (Carnine, 1997; Schwartz, 1991). The results of this study of family members' perspectives on the goals, procedures, and outcomes of the PiCS program indicate that the PiCS intervention is socially valid.

Social validity of the goals. The PiCS project was based on conceptual frameworks that have been identified as best practices in the literature: increasing social-pragmatic communication skills through naturalistic and visual teaching strategies, incorporating a family-centered orientation, and teaching in natural (e.g., home) environments.

Parent interventionists believed that social communication behavior was very important and formal assessment (CDI, Fenson et al., 2007) revealed that the target children were significantly delayed in their social-pragmatic communication skills. Therefore, the goal of enhancing the target children's social-pragmatic communication skills was a socially important one.

Social validity of the procedures. Parents reported overall satisfaction with the procedures used in the PiCS project. In addition, review of the literature related to communication teaching strategies for young children with disabilities indicated that naturalistic teaching strategies (e.g., Hart, 1985; Hart & Risley, 1975; Kaiser et al., 2000) and visual teaching strategies (e.g., Dettmer, Simpson, Myles, & Ganz, 2000; Ganz & Flores, 2008) are accepted and effective intervention strategies. Researchers have indicated that parents can be trained and coached on implementing new teaching strategies, and can use them effectively with their children (Dunlap et al., 2006; Meadan, Ostrosky, Zaghlawan, & Yu, 2009). Researchers also have emphasized the importance of involving family members in interventions for young children with disabilities (e.g., Turnbull, Turnbull, Erwin, Soodak, & Shogren, 2011).

Teaching in the natural environment and using a collaborative team process, combined with a family-centered orientation are also considered best practices in early childhood intervention (Bruder, 2010). Consequently, the framework on which we based and developed the PiCS project is conceptually sound and the procedures we used, based on effective research practices, are socially valid.

Social validity of the outcomes. We feel it is important that, although the results of the formal assessments did not show increases in all aspects of the communication skills for all children, family members noticed communication changes in the target children that the formal assessments did not identify. This suggests that formal measures might not be the sole measure of outcomes of an intervention. For example, Mike's family spoke of their son's increased ability to follow directions and interact with family members, yet he showed no growth on the formal language assessment. Parents are with their children daily and their reports of their children's increased communication skills must be considered. This exemplifies Fox et al.'s (1997) emphasis on the importance of valuing family expertise.

Limitations

There are a few limitations to this study. The strategies we used in this project to assess family members' perspectives can provide guidelines for assessing social validity in other research studies, especially using multiple data sources and triangulating the data to confirm the results. However, results in this report are specific only to the PiCS project and cannot be generalized to other parent-implemented interventions. Due to the limited generalizability of this qualitative study, replication of this study with an expanded sample or larger sample size is recommended.

Another limitation of this study is that only parent interventionists and family members participated in the assessments. Schwartz and Baer (1991) suggested that various people should be included in the assessment of social validity including (a) direct consumers (e.g., parent interventionists and children), (b) indirect consumers (e.g., family members), (c) members of the

immediate community (e.g., family friends and neighbors), and (d) members of the extended community (e.g., people in the community who do not interact with the participants). In future research we hope to explore the perceptions of members of family participants' immediate communities and extended communities related to the social validity of the PiCS project. Furthermore, there is a need to use additional means of assessing parents' perspectives on interventions. One possible method is to show video clips of the parents' and children's behavior during different phases of the intervention, in random order, and ask members of the immediate and extended communities to rate the parent interventionists' use of the teaching strategies and the children's communication skills.

Recommendations

We strongly recommend involving family members not only in the development and implementation of early childhood interventions, but also in the evaluation of the social validity of those interventions. Seeking feedback from family members on goals, procedures, and outcomes of an intervention could lead to improvement of an intervention program and increase the probability that the intervention will have long-lasting effects. During our interviews with the parent interventionists they described challenges related to the PiCS procedures and potential changes to the program that could benefit future family participants. Consequently, for subsequent implementation of the intervention we made several changes in the delivery format including using technology (e.g., Skype) to minimize our appearance in the homes and thus minimize disruption to the family routine.

In summary, the PiCS project was socially valid and we can report with confidence that the social validity was based on a thorough examination of the PiCS project's goals, procedures, and outcomes. By gathering data from several sources (i.e., parent and child participants, noninterventionist parents, and siblings of the target children) and triangulating the data we can assuredly attest to the social validity of the PiCS project. Researchers should not shy away from the task of collecting social validity data because if the data were not positive, changes could be made to render the goals, procedures, and outcomes of interventions more acceptable. Positive social validity data affirm that an intervention has benefited all who were affected by it.

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Appendix A

External Evaluator Interview Questions

1. Tell me about your experience so far with the PiCS project.
2. Describe your overall perspective on the goals for PiCS project.
3. Please describe what was effective about the intervention (i.e., training and coaching).
4. Please describe what was ineffective about the intervention (i.e., training and coaching).
5. Describe your overall perspective on the outcomes of the intervention, for both you and your child.
6. Is there anything you would change about the PiCS project?

The Digital Divide and Inequities for Students with Disabilities: Needed….A Bridge Over Troubled Waters!

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Abstract

One of the key concepts of the NCLB legislation was the improvement of student achievement in academics with the use of technology (NCLB, 2001). Ironically, the NCLB mandate of accountability has not provided the necessary resources for achieving its goals, and students with disabilities are, in fact, being left behind. Therefore, the law is intensifying the digital divide. The impact of legislative policies such as this on students with disabilities, while well intended, has led to barriers of access and equity that prevent teachers from effectively integrating the technology. The focus will be barriers to access and equity in types of special education technology, pedagogy and teacher training, and Universal Design for Learning. This paper will review relevant law, address implications of the digital divide on students with disabilities, and will conclude with recommendations for bridging the gap over the troubled waters of inequity and discrimination.

The Digital Divide and Inequities for Students with Disabilities

For over a decade anyone interested in school reform had to be well versed in the phrase "No Child Left Behind". Congress passed the No Child Left Behind (NCLB) Act of 2001 as a reauthorization of the Elementary and Secondary Education Act. Signed into law by President George W. Bush, NCLB has brought many significant changes to schools nationwide (NCLB, 2001). Just as in the landmark case, *Brown v. Board of Education (1954)*, NCLB aims for all students to have access to quality education. Schools must now consider the performance of students with disabilities to ensure their curriculum provides opportunities for student success (Hehir, 2009).

One of the key concepts of the NCLB legislation was the improvement of student achievement in academics with the use of technology (NCLB, 2001). Included in the goals for NCLB Title 2, Part D-Enhancing Education Through Technology Act of 2001 is the following:

> *To assist every student in crossing the digital divide by ensuring that every student is technologically literate by the time the student finishes eighth grade, regardless of the student's race, ethnicity, gender, family income, geographic location, or disability* (20 U.S.C.A § 6752(b)(2)(A)).

Following in the footsteps of President Bush, President Bill Clinton said that technology "gives us the tools to ensure that no one gets left behind" (Kennedy & Agron, 1999, p.17). Unfortunately research has proven otherwise, and inequity of access and achievement is well documented in America's schools.

Ironically, the NCLB (2001) mandate of accountability has not provided the necessary resources for achieving its goals, and students with disabilities are, in fact, being left behind. Therefore, the law is intensifying the digital divide. In 1970, popular recording artists Simon and Garfunkel topped the charts with their hit song "Bridge over Troubled Water" whose lyrics spoke of providing support and comfort in times of need. The simplicity of the message is universal and especially applicable to students with disabilities as they continue to need a bridge over the troubled waters of both access and equity.

The impact of legislative policies such as NCLB (2001) on students with disabilities, while well intended, has led to barriers of access and equity that prevent teachers from effectively integrating the technology. In fact, today's classroom teachers face a myriad of challenges such as high stakes testing, diverse populations, and lack of resources. Those teaching students with diverse abilities face even greater demands in demonstrating progress with inflexible measures (Rose & Meyer, 2002). With comprehensive legislation focusing on technology compliance, it is imperative that not only educators, but also policy makers take action to ensure that students with disabilities have access to and effectively use information and communication technology.

Arne Duncan (2013), U.S. Secretary Of Education, remarked," We have to get better, faster, even during a tough economy, and technology is critical to raise the bar for all students and close what I call the *opportunity gap*" (para. 29). Although a promising ideal, will the bar be raised for all students, including those with disabilities? According to Hasselbring and Glaser (2000), "Technology has the potential to act as an equalizer by freeing many students from their disability in a way that allows them to achieve their true potential" (p.118). However, there are many barriers that must be first overcome.

It is beyond the scope of this paper to discuss all technology barriers. Therefore, its focus will be barriers to access and equity in types of special education technology, pedagogy and teacher training, and Universal Design for Learning. This paper will review relevant law, address implications of the digital divide on students with disabilities, and will conclude with recommendations for bridging the gap over the troubled waters of inequity and discrimination.

Review of Relevant Law

The Individuals with Disabilities Education Improvement Act (IDEIA) of 2004 includes a focus on technology. IDEIA amendments under Title1, Part D, Section 674 concentrate on technology development, demonstration, and utilization as well as media services and instructional materials (20 U.S.C. § 1400 (2004)). Within subpart b of this federal law, "the term *universal design* was officially defined" (Edyburn, 2010, p.34) making technology accessible to the broadest range of individuals with disabilities. Edyburn (2010) also notes concern in operationalizing the construct of Universal Design for Learning (UDL), "…while we are awaiting widespread availability of the promise of UDL (Accessibility Phase), we are left to our own devices to try to apply the UDL principles to create more accessible accommodations…" (p.36).

What is also of significance in subpart e is the definition of print instructional materials. Ten years ago, this was sufficient to include all curriculum materials that would need to be made accessible for students with vision, hearing, print, and other sensory disabilities. The issue is that

with the rapid changes in technology and this new digital age, curricular materials now include far more than printed textbooks. For example, these may include electronic books (eBooks), learning applications (apps), and digital learning objects (LOs) as noted by Reiser and Dempsey (2012).

Rose and Meyer (2002) state, "Barriers to learning are not, in fact, inherent in the capacities of learners, but instead arise in learners' interactions with inflexible educational materials and methods" (p.vi). Pisha and Coyne (2001) agree, "Today's textbooks and learning materials are as inaccessible to many students as school buildings of old were to wheelchair users" (p.197). Policy makers in support of open source, or free access to software into the public domain, have been impeded by "selfish commercial interests" (Edyburn, 2008, p.63) and limitations of the Copyright Act (Hombal & Prasad, 2012). The law is not supporting the modification of all the types of curriculum materials students with disabilities will need; therefore, the law must be modified to accommodate students with disabilities and ever changing technologies.

Impact: The Digital Divide

With the acceleration of technology comes the task of deciphering the jargon for digital literacy. The Digital Divide in its earliest classification focused on disparity. Hargittai (2002) referred to the Top-Level Digital Divide as the difference between the "haves" and "have nots." The proliferation of information and communication technology (ICT) has led to a more complex definition. Warschauer, Knobel, and Stone (2004) refer to the digital divide as "a host of complex factors that shape technology use in ways that serve to exacerbate existing education inequalities" (p.584).

Ongoing research indicates that the Second-Level Digital Divide is both subtle and multifaceted, affecting society in countless respects, while having the potential for social exclusion (Singleton & Longley, 2009). Reinhart and her colleagues (2011) posit, "Gone are the days of believing that the Digital Divide is simply a partition between those who have access to a computer and a modem, and those who do not" (p.181). A more subtle division is in how technology is utilized (Hargittai, 2002; Stevenson, 2008).

Most educators would agree that marginalized populations, such as students with disabilities, continue to suffer from this opportunity gap (Banister & Fischer, 2010). Judge, Puckett, and Bell (2006) refer to digital equity as a "social justice goal, ensuring that all students have access to information and communication technologies for learning, regardless of socioeconomic status (SES), disability, language, race, gender, or any characteristics that have been linked with unequal treatment" (p.52). Unfortunately, glaring inequities and barriers in school districts across America have been documented. Complex barriers include resources, curriculum and pedagogy, environmental setting, and teacher attitudes (Edyburn, Higgins, & Boone, 2005). Strategic reform is needed to bridge the inequities of both the Top-Level and Second- Level Digital Divides.

Barriers: Types of Special Education Technology

Research, like legislation, can often take years for resolution. Fifteen years ago researchers were studying equal opportunity and technology. In the center of equity struggles, the acceleration of technology has provided hope to educators and decision makers that computers could close the gap between those who have and those who have not (Kennedy and Agron, 1999). However, access to technology, even to differing types, does not equal effective use.

Even though computers may be present in the classroom, there is little correlation that presence alone is beneficial to students with disabilities (Brown, 2005). Mouza (2008) notes that simply having the physical access to technology within the school does not significantly change learning outcomes. Additionally, the presence of computers does not necessarily mean that their operating systems and their potential are being supported by the appropriate technological infrastructure. Of significance is the cost to support the computer systems needed for students with disabilities, especially those with more severe challenges, which can be daunting (Hasselbring & Glaser, 2000). The fact is that even when computers are available, they are often outdated sitting in many classrooms like furniture gathering dust.

Many educators fail to see that "the methods and materials that are employed may create additional barriers to improved access, participation, and progress within the general education classroom" (Hitchcock & Stahl, 2003). Martinez (2011) reflects on the use of Information and Communication Technology (ICT) as "useless if its adaptation and use creates another form of social exclusion for students with special needs" (p.150). Three applications of special education technology provide access, but without proper implementation may also serve as barriers to students with disabilities: Assistive Technology, Instructional Technology, and Universal Design for Learning.

Assistive Technology

Assistive Technology is strategic in that it spans "age, disability, and health challenge whether temporary, fluctuating, degenerative, or a permanent condition faced by the individual" (Dove, 2012). According to the IDEIA (2004) amendments, "assistive technology (AT) is defined as any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve functional capabilities of a child with a disability" (20 U.S.C. §1401(1)(2004)). It is "designed to assist individuals with disabilities in overcoming barriers in their environment and in increasing their opportunities for independence" (Rose, Hasselbring, Stahl, & Zabala, 2005, p.509). The IDEA Amendments of 1997 legally mandated that during the development of an Individual Education Plan (IEP) assistive technology must be considered (Alper & Raharinirina, 2006). Dove (2012) states, "Assistive technology for persons with disabilities is not an option; it is a necessity and a right mandated by several U.S. federal laws."

Despite legislation, several studies indicate that students with disabilities are not receiving technology devices and/or services as required (Okolo & Diedrich, 2014; Davis, Barnard-Brak, & Arredondo, 2013; Alper & Raharinirina, 2006). The IEP or AT team may fear suggesting assistive technology due to its cost (Zascavage & Winterman, 2009). One of several studies conducted by Quinn and colleagues found that approximately 87% of the AT users had low

incidence disabilities and less than 15% of AT use was reported to occur in the general education classroom (Quinn, Behrmann, Mastropieri, Bausch, Ault, & Chung, 2009; Okolo & Diedrich, 2014). In addition, Newton and Dell (2011) note that traditional AT devices can be overwhelming for teachers to use and adequate training too time consuming. Unfortunately, many educators are uninformed of AT legislation, which may prevent them from carrying out the mandate (Davis et al., 2013). Finally, there is no legislation providing guidelines as to the required level of improvement or even a definition of the benefit in using assistive technology (Edyburn, 2013). The findings of the aforementioned studies clearly reiterate the need for restructuring of educational policies to ensure the use of AT in classrooms where needed or appropriate.

Instructional Technology

The inclusion model, serving students with disabilities, brings concerns of access to the curriculum in the general education setting (Edyburn, 2008). The high standards and accountability mandated by NCLB (2001) have been disabled by a general curriculum ill designed for students requiring special education services. With respect to evolving computer technology, a systematic approach to instruction and curriculum design is needed (Rothwell & Kazanas, 2008, p.16). Edyburn et al. (2005) notes historical trends in the perception of technology; "The Congressional Committee on Instructional Technology (1970) concluded that, in addition to devices and equipment, instructional technology also involves a systematic way of designing and delivering instruction" (p.7). It is evident that experts in the field have understood the need for appropriately designed instructional technology, but there is a disconnect. Hasselbring (2001), in discussing human learning and technological advances, emphasizes that what is known about how people learn is too often ignored. Students with disabilities, disregarded and powerless, have not been included in curriculum design, and they "find barriers rather than supports for learning" (Hitchcock & Stahl, 2003). Rose and Meyer (2002) argue that we should shift the dynamics of disability from the student to the curriculum. They debate that the curriculum poses many barriers to access, engagement, and success. Therefore, it is the curriculum and not the student that we should consider disabled (Jackson, Harper & Jackson, 2001; Hitchcock, Meyer, Rose, & Jackson, 2002).

Barriers: Pedagogy and Teacher Training

The digital divide is also defined by inequities in the way technology is used. Edyburn (2011) asserts that even though schools are more diverse than ever, "few teachers and professors are adequately prepared to effectively teach diverse learners" (p.38). In classrooms at all levels studies indicate marked differences in the way Instructional Computer Technology (ICT) is used (Reinhart, Thomas, & Toriskie, 2011). Due to rapid and exponential advancements in technology, maintaining teachers' proficiency levels as well as their ability to integrate digital learning into the classroom can be challenging (Hicks, 2011). Innovative technologies have a limited lifespan, which can also impact teachers' knowledge base (Edyburn, 2013). Educators are hesitant to accept change especially when it involves technology and students with disabilities (Cuban, Kirkpatrick, & Peck, 2001). Additionally, educators historically resist new solutions that do not align with their current practices (Kennedy & Deshler, 2010). Newton and Dell (2011) also argue that technology training costs time and money, a budgetary concern for

many school districts. Therefore, teachers are not given adequate training or technical support to develop their technology skills.

Voithofer and Foley (2007) contend that educators focus on intervention "in terms of what it can add or how it can supplement current educational practices rather than as a material change in the pedagogical dynamics between teachers and students" (p.14). Morse (2004) notes disparities in computer use of students with disabilities such as the skills and drills approach rather than developing higher order thinking skills. Uses of technology in similar ways contribute to what Morse (2004) references as "the hidden curriculum" or "implicit computer technology use, skills, and beliefs" (p.271) that were developed by degree of expertise with which students used the technology. Hence, there is the need for additional research to support and develop a culture that actively invests in developing instructional strategies dominated by pedagogically relevant technology.

Other inequities contributing to the digital divide are inadequate teacher training and lack of professional development opportunities (Morse, 2004). DiBello (2005) notes the need for teacher training and support and the lack of pre-service preparation programs, which includes specific computer training and strategies for incorporating into current and future practice. Judge, Puckett, & Bell (2006) report updated information from a longitudinal study that "only 15-20% of all teachers believed that they were well prepared to use computers" (p.58). Relevant research suggests that teachers continue to resist new technologies because they feel insecure, intimidated, and unprofessional rather than tech-savvy (Adiguzel, Capraro, & Willson, 2011; Hicks, 2011). Ongoing technology integration and training must become a critical focus.

Barriers: Universal Design for Learning

Although both Assistive Technology and the Universal Design for Learning both serve students with disabilities, their use of technology is quite different (Rose et al., 2005). The Universal Design for Learning was inspired by demographic changes, new technologies, the inclusion movement, and legislation (Pisha & Coyne, 2001). The Center for Applied Special Technology (CAST) began using the concept of universal design with curriculum materials and methods and "coined the term Universal Design for Learning or UDL" (Hitchcock et.al, 2002, p.9). Schools are becoming increasingly diverse due to changing policies and demographics (Rose & Meyer, 2002). As the number of students with learning disabilities physically increases in the general education setting, so does the demand for access to the general education curriculum (Edyburn, 2010; Rose & Meyer, 2002).

As noted earlier, universal design was officially defined in the IDEA (2004) reauthorization, but its origin was developed in the field of architectural design as it applied to environmental public access (Bernacchio & Mullen; Edyburn, 2010). One example of its novelty is the lack of clarity as it relates to the field of education (Rose, Hasselbring, Stahl, & Zabala, 2005). Although universal design features allow students with disabilities access to technology, it does not ensure their comprehension of the content (Sapp, 2009). By comparing these two different concepts within the field of education, scholars and teachers often confuse the very essence of instructional design.

Edyburn (2010) notes that UDL in education is "fundamentally different from Universal Design in the built environment;" for example, UDL "involves complex physical, cognitive, and social interactions to make sense of the information" (p.36) as
opposed to environmental designs, which are static and limited. Additionally, Edyburn (2010) discusses the role of UDL and refutes educators who claim they are applying instructional design principles when, in fact, they are only using multimedia tools. UDL is not a commodity that can be purchased, "it's a way of thinking and acting" (Hitchcock & Stahl, 2003, p.49). The issue is that already overburdened teachers, skilled only in the basics of technology, continue to reify the notion that word processing, PowerPoint Presentations, and *drill and kill* exercises actually fulfill the requirement for effective UDL pedagogy.

The UDL framework embraces instructor creativity in the development of teaching strategies and flexible curricula (Bernacchio & Mullen, 2007). Since UDL focuses on design and problem solving, Edyburn (2010) questions "whether… the demands of daily instruction will allow teachers to function effectively as instructional designers"(p.37). In developing UDL goals, teachers must explicitly understand the learning objective, which according to Hitchcock et al. (2002) is not as easy as it seems. Unclear goals can be problematic causing inappropriate accommodations or modifications.

When the content is digital, it becomes even more essential to use a medium that does not undermine the learning goal. Edyburn (2011) cautions administrators against adopting digital technology without understanding its value. DiBello (2005) notes how easy this can happen in marginalized schools. Outdated technology shifts the focus from the learning outcome to unreliable technology issues. Although the Universal Design for Learning holds great promise, educators must first dialogue and reflect on its flaws and limitations for students with disabilities, particularly those in impoverished rural and urban settings.

Recommendations for Improving Student Outcomes

The future of special education technology is certainly marked with challenges. Hitchcock and Stahl (2003) clearly understand the dilemma as they note, " Some barriers have existed for so long, that most educators no longer even see them" (p.46). Granted, these barriers are challenging; but they can be overcome. Students with disabilities have the potential to powerfully redirect the waves of their future given access and equity to digital mainstreaming or inclusion.

Student Focus

First and foremost, students with disabilities should be included in curriculum design, technology choice, and all levels of decision making as developmentally appropriate so that they learn self-determination strategies and skills. Students are the future, and in order for them to succeed in the 21st century they must be digitally literate. By focusing on social capital, local schools could recruit community volunteers to offer evening and weekend training sessions and summer camps. The creation of after school tech clubs and multimedia gaming events could introduce technology to students who would otherwise be victims of the hidden curriculum. The local community might also collaborate to provide technology internships and part time job opportunities to better prepare students for the workforce.

Ongoing Training

Pre-service and ongoing training and professional development for educators must become a priority. Technology is constantly changing, and in order for teachers to be a source of enlightenment, they must be given access to the kind of technology that will serve their students best. Palak and Walls (2009) suggest, "Focus on teacher training should move away from isolated technology training and toward integration of technology into curriculum to help teachers use technology to support student-centered pedagogy" (p. 437). Additionally, administrators should budget for a tech facilitator to provide continued support for their staff and student body.

Physical Proximity

Local teachers and decision makers should research proven practices of computer and technology placement in their facilities. Computers should be located in classrooms rather than concentrated in lab settings. Studies have shown that students were more likely to use computers when they were accessible on a daily basis rather than having to wait for a computer lab schedule (Brown, 2000; Morse, 2004; Judge et.al, 2006). To promote ownership students should be in charge of turning the computers on/off and preparing them for scheduled use.

Policy and the Law

Legislators and policymakers must identify and rectify discrimination and inequities in technology in local districts as well as in state agencies. Zascavage and Winterman (2009) clearly state that federal law mandates high quality standards, yet implementation has not been addressed. Burgstahler (2002) notes, "Legal mandates… that apply to computer access for students are not always reflected in practice." Policy groups in support of UDL curriculum design need research-based evidence in order to encourage the publishing of accessible materials. It is time for stakeholders to voice their outrage that further change is needed- change that is culturally and pedagogically responsive to students with disabilities.

Research

Further research is needed in assistive technology and the Universal Design for Learning. Implementation is required that is consistent, current, and research based. Quinn et.al (2009) note, "There has been little research as to whether all students are receiving access to AT" (p.1). Whether the problems are teacher driven such as lack of training or budget driven due to lack of resources, studies are needed to determine appropriate educational access and equity. Additional research is also needed in the integration of assistive technology with the Universal Design for Learning model.

The empirical basis for UDL methodology has not been scientifically validated (Edyburn, 2010; P. King-Sears, 2014); therefore, research teams are necessary to ensure these technologies are sound. Studies are promising according to Spencer (2011), "Although there is not yet a conclusive body of quantitative research on student outcomes related to UDL, the literature documents benefits that include reduced behavior problems, increased metacognitive knowledge, and improved access to the curriculum for struggling learners" (p.10). Equitable use of curriculum materials like digital text is possible through the lens of UDL if key features are targeted and weaknesses redesigned (M. King-Sears, 2009). However, further research is needed

to inform practitioners and educators. Curriculum that is flexible, differentiated, and research-based could break down the barriers that students with disabilities face.

Curriculum Access

Finally, research is needed to determine what various forms of curriculum materials are being utilized today for students with disabilities. In addition, what types of curriculum materials are students with disabilities being denied access to, or conversely, being provided appropriate access? Studies should also determine what forms of curriculum materials are not included in the IDEIA (2004) statute and what materials students require.

Conclusions

Bridging the Gap

Reinhart et al. (2011) state, "The Second Level Digital Divide shapes the future for all students as they navigate a technologically advanced global village." Solving the problem requires careful examination of access to technology as well as technology equity. Further studies are needed to investigate pedagogical practices that advance higher order thinking skills. Moreover, research evidence for UDL as a scientifically validated intervention has been limited to date.

The marginalization of students with disabilities continues to plague our nation's educational system. Kalyanpur & Kirmani (2005) conclude, "The implications are enormous and the costs to society great, as these students are impeded by their lack of technological skills from entering the competitive world of college… or work." The digital divide continues to be a significant issue and will need a collaboration of policy and decision makers to bridge the troubled waters of inequity in support of students with disabilities.

Although it has been over four decades since Simon and Garfunkel topped the chart with their popular song "Bridge over Troubled Water", the lyrics for students with disabilities prove encouraging…"Your time has come to shine…all your dreams are on their way." Bridging the troubled water of inequity and fully embracing the potential of digital inclusion is a lofty goal, but one that deserves critical attention and discourse.

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