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How Expert Special Educators Effectively Negotiate Their Job Demands

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Abstract

This qualitative case study explored how three expert secondary special education teachers in Hawaii successfully negotiated their job demands. Purposeful sampling was used to select one secondary school on the Leeward coast of Oahu. We used reputational-case sampling to select participants that fit Dreyfus and Dreyfus' (1980) expert theoretical construct, and defined expert special education teachers as (a) licensed to teach special education in Hawaii, (b) taught special education in Hawaii for a minimum of 6 years, and (c) nominated by their principals and special education department chair as experts. Data were derived from semi-structured interviews, observations, and teacher-kept time journals and were analyzed through individual and cross-case analysis to uncover underlying themes. Findings from this qualitative study identified resources and supports, skills, behaviors, and dispositions that three expert special education co-teachers used to effectively manage their multiple job demands such that they averted burnout and remained in the field. Major themes regarding what helped the participants juggle their job demands included relying on others for help; working beyond required work hours; multi-tasking; and having good classroom management skills, a positive attitude, and empathy. These results have implications for teacher education programs, administrators, and practitioners regarding the qualities of expert special educators, how to move from a novice to expert teacher, and providing role clarification.

How Expert Special Educators Effectively Negotiate Their Job Demands

What is the one thing that government, research, and popular press reports in the United States all have in common with respect to special education? Answer: There is a severe shortage of special education teachers. Special education teacher positions are difficult to fill in all regions of the United States, with 98% of school districts nationwide and every state experiencing shortages of special educators (Thornton, Peltier, & Medina, 2007; U.S. Department of Education, 2015). These shortages likely will continue to get worse as qualified special education teachers exit the field, and the overall special education population increases (Data Accountability Center, 2009a, 2009b, 2009c, 2010; Emery & Vandenberg, 2010; Smith, 2012; Smith, Montrosse, Robb, Tyler & Young, 2011). Unfortunately, the special education teacher shortage has a direct impact on the quality of education provided to students with disabilities. Several scholars have emphasized the positive impact that qualified special educators have on the academic and functional achievement of students with disabilities (Billingsley, 2004a; Darling-Hammond, 2004; Darling-Hammond & Youngs, 2002). And as the total number of special education teachers in the U.S. increased between 2008 and 2010, so did the number of

special educators who were not *highly-qualified* according to No Child Left Behind (Data Accountability Center, 2008a, 2008b, 2009b, 2009c, 2010). To fill vacant positions, unqualified teachers are often hired to provide services for students with disabilities. In these situations, students with disabilities often receive services from unlicensed and inexperienced special educators, which can result in inadequate educational experiences and reduced achievement levels (Billingsley, 2004a; Darling-Hammond, 2004; Darling-Hammond & Sclan, 1996).

To service the needs of students with disabilities and comply with the standards of the Individuals with Disabilities Education Act (IDEA), educators and policymakers "must be aware of the special education teacher shortage, take steps to increase the supply of teachers, and lower rates of attrition" (Thornton et al., 2007, p. 233). It is imperative that steps are taken to retain quality special educators for the sake of providing students with disabilities appropriate educational opportunities (Billingsley, 1993, 2004a, 2004b; Darling-Hammond, 2004; Darling-Hammond & Sclan, 1996).

Job Demands of Special Educators

Lack of time, lack of resources, high caseloads, excessive paperwork, too many meetings, severed relationships with colleagues, lack of support, and excessive job stress are cited by special education teachers as reasons for leaving their jobs (Billingsley, Bodkins, & Hendricks, 1993; Plash & Piotrowski; 2006; Shimabukuro et al., 1999; Thornton et al., 2007; Tschantz & Markowitz, 2002). The job demands of special educators require that they juggle many tasks, which may include planning, coordinating, and attending many meetings; completing considerable amounts of paperwork; collaborating with parents and colleagues; supervising paraprofessionals; collecting data; planning and delivering instruction with general educators in co-taught classrooms; implementing behavior management plans; and delivering instruction to numerous students with varying disabilities under the pressures of federal mandates. Oftentimes, the stress that comes with these numerous and varied tasks leads special educators burnout, leave the field, or both (Billingsley, 2004a; Billingsley, Bodkins, & Hendricks, 1993; Kaff, 2004; Shechtman & Leichtentritt, 2004; Shimabukuro et al., 1999; Thornton et al., 2007; Tschantz & Markowitz, 2002).

Studies focusing on reducing special education teacher burnout and attrition rates (e.g., Cecil & Forman, 1990; Cheek, Bradley, Parr, & Lan, 2003; Westling, Herzog, Cooper-Duffy, Prohn, & Ray, 2006; Whitaker, 2000) have primarily focused on identifying variables that contribute to burnout and attrition. However, little is known about how expert special education co-teachers effectively balance their job demands. Evaluating the job demands and effective time management strategies used by experienced, expert special education teachers may help yield information that can be used to design interventions and provide supports to improve special education teacher retention. As Otto and Arnold (2005) stated, "acquiring feedback from experienced educators can help identify the areas needing reform in order to retain special education teachers" (p. 253).

Purpose

The purpose of this case study was to identify and explore resources, supports, and skills used; and behaviors and dispositions exhibited by expert special education co-teachers to successfully negotiate their job demands.

Method

Participants and Setting

We used purposeful sampling to select one secondary school that employed several special educators who were eligible to participate in the study. Specifically, we employed reputational-case sampling, in which participants were recommended by knowledgeable individuals as the best examples for the phenomena under study (McMillan & Schumacher, 1997). We defined expert special education teachers as: (a) having a license to teach special education in the state, (b) having taught special education for a minimum of six years, and (c) nominated by their principals and special education department chair as an expert special education teacher who effectively negotiates the demands of the job. We used the criteria of teaching for a minimum of six years because research has indicated that it takes three to five years of professional experience to demonstrate competence in the classroom (Darling-Hammond, 2007; Eraut, 1994). The nomination form used by the principal and special education department chair to select expert special educators was derived from the expert category in Dreyfus and Dreyfus's (1980) Novice to Expert Theory, which posits five sequential phases of development: (a) novice, (b) advanced beginner, (c) competent, (d) proficient, and (e) expert. Experts exhibit deep, tacit understanding; ease with job performance; independence; holistic grasp; and vision of what is possible (Dreyfus & Dreyfus, 1980; Lester, 2005). The theory was used as a framework to analyze how expert special education teachers manage their job demands. For example, an expert special educator's ability to adapt and make adjustments as necessary (Dreyfus, 1981; Dreyfus & Dreyfus, 1980) may give them the flexibility and intuitive decision-making skills necessary to successfully execute their multiple job demands. We individualized the nomination form to fit the specific job demands of a special educator by taking Dreyfus' (1981) detailed characteristics of experts and categorizing them into the five general domains of expertise as defined by the Professional Standards for Conservation: knowledge, work standards, autonomy, coping with complexity, and perception of context (as cited in Lester, 2005). For example, the perception of context category reads that an expert special educator is able to see the overall picture and alternative approaches, and has a vision of what may be possible in regards to the job duties required of a special educator.

Three expert special education teachers from the selected school participated in this study; pseudonyms were used to protect their confidentiality. The first participant, Ms. Snow, was a female in her early 30s who was of Asian descent. Ms. Snow was co-teaching with a general education teacher in a 9th grade physical science line. She had been teaching special education for six years and had an IEP caseload of 11 students. The second participant, Ms. Harmony, was a female in her early 40s and was Filipino. Ms. Harmony co-taught 9th grade Math and had been a special education teacher for 20 years. She had an IEP caseload of 15 students. The last participant, Ms. Raffy, was also a female in her early 40s. She was Caucasian and had been officially teaching special education for six years. She was co-teaching 9th grade English and had 15 IEP students on her caseload. When referring to the participants' caseloads, the numbers are not inclusive of the total number of students in their classrooms. Their caseloads only represent the number of students for whom they had the responsibility of coordinating the procedures and paperwork related to the evaluation, eligibility, and IEP processes.

About 2,200 students attended the school during the time of the study. A large majority of the student population was of Filipino and Hawaiian ancestry. Approximately 600 students (27%) met the criteria to receive a free and reduced lunch and 232 students (10.5%) were eligible for special education services. The majority of the school's special education population received services under the categories of specific learning disability and other health impairment. The school employed 115 teachers with an average teacher to student ratio of about 1 to 19. Twenty-three of the 115 teachers were special education teachers; 16 of which were highly qualified to teach special education.

Measures and Procedures

We used teacher-kept time journals, transcribed semi-structured audio-taped interviews, detailed observation field notes of teachers in their natural settings, and other documents (e.g., meeting minutes, lesson plans) to collect data on the resources, experiences, supports, behaviors, and skills that these expert special education teachers used to manage all aspects of their jobs.

Time journals and interviews. We asked participating teachers to keep time journals documenting their work-related duties for an entire work week. We asked participants to select a work week that was typical of their job-related duties. The teachers were asked to document their work-related duties from Monday through Friday in 60-minute intervals. At the end of each work day, participants were asked to reflect and comment on their work day in paragraph form.

Interview questions directly addressed the participants' resources, supports, experiences, behaviors, and skills that helped them effectively manage their job demands. We developed the interview questions in an open-ended manner that encouraged participants to respond in narrative form. Questions included but were not limited to: please describe what you do during a typical workday, do you feel like you are able to do everything expected of you as a special educator? Why or why not? How have you been effective in managing your job demands? Tell me about a time when you were effective in successfully carrying out your job demands. The location and time of the interviews were scheduled at the convenience of the participants. The lead author conducted all interviews at the participants' school. Each interview lasted for approximately 30-45 minutes and was audio-taped using a digital recorder.

Observations and artifact documents. Observations involved the lead author shadowing each of the participants for two entire workdays. The observations were conducted on different days than the participants recorded activities in their time journals. During these observations she sat at the back of the classroom and recorded the participants' behaviors related to how they managed their job demands in their natural work environments. Whom the participants interacted with, the length of their behaviors, and location were also recorded during the observations.

In addition to the time journals, we asked participants to provide all documents mentioned in their interviews and time journals as additional corroborating documents. Documents included IEP templates, weekly calendars, and to-do-lists.

Credibility procedures. Data collected for this study were given to second author for the purpose of peer debriefing (Creswell & Miller, 2000; Spall, 1998). The process involved

challenging biases and assumptions, and asking questions about interpretations and under- or over-emphasized points.

Intensive involvement occurred as the lead author spent two entire work days with each participant. The rich data captured through intensive involvement of shadowing participants and transcriptions of interviews were analyzed and compiled in numerical expressions (Maxwell, 2005). For example, participants documented how often and how long they stayed beyond required work hours, allowing us to numerically express how often they stayed beyond required work hours as a strategy to help them manage their job demands.

Furthermore, a focus group meeting was conducted where all participants met with the lead researcher for approximately 60-90 minutes to review preliminary analyses regarding accuracy of interpretation and to clarify and elaborate on emerging themes. This process, also known as respondent validation or member checking, provided a venue for the researchers to minimize the likelihood of misinterpreting the meaning of what participants said and did (Creswell, 2007; Lincoln & Guba, 1985; Maxwell, 2005). We used also used additional corroborating documents (e.g., IEP templates, to-do-lists) to triangulate participants' (a) responses to interview questions, (b) observed behaviors, and (c) teacher-kept journals.

Data Analysis

Once collected, we organized data from four sources (transcribed interviews, observation field notes, time journals, and documents) to construct a case study description of each individual teacher. Each participants' words and behaviors were categorized into concepts or emerging themes (Jones, Torres, & Arminio, 2006). We then engaged in cross-case analysis to uncover common patterns between participants (Creswell, 2007) by carefully examining the words and actions used by the participants to convey their experiences. Using the constant comparative approach, we attempted to saturate themes until no further information could be found to provide insight into the category (Creswell, 2007). Finally, we coded data according to themes and extracted examples that summarized how participating expert special education teachers identified their job demands and effectively managed them.

Results

As summarized in Table 1, participating expert special educators used a variety of resources and supports, skills, and behaviors and dispositions to manage their multiple job demands.

Table 1
Resources, Supports, Behaviors, Dispositions and Skills that Helped Expert Special Educators Effectively Manage Their Job Demands

Resources & Supports	Skills	Behaviors & Dispositions
-Planning period (e.g., used to hold IEP meeting) -Personnel support (e.g., co-teacher, educational assistant, substitute teacher) -Utilizing teaching tools (e.g., rubrics, assistive technology)	-Effective classroom management strategies -Relevant teaching (e.g., providing real-life examples that students can relate to)	-Working beyond required work hours -Collaboration (e.g., working with co-teacher) -Use of multiple communication methods -Multi-tasking -Empathy and rapport with students -Positive outlook

Resources and Supports
The participants mentioned a variety of resources and supports that assisted them in effectively negotiating their job demands, including using their planning period and supportive school personnel such as co-teachers, educational assistants (EAs), and colleagues to create more time in the day to attend to critical tasks. Additionally, participants used teaching tools such as rubrics and assistive technology to maximize efficient use of time.

Using planning periods and collegial/personnel support to create more time in the day. All three participants utilized their planning periods as a resource to efficiently manage their job demands. They used their planning periods to hold IEP meetings, complete paperwork, communicate with parents, collaborate with colleagues, run class advisor errands (e.g., getting signatures, making decorations for prom), and catch up on emails. Ms. Harmony used her planning period to complete a portion of the school's accreditation report, put posters in her classroom, and collect work for two of her students who were going to be out due to surgery. Ms. Raffy used her planning period to help students with study skills, complete a survey for a federal grant, and make copies.

At times the participants attended IEP meetings, conducted class advisor business, and communicated with parents during class time while their co-teachers ran class. For example, Ms. Snow left class after fifteen minutes to attend a meeting with district personnel to discuss an IEP. Ms. Raffy was also observed attending an IEP meeting while her co-teacher took over the class. Ms. Harmony indicated in her journal that she spent some class time running errands for class advisor business while her co-teacher ran class. Ms. Harmony was also observed stepping out of class to call parents while her co-teacher presented a math lesson. Ms. Raffy explained how her

co-teachers over the years have helped her be more open-minded and have introduced her to more efficient ways of doing things.

Two of the participants used their EAs to help them complete their job demands. Ms. Harmony's EA tutored students after school and helped her to work one-on-one with students who needed additional help in class. She positioned her EA near an unruly group of students in class to minimize behavioral problems and distractions while she taught class. The EA was also utilized to make copies and find a student who cut class. Ms. Raffy had her EA help run errands for class advisor business, redirect students in class, and cover her study skills class while she attended an IEP meeting.

Ms. Harmony was the only participant who got a substitute teacher so that she could complete a variety of job related tasks. Although she had a substitute teacher for the day, she remained at work from 7:30am to 5:00pm. During this time, she worked on school wide initiatives, student evidence binders, sophomore banquet ticket sales, laminating posters for her classroom, writing IEPs, and developing differentiated lesson plans.

Using teaching tools to maximize efficiency. One participant used rubrics and assistive technology to manage her job demands more efficiently and effectively. Ms. Raffy agreed to be a part of an assistive technology pilot project conducted by a local university. As a part of the project, she received a couple of laptops that had a text-to-speech program. She explained how although the program ran slowly at times, it seemed to be beneficial to some of her students who struggled with reading. She talked about how convenient it was to have the books they were reading in class downloaded onto the program and how the students could use the laptops to conduct research. She also used rubrics to grade and commented that "I never used to grade with rubrics, but now I find that I can't do without them, because they speed things up so much."

Skills

The participants exhibited strong classroom management skills, made the content relevant, and drew upon their own experiences to make instruction more efficient and effective for their students.

Classroom management. All three participants appeared to be skilled at managing classroom behavior. They all appeared to be the primary disciplinarian in their co-teaching relationships. Their effective classroom management skills seemed to make one of their primary job duties, teaching groups of diverse students, more achievable.

All three participants used the tone of their voice, gestures, and proximity to redirect students to get back on task. For example, during one instance Ms. Snow positioned herself near an unruly group of students where they could see her tilt her head and use her eyes to communicate. Without saying a word, the students immediately scattered and went back to their seats. Without saying a word, Ms. Harmony stood in front of a class that was unsettled and glared at them quietly; the class took notice and settled down shortly after. These classroom management tactics got the students focused on the task at hand, which seemed to allow the participants to be more effective in delivering the lesson to the students. During another incident, Ms. Snow interrupted a noisy class and her co-teacher with a calm tone that was loud enough for all to hear and told the

class what they should be focused on; the classroom became silent and the co-teacher continued. When students got overly excited about a lab demonstration, Ms. Snow calmly told them to take two steps back and they complied. Students seem to respond to her calm and firm tone. Getting the students focused and settled seemed to help Ms. Snow and her co-teacher get through the lab demonstration more efficiently.

All three participants used grouping and preferential seating strategies to manage classroom behaviors. For example, Ms. Harmony grouped her small study skills class by gender (2 girls in one group and 4 boys in another). She explained that this arrangement helped prevent distractions with the opposite sex; it prevented them from flirting with one another during class time. Ms. Snow separated two students who were distracting each other. To maintain the peace between classmates, Ms. Raffy regrouped students as she saw fit. In addition, Ms. Raffy and her co-teachers split one of their class periods in half due to major behavior issues that she thought stemmed from low reading levels apparent with many of the students in that particular class. She explained how this helped her and her co-teachers better monitor student behavior and afforded them time to work more one-on-one with students to boost their reading levels.

Another effective classroom management skill that all three participants displayed was circulating around the classroom. Ms. Snow constantly circled the room, even when she was giving instruction. Ms. Raffy and Ms. Harmony took turns circling the room with their co-teachers. Circulating around the classroom seemed to help minimize disruptions while the participants delivered instruction to their students.

Ms. Snow often had individual conversations with students who were not focused on the task at hand. She pulled a student to the side who kept talking with a neighbor and spoke with him about his choice of seating himself next to people who distract him. After the talk with Ms. Snow, the student chose to move himself to another seat and appeared to be on task the rest of the class period. During another instance, she pulled another student to the side of the classroom to talk with him about his behavior and the consequences of having to stay after school for her to re-teach him the concept he was missing. She approached another student who appeared to be quiet and removed him from the rest of the class; Ms. Snow sat next to him, talked with him about how his day was going and helped him with a problem.

The structure of Ms. Harmony's class seemed to be a key component to her effective classroom management. Students seemed to know the following routine:

1. Work independently on problems from the previous day's lesson.
2. Teachers model new problems.
3. Students work with one another to try the problems themselves.
4. Teachers do temperature check and re-teach concepts as needed.
5. Assign homework and allow students to begin if time permits.

Students seemed comfortable with this structure and seamlessly moved through the routine. In her Study Skills classes, Ms. Harmony had students fill out a document called "Study Skills Student Accountability" in which they wrote down the work they completed for the day; this self-management strategy seemed to help students stay on task.

Possessing good classroom-management skills appeared to help the participants be more effective at delivering classroom instruction, a primary job duty. Furthermore, being an effective teacher seemed to contribute to the participants' abilities to efficiently juggle other job demands. For example, Ms. Harmony was able to check emails while students worked independently without problematic behaviors.

Relevant teaching. Two of the participants, Ms. Snow and Ms. Raffy, made content relevant to students, which in turn made their teaching more effective and efficient. When Ms. Snow and Ms. Raffy provided real-life examples the students could relate to, the students made gestures and comments that showed they comprehended the subject matter. For example, during a lesson on force and motion Ms. Snow posed the following scenario and question to follow: Same car different driver, one driver is a small Japanese lady and the other is a big Samoan man. Which car will go faster/have an easier time accelerating? With a big smile on her face, the student said "Da small Japanese lady of course Miss." When Ms. Snow asked her why, she answered correctly that the Samoan man is bigger and has more mass. The student was able to take this concept and create her own bumper car example, which she modeled for the class. The student seemed pleased with herself and Ms. Snow did not have to re-teach the concept.

Ms. Raffy was observed making instruction relevant to her students seven different times over the course of two days. She read a short story called "Growing up Local" in Pidgin (also known as Hawaiian Creole English) to a small group of students. They all listened to the story intently and accurately answered questions about the story during discussion. In another period, they read the same story and Ms. Raffy shared her personal story about moving to Hawaii and becoming familiar with Hawaiian culture. She made a joke about pronouncing the street names incorrectly. They laughed and seemed to relate to her and the character in the story. During another class period, she discussed a story called "American Eyes" with the class. Ms. Raffy posed questions such as "How do you think the girl felt when she was told that she stinks like a Korean?" Ms. Raffy got students deeply involved in the discussion by having them think of a time when they were made to feel bad; they were able to use their own experiences to put themselves in the character's shoes.

On another occasion, while describing solar panels to a couple of students in her study skills period, Ms. Raffy discussed uneven sources of energy and related it back to real life by saying "On cloudy days I have to take fast showers." The students got excited about understanding the concept after her comment and tried to chime in all at once. One student said "Oh yeah, because the heat runs out!" Making instruction relevant to students' lives enabled participants to teach effectively and efficiently, allowing students to understand content quickly and eliminating the need to re-teach concepts.

Behaviors and Dispositions

The participants exhibited several behaviors and dispositions that enabled them to juggle their job demands. Behaviors included working beyond required work hours, collaborating and using multiple communication methods, and multi-tasking during study skills class. Developing rapport with students and maintaining a positive outlook were professional dispositions exhibited by the expert teachers.

Working beyond required work hours. The most frequently cited theme was working beyond required work hours. Arriving at work early, using their designated break times (lunch and recess), staying past required work hours, and taking work home was crucial to allowing the participants to manage all aspects of their job demands. Two of the participants regularly arrived 30 to 55 minutes early to work on their job-related tasks. They would use this time to create to-do-lists, read and respond to emails, communicate with parents, and plan lessons. Lunch time and recess were often used by participants to catch up on emails, schedule IEP meetings, develop lessons, communicate with parents, collaborate with colleagues, work with students, and conduct class advisor business. "Unfortunately, recess is too short and is usually spent for last minute things! Students can flock to ask a million clarifying questions!" said Ms. Harmony. Lunch time was rarely used to eat lunch. If participants ate, it was referred to as a working lunch.

All three of the participants indicated that they stayed past required work hours every day. Two of the participants stated that the only way they can complete all of their job requirements is stay past required work hours. The other participant said that she stayed past required work hours because she set a standard for herself to go above and beyond what was required for the sake of her students. The participants typically stayed between one and a half and three hours past their required work time. On one occasion Ms. Harmony worked from 3:00 p.m. to midnight, nine hours past her required work time, to chaperone and clean-up after the sophomore banquet. Staying past required work hours allowed participants to tutor students and provide them with supplemental help in areas where they struggled, and to complete legal paperwork related to re-evaluations and IEPs. Participants also took their work home. One participant, Ms. Raffy, preferred to do paperwork at home because she was free from distractions of the workplace. Ms. Snow said that students' parents called her at home, even while she was cooking dinner for her family, which allowed her to communicate with parents free from work-related distractions.

Communication and collaboration. Communication and collaboration was mentioned by all three participants as helping them meet their job demands. All three were observed collaborating with other teachers before, during, and after class. In addition, they used their planning periods and time before and after school to communicate with other teachers (mainly co-teachers), parents, administrators, and support staff (i.e., counselors, district resource teachers, EAs, and skills trainers). Collaborative discussions focused on student performance, grades, tutoring, instructional strategies, root causes for inappropriate student behaviors, class advisor business, and planning for meetings (i.e., accreditation, Professional Learning Communities, IEPs). Participants also expected to collaborate with other content area teachers in order to successfully teach their IEP students; therefore, they considered themselves teachers of all core content areas including electives.

Participants used multiple communication methods to collaborate with colleagues, administrators, parents, and support staff including email, text messaging, phone, and face-to-face meetings. Ms. Harmony used a communication book and a daily assignment and study skills checklist to communicate with her students' parents and other teachers. All three participants gave parents their personal cell phone numbers to keep open lines of communication. Ms. Snow commented, "I give all my parents my cell number so they call me 24-7." Two participants talked about how parents called them to talk about issues that occur in the home. Listening to parents helped them make connections to what is going on at school and build rapport.

Multitasking. The participants explained that the need to multitask is greater at the secondary level due to the higher caseloads, multiple class periods, class advising, and collaborating with several other content area teachers. The participants were observed multitasking at different times during their work day. During the study skills class, Ms. Snow helped one student with a poster board while going back and forth to help other students with geometry, finding articles for a project, and pre-writing an essay. During this time, she questioned students about answers on worksheets, prompted them to look at bold phrases and pictures in text, showed one student how to print her paper from the laptop, and assisted with spelling. Ms. Snow capitalized on student strengths to help her multitask. For example, she had a student who finished his assignment early help another student with the same assignment.

Ms. Harmony used a portion of her Study Skills period to complete class advisor tasks that included ordering tiaras and contacting a photographer for the upcoming prom. In addition, she created graphic organizers for her class, answered emails, and visited her colleagues' study skills period to see if other students needed assistance with math. She also found pockets of time to speak with a colleague while she answered student questions about tobacco projects, science, math, and video editing. Ms. Raffy described her typical workday as "putting out lots of fires" and Harmony described it as "a whirlwind," because there is always something to do and someone who needs their problems solved. Ms. Raffy mentioned days that were dominated by school wide initiatives and prom business; she expressed how much she missed time spent with students on those types of days.

Two of the participants (Ms. Harmony and Ms. Snow) expressed how at times they did not feel like they could do everything expected of them, because there were just too many things to do. However, prioritizing and multitasking helped them manage their feelings of being overloaded with the many facets of being a special educator. "I try to prioritize, but then I can't fit unknowns into my list of priorities," said Ms. Raffy.

Empathy and rapport with students. Ms. Harmony's and Ms. Snow's students were comfortable telling them just about anything. These teachers also showed that they were able to identify with and understand their students' feelings, both the difficult and positive things they experienced. Ms. Harmony was observed pulling one student who looked sad and lethargic to the side of the classroom near her desk. She asked him if he was alright and she took the time to listen to what he was going through. On one occasion, Ms. Harmony was observed having a heart to heart talk with the entire class. She took some time at the beginning of the class period to talk to them about how much she cared about their success and the belief she had in all of them to succeed. Furthermore, Ms. Harmony provided all her students with a "Student Questionnaire" at the beginning of the school year. The questionnaire prompted students to write about their likes and dislikes in school, hobbies, advice for teachers, and how they learn best. She explained how this questionnaire helped her to understand the students better, which in turn helped her to efficiently meet the needs of her students.

A female student talked with Ms. Snow candidly about her boyfriend and then when Ms. Snow left the room briefly the student said, "She is a good teacher." Another student was observed speaking with Ms. Snow about his sexual orientation and his comfort talking with her about

being gay. Ms. Snow helped this particular student look through his bag full of crumpled papers to find missing assignments. During a conversation with another student it appeared that Ms. Snow knew his family and had the boy's sibling as a prior student. They chatted about his sister and how she was having her first baby shower. Ms. Snow seemed aware of the issues going on in the student's home. During another class period Ms. Snow talked with her students about the upcoming prom. They all seemed excited to tell her about what they were wearing and who they were taking as their dates. Some of them even told her what they were planning to do after prom. On another occasion, a student spoke with her about frustrations he was having living with his aunty. Ms. Snow did not judge him, just took the time to hear him out.

Ms. Raffy seemed to have an increased sense of empathy with her students because she is a parent of two children with disabilities who receive special education and related services. She explained how she can see things from the perspective of both parent and teacher when working with students with disabilities. Ms. Raffy said that her own children's success stemmed from a team that had good working relationships. Ms. Raffy expressed that being a parent of children with disabilities helped her be more efficient when developing IEPs and coordinating multiple cases, because she was already familiar with the process as a parent who sat through many IEP meetings.

With their empathetic nature and ability to establish rapport with students, all participants had students who seemed motivated to learn from teachers who they knew genuinely cared about them. The safe and caring environment they created seemed to make students more receptive to their teaching, which often saved them from having to re-teach concepts, which in turn allowed them more time to focus on other job duties.

Positive outlook. Ms. Harmony found inspiration in being a special educator and portrayed a positive outlook about her job. When asked how she was successful at managing her job duties, Ms. Harmony talked about how she woke up every morning with a cup of coffee, praised herself, and listened to inspirational music. She explained how inspiration was important to her and her co-teachers who spent a portion of their planning time to look for inspirational quotes that reminded them of why they got into teaching in the first place. Ms. Harmony's positive outlook was also seen in the interactions she had with her students.

Ms. Harmony praised one of her students for getting an A. She walked by another student intently doing his math work, smiled at him and said, "Feels good, yeah, when you know how to do 'em." In another class period, she complimented the entire class about how well they understood the lesson, cooperated with one another, and focused. Her tone was melodic in nature; positive and encouraging. Several students smiled and nodded at her as she complimented the class. Ms. Harmony appeared to be quite dynamic when instructing the class; her animated style seemed to command the students' attention. She even had a sense of humor while teaching. For example, she told the students that they were going to learn about "the good 'F word' -- factor." She would motivate the class with positive phrases like "You guys are rocking and rolling in here." Her high energy levels enhanced the positive vibe she gave off. She wrote in her journal that, "At the end of the day, I always feel productive and celebrate small steps! There's always tomorrow, promise of more things to complete!" Her positive outlook and ability to "celebrate the small steps" seemed to help her perceive her multiple job duties as

achievable. Ms. Harmony chunked her job duties into reasonable steps that she could meet, which seemed to motivate her to continue to achieve whatever job duties came her way.

Discussion

Findings from this qualitative study identified resources and supports, skills, behaviors, and dispositions that three expert special education co-teachers used to effectively manage their multiple job demands such that they averted burnout and remained in the field. In this section, we discuss the primary themes identified in the study, limitations of the study, and implications of the findings.

Resources and Supports

The collegial support given to all three participants by their co-teachers contrasts with Billingsley's (2004b) notion that many special educators struggle with their job demands due to a lack of support from their colleagues. Our participants were able to attend IEP meetings, conduct class advisor business, and communicate with parents during class time while their co-teachers ran class. When the participants had other job demands, their co-teachers willingly supported them by covering all aspects of classroom instruction. However, having general education co-teachers cover for special educators so that they could perform non-instructional tasks is far from ideal. Although it does not appear that the three expert special education were relegated to the role of instructional assistants in their inclusive classes, which has been frequently documented in the co-teaching literature (Scruggs, Mastropieri, & McDuffie, 2007), it appears that participants sometimes relegated their co-teachers to being solo teachers in order to meet their multiple job demands. Having supportive co-teachers seems to have contributed to participants' handling of job demands, but it is also possible that the participants' expertise could have contributed to having supportive co-teachers.

Teachers reported that planning time is crucial to helping students succeed in inclusive settings (e.g., Fuchs, 2010). Yet our participants often held IEP meetings, completed paperwork, communicated with parents, caught up on emails, gathered work for sick students, and conducted class advisor business during their planning periods to meet their job demands; which entails sacrificing planning time with colleagues. Again, this situation is less than ideal. Planning time between general and special education teachers should be used to co-plan for instruction, differentiation, and providing specially designed instruction. Using planning time for non-instructional tasks, while effective in providing time for work completion, does not accomplish the collaborative instructional implementation that is the goal of co-teaching (Cook, 2004).

Cook (2004) advocated for use of substitute teachers to enable collaborative planning time for co-teachers. Our participants instead felt they needed the time for paperwork. For example, Ms. Harmony had a substitute teacher handle her instructional responsibilities while she used the time to work on paperwork and other tasks. Other researchers have found that legal paperwork contributes to special education teacher attrition, particularly because it takes away from instructional time spent with students (Billingsley, 2004a; DeMik, 2008). Teachers interviewed by Tschantz and Markowitz (2002) reported that they spent less time doing paperwork related to special education when they had clerical assistance from a paraprofessional. In contrast, two of

our participants used their paraprofessionals to work with students while they completed paperwork and other clerical tasks.

Skills

Good classroom-management skills and making the content relevant created opportunities for our participants to complete other job duties. Washburn-Moses (2005) and Casey et al. (2011) said that managing student behaviors was one of the major daily responsibilities of special educators, and all three participants made managing student behavior a daily focus. They each had a repertoire of effective classroom-management skills (e.g., structure, routine, proximity, redirection, tone of voice) that helped create an effective and efficient learning environment (Washburn-Moses, 2005). It is possible that the rapport participants had with their students contributed to effective classroom management techniques with the students.

All three participants seemed assertive in nature and were skilled at making content relevant to their students, which helped them reach their students effectively and efficiently. Relevant teaching and their assertive nature seemed to help them execute their primary job duty of helping students understand concepts quicker. Assertiveness is associated with effective classroom management (Canter & Canter, 2001); and effective classroom management can lead to more effective and efficient student interactions and instruction. Core instructional competencies, such as classroom management and assertiveness, may serve as foundational skills that are necessary for expert special education teachers to be successful.

Behaviors

Our participants worked beyond required work hours to attend to the many tasks associated with their jobs (e.g., tutor students, check emails, create to-do-lists, work on school accreditation documents, communicate with parents, plan lessons, collaborate with colleagues, and conduct class advisor business; see also Casey, Dunlap, & Davidson, 2011; Vogler & Virtue, 2007). According to Cowne (2005) and Kaff (2004), special educators spend much of their time collaborating and communicating with parents and colleagues. The importance of communication may explain why participants in our study used time before, during, and after school to collaborate with parents and colleagues. Although their devotion to their jobs is admirable, the necessity of consistently accomplishing these tasks before and after their working hours begs the question of whether the requirements of a special educator's job are unrealistic to complete in the designated required work time allotted.

Dispositions

Empathy and positivity helped participants build rapport and made their job demands more manageable. Klis and Kossewska (1996) indicated that empathy could protect teachers against feelings of loneliness and burnout; perhaps providing insight into why the two participants exhibiting empathy have stayed in the field of special education. We speculate that these dispositions enabled the participants to put in the extra hours necessary to accomplish their many and varied tasks. Additionally, students seemed to be more receptive to Ms. Snow and Ms. Harmony's teaching due to the rapport and empathy they shared with students, which prevented them from having to re-teach concepts as much. In addition, Ms. Harmony's positive outlook seemed to help her view her multiple job duties as achievable, and appeared to motivate her to continue chipping away at them.

Limitations

Our study's findings should be considered within the context of a number of important limitations. First, the findings of this study should not be generalized to other special educators or settings. This study targeted a limited number of expert special educators (*n*=3) from one school who were nominated by their principal and special education department head to participate. The job demands and conditions of special educators may vary greatly by setting (e.g., alternative schools, resource classrooms, fully self-contained settings, grade levels) and between regions. The criteria that we used to identify participants as experts in their field are somewhat subjective. A certified and licensed special educator who has taught for a minimum of six years and meets the criteria derived from Dreyfus and Dreyfus' (1980) skill acquisition model may not be deemed an expert by some (e.g., there may be other factors that qualify a special educator as an expert). Although it has been applied to a variety of fields (e.g., nursing, aircraft pilots), the Dreyfus and Dreyfus (1980) skill acquisition model was originally proposed to train aircraft pilots and may not be valid for special educators. Finally, the interpretation of findings in this study may reflect the biases of the participants and the researchers. For example, the results may include some gender bias, because all three participants were female. The constructed role perceptions, behaviors, resources, supports, experiences, and skills that were found to be effective in juggling the job demands of a special educator depended heavily on the participants' personal feelings, experiences, and biases.

Implications and Recommendations for Future Research

In identifying resources, supports, skills, behaviors, and dispositions that our participants used to effectively manage their job demands, we suggest that administrators may want to consider giving more planning and preparation time to special educators teaching in inclusive settings. For example, the participants were allotted planning periods three times per week. They used these planning periods to manage job demands (e.g., completing paperwork, attending IEP meetings) rather than devote this time solely to the critical task of planning, yet they still had to work beyond required work hours on a daily basis. Allotting them a daily planning period may alleviate some of the time they spend completing job duties beyond their required work hours. Allowing them more planning time during the school day may also alleviate the need to use instructional time to collaborate with colleagues. If more time is not available during the instructional day, we recommend that schools provide compensation for teachers for their extra hours worked similar to many Extended-Day Contracts used for other personnel such as coaches.

All of the participants were consistently observed multitasking and working extra hours to complete their job duties. Allowing them more time through increasing time allotted for planning or reducing caseloads could possibly allow special educators to put more of a concentrated effort on specific tasks. For example, special educators could concentrate solely on instructing students rather than checking emails or collaborating with colleagues and parents during instruction time. Providing special educators with substitute teachers to complete job demands may also be helpful. We also recommend that much of the clerical work be performed by paraprofessionals, and qualified licensed teachers deliver instruction. Policymakers may also want to consider increasing the pay of special educators to motivate them to effectively complete their job demands.

When interviewing potential special educators, administrators may want to consider skills and personality traits found in the expert special educators who successfully balance their many job demands and roles. Interviewees who have displayed good classroom management skills, are technologically inclined, are empathetic, and have a positive outlook may be promising special educators. In addition, administrators may want to look at providing professional development in the areas listed above to help their special education teachers improve their craft and effectively manage their tasks.

Researchers may want to further explore the process that one goes through from being a novice special educator to an expert special educator. This will help to provide information to practitioners and administrators on how to develop expertise. It would be interesting to see the impact that being taught by expert special educators has on the academic and functional outcomes of students with disabilities. Furthermore, additional research should be conducted on the relationship between expertise and retention rates in the field of special education.

Lastly, it may be beneficial to further explore whether the time in a traditional school day is enough for special educators to complete all of their job demands. It may be that special educators simply have too many tasks for most individuals to reasonably accomplish, which is a recipe for burnout and attrition. Researchers should look into whether the resources, supports, behaviors, skills, and traits found in this study to help the participants effectively juggle their job demands can be replicated in other regions and settings (elementary versus secondary, fully self-contained versus resource and inclusion). The results of these types of future studies could clarify the job demands of special educators teaching in different settings. It may also be worth exploring how expert special educators might mentor novice special educators in the "unwritten rules" of managing job tasks that are typically not part of a pre-service curriculum.

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Inclusive Concurrent Enrollment: A Promising Postsecondary Transition Practice for Building Self-Determination among Students with Intellectual Disability

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Abstract

There have been significant advances in educational programming and postsecondary options targeting acquisition of self-determination skills among students with intellectual disability. This article provides a description of an inclusive concurrent enrollment (ICE) program at an urban public university and describes findings related to student acquisition of self-determination skills necessary for successful postsecondary transition. A sequential explanatory design was employed to examine the development of self-determination among nine participants who engaged in ICE ranging from one to three semesters. Findings indicated that students who participated for at least two semesters demonstrated growth in self-determination, whereas no significant growth was observed for students who participated one semester. These preliminary findings suggest that ICE is a promising transition practice. Further research is needed to examine the impact of program duration on development of self-determination skills to increase college access.

Inclusive Concurrent Enrollment: A Promising Postsecondary Transition Practice for Building Self-Determination among Students with Intellectual Disability

Despite federal legislation, including the Individuals with Disabilities Education Act (IDEA), that mandates educators to prepare students with disabilities to achieve access to further education and employment options (Mock & Love, 2012), students with ID encounter significant challenges with high school completion and subsequently obtaining competitive employment (Shogren & Plotner, 2012). Although IDEA was implemented to provide special education and related services to students through age 21, there is a dearth of educational opportunities that effectively meet the needs of students with ID as they transition to adulthood (Lee & Will, 2010). To address achievement and employment gaps, the Higher Education Opportunity Act (HEOA) was passed to provide greater access to higher education opportunities for students with ID (HEOA, 2008). Funding associated with HEOA has resulted in the development and expansion of PSE options across the United States (Hart & Grigal, 2010; Lee & Will, 2010). The Transition and Postsecondary Programs for Students with Intellectual Disabilities (TPSID) is an example of a federally funded initiative that was designed to provide inclusive and comprehensive PSE opportunities for students with ID (Folk et al., 2012). TPSID and other initiatives have expanded inclusive higher education options with a focus on skill acquisition necessary for gainful employment and college access, including self-determination skills, independent living skills,

and other soft skills, that promote college and career readiness. The present article provides a preliminary examination of an inclusive concurrent enrollment (ICE) program on outcomes of self-determination skills among high school young adults as they transition to PSE.

Inclusive PSE Programming

Although PSE opportunities for students with ID are on the rise, there are relatively few options for students with ID to engage in fully inclusive PSE programs (Grigal & Hart, 2010; Uditsky & Hughson, 2012). PSE programs purport to be inclusive, but many continue to provide separate skills-based training through segregated courses and workshops (Uditsky & Hughson, 2012). Higher education institutions that offer inclusive programming maintain the same academic rigor and high expectations for all students, regardless of disability status (Hart & Grigal, 2009). Students with ID can access disability services to receive accommodations, while college instructors should not reduce academic expectations (Hart et al., 2010). Uditsky and Hughson (2012) emphasized the benefit of facilitating connections to the natural supports that universities provide to all students, such as career services, disability services, student mentoring programs, etc., rather than creating exclusive, segregated offerings for students with ID.

Outcomes from inclusive PSE and high school programming have been positive in preparing students for employment and careers (Causton-Theoharis, Ashby, & DeClouette, 2009; Folk et al., 2012; Uditsky & Hughson, 2012). Self-determination, which includes self-awareness, self-advocacy, goal setting, problem solving, and decision making, is a fundamental skill that is required for successful postsecondary transition among youth with ID (Landmark, Ju, & Zhang, 2010; Wehmeyer et al., 2007; Wehmeyer, Palmer, Shogren, Williams-Diehm, & Soukup, 2013). Several evidence-based interventions and education planning models that focus on self-determination skill attainment have been effectively employed in postsecondary transition (e.g., Wehmeyer et al., 2007). Two examples include the Self-Determined Learning Model of Instruction (SDLMI), a curriculum that focuses on goal attainment through engaging in self-directed activities (Wehmeyer, Palmer, Agran, Mithaug, & Martin, 2000), and Whose Future is it Anyway? (WFA), a curriculum designed to promote active student engagement in PSE (Wehmeyer, Lawrence, Garner, Soukup, & Palmer, 2004).

There is growing evidence suggesting that participation in self-determination interventions is linked to enhanced overall self-determination among students with ID (Wehmeyer et al., 2013). Self-determination status at high school exit has also been associated with greater community engagement and positive post-school outcomes (Shogren, Wehmeyer, Palmer, Rifenbark, & Little, 2015). Considering these positive outcomes observed among youth with ID, the opportunity to develop self-determination skills should be infused in PSE programming, such as through engagement in inclusive education and community-based activities rather than special, separate settings. In a preliminary investigation, Hughes, Cosgriff, Agran, and Washington (2013) found that high school students with ID from a high-poverty school who had limited exposure to inclusive classroom education and community-based transition activities reported significantly less use of self-determination skills compared to students with ID from middle-income communities with greater access to inclusive settings. These findings suggest the importance of greater participation in inclusive school and community environments and promoting self-determination, particularly in urban, high-poverty locations where employment

and recreational resources may be limited (Hughes et al., 2013; Washington, Hughes, & Cosgriff, 2012).

Purpose of Study

Although funding at the national and state levels (e.g., TPSID) has increased inclusive PSE and dual high school/college enrollment programming (e.g., Folk et al., 2012), there is minimal documentation of outcomes of such programs to date. The purpose of this study is to explore learning outcomes for students enrolled in an ICE program offered at an urban public university. The article will provide a description of the development and implementation of the ICE program and describe findings related to student outcomes on the acquisition of self-determination skills, including, autonomy, self-confidence, and self-advocacy. The following two research questions guided the investigation: Did participants' engagement in the ICE program contribute to the development of self-determination? If so, in what ways?

Method

Participants

As presented in Table 1, nine students engaged in the ICE program, ranging from 1-3 semesters. Six students completed 1 semester; 1 student completed 2 semesters; and 2 students completed 3 semesters. The participants included 6 male (who completed 1 semester) and 3 female (who completed 2-3 semesters). Of the 3 female students, 2 identified race/ethnicity and language(s) spoken as African American, English-speaking and 1 Haitian, bilingual Creole- and English-speaking. Of the 6 male students, 3 identified as African American, English-speaking, 1 Haitian, bilingual Creole- and English-speaking, 1 Latino, bilingual Spanish- and English-speaking, and 1 White, English-speaking.

Table 1
Individual Level Participant Data

Variable	*n*
Gender	
Male	6
Female	3
Length of Participation	
3 semesters	2
2 semesters	1
1 semester	6
Race/Ethnicity	
African American	5
Haitian	2
Latino	1
White	1
Language	
English only	6
English and Creole	2
English and Spanish	1

All participants concurrently attended a local urban public high school and audited 1 course per semester at the local urban four-year university. Students' age ranged from 18-20. Participants were diagnosed with a severe cognitive and/or learning disability and were unable to achieve the competency determination necessary for graduation by passing the State's comprehensive exam. The exam is given to all public school students to measure performance based on the State's curriculum framework and learning standards. No additional educational or diagnostic information was provided to the institution of higher education (IHE) due to privacy and confidentiality agreements with the local educational agency (LEA).

Measure

Participants completed the Adolescent Self-Determination Assessment- Short Form (Wehmeyer, Palmer, Shogren, & Seong, 2014) at least twice during attendance in ICE to measure growth in self-determination skills. The co-investigators at the IHE administered the survey in a single sitting, meeting individually with each participant, lasting approximately 45 minutes per session. During administration, researchers followed participants' preference for survey completion, whether through dictation or done independently. In addition, upon exit from the program, the three participants who engaged in ICE for greater than one semester engaged in an interview with co-investigators in collaboration with education coaches from the LEA.

Adolescent Self-Determination Assessment- Short Form. The Adolescent Self-Determination Assessment- Short Form (Wehmeyer et al., 2014) was used as a briefer alternative to The Arc's Self-Determination Scale (Wehmeyer & Kelchner, 1995), with all items assessing self-determination. The Arc's Self-Determination Scale has been field-tested and validated for use with students with cognitive and developmental disabilities. Cronbach's alpha for the full scale was .90, and alpha levels for 3 of 4 domains were: autonomy (.90), psychological empowerment (.73), and self-realization (.63). No reliability is available for the self-regulation scale due to the open-ended response format of items (Wehmeyer, Kelchner, & Richards, 1996). The Adolescent Self-Determination Assessment- Short Form also contains 4 sections that assess self-determination, totaling 28 items, including Likert-type scale items and short answer items (Wehmeyer et al., 2014). The 4 sections assess self-determination and include the following domains and subdomains: (a) autonomy (7 items); (b) self-regulation, containing 2 subdomains, interpersonal cognitive problem solving (6 items) and goal setting and task performance (1 item); (c) psychological empowerment (7 items); and (d) self-realization (7 items). Sample items on the autonomy domain include: (a) I plan weekend activities that I like to do; (b) I write letters, notes, or talk on the phone to friends and family; (c) I decorate my own room. Items have 4 possible response choices: I do not even if I have the chance (0); I do sometimes when I have the chance to (1); I do most of the time when I have the chance to (2); and I do every time I have the chance to (3). Twenty-one points are possible, with higher scores representing higher levels of autonomy.

The self-regulation, interpersonal cognitive problem solving subdomain includes story-based items. The student is given the beginning and ending of stories and is required to write (or dictate) solutions that would complete each scenario. Responses are rated on a scale of 0-2 points based on the effectiveness with which each solution resolves an identified problem in each story. The self-regulation, goal setting and task performance subdomain also includes a 2-part item on transportation. The respondent is asked to identify a transportation goal and steps required to

reach the goal. Responses are scored 0 (i.e., no identified transportation goal) to 3 (i.e., 3 to 4 steps are identified to reach the goal). Higher scores in self-regulation represent greater interpersonal cognitive problem solving and goal/task attainment skills.

The psychological empowerment domain includes items that demonstrate self-empowerment, including beliefs regarding ability, perceptions of control, and expectations of success. Students are presented 2 statements and are asked to select the statement that best describes them. For example, "I do not make good choices. I can make good choices." Items are scored a 0 or 1, and higher scores represent a greater sense of psychological empowerment.

The self-realization domain includes items that measure self-knowledge and self-awareness. Items are scored a 0 or 1. Respondents are asked if they disagree or agree with statements, such as, "I know what I do best." Higher scores represent greater self-realization, and total scores can be calculated using converted scores and percentile ranks (Wehmeyer et al., 2014). Overall total scores on the survey correspond to varying levels of self-determination.

Interview. The interview guide was developed based on the 4 domains assessed in the Adolescent Self-Determination Assessment- Short Form (Wehmeyer et al., 2014). Interview questions followed a semi-structured format to give participants opportunities to direct the conversation and expand our understanding of self-determination acquisition. The following sample questions illustrate the reflexive nature of the interview: (a) Tell us about the process of choosing classes. How did that go for you? (autonomy domain) (b) What was it like going through the process of applying for jobs? (self-regulation and goal setting domain) (c) What was it like to take classes here? How confident did you feel? (psychological empowerment domain) (d) You mentioned that you see yourself here at college as your future goal. Can you tell us a little more about that? (self-realization domain)

Interviews were conducted to maximize participants' comfort and sense of ease. As such, interviews were completed in a conversational manner over lunch with two interviewers, and students were encouraged to invite their educational coach if preferred. In all cases, students' educational coach participated and periodically offered support during the interview to respond to questions. Support consisted of enhancing understanding of questions and aiding in recalling experiences. Participants were not pressured to respond to items and were given as much time as needed, with interviews lasting two hours on average. The two interviewers worked in applied research settings with emerging adults with disabilities in clinical, classroom, and university settings and were serving as project coordinators of the ICE program. The participants had many previous interactions with the investigators as project coordinators, which aided in facilitating the interview process and building a sense of comfort.

Procedure

The ICE program at a large urban, public university (IHE) was implemented in partnership with a large urban, public school district (LEA). Approval to conduct research with students in ICE was obtained by the Institutional Review Boards of both the LEA and IHE, whereby all research processes were approved for the present study. Informed consent was obtained from all

participants during individual meetings with researchers and educational coaches. Informed consent included survey administration as well as engagement in interviews.

The ICE partnership was designed to provide transition personnel at the high school and faculty at the university with knowledge and support to offer students with ID the opportunity to participate in academic courses and social life of the university side-by-side enrolled college students. The ICE program at the IHE followed an inclusive model, whereby students with ID engaged in the university community similar to other college students and received supports through educational coaches and mentors (Folk et al., 2012; Hart & Grigal, 2010).

Participants could make use of student services and campus facilities available to all students, such as Disability Services for course accommodations and Career Services for employment assistance. Academic 504 course accommodations were provided through the IHE's Center for Disability Services. All students chose to disclose their disability and registered with the IHE's Center for Disability Services. Accommodations were provided based on student needs, including proctoring services on exams, preferential seating, and extended time on assignments and tests. Students in ICE participated in orientation day with all incoming university students. The LEA educational coaches served as transition specialists to assist with postsecondary planning. At the IHE, a designated Student Services advisor worked with participants to provide academic advising, a service available to all university students.

Participating students audited a variety of courses, such as, creative writing, art history, piano, voice, sociology, literature, music, criminology, American history, and graphic design. In collaboration with educational coaches from the LEA, the IHE's academic and career advisors helped students with course selection related to personal and future career and PSE interests. If students met the course prerequisites, they could register for credit, albeit none of the students in ICE met requirements to take courses for credit.

To encourage social engagement on the campus, students in ICE were paired with an undergraduate peer mentor. The mentor's role involved helping students in ICE to explore extracurricular activities and to encourage use of student IDs to access discounted community events. Mentors and students in ICE typically met one hour weekly and engaged in a variety of activities on and off campus, including visits to the game room, greenhouse, gym, pool, museum, and meeting for lunch or coffee. Initially, mentors suggested activities students, but eventually, they would mutually choose ways to spend time together, with mentors encouraging mentees to express interests and make independent choices. In addition, returning students to ICE served as mentors for newly admitted peers.

Participants had to commute to the IHE independently using public transportation. To support this capacity, educational coaches from the LEA designed and implemented an individualized travel-training protocol. The travel training followed a scaffolded model whereby educational coaches identified each student's travel capacity and goals and then created structured activities to transition students to travel independence. The process included modeling the desired behaviors, breaking the behaviors into simple steps, monitoring progress toward independence, removing supports as students demonstrated autonomy, and independent commuting. Coaches also integrated safety awareness (i.e., Where is the best place to stand? What individuals can I

approach for help?) and problem-solving (i.e., What if I miss my stop? What if I lose my bus/subway pass?) into the travel training.

The IHE and LEA jointly provided outreach to families. Families were invited to all IHE events, such as information and orientation sessions, the same events that parents of all prospective and enrolled students receive invitations to attend. In addition, the LEA educational coaches and IHE personnel attended jointly arranged meetings to answer parents' questions regarding the ICE partnership. Community engagement was also central to ICE, with students lobbying State representatives for continued program funding.

In addition to inclusive coursework, opportunities for community-based and competitive employment options were made available through locally sponsored partnerships. Campus Career Services, in collaboration with LEA educational coaches, provided supports to assist students with transition goals. Through grant-funded programs, the IHE provided on-campus paid employment options for students in ICE, allowing participants to choose an area of interest and apply for work-study positions. Students who participated in ICE greater than one semester applied for and secured on-campus paid employment in positions similar to work-study placements for undergraduates across campus, such as in the printing and the greenhouse. Campus Career Services personnel provided support in developing a resume and holding mock interviews. Participants interviewed with hiring departments and filled out applications for employment. Students had a set work schedule each week, typically structured to occur before or after course meeting times. Students worked approximately 5 hours per week each semester.

Participants spent at least two and a half hours on campus (the length of time for class attendance) over either a two- or three-day schedule per week. Beyond acquisition of travel independence, participants did not receive additional self-determination training at the high school. Moreover, although several components of the ICE program purported to develop self-determination, including interaction with mentors, classmates, and professors, engagement in work, and participation in campus activities, no separate or specific training regarding self-determination was provided at the IHE. Activities beyond coursework led to many of the students spending up to three to six hours weekly on campus beyond scheduled course hours.

An ICE leadership team, comprised of LEA educational coaches and IHE student support personnel, met regularly to discuss transition policies, practices, and procedures needed to maintain inclusive PSE opportunities. The ICE leadership team developed an infrastructure to ensure success in academic and social endeavors (e.g., registration, mentoring network, advising, accommodations, career development). Universal Design workshops were provided for IHE faculty to assist with designing appropriate instructional strategies and in arranging meaningful learning experiences. An advisory council comprised of community stakeholders and adult disability services met periodically to help facilitate the ICE initiative, to maintain an inclusive model, and to focus on postsecondary to employment transitions. In addition, at the conclusion of each semester, students met in a group with implementation personnel (LEA, IHE, and other stakeholders) to reflect on their experiences during the semester and provide feedback.

Data Analysis

A sequential explanatory design was employed to examine participants' development of self-determination skills, which included the collection and analysis of qualitative data to expand upon preliminary quantitative findings (Creswell & Plano Clark, 2011). In the initial phase of the study, we examined the development of self-determination using the Adolescent Self-Determination Assessment- Short Form (Wehmeyer et al., 2014). The survey was administered at the start and end of the first semester of engagement for all 9 participants in ICE and subsequently upon exit for 3 of the 9 participants who engaged in ICE for at least 2 semesters. We calculated mean survey scores and conducted non-parametric Friedman and Wilcoxon signed-rank tests to examine whether participants' level of self-determination changed as students engaged in ICE. Non-parametric tests were employed due to the small sample size and effectiveness in testing hypotheses of small samples (Field, 2013). Analyses were conducted using SPSS Version 21.0.

Upon exit from the program, follow up interviews, using qualitative content analysis (QCA; Schreier, 2012), were conducted with students who participated in ICE for at least 2 semesters and demonstrated greatest growth in self-determination on the Adolescent Self-Determination Assessment- Short Form (Wehmeyer et al., 2014). Using QCA allowed us to further explore themes associated with self-determination in relation to constructs measured in the survey to understand in what ways participants may have developed self-determination. QCA was selected as a framework for data analysis and interpretation because it allowed us to build a coding frame that was consistent with the domains of self-determination measured within the Adolescent Self-Determination Assessment- Short Form (Wehmeyer et al., 2014).

Results

To assess outcomes of engagement in ICE on participants' development of self-determination, Adolescent Self-Determination Assessment- Short Form mean total scores were calculated and converted into standard/percentile scores following the scoring procedures manual (Wehmeyer et al., 2014). The Wilcoxon signed-rank and Friedman tests were conducted to examine (a) pre and post differences after one semester of participation in ICE and (b) change across 3 points, pre semester 1, post semester 1, and upon exit from ICE, respectively. Table 2 provides standard/percentile mean self-determination scores for all 9 participants completed at pre and post first semester of engagement in ICE.

Table 2
Mean Scores on Adolescent Self-Determination Assessment- Short Form for All 9 Participants in ICE Pre and Post First Semester of Completion

Administration Point of Short Form	*Raw M (SD) Score*	*Standard M (SD) Score*	95% CI	Percentile Rank	*n*
Pre semester 1	28.00 (4.47)	85.78 (10.01)	[78.0, 93.5]	19.5	9
Post semester 1	28.67 (4.12)	87.44 (9.14)	[80.4, 94.5]	22.6	9

As depicted in Figure 1, change in self-determination scores from pre (*Mdn* = 84) to post (*Mdn* = 86) semester 1 completion was not significant (Z = -.421, *p* = .674).

Figure 1

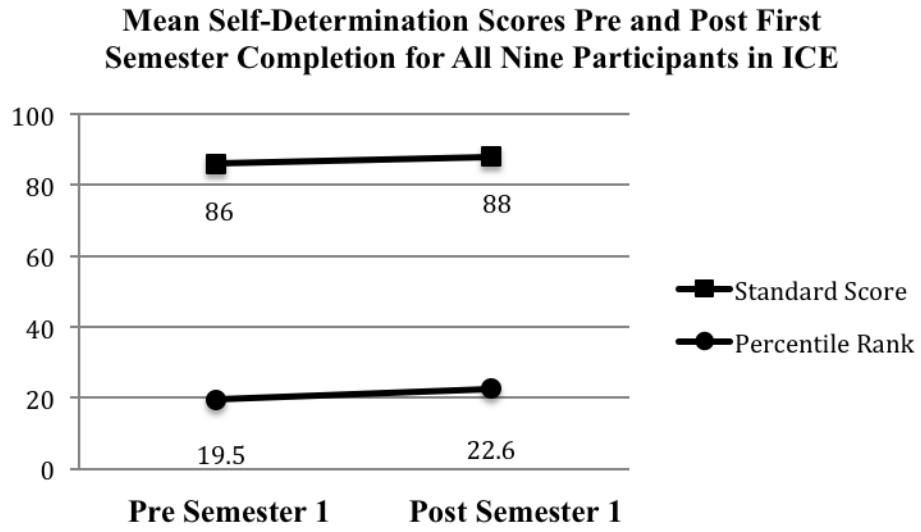

Figure 1. Figure one depicts mean self-determination scores assessed by The Adolescent Self-Determination Scale- Short Form for all 9 students who participated in the ICE program. No change in mean self-determination scores was observed.

In using the Friedman test to evaluate whether there was a significant growth in self-determination for the 3 participants who engaged in ICE for at least 2 semesters, mean self-determination scores increased over time (i.e., from pre semester 1, post semester 1, to exit) as demonstrated in Table 3 and depicted in Figure 2. However, the observed increase at pre (*Mdn* = 84), post (*Mdn* = 88), and exit (*Mdn* = 101) was not significant, with $p = .06$, $\chi^2(2) = 7.897$. Effect sizes of mean differences on the Adolescent Self-Determination Assessment- Short Form across assessment points using Wilcoxon signed-rank post hoc tests with a Bonferroni correction were large, ranging from $r = .77$ to $r = .94$.

Table 3
Mean Scores on Adolescent Self-Determination Assessment- Short Form for Participants in ICE at Least 2 Semesters

Administration Point of Short Form	*Raw M (SD) Score*	*Standard M (SD) Score*	95% CI	Percentile Rank	*n*
Pre semester 1	28.00 (4.58)	86.00 (10.15)	[60.8, 112.2]	19.5	3
Post semester 1	30.33 (2.31)	91.00 (5.20)	[78.1, 103.9]	26.8	3
Exit	34.33 (2.08)	100.00 (4.58)	[88.6, 111.4]	50.0	3

Figure 2

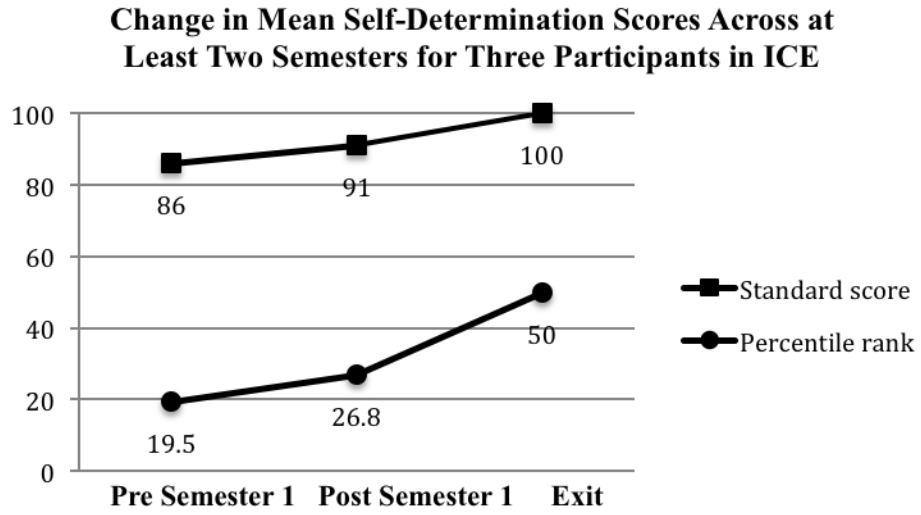

Figure 2. Figure two depicts mean self-determination scores assessed by The Adolescent Self-Determination Scale- Short Form for 3 students who participated in the ICE program for at least 2 semesters. Mean self-determination scores increased over time.

Considering the increased growth in self-determination among the 3 participants with the longest period of engagement in ICE at the $p = .06$ level, we invited these students to participate in individual interviews to better understand their experiences and in what ways they may have developed self-determination. The first steps of analysis included transcribing recorded interviews and developing a coding frame that was consistent with the constructs measured in the Adolescent Self-Determination Assessment- Short Form (Wehmeyer et al., 2014), containing 4 main categories: autonomy; self-regulation; psychological empowerment; and self-realization. Next, we reduced our transcribed data into units of coding through choosing material relevant to our coding frame and then structured that data into meaningful subcategories using structural coding (Saldaña, 2013). Deductively, we examined transcribed data drawing upon the work of Wehmeyer et al. (2007) to identify material related to participants' development of self-determination. Inductively, we reviewed the data to see what additional themes emerged. We

then defined each of the subcategories, explored their relation to each other, and tested our coding theme by double-coding the data and identified subcategories.

To prevent researcher bias, one of the three investigators reviewing transcriptions was not involved in conducting the interviews with participants. To ensure trustworthiness, two of the investigators independently reviewed the transcriptions for inter-rater agreement and followed an iterative consensus process until they reached consensus (Kvale & Brinkman, 2009). Triangulation of data resulted in final revisions to our coding frame and theme identification to represent participants' experiences.

Autonomy

Participants' responses to interview questions in relation to the main category of autonomy were organized into two subcategories: (a) increasing independence and (b) taking responsibility. All 3 participants talked about how engaging in ICE increased their sense of independence, exemplified by learning how to travel to and from campus, engaging in academic and career self-exploration, and feeling a sense of "freedom" and being "grown up…to grow and develop what I need to achieve." One participant shared what independence meant to her.

> You can learn to be independent and not rely on Mom anymore. And I love my mom, but I don't want to rely on her, like lean on her shoulder like glued to her…So I said alright but I'll have you for moral support, but I want to still learn independence.

She goes on to share how she demonstrated independence through traveling to and from campus.

> I did not know anything about the train or the bus at all, when I was before. Then my mom like babied me most of the way, and like until I got tutoring in school like my mom said "what you're taking the train?"…She said, 'oh call her when I get to the train station and call her when I get on the bus.' And I remember one time and I forgot…'cause I was so confident to get on the train by myself, and she called me on the bus when it was really crowded, and I was like, 'hello,' and she said, 'Where are you?' 'On the bus.' 'Like you didn't call me.' 'Oops!'

Another participant talked about how she exerted independence through engaging in academic self-exploration. When asked how she became interested in writing, she responded: "Because I need help with writing, and I need to think about I always wanted to write my own thoughts." She also described becoming more independent in decision making when asked about the process of applying for employment. "At first I was a little nervous…like oh we get to choose what job we going to get, so I chose 'cause I heard animals. Oh animals. Real life animals, so I chose to work in the greenhouse." Another participant also demonstrated independence through employment selection.

> But when the lady said it…the pay isn't always the best. But um I'm like, I don't care about the price, I don't care about the payment. I have to be enjoying myself. If I'm not enjoying myself, this is called work, and I don't want to do work. I wanna call it fun. So, it's fun for me to help somebody answer the phone.

The subcategory taking responsibility was also identified within the main category autonomy. For example, one participant shared how she took charge of finding her way around campus without relying on her educational coach.

> When I first came to campus I almost got lost. I had to ask Ms. Jones which way, which way was the building because I was lost. I was worried I might go the wrong ways or back and forth, but I learned my way around this time without calling Ms. Jones 24/7.

Another participant talked about taking responsibility through engaging in self-advocacy and reaching out to her vocational rehabilitation counselor.

> So like she said, OK we can have a meeting Tuesday…So we talked about the train, we talked about my books…And [the counselor said] 'you know I'm going to tell you something amazing. You're the only student in your class that actually came and called me and made an appointment with me.'

Overall, through participation in ICE, students demonstrated an increased sense of autonomy, specifically in the areas of increasing independence and taking responsibility.

Self-Regulation

Within the main category of self-regulation, participants' responses were organized into 2 subcategories: (a) goal setting and task performance and (b) time management. Participants discussed their development in goal setting and engaging in task performance related to academic classwork and traveling. For example, one participant shared how she learned different tasks to improve her academic performance.

> …To think carefully before I write the answer…that way I could just follow the examples where my professors was showing everybody about during the college class...and see words so I can write notes, a little bit more and, and so I can manage enough to take that knowledge, and so I can get better at it.

Another participant talked about how she was able to build upon previously learned steps she engaged in to become successful in traveling to and from campus.

> It worked for me…because I traveled…in the morning to the first station then all the way up to the train station, [and] all the way up to the [next train station], then I just take the shuttle bus all the way to campus, and then when I get finished, I started coming back to my high school.

Participants also talked about skills they developed in time management with regards to traveling to and from campus.

> I'm gonna be late…And like alright so I'm gonna have to wake up early, so I woke up at 5:45, and…I'm gonna test this out and my mom said, 'that's too early.' And like, 'no it's not, I'm telling you, you drive, I have to take the train!'...And so I learned that taking the A Line straight to the 31 to the A Line trying to go all the way to college is not going to

> work. So I said you know what, I'm going to take the B Line to the A Line, even though that seems like a silly accommodation for myself, like it works! I'm more early.

Considering the urban location of the university and need to rely on public transportation, participants demonstrated significant growth in setting goals and carrying out the necessary steps to travel to and from campus. Participants also demonstrated self-regulation through effective time management, an important skill necessary to achieve postsecondary success.

Psychological Empowerment

Within the main category of psychological empowerment, 2 subcategories were identified in participants' responses: (a) increased sense of self-confidence and (b) perseverance. Participants talked about experiences in the ICE program and how their sense of self-confidence increased. For example, one participant shared how she applied her learning to other related educational experiences.

> I learned that you like still have to do the same process, 'cause I went to the campus disability center and I needed help for a book at the time. I was like kind of nervous, like I hope I can do this correctly. But um when I finally did it through your school I was more confident, like 'oh great I can do it!'...And when I was applying for community college…I have a class that needs to have a book, I know I'll be prepared, same thing, and I feel more confident.

Another participant expressed self-confidence in her ability to improve academic performance in college coursework.

> The way I see college people do, the way how they push themselves studying for tests and their classwork. And I feel like…a little bit…I feel like my thoughts don't understand the basics other than when I first came here...That if they can try to memorize it, maybe I can try to memorize it as well....And, even if on an exam you're just gonna try your best and try memorizing a little bit more.

One participant reflected on her overall experience on campus contributing to an increased sense of self-confidence.

> I see myself at being here at college. It helps me gives me self-confidence. Letting me learn whatever I want to learn. It helps me to focus, and helps me to go beyond my imagination like for writing 'cause the class I took today here writing literature was fun for me. I get to use my imagination.

The second subcategory of perseverance was identified within the main category of psychological empowerment. Participants talked about learning from mistakes and persevering despite obstacles. For example, one participant shared how she handled peer feedback, stating, "It feels good. Some people like it and some people write comments on our papers to see what was missing. Some of them say I do a good job. And some of them just mark the words I misspelled." Relatedly, she shared how trying hard (persevering) at school will help to get a good job, stating, "I wanna become a lawyer. And lawyers have to learn how to write but if a

lawyer doesn't work for me, then poetry, writing poetry for kids will be my goal." Another participant shared the importance of persevering on the job despite not always enjoying all tasks.

> I learn how to work hard and to shred paper and to do my best, and listen to my boss, in case he teaches me how to do stuff...Oh I thought I was going to sharpen pencils, work with the secretary, kind of, help them move their stuff their first day, I was stuck here sharpening pencils and I was like ah but I go with the flow.

Overall, participants demonstrated growth in the area of psychological empowerment, particularly through acquiring an increased sense of self-confidence and perseverance.

Self-Realization

Within the main category of self-realization, 2 subcategories were identified: (a) confidence in abilities and (b) feelings of pride. Participants expressed confidence in abilities, through overall attitude toward coursework and completing academic work. One participant talked about writing assignments and feeling confident about the stories she writes.

> Writing story is fun. It's like using my imagination…Even though it had to be fiction or non-fiction we can write it anyway we like. That's what I like about my teacher; we can write anything we like. Just make sure it's the story that you really like. Some of the stories that I write I like, and some of them I don't, but I still show it anyways.

Participants also expressed feelings of pride as they reflected on experiences in ICE. One participant shared an interaction she had with her grandmother reflecting pride.

> When I go to my grandma's house, she always used to praise me like 'Oh, look at my college student!'...So, I like to be with a lot of students even though I was the youngest one in the classes I was in. It still felt really amazing. I got confident and wanted to go to college so. And, I'm glad I'm in college now.

Another participant talked about her transformation and feelings of pride.

> I think about myself as like, I feel changed...In a collegeable way. And I feel like, I already like, I passed all my high school, like I finished high school and my...thoughts of my knowledge grew, grew like a lot and I was proud of that.

Through participation in ICE, overall the 3 participants demonstrated an increased sense of self-realization, specifically through developing confidence in abilities and feeling a sense of pride.

Discussion

There have been significant advances in educational programming and postsecondary planning options targeting the development and improvement of self-determination skills among students with ID (e.g., Palmer et al., 2012; Wehmeyer et al., 2007; Wehmeyer et al., 2011; Wehmeyer et al. 2012). Researchers have demonstrated positive relationships between self-determination, academic achievement (Gaumer Erickson, Noonan, Zheng, & Brussow, 2015), employment

outcomes (Martorell, Gutierrez-Recacha, Pereda, & Ayuso-Mateos, 2008), life satisfaction (Miller & Chan, 2008), and quality of life (Lachapelle et al., 2005). Considering the positive outcomes, it is important to provide students with ID the opportunity to engage in PSE programming that supports the acquisition of self-determination.

Providing students with ID options to engage in PSE is one helpful way to support this development (Causton-Theoharis et al., 2009; Folk et al., 2012; Uditsky & Hughson, 2012). The present investigation assessed the acquisition of self-determination skills among high school students with ID who engaged in an inclusive concurrent enrollment (ICE) program at an urban higher education institution. Findings from sequential explanatory analyses of self-determination skills assessed by the Adolescent Self-Determination Assessment- Short Form (Wehmeyer et al., 2014) and evaluated via interviews, suggested an increase in self-determination for participants who engaged in the program for at least two to three semesters. Students who engaged in ICE for one semester did not demonstrate significant growth in self-determination as assessed by the Adolescent Self-Determination Assessment- Short Form (Wehmeyer et al., 2014).

An increase in mean self-determination scores was observed for students ($n = 3$) who engaged in ICE for at least two to three semesters at the $p = .06$ significance level. To further investigate this growth, using QCA of semi-structured interviews conducted with the three students allowed us to identify acquisition of self-determination skills in four areas, including autonomy (i.e., increased independence and taking responsibility), self-regulation (i.e., goal setting/task performance, and time management), psychological empowerment (i.e., increased sense of self-confidence and perseverance), and self-realization (i.e., increased sense of confidence in abilities and feelings of pride). Specifically, engaging in ICE increased participants' sense of independence related to academic and career self-exploration as well as taking responsibility through self-advocacy (autonomy). Participants discussed improvement in goal setting and engaging in task performance related to academic classwork and traveling (self-regulation). They also expressed an increased sense of self-confidence and perseverance to improve academic performance in college coursework (psychological empowerment), and shared feelings of pride and confidence in abilities to reach college goals (self-realization).

These findings demonstrate preliminary support for inclusive higher education programs insofar as promoting the acquisition of self-determination for students with ID—a finding that was also identified by Folk et al. (2012) who observed improved self-determination among students with ID enrolled in a dual enrollment program. There is also growing support for and acceptance of inclusive programming at the higher education level (Griffin, Summer, McMillan, Day, & Hodapp, 2012). In the present study, participants identified feelings of increased self-confidence and a sense of pride engaging in college activities and coursework and described how participation impacted academic and employment preparedness.

Furthermore, the setting where students engaged in the ICE program is unique because of its urban location and diverse student body. Students in ICE were required to commute by public transportation and had to learn to travel independently. Travel independence was an area of development that likely facilitated students' sense of self-confidence, self-advocacy, and pride and is an important skill in furthering college and career readiness. The university's diverse student body, while not assessed, may have contributed to participants' sense of belonging and

comfort. The students who participated in ICE came from inner city and minority high schools. Having the opportunity to engage in postsecondary planning activities and build self-determination are critical experiences for all students, particularly for students with ID who attend high-poverty schools (Washington et al., 2012).

Limitations

Preliminary findings regarding the development of self-determination via engagement in ICE are limited by several factors. First, although the university setting and location likely aided in the development of self-determination, students in ICE had limited time available to engage in campus activities due to high school obligations. Considering the nature of concurrent enrollment programs between high schools and higher education institutions, development of self-determination may require greater than one semester of participation. Close collaboration between the IHE and LEA can help to bridge gaps in college attendance and facilitate students' engagement in educational activities at the high school that promote self-determination.

Second, the small sample size limits generalizability of findings. Although having a small number of participants engage in ICE facilitated program implementation and ensured students' needs were met, the small sample precluded the ability to examine other variables that may affect development of self-determination, such as level of cognitive and intellectual functioning. It may be that the students with the longest duration of participation were higher functioning than their peers who participated in ICE for only one semester. The present investigation did not examine such variables related to IQ or other assessments of functioning. Relatedly, the LEA was not permitted to disclose information pertaining to level of functioning other than that participants had not passed the State standardized exams and had been served under an IEP for developmental or intellectual disability. Further research with a larger sample could examine the potential effects of such variables, as well as others (i.e., parent support, community support, income, program factors), on program effectiveness.

Implications for Research and Practice

College environments provide vast opportunities to practice self-determined behavior. Students in ICE have access to a wide array of educational, vocational, and extracurricular activities that are typically not available in most high schools, particularly in urban settings where resources may be limited. Participants had access to peer mentors and support from educational coaches, permitting development of greater autonomy and self-confidence to navigate the college campus and explore postsecondary options through part-time employment. Considering the positive preliminary outcomes on student development in self-determination, more research on outcomes of ICE programming is warranted. Through further investigation, researchers could examine longitudinal outcomes of engagement in ICE programs on PSE and employment, while identifying ways to meet individualized postsecondary planning needs.

The ICE program described in the present study held to the ideal of being "of" the community rather than being "in" the community. This ideal was achieved by maintaining an inclusive college experience instead of a program separated from mainstream courses and activities. In such an environment, students were included in situations that allowed them to practice skills that foster self-determination and demonstrated growth in autonomy, problem solving, self-confidence, and self-realization. The findings of the present study hold important implications

for building college and career readiness and offer preliminary support for expanding inclusive concurrent educational programming for high school students with ID.

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Improving Outcomes for Students with Disabilities: Identifying Characteristics of Successful Districts

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Abstract

The common characteristics among Arizona districts and charters with high academic outcomes for student disabilities were identified in a qualitative study involving site visits and interviews. In 2014, the Arizona Department of Education examined over three years of state testing data to identify districts and charter schools that closed the academic achievement gap between students with disabilities and their non-disabled peers. These local education agencies (LEAs) had 30% higher proficiency rates for students with disabilities than the state average. Six clearly identifiable systemic trends were detected to increase academic achievement for all students. These LEAs were implementing systemic frameworks to improve schools not only for students with disabilities but for all children. The good news is that these systems can be replicated at other sites to improve outcomes for all students and provide evidence that every student can succeed academically.

Improving Outcomes for Students with Disabilities: Identifying Characteristics of Successful Districts

Driven by Federal Changes

Influenced by the No Child Left Behind Act, Race to the Top initiative and the newly signed Every Student Succeeds Act (ESSA), the federal government has focused its efforts on raising the academic achievement of students in the United States. These initiatives and others have endeavored to decrease the achievement gap between various groups of students while holding schools accountable, promoting the creation of rigorous standards, and encouraging the use of research-based programs. While the push from the U.S. Department of Education has been to find ways to address this problem, overall, the achievement gap between students with disabilities and their nondisabled peers has continued to grow nationally (Albus & Thurlow, 2015).

The Office of Special Education Programs (OSEP) has held states accountable through the annual state determination process for meeting procedural requirements, more often called compliance, under the Individuals with Disabilities Education Act (IDEA). Although these compliance indicators remain an important piece of accountability evidence, alone they are not sufficient. Since 2012, OSEP has reexamined the practice of focusing primarily on compliance in an effort to improve the educational outcomes for students with disabilities and has developed a new accountability framework for states known as Results-Driven Accountability (RDA).

Former U.S. Secretary of Education Arne Duncan highlighted the importance of adequate accountability when in 2014 he stated “Every child, regardless of income, race, background, or

disability can succeed if provided the opportunity to learn. . . . We know that when students with disabilities are held to high expectations and have access to the general curriculum in the regular classroom, they excel. We must be honest about student performance, so that we can give all students the supports and services they need to succeed."

Compliance Necessary, but Not Sufficient

Over the years, state departments of education have been tasked to work actively with their districts and charters, also called local education agencies (LEAs), to meet compliance indicator goals set forth by OSEP. Arizona as a state has been doing well with OSEP compliance indicators but under RDA they needed assistance in areas of student outcomes (U.S Department of Education, 2014). In order to understand where to focus attention as a state to correct this, in 2014 researchers from the Arizona Department of Education (ADE), which included the authors, had to first examine the proficiency levels of Arizona students with disabilities.

Digging into the Data and Research

Nationally, students with disabilities score from 32 to 41 percentage points lower than their nondisabled peers (Albus & Thurlow, 2015). Arizona's scores on the National Assessment of Educational Progress (NAEP), an assessment given to a representative sample of more than 700,000 students across the country, showed Arizona students with disabilities scoring the same as their national peers except in grade 4 reading, where Arizona students with disabilities lagged (NAEP, 2015). As seen in Figure 1, there is also a continuing gap between the academic proficiency of Arizona students with disabilities and their general education peers on Arizona's Instrument to Measure Standards (AIMS) test. Although the achievement gap between students with disabilities and their nondisabled peers in math and reading proficiency rates has decreased slightly in Arizona, the gap between their proficiency rates is still alarming.

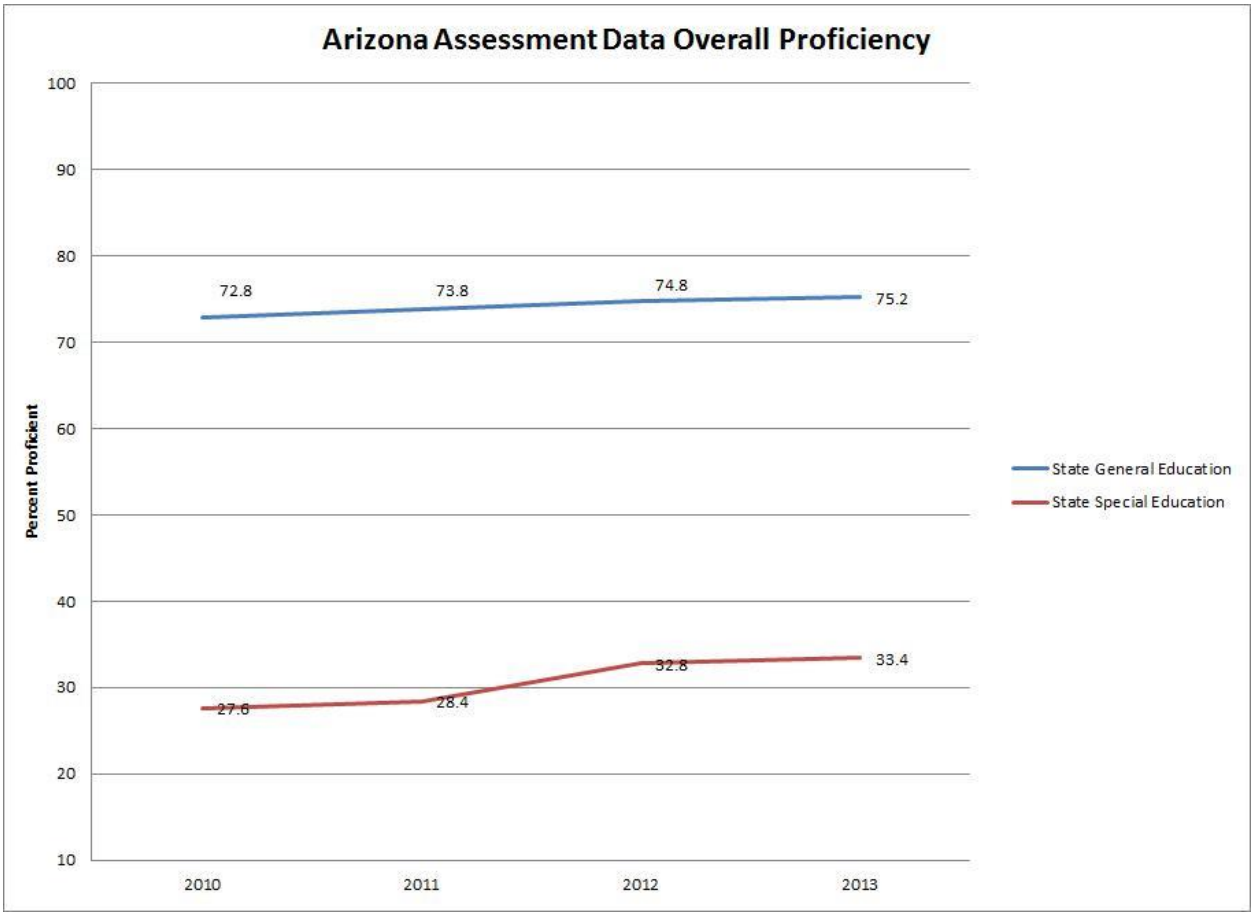

Figure 1. All Grades Mathematics and Reading Proficiency

Few studies exist of state departments of education attempting to identify the common characteristics among districts and charters having academic success with students with disabilities. The authors of this report could only identify two (Huberman, Navo, & Parrish, 2012; Sanders, Jurich, Mittapalli, & Taylor, 2013). Due to the lack of research and related studies, there was little in place for Arizona to replicate.

Although many Arizona LEA's have struggled to reach proficiency on state exams with their students with disabilities, the authors were able to identify LEAs who have made progress. We hypothesized that if we could determine what was happening within these successful districts and charters then perhaps we could learn how to best assist low-performing LEAs to raise student achievement for all students with disabilities.

In the effort to identify highly performing districts and charters that demonstrated continual academic successes for students with disabilities, ADE's Research and Evaluation Division pulled three years of data from the state AIMS assessment. These data were analyzed to find districts and charters that were performing significantly higher than the state average on the state assessment. Sites were required to have a wide cross-sampling of disability categories; schools that only served one primary disability category were eliminated. LEAs with a small testing pool

(fewer than 10 students) and those that did not have three years of significantly higher data were not included in the high-performing group.

A one-way ANOVA was run with correction to determine whether statistical differences existed to select LEAs that were significantly higher performing than others in Arizona. To be selected as a high performer, a LEA needed a substantially higher proficiency rate for its students with disabilities than that of the state average (see Figure 2). Overall, when scores were averaged, the 32 high-performing sites had 27.3% higher proficiency rates for students with disabilities than the state average for students with disabilities. These high-performing sites had a smaller gain in proficiency for general education students, exceeding the state average by 14.35%. These high-performing sites were able to close the achievement gap by 12.7%, with the four-year state achievement gap being 43.4% and the high-performing sites being 30.7%.

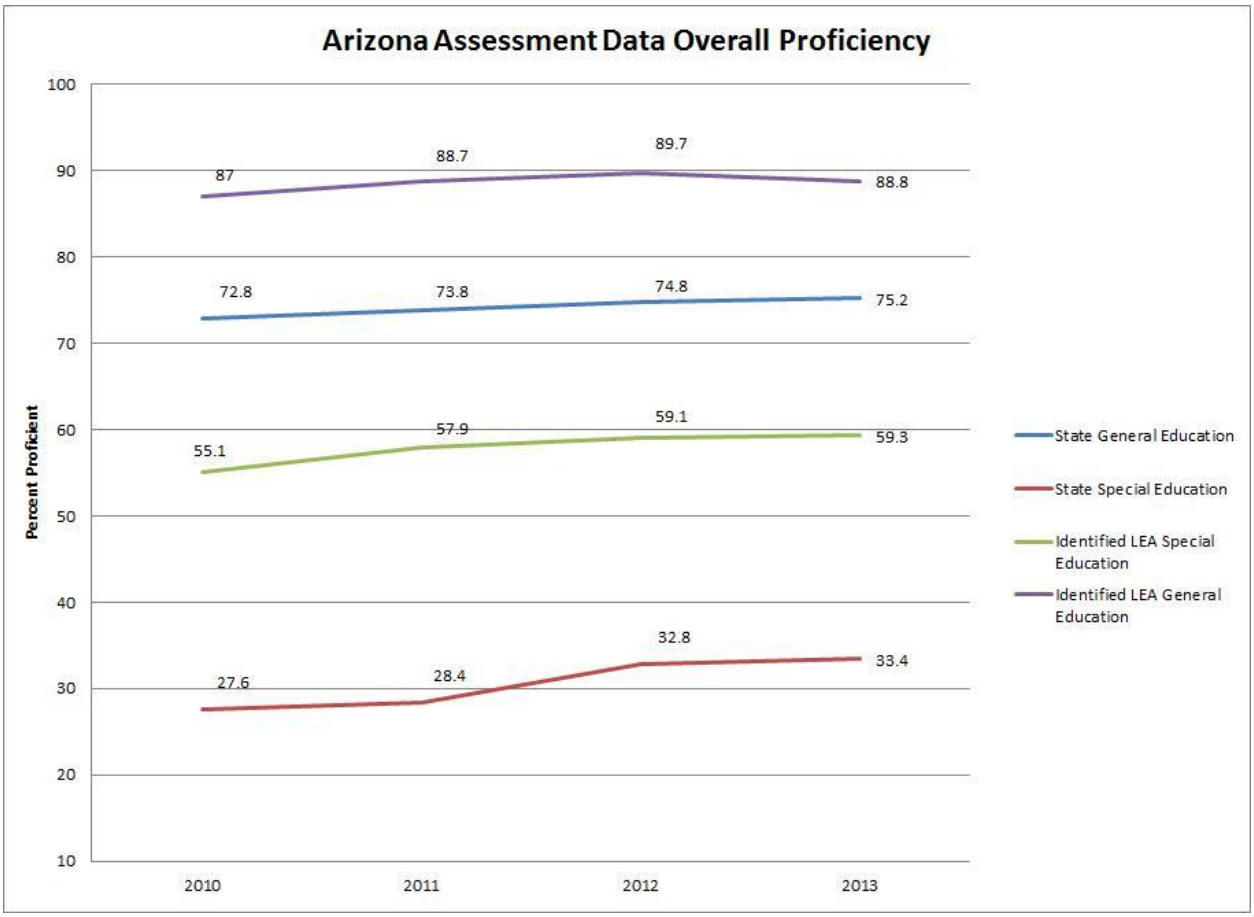

Figure 2

High performing LEAs were divided into four groups:

- those that tested fewer than 100 students with disabilities annually on AIMS were considered small districts and charters,
- those that tested more than 100 but fewer than 300 students with disabilities were considered medium,
- those that tested more than 300 but fewer than 1,000 students with disabilities were considered large, and

- those that tested over 1,000 students with disabilities were considered extra-large.

The highest performers in each of these four categories were selected and included a mix of both charter schools and districts. In narrowing the list further, we looked at geographic information, picking the top performers in both rural and urban areas across the state. Finally, ADE's Exceptional Student Services (ESS) leadership team checked school records to make sure that there were no complaints or allegations of testing misconduct filed against any of these LEAs.

In total, 32 districts and charters met all of the criteria. Among the 32 highest performing sites included urban Phoenix and Tucson LEAs, the largest cities in the state, and extremely rural sites. More than half of the sites listed were identified as serving a population of students of whom more than 50% qualified for free and reduced lunch. More than half of the sites listed were identified as Title I schools. The sites varied in student populations and even in the types of educational approaches (i.e., some were Montessori schools, some were "back to basics," some were traditional, and a few were science and math magnet schools). The final 32 high performing sites were composed of approximately 2/3 charter sites and 1/3 school districts, which is comparable to Arizona's charter to district ratio.

To delve into what was making these sites such high performers, all 32 districts and charters were contacted. The goal was to find out what these highly effective LEAs deemed essential for their success and if any trends were prevalent across these identified LEAs that could then be replicated statewide. When contacted, the LEAs were provided the goals to be achieved by the interviews and asked to participate in our study. Twenty-nine of the 32 LEAs provided their consent to participate. Each site was asked to assemble a team that would include a sample of representatives who were responsible for making the educational decisions within their district or charter. Most teams included the superintendent or charter holder, the curriculum director, the special education director, building principals, and instructional coaches.

Members of the ESS leadership team prepared materials and made in-person visits to meet with LEAs' leadership teams asking a series of questions developed by ADE to investigate the LEAs' performance factors. The questions were sent to the charters and districts prior to the visit with instructions that these questions were intended to be discussion starting points. Participants were encouraged to discuss factors outside of the given questions if they felt that the questions did not address their whole success story.

Discussion Questions

1. Talk about your school's or district's mission and vision for education. How does this relate to your students' progress on Arizona's state assessment?
2. What does it mean to be a leader in your school or district? What responsibilities, expectations, and resources are involved in the role of leadership?
3. Talk about your use of data. What systems are in place to collect and evaluate data (computer software used, collection manuals employed, data quality guidelines, etc.)?
4. How do you make decisions about placing students in different classroom environments? Discuss your culture of inclusion and how it affects your placements of special education students.

5. Explain the various roles of stakeholders both inside and outside the school that may be factors in your success (special education director, administrators, outside agencies, staff, parents, etc.). Are there programs outside the sponsorship of your school that contribute to academic improvement?
6. For students with disabilities, what instructional supports are in place to improve instruction, strengthen curriculum, reinforce student learning, and encourage professional collaboration (grade-level meetings, professional learning communities, professional development, pre-service training, after-school tutoring programs, etc.)? How are instructional decisions made?
7. Discuss your current use of educational funding to support students with disabilities. What additional grants or resources other than basic entitlement grants are also used?

During a six-week period, all of the sites selected were visited by two members of the ESS leadership team, and the interview results were transcribed and placed in a database. Once all 29 visits were concluded, the data from the interviews were reviewed. As mentioned above, although these sites varied in student populations and types of educational approaches, data showed clearly identifiable characteristics within all the interviewed high performing LEAs. Identifiable characteristics were grouped into six categories:

1. A culture of high expectations for ALL students and a student-first mentality
2. Highly effective teaching strategies in the general education classroom
3. Frequent data collection for use in decision making
4. The use of data analysis to provide interventions and enrichment
5. Core instruction in the general education classroom as much as possible
6. Effective leadership

A Culture of High Expectations for ALL Students and a Student-First Mentality

A common theme across each charter and district visited was a student-first mentality and the belief that all children, with the right support from teachers, can achieve academically. One of the charter schools visited simply said, "If the bar is raised high they will surpass it." School leaders, general education teachers, special education teachers, and other staff spoke of "our kids," not "their kids," when discussing high expectations for students with disabilities. One district stated, "All students means all students, we are dedicated to every child, every day. We walk the talk and have genuine concern for every student." This collegial team mentality created a strong system of supports between general education and special education teachers. The collegial support system prepared teachers to instruct children assigned to their classrooms; students first was an accepted and nonnegotiable construct.

This theme of educators holding high expectations for themselves and taking responsibility for student performance can be identified in many studies regarding effective learning systems (Blackburn, 2008; Tomlinson and Javius, 2012; Howell and Gengel, 2005; Newman, 2006; Blackburn and Armstrong, 2011; and Williams and Williams, 2014). Having high expectations for all students is a theme that is validated in other research, most recently in John Hattie's 2009

meta-analysis, which ranked various influences on learning according to their effect sizes. Hattie studied six areas that contribute to learning: the student, the home, the school, the curricula, the teacher, and teaching and learning approaches. His research showed that developing high expectations for each student had an effect size of 1.44, and developing high expectations for teachers had an effect size of .43. As he states in his book *Visible Learning for Teachers*, "Making the learning intentions and success criteria transparent, having high, but appropriate, expectations, and providing feedback at the appropriate levels is critical to building confidence in taking on challenging tasks" (Hattie, 2012).

These findings are not new. In the book *Fifteen Thousand Hours* (1979), researchers concluded that schools that promote "social and scholastic success reduce the likelihood of emotional and behavioral disturbance" (Rutter, Maughan, Mortimore, Ouston, & Smith, 1979). Even as early as 1948, researchers discussed the concept of "self-fulfilling prophecy" in which the opportunities presented to a certain group of people will dictate the achievements the group produces (Merton, 1948). Also called the Pygmalion effect, this phenomenon shows that "one's expectations about a person can eventually lead that person to behave and achieve in ways that confirm those expectations" (Tauber, 1997).

High-performing LEAs also adopted hiring practices that identified individuals who supported the philosophy of the school. Those who could not adhere to the standard of high expectations and who did not put the needs of children before the needs of adults were asked or directed to find other employment.

Highly Effective Teaching Strategies in the General Education Classroom

The majority of Arizona students with disabilities spend at least 80% of the time in the general education classroom. In the LEAs visited, instruction in the general education classroom was effective and based on research. Although the teaching styles and curricula varied immensely in the districts and charters visited, a common theme was an emphasis on "hands-on" instruction (i.e., the use of manipulatives, assistive technology, learning centers, and other modes of learning that differentiated instruction and engaged learners in the educational experience). Instruction was intentional and purposeful, with lesson plans and activities written in advance and based on data that could continually advance students to mastery of concepts and skills taught. Students were not just "receiving" an education; they were actively pursuing and participating in it. Ensuring that students are engaged and active in learning is a widely established and researched best practice (Archer & Hughes, 2011).

Standards-based grade-level instruction with modifications and accommodations as needed was provided in each classroom, but was continually linked to the rigor and content described in the grade-level standards. One of the principals from a medium sized district said, "We have the philosophy of assumed competence; we assume the student can do it instead of 'Oh, they can't do this.' We teach the grade level standard and fill in the gaps." Instruction time was considered sacred with minimal disruptions occurring while class was in session. To support continuity of instruction time school wide, policies were established to refrain from announcements over the intercom once class started and to limit school assemblies during core instruction time. This practice is reinforced by research that shows that the quality of instruction is equally as important

as the quantity of time spent learning (Silva, 2007). Pull-out for related services also did not take place during core instruction or for the entirety of core instruction.

Frequent Data Collection for Use in Decision Making

Within the LEAs visited, data-based decision making was essential to the success of all students. One district reported that they "conducted a data retreat at the beginning of each year to really dig down into the data; then it is gathered and used throughout the school year to design enrichment and re-teaching." Continually using data allowed staff to monitor student progress and flexibly group students accordingly, depending on student strengths and weaknesses. As one district stated, "We have skills-based flexible groupings." These groupings of all students (both with and without IEPs) could continually change, depending on the data, so that each child could get the supports needed to master content and move on to new learning.

Although the LEAs visited did not always label their use of data to create groupings response to intervention (RTI) or multi-tiered system of supports (MTSS), each did contain several key tenets stated in research as effective in RTI systems. The structure of beginning with a solid system of instruction and a validated curriculum to meet the needs of the majority (80% or more) of students is the backbone of RTI. The first tier of instruction, Tier I, is comprised of three elements: a core curriculum based on validated research, screening and benchmarking assessments, and ongoing professional development for teachers to ensure they are delivering quality instruction (Vaughn, Wanzek, Woodruff, & Linan-Thompson, 2007). Each LEA visited had a system or "safety net" in place for students identified as not meeting standards/expectations in Tier I instruction, as well as a system to track student progress. In general, the majority of LEAs visited provided quarterly benchmark testing for all students, which varied depending on the school year schedule. Progress monitoring occurred more frequently (approximately every two weeks) for struggling students or students with disabilities. Assessment for learning, also called formative assessment, formally and informally occurred within classrooms, and teachers built opportunities for students to respond and produce within the classroom, allowing them to continually monitor students' content mastery. Multiple data sources, including observational data, were used to understand where each student was performing and how teams could spotlight strengths and support weaknesses.

This use of formative assessment provides a "steady stream of data about how learning is progressing while it is in the process of developing" (Heritage & Chang, 2012). Formative assessment during instruction assists teachers in checking for progress, detecting learning gains, checking for misconceptions, and using this data to adapt instruction (Gallagher & Worth, 2008). The data collected by the LEAs met certain criteria established by research about data quality (Marsh, Pane, & Hamilton, 2006). First, data were accessible and timely for those who used the results. Second, the data were reliable. Third, there was motivation to use the data to improve student performance. Lastly, educators were supported in data use. Sites visited provided time for data collection and analysis, professional development on how to use data, and a data system with filtering capabilities to assist educators in making data-based decisions.

The Use of Data Analysis to Provide Interventions and Enrichment

Each LEA visited had a method to create ability-based groupings to help students reach mastery in reading and mathematics. Methods varied from site to site. In some cases, it was a time of day

during which students were regrouped based on data and sent to different teachers depending on the intervention/enrichment activity. In some situations, time was built into the lesson plan and the teacher and co-teacher, or teacher and paraprofessional, worked with students in the same classroom either in small groups, one-on-one, or in other arrangements based on the student data (formative and summative) for that lesson. These intervention and enrichment opportunities were targeted toward specific skills needed to master a lesson or based on individual needs for learning, not just on participation in the activity. One charter school answered that they "used data formatively to decide who needs intervention support." "We use present levels and data to drive individual instruction," they explained.

Each LEA visited had established tutoring opportunities for students—one or more after-school, before-school, or mid-day tutoring times for students who needed more assistance. In some cases, all teachers were expected to come in early, stay late, or tutor during their prep time one day a week to assist students; in other cases, grants paid for the additional staff needed. These after-school, before-school, or midday opportunities tied directly to the grade-level curriculum being taught in classrooms.

There is a strong correlation between interventions and student success. For example, providing intensive, systematic reading instruction in small groups has been strongly supported by evidence from the Institute of Education Sciences (IES, 2009). Other research on interventions, specifically for students with learning disabilities, has found the following teaching practices to be effective (the list below only includes a few):

- Combining direct instruction (i.e., teacher-directed instruction and discussion) with strategy instruction, such as study skills instruction, note-taking strategies, self-questioning strategies, self-monitoring, and summarization (Scruggs, Mastropieri, Berkeley, & Graetz, 2010)
- Employing mnemonic instruction (Scruggs, et al., 2010)
- Using concept diagrams, concept comparison routines, and other graphic organizers (Scruggs et al.,2010)
- Using repeated reading to increase oral reading fluency (Rasinski & Padak, 2013)

It is important not to forget the role of enrichment in this finding. It is as crucial to create activities for students who understand the content (including those with disabilities) to further explore the subject as it is to create interventions for those who do not. Examples include the following enrichment activities:

- Learning centers with more challenging activities, such as applying the learning to a different environment
- STEM (science, technology, engineering, and mathematics) and cultural activities
- Academic competitions and clubs
- Community partnerships and internships
- Expanded school day with "0 hour" activities (before or after the regular school day)

Core Instruction in the General Education Classroom as Much as Possible

With the student-first mentality as a foundational belief, decisions about an individual student's least restrictive environment (LRE) placement began with consideration of full inclusion in the

general education classroom with necessary accommodations and/or modifications. A representative from a larger district visited said, “Inclusion is huge, teachers meet to discuss problems, data, what skills were missed, and then how to reteach those skills.” Only when data showed that the current placement was not in the best interest of the child did the IEP team carefully and methodically look at the continuum of placements available. When placements were changed, the team always ensured the student was spending as much productive time in the general education setting as possible. Research (and legal mandates) supports this inclusive decision-making process. Studies have shown that in many cases, separate classrooms and separation of students with disabilities from their nondisabled peers does not increase student gains (McLeskey, Rosenberg, & Westling, 2012; Salend, 2010; Valle & Connor, 2010). Other studies show that including students with disabilities in the general education classroom does not disturb the learning gains of nondisabled peers (Idol., 2006; Sermier & Bless, 2013; Ruijs, Van der Veen, & Peetsma, 2010). The high performing LEAs saw special education as a service children receive, not a physical place or a label identifying students. One district said, “Special education is the last resort not the first stop. It is a service, not a destination.”

In the visited LEAs, time was provided for collaboration between general and special education teachers. How and when the time was set aside was different at each charter and district. Some used professional learning communities; others scheduled common planning time. Most importantly, the school leaders understood that collaboration takes time, and teachers were provided time within the school day or week to meet and discuss student achievement. Whenever barriers or successes occurred, this partnership between general education and special education teachers occurred organically, with constant, spontaneous meetings taking place as needed outside scheduled collaboration time. Studies on teacher collaboration have shown that schools have higher achievement in reading and mathematics when higher levels of teacher collaboration occur (Goddard, Goddard, & Tschannen-Moran, 2007).

In line with the student-first belief, identified LEAs created or changed their campuses’ programs and supports based on the needs of the students that were being served. Students were not expected to fit into programs that were already in place. According to the location and needs of students, districts and charters ensured that proper services were available. In larger districts, this meant changing the location of certain programs throughout the district to better meet the needs of the children being served.

Special education supports consisted of more “push-in” services (with the special education teacher joining the general education classroom) than “pull-out” services (with the child being removed from the class to receive special education services). A charter school reported, “We support the teacher, and we want kids to be in the regular classroom as much as possible. Teachers look for modifications and adaptations. We use a resource room to help support what is happening in the regular classroom. We are using the same curriculum, filling in and supplementing.”

In most cases, when pull-out services did occur, they were strategically scheduled. Strategic scheduling meant that to the maximum extent possible, services did not occur during core instruction. Interference with core instruction was considered harmful and kept to a minimum. Students were sent immediately back to the general education classroom when the special

education services for that lesson were no longer needed. This practice supported the emphasis on sacred learning time using highly effective teaching strategies because it ensured that students receiving services encountered as few distractions as possible when teaching and learning were taking place. Any pull-out services were aligned with skills needed to support the learning and high expectations of grade-level content being taught in the general education classroom.

To allow special education teachers more time in classrooms, some districts and charters creatively scheduled and reassigned job responsibilities to cope with compliance aspects of special education. In two cases, the special education directors personally took on additional paperwork as part of their job duties. In other cases, staff were repurposed or hired to assist with the paperwork or the periodic review of paperwork.

As suggested in research, certain structural/procedural accommodations were made by these LEAs for students with disabilities to achieve in the general education environment. These included:

- differentiating instruction by using flexible grouping, varying learning-style preferences and student choices, and creating alternative activities and assessments (Tomlinson & Javius, 2012);
- using universal design for learning (UDL) when planning instruction. This included multiple ways students can view, express, and engage in the content (Meyer, Rose, & Gordon, 2014);
- creating student-centered collaboration time between general education teachers, special education teachers, and related services personnel; and
- using effective teaching practices in both general education and special education settings.

Although current research has shown that the addition of students with disabilities in the general education classroom is a win-win situation for all involved (Allodi, 2009; Downing, 2008; and Teigland, 2009; Theoharis & Causton-Theoharis, 2010), other studies have found inconclusive results, causing some experts in the field to remain divided over the issue of placement for students with special needs (e.g., Kavale, 2002; Villa & Thousand, 2003). Research has not shown that the addition of peers with disabilities in a classroom has a negative effect on the learning of nondisabled students (Kalambouka, Farrell, & Dyson, 2007; Sermier, Dessemontet, & Bless, 2013; Ruijs, Van der Veen, & Peetsma, 2010). Research also fails to provide evidence that exclusion from the general education classroom is beneficial to all students with disabilities (Falvey, 2004).

The issue of inclusion remains a significant trend in special education. In the Arizona LEAs visited, tactically placing students with disabilities in the general education classrooms with support (e.g., co-teaching, accommodations, and modifications) was found to have positive effects on student outcomes.

Effective Leadership

The LEA leaders (i.e., superintendents, principals, special education directors, and lead teachers) ensured a culture of high expectations for all students and a student-first mentality were taking

place in their schools. In most cases, the principals were "in the trenches," visiting classrooms regularly and participating in the data meetings regarding all students, including those with disabilities.

The leadership valued their employees; all staff were considered valued members of the school team and were supported as such. One district reported "We specifically and carefully select our staff on the basis of their ability to carry out our mission and guiding principles. We hire the best people suited for the task. We respect their expertise and depend on them to work with parents to make our vision for a community of learners a reality."

Principals had significant involvement in keeping the school's focus on the achievement of all students. To ensure that all staff understood what was expected to occur in classrooms, school leaders provided planned and specific professional development for all staff, including paraprofessionals.

Often the school's leadership was consistent, with leaders remaining at the district or school for numerous years. Many principals and district leaders were promoted from the teaching ranks within the LEA. Most locations embraced shared leadership in which the superintendents and principals systematically shared responsibility with the entire staff; the role of the leader was to stay focused on academic achievement and remove any barriers that prevented staff from achieving these goals.

The leadership at the districts and charters visited were all continually seeking to improve. One larger district reported, "We are never content with the status quo in our operations or in our curriculum methods. We recognize that we live in a changing world and we respond to those changes. We are constantly looking for better and more efficient ways to accomplish our mission." The tone and expectation set by the leaders included the mantra of "these are all our students." Most leaders indicated that their position was more than a job, it was also a passion, with some work weeks taking 60 or more hours of their time.

Various research studies on effective leadership support our observations during these visits. Some examples from other studies about traits of effective leaders are given below:

- A strong leader shapes a vision of academic success for all students, creates a climate hospitable to education, cultivates leadership in others, improves instruction, and manages people, data, and processes to foster school improvement (Wallace Foundation, 2013).
- An educational leader has consistent, high expectations, constantly demonstrates that disadvantage need not be a barrier to achievement, relentlessly focuses on improving teaching and learning, guides assessment and tracking progress as an expert, demonstrates inclusiveness, and develops individual students through promoting rich opportunities for learning both within and outside the classroom (Morrison, 2013).

Other Factors
Although not prevalent enough among these schools to be considered trends, other factors that may have contributed to success in many of the districts and charters were discussed during our visits. These include:

- High retention rates for staff
- Positive school climate in which teachers feel supported
- Quality parent involvement

Limitations
Although Arizona took many items into consideration when beginning this study, it is not without limitations. These limitations should be taken into consideration when other state departments of education conduct research on effective characteristics among the state's highest performing LEAs and their outcomes for the academic achievement of their students with disabilities.

The lack of collaboration with an institute of higher education was a limitation in that the ESS leadership team, although containing people who have been previously published, were charged with creating the study design. The input from an institute of higher education when designing the study could provide a more robust approach to finding the information needed to make changes at a state level.

The development of the interview protocol and questions began as a brainstorm among the ESS leadership team regarding the information wanted from these interviews. This brainstorm resulted in over 25 questions, and ESS leadership pared the questions down to seven, which was an arbitrary number that was decided to not be overwhelming. Although ESS leadership did review the limited literature in this area, input from an Institutional Review Board regarding formal research protocols could have provided additional benefits.

Conclusions
The six characteristics found in the 2014 Arizona study support findings from other state-level studies that focus on effective educational systems for children with disabilities (Sanders, Jurich, Mittapalli, & Taylor, 2013; Huberman, Navo, & Parrish, 2012).

Based on the findings, researchers, practitioners, and policy makers should emphasize an analysis of effective practices and supports to assist LEAs in replicating the characteristics found in successful districts and charters. As stated in current research, many general education teachers and leaders do not feel prepared to teach students with disabilities, and many efforts at creating a more inclusive environment for students with disabilities fail due to lack of leadership support or system being in place to support increased collaboration between general and special education teachers (Billingsley, McLeskey, & Crockett, 2014; Crockett, Billingsley & Boscardin, 2012; Rosenzweig, 2009; Yell & Katsiyannis, 2004). The lack of supports include lack of planning time, instructional responsibility, communication about what is being taught in the general education classroom and pullout services.

Because the identified characteristics include areas that may not fall under the purview of state and county agencies responsible for special education outcomes, such as leadership and curriculum, agencies need to commit to collaborating around a comprehensive system of support that builds the capacity of LEAs to improve outcomes; they need to analyze existing infrastructure to identify the supports that align with the six characteristics. In addition, agencies can identify supports that do not align with the six characteristics and reconsider their necessity.

Although each state needs to be compliant with the laws and regulations stated in ESSA and IDEA, each state has different political, educational, legal and financial mechanisms that create unique opportunities and roadblocks. For example, Arizona is a local control state that does not require all LEAs to use a certain curriculum or textbook, which is different from other states such as New York or Texas. Because of these differences, it is important for individual state departments of education to conduct studies to identify characteristics of successful LEAs and share with LEAs how these successful characteristics have been implemented.

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A Comparative Study of Teachers' Pedagogical Competencies in Supporting Children with Learning Difficulties in Primary Schools in Ghana and Brunei Darussalam

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Abstract

Teachers' pedagogical competencies level is increasingly affecting the implementation of inclusive education policy in many countries. The aimed at comparing primary school teachers' competence levels in supporting children with learning difficulties in Brunei Darussalam and Ghana. Descriptive survey design was used and 188 primary school teachers from Brunei Darussalam and Ghana participated in the study. Results showed that teachers from Brunei Darussalam and Ghana had limited to moderate competencies in supporting children with learning difficulties in the general education classroom. In addition, the results showed that there was no significant difference between the competence level of teachers in Brunei Darussalam and Ghana. It is recommended both countries must work towards improving their teachers' competencies in curriculum adaptation, instructional strategies, identification and assessment of children disabilities and their skills in collaboration.

A Comparative Study of Teachers' Pedagogical Competencies in Supporting Children with Learning Difficulties in Primary Schools in Ghana and Brunei Darussalam

Brunei Darussalam and Ghana are both signatories to many international declarations and convention including the Declaration of Rights of Disabled Persons, 1975; the Convention on the children' Rights to equal education, 1989, UNESCO's World Conference of Education for All, at Jomtien, Thailand in 1990; and the Salamanca Statement and Framework for Action on Special Needs Education in 1994 (Norulfazidah, 2011; Koay et al., 2006; Kuyini & Mangope, 2011; UNESCO, 1994; Kuyini, 2013). These declarations, especially the Salamanca statement and Framework urged all governments to adopt, as a matter of law or guiding principles, the principles of inclusive education. Moreover, Brunei Darussalam and Ghana have made some strides in providing for the needs of children with disabilities in their schools.

In the case of Brunei Darussalam, the Government of Brunei Darussalam (GoBD), through its Ministry of Education (MoE), adopted principle and philosophy of inclusive education to be practised in Brunei Darussalam. This gave birth to the principle of inclusive education in Brunei Darussalam. Since then, Inclusive education has become part and parcel of Brunei Darussalam education system (Koay,Lim, Sim and Elkins, 2006; Norulfazidah, 2011). In line with the principle of inclusive education, Brunei Darussalam's special education policy guidelines state: "All pupils are able to learn given an appropriate learning environment. Appropriate learning environments can be created within the inclusive school. The inclusive school is one that

provides appropriate instruction for all pupils based on their level." (Special Education Unit [SEU], 1997, p.2). Thus, the principle of inclusive education does not discriminate no matter a pupils' background and condition. It attempts to meet the needs of all learners at all levels (Special Education Unit [SEU], 1997, p.2). Therefore, the aim of Brunei Darussalam' inclusive education policy is to ensure that the needs of all children in Public and Private Schools are met holistically. This noble aim led to the establishment of Special Education Unit (SEU) within the MoE and subsequent development of the National Strategic Education Plan (NSEP) for 2007-2011(MoE, 2008).

The development of the National Strategic Education Plan (NSEP) for 2007-2011 stimulated the implementation of Brunei Darussalam's inclusive education systems. The NSEP 2007-2011 specifically directed that Brunei Darussalam's education system must include children with and without disabilities must be in the general school system. This was to ensure that the National Education System (NES) for the 21st Century or Sistem Pendidikan Negara Abad Ke (SPN 21) was implemented. The SPN 21st Century education strategy, which fine-tunes the national education system, was aimed at ensuring visibility and promising future for all students in Brunei Darussalam. The SPN 21st Century education strategy has the following objectives:

a) To invest into early childhood education.
b) To adapt the international best practices in teaching and learning.
c) To produce experts, professionals and technicians required in the commerce and industries through secondary, tertiary and vocational education.
d) To strengthen the capacity of teachers, students and educational administrators in the area of Info-communication technology (ICT) and integration of ICT in the school curriculum.
e) To design and develop programs capable of promoting life-long learning and wide access to higher education, and
f) Promotion of research, development and innovation in the government-funded institutions, and through private and international partnership (MoE, 2008).

The above policy objectives are consistent with the principle and philosophy of inclusive education rooted in 1994 Salamanca statement and frame work for action on special needs education (UNESCO, 1994). Furthermore, MoE (2008) clearly indicates that the SPN 21st framework was aimed at achieving quality education through the provision of unprejudiced, appropriate and differentiated program of study for all children in both public and primary schools. In other words, the SPN 21st century framework was aimed at ensuring that the contemporary education system in Brunei Darussalam fitted well into the needs of every individual child, rather than students struggling to fit themselves into the education system (MoE, 2008). As such, the SPN 21st Century curriculum was to provide quality and holistic education to every student in the Public and Private Schools. The curriculum ensured that individual student's needs were catered for in their local schools. This was made possible because the SPN 21st framework created room for teachers to give their utmost support for the fast learners and students needing assistance and guidance to progress in their studies. Similarly, the SPNS 21st also created opportunities for all children with similar age peers from the same locality to learn together in the same school.

The current inclusive education provision in schools of Brunei Darussalam focuses on the following categories of learners:

a) Students with learning difficulties. They are those who are on remedial education plan. This category of learners include children who start school at a very late (previously not in school) and require some special support to follow the regular curriculum.
b) Students who are regarded as high support /dependency needs. Such students are on Individualized Educational Programme (IEP). They may children who have intellectual, sensory, physical, emotional and behavioral problems or challenges and require significant adaptation in their studies
c) Physical disability including neurological impairment
d) Multi-disabilities students are students who are severely disabled as a result of two or more non-associated/associated major disabling condition such visually impaired-mentally retarded (SEU, 1997; MoE, 2008; Norulfazidah, 2011).

While the inclusive education system in Brunei Darussalam is not that different from that of Ghana, researchers claimed that Ghana's inclusive education system is not a new phenomenon in Ghana's education system. For instance, Gadagbui (2008) argued that the policy of inclusive education is not a new development in Ghana education system. Its starting point in the Ghana education systems dates to the 1951's Accelerated Development Plan (ADP). According to Gadagbui (2008), the ADP made basic primary education accessible and universal to all Ghanaian children independent of their abilities or disabilities (Education ACT, 2008). From then on, various Education Acts and Legal Frameworks were put in place to take care of the educational needs of Ghanaian children. Those Acts and frameworks include: the 1961 Education Act; the 1992 Constitution of Ghana; the FCUBE Policy; the Ghana Government's Education Strategic Plan (ESP) 2003-2015; the National Disability Policy of 2000; the Special Educational Needs Policy Framework of 2005; Persons with Disability Act (715) of 2006; and the Education Act, 2008 (778) (Education Act, 2008; Anthony, 2009; Agbenyega, & Deku, 2011; Casely-Hayford,et al., 2011). All these Acts and frameworks reiterate the need for the Ghanaian child, especially those with disabilities and from disadvantaged backgrounds, to have equal educational rights and opportunities (access and quality educational provisions) without discrimination in any form.

The above Acts, policies, frameworks and strategic plans share common commitments, goals and aspirations for persons with disabilities and those from disadvantaged backgrounds. They reinvigorate the call for effective implementation of inclusive education policy in the general education classroom in Ghana. The Acts, policies and frameworks state among others things that: basic education is a right, free, compulsory and must be available to all. Second, it calls all schools in Ghana be inclusive for all children, especially those with 'non-severe' disabilities, street children, the girl-child and those from disadvantaged backgrounds by the year 2015. The inclusive education should be implemented in all districts. Third, it reiterated the call for specific rights to persons with disabilities in respect to education, transportation, community acceptance, housing and employment. Fourth, they also provide protection for persons with disabilities (PwD) from discrimination and abusive treatment. Finally, the framework sought to address the challenges of marginalization, segregation and inequality created for students with disabilities in

the Ghanaian education system (Education Act, 2008; Anthony, 2009; Casely-Hayford, et al., 2011; Kuyini & Abosi, 2014).

The actual implementation of the provision in the 1992 constitution started in 1996 by the introduction of the Free Compulsory Universal Basic Education (FCUBE) programme. The aim of the programme was to improve on the quality of teaching and learning, improving management efficiency and increasing access and participation through increased community ownership of basic education for all children including those with disabilities (GES, 2004; Casely-Hayford, et al., 2011). Also, the initiative sought to reduce school failure, repetitions, school dropout, and to limit inequality in education access among girls and disadvantaged children (ibid). This initiative resulted into an increased access to basic education for many children who were previously excluded in the Ghanaian school system (Gadagbui, 2008).

Recently, the government of Ghana introduced Capitation Grant in 2004 and the Ghana School Feeding Programme (GSFP) in 2005. The overall aims of these programmes were to improve inclusive education for all children to meet the requirement of the constitution and the obligations of the international community on the right to education (Casely-Hayford, et al., 2011). In spite of these policy provisions, Kuyini (2010) and Abosi (2007) argued that governments in Africa continue to pay lip service to the needs of persons with disabilities and the promulgation of policy lagged unacceptably far behind implementation. This policy provides free school feeding for children who are at risk of dropping out of school and those vulnerable in the deprived communities. This policy initiative was also meant to strengthen the existing FCUBE policy of attracting and retaining children in school (MOE, 2005). The most recent government's initiatives toward inclusion includes the provision of free exercise books, school uniforms for children from disadvantaged communities, and elimination of schools under trees (Kuyini, & Abosi, 2011; Casely-Hayford, et al., 2011). The question is that how long these of free will school feeding programmes, uniforms, sandals and provision of learning materials last.

Theoretical framework

This article is an attempt to argue that a teacher who has pedagogical competence to teach children with LD is the one who has competence in his or her subject matter and possesses pedagogical knowledge and reasoning skills required to be an effective inclusive teacher. Such a teacher must be effective in meeting the diverse needs and background of all children in the inclusive classroom. Lieberman and Mace (2010) and Dyson (2010) observed that teachers with adequate pedagogical and content competence are teachers, who effectively engage children in the learning processes that meet the diverse challenging behaviors of children in the inclusive classrooms. Therefore, for regular teachers to be able to meet the needs of children with learning difficulties in regular classrooms in Brunei Darussalam and Ghana, we argue that they require what Shulman (1987) referred to as richly developed "pedagogical content knowledge" (PCK) (p.8). In this context, PCK is the most crucial competence inclusive classroom teachers need in their practice in order to provide instruction that meets the diverse learning needs and backgrounds found in our contemporary classroom environment.

Our preposition therefore is that before teachers are able to include children with LD effectively in the inclusive classroom, they need to have competencies in: instructional strategies, behavior management, curricula adaptation, assessment, collaboration, adaptive instruction, assistive

technology, advocacy skills, policies and right-based knowledge in education. That is, they should possess what Shulman (1987) described as broad knowledge on the principles and strategies of classroom management, organizational skills, instruction presentation that "…appear to transcend subject matter" (p.8).

Based on Shulman (1987) theory of pedagogical content knowledge, the schema below shows the pedagogical competencies the regular teacher should master in order to meet the needs of children with learning difficulties in regular classrooms.

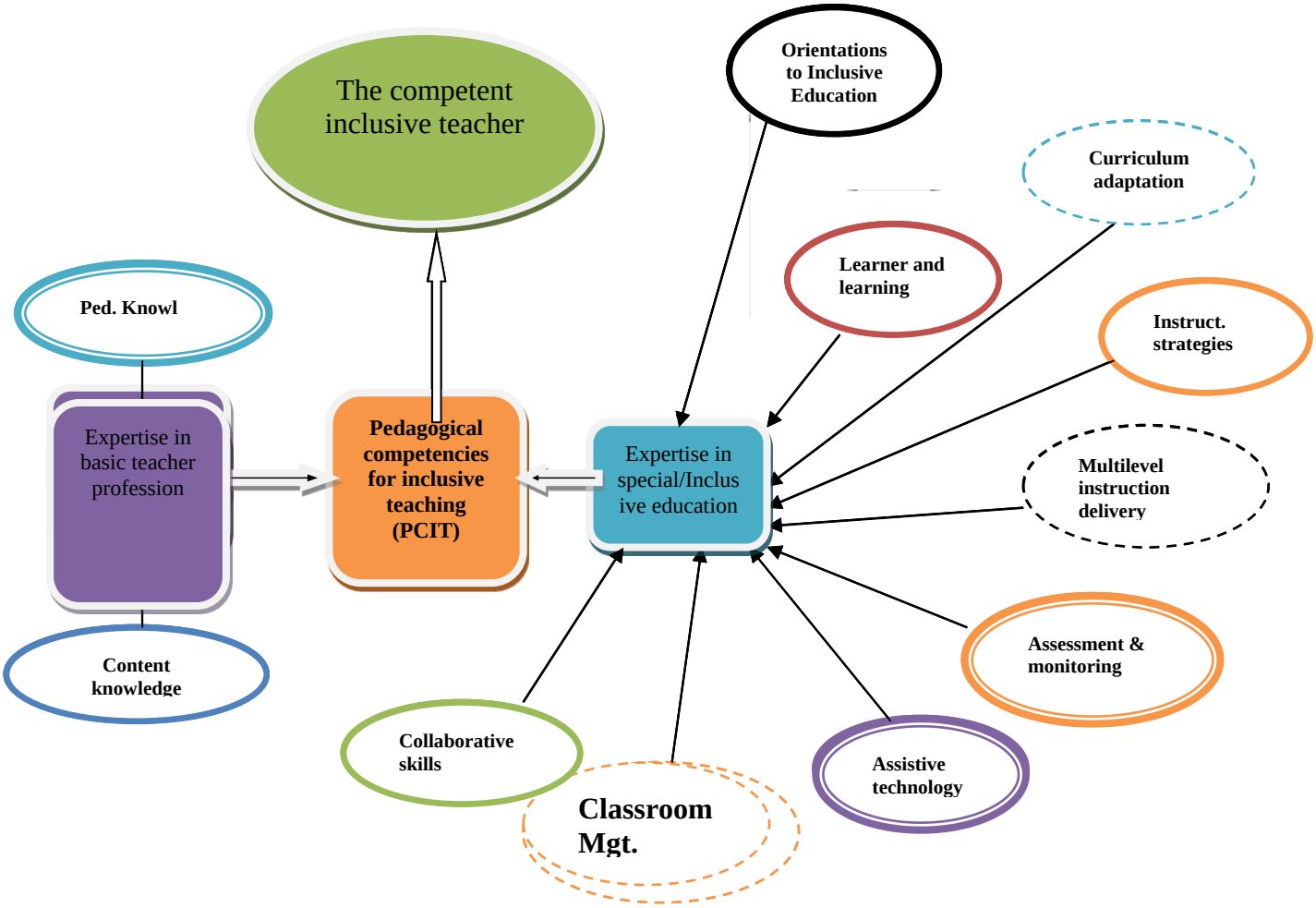

Figure 1: Teachers' pedagogical competence for inclusive teaching

The above theoretical model (Shulman, 1987) shows the relationship between two domains of knowledge: expertise from the basic education programme for regular teachers and that of special/inclusive education programmes for special educators. At the heart of the model, there is a general idea of amalgamating the knowledge domains of professionally trained regular teachers and the expertise of special/inclusive educators. Between these two domains, there is a combined specialty of *'the competent inclusive teachers'*. In view of the expertise of regular teachers, it is assumed that they are already well versed in content and some pedagogical knowledge. What is lacking in their training is the special educational knowledge of curriculum adaptation, adaptive instruction, instructional strategies, class management, assessment, collaboration and assistive technology. Based on this framework, we argue that inclusive classroom teachers will develop pedagogical competencies required to meet the needs of children with LD in the schools.

Objectives

Several studies such as Abdul Aziz etel (1996); Koy etel (2006); Norulfazidah, (2011); Kuyini, (2013) Kuyini & Abosi, 2014; Agbenyega, & Deku, 2011; Casely-Hayford, etal 2011; Kuyini, & Desai, 2008; Gadabgui, 2008, have been conducted on the implementation of inclusive education policy in both Brunei Darussalam and Ghana. However, there is virtually no research comparing teachers' pedagogical competencies in teaching children with LD in the inclusive schools in Brunei Darussalam and Ghana. This study, therefore, aims at filling this research gap. The study in this regard aimed at comparing the pedagogical competence level of primary school teachers in Brunei Darussalam and Ghana. The study has the following specific objectives:

a) To examine the competencies level of teachers in Brunei Darussalam and that of those in Ghana.
b) To assess if there is statistical difference between the competence level of teachers in Brunei Darussalam and that of teachers in Ghana.

Methodology

Descriptive survey design was used in the study. This approach was required in order to reach out to many participants in the Brunei Darussalam and Ghana to provide a basis for determining and making decision regarding Brunei Darussalam and Ghanaian teachers' competencies in supporting children with LD in schools in those countries. As a result, descriptive research design strategies were carefully applied in the study.

Data sources

The data were collected from 188 primary school teachers in a cross-sectional survey in the Brunei Maura District and the Tamale Metropolis, Ghana (n=94 for Brunei Darussalam and n=94 for Ghana). A total sample size of 188 respondents is considered appropriate for estimation purposes (Cooper & Schindler, 2002; Acton etel, 2002; Hyndman & Kostenko, 2007). The sampling process was organized in two stages for each of the countries. In the first stage, schools in each of the countries were identified. Then, the teachers were selected using simple random selection technique in the second stage. Cooper and Schindler, (2002) contend that random sampling technique used in this manner is appropriate and considered good for exploratory studies of this kind.

Instruments

Survey questionnaires were used to gather data for the analysis. The questionnaire instrument has three segments: demographic information, aimed to gather data on teachers' background variables (e.g. age, gender and class size). Section two of the questionnaire which has a self-developed Teachers' Competence Scale for the inclusion of children with LD (TC Scale), is made up of 17 items, describing effective inclusionary behaviours of teachers in the regular classroom. It embodied a collection of teaching practices and behaviours carefully identified in the inclusive education literature. Current thinking suggests that those teaching practices/behaviours produce better inclusion of pupils with diverse learning needs in the regular classroom (Kuyini & Desai, 2008; Kuyini & Abosi, 2014). The competence scale for the inclusion of children with LD contains self-assessment items, measured on 4-point Likert-type statements. The TC Scale aims at measuring teachers' competence in the inclusion of children

with LD in the inclusive schools. The TC Scale was developed and worded in the following fashion:

Using a scale of 1-4, please indicate your level agreement and disagreement to the following statements:

a) Adapting curricula materials for pupils with LD: 1, 2, 3, 4.
b) Modifying learning content for pupils with LD: 1, 2, 3, 4.
c) Providing relevant examples during lessons for children with LD: 1, 2, 3, 4.
d) Using peer-tutoring techniques in the regular classroom: 1, 2, 3, 4.

The TC Scale was interpreted as: "1" representing "No competence", "2" representing "Limited competence", "3" representing "Moderate competence" and "4" representing "Adequate competence". The data gathered from this section offered answers to research question one and was analysed using descriptive statistic.

Reliability and validity

The TC Scale had 52 items. Since we developed the scale and did not adapt it, we assessed the scale's reliability and validity. In the first instance, we conducted a pilot study involving 30 regular primary school teachers in both countries (n=60) to see whether the research instrument was reliable and feasible to obtain the relevant data required for the study. Prior to the reliability test and factor analyses, a group of experts in special/inclusive education field which included one university lecture, two teacher educators and three regular teachers carefully scrutinized and assessed the instrument for its relevance, content, cultural, face and construct validity. Based on the experts' feedbacks and recommendations, some of the items were removed while others items were included. In the end, the 52 items were reduced to 38 items. In addition, when the reliability test was performed, the items were reduced further to 14 items. The reduction in the number of items showed a very good sign of data reduction and consistency.

Also, the result of the reliability assessment of the TC Scale yielded Cronbach's alpha coefficient of 0.89, indicating that the instrument was very good. Also we examined the commonality commonalities among the items by applying factor analytic approach by applying principal component factor analysis approach with Varimax Kaiser Normalization. The result of the factor analysis showed factors (items) ranged from 1 to 5 for Brunei Darussalam and 1 to 6 for Ghana with coefficient of 0.54 to 0.76 and 0.65 to 0.89 respectively. Most of the items scored above 0.60, suggesting that the research instrument was good and reliable.

Data collection process

We began the data collection process by seeking permission from the relevant school authorities through the University of Brunei Darussalam and Ghana education service, Tamale. The permission to conduct research was granted by the department of schools, Ministry of Education, Brunei Darussalam on 8th September, 2011. In Ghana, the permission was granted y the regional director of education on 25th April 2012. Thereafter, permission was again sought from heads of the selected schools. In the end, primary school teachers from more than 30 schools in both countries opted to participate in the study. In addition, quite teachers taking various professional development programs at the University of Brunei Darussalam also took part in the study.

Data were gathered using quantitative data collection procedures and techniques. We distributed more than 200 survey questionnaires to teachers in the selected schools in both countries. In return, we received only 97 questionnaires from Brunei Darussalam and 102 from Ghana. Overall, we rejected 12 questionnaires due to missing information, inconsistency inconsistencies, errors and nonresponse cases. In all, 94 teachers responded all questions in the survey questionnaires.

Data analysis

We used SPSS version 17.0 for data processing and editing, and analyzed the data using Descriptive Statistic.

Results

Teacher pedagogical competency in Brunei Darussalam and Ghana

In Table 1, we provide a summary statistics of each of the inclusive teaching practices under consideration. The result, which is based on the competence composite score with "1" representing No competence, "2" representing Limited competency, "3" representing Moderate competency and "4" representing Adequate competency, indicates that the pedagogical competence of the sampled teachers in Brunei is between 1.71 and 2.61. This implies that the level of teachers' pedagogical competence in supporting children with LD in schools, in this regard, is limited since majority of the means scores are within "2". The composite mean scores of the sampled teachers in Brunei Darussalam is 35.12. Therefore, to achieve the second objective, the result of the descriptive statistic presented in Table 2 shows that a mean composite score of 35.66. This means that the sampled teachers' mean composite score is between 1.71 and 2.61**,** suggesting that the entire 94 teachers who participated in the study had limited to moderate pedagogical competency in teaching pupils with LD in inclusive settings.

Interestingly, participants recorded high means score in item 16 (Assessing learning needs of pupils with LD) and lowest means score in item 5(Using effective classroom practices) with means scores of 2.61(SD=.64) and 1.71(SD=.90) respectively. The result of the study also revealed that the following items: Creating learning-environment to cater for low and high achievers (M=2.29, SD=1.00); Using scaffolding as a teaching technique (M=2.23; SD=.90); Using mixed-ability groupings during lessons(M=2.20, SD= .82); Using assessment techniques to evaluate performance of pupils (M=2.19, SD= .78); Keeping/maintaining progress records of pupils with LD(M=2.17, SD=.96); Using multi-level teaching as a teaching strategy (M=2.16, SD=.81); Pacing lesson for pupils with LD in the regular classroom (M=2.15, SD=.87); Using IEP to support pupils with LD (M=2.11, SD= .86); Using explicit instruction as a teaching technique (M=2.09,SD= .85); Using cooperative teaching strategy (M=2.05, SD=.97); Providing one-on-one assistance during lessons (M=2.04, SD=.88) and Providing relevant examples during lessons (M= 2.00, SD=.86); Adapting curricular curriculum (M=1.96,SD=.97. The lowest means score included: Using different behavior management strategies during lessons (M= 1.94, SD= .89); Using peer-tutoring techniques in the regular classroom (M= 1.76, SD=.99).

Table 1
Teachers' competence inclusive teaching practices (TC Scale) in Brunei

	N	Mean	Std. Deviation
1. Adapting curricular curriculum	94	1.96	.97
2. Pacing lesson for pupils with LD in the regular classroom	94	2.15	.87
3. Providing relevant examples during lessons	94	2.00	.86
4.Using IEP to support pupils with LD	94	2.11	.86
5.Using effective classroom practices	94	1.71	.90
6.Creating learning-environment to cater for low and high achievers	94	2.29	1.00
7.Using different behavior management strategies during lessons	94	1.94	.89
8.Using peer-tutoring techniques in the regular classroom	94	1.76	.99
9.Providing one-on-one assistance during lessons	94	2.04	.88
10.Using mixed-ability groupings during lessons	94	2.20	.82
11.Using cooperative teaching strategy	94	2.05	.97
12.Using scaffolding as a teaching technique	94	2.23	.88
13.Using explicit instruction as a teaching technique	94	2.09	.85
14.Using multi-level teaching as a teaching strategy	94	2.16	.81
15.Using assessment techniques to evaluate performance of pupils	94	2.19	.78
16.Assessing learning needs of pupils with LD	94	2.61	.64
17.Keeping/maintaining progress records of pupils with LD	94	2.17	.96
Valid N (listwise)	94		

Survey Data (2016).

On the other hand in Table 2, the composite scores of teachers' pedagogical competence in including children with LD in the inclusive school in Ghana is 35.78. This implies that averagely, the competence level of the sampled teachers in Ghana is 2. Alternatively, their competence level is between 1.73 and 2.41, implying limited competence. The highest mean scores (M=2.41, SD=.89) is item 7(Using different behavior management strategies during lessons), whereas the lowest (M=1.73, SD=.83). Also, the result shows that majority of the items that fall within the adaptive teaching skills have lowest means scores. For instance item 3(Providing relevant examples during lessons); 13(Using explicit instruction as a teaching technique); 12(Using scaffolding as a teaching technique); 14(Using multi-level teaching as a teaching strategy) with corresponding mean scores of 1.73(SD=.83), 1.88(SD=.97) and 2.01(SD=.82) respectively. The highest mean score (M=2.34, SD=.86) among the items relating to assessment is item 17 (Keeping/maintaining progress records of pupils with LD). The rest of the assessment are items 15(Using assessment techniques to evaluate performance of pupils) and 16(Assessing learning needs of pupils with LD) with means scores of 2.04(SD=.62) and 2.19(SD= .76) in that order. Among the items that have high mean scores apart from item 6 include item 9(Providing one-on-one assistance during lessons); 7(Using different behavior management strategies during lessons); 8(Using peer-tutoring techniques in the regular classroom) and 2 (Pacing lesson for pupils with LD in the regular classroom) with relatively high mean score of 2.31(SD=.61), 2.24(SD=.86), 2.23(SD=.88) and 2.20(SD=.87) correspondingly.

Table 2
Teachers' competence inclusive teaching practices (TC Scale) in Ghana

	N	Mean	Std. Deviation
1. Adapting curricular curriculum	94	2.11	.94
2. Pacing lesson for pupils with LD in the regular classroom	94	2.20	.87
3. Providing relevant examples during lessons	94	1.73	.83
4.Using IEP to support pupils with LD	94	1.89	.84
5.Using effective classroom practices	94	2.18	.94
6.Creating good learning-environment to cater for low and high achievers	94	2.41	.83
7.Using different behavior management strategies during lessons	94	2.24	.86
8.Using peer-tutoring techniques in the regular classroom	94	2.23	.88
9.Providing one-on-one assistance during lessons	94	2.31	.61
10.Using mixed-ability groupings during lessons	94	2.09	.73
11.Using cooperative teaching strategy	94	2.04	.83
12.Using scaffolding as a teaching technique	94	1.93	.95
13.Using explicit instruction as a teaching technique	94	1.88	.97
14.Using multi-level teaching as a teaching strategy	94	2.01	.82
15.Using assessment techniques to evaluate performance of pupils	94	2.04	.62
16.Assessing learning needs of pupils with LD	94	2.19	.76
17.Keeping/maintaining progress records of pupils with LD	94	2.34	.86
Valid N (listwise)	94		

Survey Data (2016).

Discussion

The comparative study of teachers' competence in the inclusion of children with LD in Brunei Darussalam and Ghana disclosed interesting finding. Both countries are signatories to the 1994 Salamanca Declaration (UNESCO, 1994). In terms of composite mean scores of teachers' competence levels, teachers in Ghana scored 35.78 while that of teachers in Brunei Darussalam was 35.66. This suggests that the mean scores of the sampled teachers of Ghana have higher means scores than teachers from Brunei Darussalam. However, when t-test was performed to find out whether or not the differences in means scores were significant. The result showed that there were no significant differences between the pedagogical competence of teachers in Ghana and that of those in Brunei Darrussalam.

In addition, comparing the mean scores of the two data sets on item 5(Using effective classroom practices), the means scores (2.00, SD=.86) of teachers in Brunei Darussalam is higher than that of Ghana by 0.27, implying that teachers in Brunei Darussalam are more likely to provide relevant examples to support children with LD during teaching than their counterparts in Ghana. Similarly, the result showed that teachers in Brunei Darussalam have higher means scores in item 1(M=1.94, SD=.97), 2(M=2.15, SD=.87), 6(M=2.29, SD=1.00), 7(M=1.94, SD=.88), 8(M=1.76, SD=.99), 9(M= 2.04, SD=.88), 17(M=2.17, SD=.96) than the teachers in Ghana. While teachers in Ghana demonstrate higher competence in: 10(M=2.09 ,SD=.73),11(M=2.04

,SD=.83), 12(M=1.93,SD=.95),13(M=1.88 ,SD=.97),14(M=2.01 ,SD=.82),15(M=2.04 ,SD=.62),16(M=2.19 ,SD=.76) than the teachers in Brunei Darussalam.

In spite of the differences in the mean scores of the teachers in the two countries, the general pedagogical competence level of the teachers is not encouraging. Out of the 17 items, the sampled teachers in Brunei Darussalam had moderate competence (M=2.61, SD=.64) in only one item 16(Assessing learning needs of pupils with LD). In the case of teachers in Ghana, none of their mean scores were up to 3(moderate competence). Also, our theoretical model (Figure 1) proposes that teachers must possess competence in all the 17 items in Table 1 and 2 in order to have adequate or become an effective inclusive teacher. In line with this thinking, Shulman (1987) contended that before teachers are able to meet the needs of children with LD in the inclusive classrooms, they require what he referred to as richly developed "pedagogical content knowledge" (p.8). The content knowledge of teachers in any subjects taught at the primary schools is imperative in the inclusion of children with LD. All teachers in primary schools in both must have full comprehension of all subjects they teach. Without this, it would be difficult to support children who have LD in primary schools. In addition to the content knowledge, primary school teachers must have knowledge of special/inclusive education discussed earlier in Figure 1 if they are to succeed in supporting children with LDs in primary schools in Ghana and Brunei Darussalam. The key knowledge domains in special/inclusive education teachers in both countries must have including orientation to special educational issues, knowledge of learners (those with and without disabilities. In the case of those with disabilities, teachers must have full comprehension of the different types of disabilities and ways of supporting them in regular classroom settings); instructional strategies for children with disabilities and all other strategies discussed in Figure 1.

In addition, the study has also found that teachers from Brunei Darussalam and Ghana have low means scores in the following items 10: M=2.20(SD=.82) and M=2.09(SD=.73) respectively. It is expected that before teachers can deliver effective and meaningful instruction, they must first demonstrate pedagogical competence in the comprehension of the lesson, if possible, in many different ways. That is, what is to be taught must be adapted and tailored to meet a range of ability levels of the pupils in the classroom. At the same time, they should possess competence that can encourage and support pupils' learning and progress without ability-grouping or segregation (Peterson, 2005, Shulman, 1987). After all, instruction is defined as "… management, presentation, interactions, group work, disciplines, humor, questioning and other aspects of active teaching, discovery or inquiry instruction, and the observable forms of classroom teaching" (Shulman, 1987, p.15).

Teachers' pedagogical competence in multi-level instruction is therefore crucial in the inclusion of children with learning difficulties in regular classrooms. Teachers with pedagogical competence engage learners actively in and in meaningful and practical learning activities while maintaining learning at the levels of pupils' ability. In doing this, they use pedagogy that involves much scaffolding and adaptations as required (Peterson, 2005). Additionally, she argues that learning in a regular classroom cannot be effectively done when school subscribes to monolithic or "one size fits all" instructional recipe in the regular classroom. It is argued in Figure 1 that teachers who are competent in inclusive teaching must have repertoire of, not only in instructional strategies, but also skills in multilevel instructional delivery and classroom

management. These skills are imperative in meeting the needs of all learners in the regular classroom. In addition to these skills, teachers are also required to have knowledge of basic assistive technologies and collaborative skills. In Figure 1, we argued that without knowledge of assistive technology and collaboration teachers are likely not to succeed in supporting children with LD in the regular classroom. Teachers need to collaborate with parents of children with LD to ensure that whatever is taught in school is also practiced at home. In that way, there would consistency and continuity of learning in both school and at home. This becomes easier when both parents and teachers have some knowledge of basic assistive technology (Figure 1.).

Conclusion

This article sought to investigate the pedagogical competence level of teachers in supporting children with LD in the general education classroom Brunei Darussalam and Ghana. The second objective was to find out if there was any significant difference between the competence level of teachers in Brunei Darussalam and that of teachers in Ghana. The result of the study showed that teachers in both countries had limited to moderate pedagogical competency in supporting children with LD in schools. In terms of the composite means scores, teachers from Ghana had higher means scores than their counterparts from Brunei Darussalam. However, upon performance of t-test, the result showed that there was no significant difference between the competency level of teachers in Brunei Darussalam and that of those in Ghana. Nonetheless, there were some differences in the means scores of teachers from both countries. For example, The means scores of some individual items such as item 5(Using effective classroom practices), the means scores (2.00, SD=.86) of teachers in Brunei Darussalam is higher than that of Ghana by 0.27, implying that teachers in Brunei Darussalam are more likely to provide relevant examples to support children with LD during teaching than their counterparts in Ghana.

It is clear from the above discussion that teachers from both countries showed limited to moderate competencies in supporting children with LD in the general education classroom. It is recommended that teachers in both Brunei Darussalam and Ghana must be provided with intensive training in inclusive/special education training. Specifically, they should be given more orientation on special education and disabilities. This will help reduce some negative attitude and perception teachers might have towards teaching children with disabilities in the general education classroom. Moreover, intensive training is also required in specific instructional strategies such as direct teaching and multilevel instruction. Most teachers found it difficult to teacher children with LD in the general education classroom because they lack these specific skills in teaching those with LD in the same classroom with children without disabilities.

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A Case Study of Factors that Influenced the Attrition or Retention of Two First-Year Special Education Teachers

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Abstract

The issue of attrition and retention has been a chronic problem in the field of education for decades. School districts across the United States are experiencing shortages of qualified special education teachers largely due to high turnover rates, with many of these teachers electing not to return after their first year of teaching. In fact, roughly nine percent of special educators not return to the profession after their first year, citing themes such as lack of administrative support, excessive paperwork and burnout as primary factors that prompted their decision to leave. The purpose of this study was to identify problems faced by two novice special educators from their own perspective. Further analysis of the research data produced additional themes, including poor co-teaching relationships, the use of ineffective co-teaching models, student behavior, time management, paperwork, isolationism, time management, ambiguous special education practices and procedures.

A Case Study of Factors that Influenced the Attrition or Retention of Two First-Year Special Education Teachers

Over 6 million children in public school systems across the United States received special education services (Roach, 2009), placing the need for highly qualified special education teachers well into the hundreds of thousands in order to appropriately accommodate these children in these classroom (Hanson, 2011). However, according to the U.S. Department of Education (2002), there is a severe shortage of special education teachers as few prospective teachers are willing to venture into the special education field and, of those who do, roughly nine percent leave the profession after the first year (Horrison-Collier, 2013). Many of the vacancies are subsequently filled by teachers who lack the appropriate highly qualified status as outlined by No Child Left Behind and the Individuals with Disabilities in Education Act (VanCise, 2013). It is estimated that over 80% of secondary special education teachers do not meet highly qualified status (McLeskey & Billingsley, 2009) as outlined in state and federal mandates.

Much of the research suggests that retention is the dominate problem associated with special education (Horrison-Collier, 2013) rather than recruitment (McLeskey, Tyler & Flippin, 2004; Smith & Ingersoll, 2004). Responsibilities such as co-teaching, progress monitoring, developing individualized education plans (IEPs), accommodating student disabilities and modifying assignments, assessing, and assisting in planning curriculum has caused perspective teachers to think twice about entering into special education. Those novice teachers who enter the profession are statistically less likely to stay. For decades, turnover for special education teachers has been higher than turnover of general education teachers (Emery & Vandenberg, 2010) regardless of subject matter, demographics and other associated variables (Boeddeker, 2010). Consequently, it is highly probable that a teacher shortage will persist in the field of special education (Lemons, 2013).

Purpose

The purpose of the study was to examine the problems faced by two special education teachers during their first year in the field. Both participants in the study worked at the same middle school, but in separate classrooms. The main focus was to develop themes that shed light on those issues that contribute to novice special educators leaving the profession. It was hoped that these themes would prompt further discussion about how to remedy shortages in staffing special education teachers and, when positions are filled, retaining those teachers.

Literature Review

Paperwork

Because of federal and state mandates governing the education of students with disabilities, documentation of services is critical part of students' education plans. The average IEP can be 10 to 14 pages long, depending on the needs of the student. However, within the context of the document, the amount of data required to complete the IEP may seem overwhelming for even veteran teachers. In fact, many special education teachers report that their decision to leave the field was based on the paper requirements that were part of the job. Results from a study conducted by the U.S. Department of education indicated that teachers were overwhelmed by the amount of paperwork that was required as part of their professional duties, which impacted their ability to manage other aspects of their jobs (Klein, 2004). Special education teachers at the elementary and secondary grade levels report spending 53 percent more of their time on paperwork compared to any of aspect of their jobs, including attending IEP meetings, lesson planning or grading student assignments (U.S. Office of Special Education Programs, 2013).

Administrative Support

Special education teachers have cited support from their administrators (Cancio, Albrecht & Johns, 2013) as being highly influential in terms of whether they leave or stay in the profession. Leadership support that focuses on teachers' professional and emotional needs was found to be successful in reducing attrition rates (Boeddeker, 2010), specifically if principals create human resource policies (National Commission on Teaching and America's Future, 2007) tailored to the most essential needs of their teachers. Teachers who perceive remain in the field are more likely to perceive their administrators and the overall school climate as being supportive of them professionally (Bozonelos, 2008). In contrast, teachers who were not satisfied with the amount of support and feedback that they received from administrators were less likely to stay in their current job assignment, and many were inclined to leave the field of education altogether.

Teacher Burnout

Burnout occurs when an individual experiences job-related stress that impacts their physical, mental and emotional well-being. Haberman (2004) defined the term as "a condition in which teachers remain as paid employees but stop functioning as professionals. Teacher burnout is commonly cited as the reason special education teachers leave the profession, thus causing a critical shortage in classrooms across the country. As Berry (2011) describes it, burnout refers to job-related "fatigue, frustration or apathy that can result from periods of overwork and stress (p. 9)." Burnout can be the result of increasing paperwork requirements, stress associated with students who have physical, emotional and/or learning disabilities or lack of support from their

peers and administrators that leaves special education teachers feeling isolated (Billingsley, 2010), demoralized, exhausted and ineffective (Maslach,1982).

Because of the high demands of paperwork, special education teachers have reported that they experience increased levels of stress and burnout, which becomes a huge factor in their decision to leave the professional (Mehrenberg, 2013). According to Suter & Giangreco (2009), special education teachers reported paperwork requirements that took an average of five hours a week to complete. Because of federal and state legal requirements, including student individualized education plans (IEPs), progress monitoring data collection and record keeping, many teachers believe that their ability to effectively provide instruction is eclipsed by the amount of paperwork they are required to complete as part of their job responsibilities. Moreover, the availability of school-based mentorships, constructive feedback or support systems may be nonexistent for special education teachers, causing even more stress and the potential for burnout.

Methods

A qualitative case study research design was used to describe the experiences of novice special education teachers from their own perspectives (Creswell, 2012). Specifically, the focus of this research included three themes: perceptions of administrative support, excessive paperwork, and teacher burnout and the likelihood of retention at the end of the school year A qualitative design would allow for the development of additional thematic issues that could shed light on what contributes to these teachers' decision to leave or stay in the profession after their first year in the field. This paper describes the survey results and interview of two special education teachers in their first year of teaching at the middle school level. As Smith & Ingersoll (2004) pointed out, special educators are at high risk for turnover during the early stages of their careers, which makes the significance and rationale for this study even more important. Because of high attrition and low retention, there is a need to identify those factors that were most influential in teachers' decisions to stay in the field (Viel-Ruma, Houchings, Jolivette & Benson, 2010).This research will seek to provide insight into the teachers' needs for help and support during their first year of teaching and what other educators or administrators can do in order to support these novice teachers. Participants were chosen from a convenience sample of novice special education teachers from a local middle school in the state of North Carolina based on their willingness to be involved in the study.

Participants

The target population for the study was novice special education teachers. The two participating special educators worked at the same local middle school in inclusion classrooms. Both participants held a bachelor's degrees, one in social work and the other in special education. Neither of the participating teachers had ever taught in the classroom prior to this year's assignment, though one of the participants had completed her student teaching in a self-contained classroom at the elementary level.

Instrumentation

The study used survey data and interview questions that were sent to the two participating teachers through email. The survey was created with closed-ended questions that asked participants to rate their experiences based on whether they agreed, disagreed, somewhat agreed,

and somewhat disagreed with the questions that were being asked about the participants' perceptions of their need for support from administrators and/or mentors, their ability to complete paperwork and their ability to effectively manage their student case load. Although this study was strictly qualitative in nature, a larger scale study could be conducted in the future to gain a more quantitative result based on the same or similar questions posed to the participants of this study.

In addition to the survey, participants were asked to complete a questionnaire that consisted of three open-ended questions and one suggestion that they felt would support the retention of novice special education teachers. The first question asked participants to list and describe four issues they have faced during their first year as a special education teacher. The second question asked participants to list four examples of support (i.e. mentoring, workshops) they have received during their first year as a special education teacher. The third question asked teachers the likelihood of them returning to special education after the first year and the four primary factors that have contributed to their decision. The questionnaire allowed for more detailed, candid responses than the survey would allow, providing additional insight into an issue that has not been extensively explored through quantitative or qualitative measures.

Procedures

A letter was sent to two prospective participants along with a copy of the survey and copy of the questionnaire. Participants were recommended based on their location at a local middle school and foreknowledge about their career status. Each prospect was assured that her identity and responses would remain anonymous. Once they agreed to take part in the research study, the participants were asked to complete both the survey and questionnaire within three weeks.

Findings

Open-Ended Responses

The responses to the open-ended questions about challenges faced as a first-year special education teacher were analyzed. During the analysis of the data, additional themes emerged that included: isolationism, time management, poor co-teaching relationships (Billingsley, 2010), the use of ineffective co-teaching models, student behavior (Skaalvik & Skaalvik, 2007), ambiguous special education practices and procedures, and negative perceptions of special education school wide.

Survey Responses

Results from the survey indicated that administrative support was the primary challenge for these first year special education teachers. They indicated that school administrators were not supportive of their needs and they felt isolated in the school. Both respondents either disagreed or somewhat disagreed with statements that, "I felt comfortable approaching administrators with my concerns," "I received support from my administrators," and "administrators are sensitive to my needs as a first year teacher."

Paperwork

Both survey participants agreed that paperwork requirements was the most critical challenge they faced during their first year. On the questionnaire, one participant shared, "I was asked to come

to the principal's office because I was late submitting my IEP paperwork. Even though I told the case manager that I was having problems completing the paperwork because of my co-teaching responsibilities, the response was that I would be written up if the late paperwork continued."

The second participant indicated similar concerns on her open-ended questionnaire, adding, "Progress monitoring and paperwork takes up a lot of time. I don't know how they expect us to teach and plan, too."

Administrative Support

Both participants disagreed that administrators supported them as first year teachers. They both disagreed with the statement that administrators were sensitive to their needs and both agreed that they felt isolated. On the questionnaire, one of the participants suggested that, "There is a shortage of special education teachers. Administrators need to build better relationships with the ones that they already have." As far as perceptions of mentorship, one of the participants agreed that her mentor was supportive while the other participant somewhat agreed with that statement on the survey,

Teacher Burnout

When asked whether they experienced job-related stress during their first year, both respondents agreed. However, neither respondent felt that their physical health had been impacted by the job-related stress that they experienced. On the open-ended questionnaire, both participants cited burnout or stress as an issue that they had experienced. One participant indicated, "I am definitely looking for another job. I can't take any more of this. Between administration and the teacher I am in the room with, I don't see myself coming back another year."

Additional Factors

Additional themes emerged during further analysis of the survey and questionnaire results, yielding more insight that could be useful in developing comprehensive plans for special educators during the first year. Participants identified issues that caused them some or frequent difficulty during their first years of teaching such as (a) poor co-teaching relationships (b) ineffective co-teaching practices (c) managing the accommodations and modifications of students with disabilities in the regular education classroom, (d) constant change of special education policies and procedures that impact paperwork requirements and classroom-based practices, (e) co-planning with the regular education teacher to create lesson plans for different levels of children in the inclusion classroom, and (f) inadequate preparation or training prior to entering the classroom for the first time. One the participants stated, "I was not prepared for the reality of being in special education. It was totally different from what I expected."

Discussion

There were three primary themes addressed in this study: administrative support (Hanson, 2011), the demands of paperwork (Imhoff, 2012) and job-related stress that contributed to the attrition or retention of first year special education teachers. A closed-ended survey and open-ended questionnaire was used to illicit responses from two novice special education teachers who were willing to lend their perspectives in an effort to provide somewhat of an understanding of the types of challenges and need for support during this initial phase of their careers.

Analysis of the data suggested that first-year special education teachers felt isolated within the school, lacking sufficient mentorships (Horrison-Collier, 2013) and administrative support. Increased levels of support from mentors and administrators (Roach, 2009) within the school would benefit a teacher who was in the beginning stages of their special education career if the support offered constructive feedback and suggestions for improving practice. Participants proposed that schools create a mentorship program dedicated specifically to the support and professional development of teachers who are new to the special education profession. There was a consensus between both participants that administrators were not supportive of their needs, and this was cited as the primary reason for their decision not to return to the classroom. At the conclusion of this study, one participant had given her two-week notice to resign her position while the other had indicated to the principal in writing that she would not return the following school year.

Further analysis indicated that the co-teaching relationship between the special education and the general education teachers was acrimonious and that co-teaching practices were not used in a way that benefitted students in the classroom. The regular education teacher provided much of the instruction, while the special education teacher served as more of a support role or assistant in the classroom. Special education teachers were also expected to collect data through progress monitoring in order to write student IEPs, as well as support all students in the inclusion classroom. They were faced with the task of implementing the components of the IEP within the context of the general education classroom as well as provide accommodations and modifications for students with disabilities as needed. Only one of the participants indicated that she needed additional support when it came to implementing the IEP, though both participants felt that the special education practices and procedures for their district lacked clarity. As a result, time management was somewhat of an issue when it came to creating a balance between paperwork requirements and expectations for co-teaching. While other themes emerged from the survey and questionnaire responses, there was no indication that these themes were major causal factors for either respondent's decision to not return after the end of the school year.

While this study employed a considerably small number of participants which, in effect, served as a limitation to the research, the findings are of interest because they provide some insight into specific factors that are most critical to the attrition and retention of special education teachers. Based on high turnover rates and significant shortages of special education teachers in schools across the United States (Imhoff, 2012), further research is needed to clarify the types of mentorships and support that would be most effective in meeting the needs of these teachers during their first year in the field.

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Significant Outcomes in Case Law in the United States: Autism and IDEA in 2013, Transition Issues and Changes in Diagnostic Evaluation Criteria

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Abstract

The authors examined 85 cases decided in 2013 where the facts centered on violations of the Individuals with Disabilities Education Act (IDEA) and the provision of a Free Appropriate Public Education (FAPE) for students with autism spectrum disorder (ASD). Trends in prevailing party by geographic location, court circuit, gender, and other specifics (including transition and changes in evaluation criteria) are explored and compared to earlier research. Suggestions for educators who provide services for students with ASD are provided as well as free evidence-based resources for professional development.

Significant Outcomes in Case Law in the United States: Autism and IDEA in 2013, Transition Issues and Changes in Diagnostic Evaluation Criteria

Autism has been redefined in the Diagnostic and Statistical Manual of Mental Disorders- 5th Edition (American Psychiatric Association [APA], 2013). Three of the previously separate disorders (autistic disorder [autism], Asperger's disorder, and pervasive developmental disorder-not otherwise specified) have been redefined as a single condition with different levels of symptom severity in two core domains; 1) deficits in social communication and social interaction and 2) restricted repetitive behaviors, interests, and activities. Both components are required for diagnosis, and social communication disorder is generally diagnosed if no restrictive, repetitive behaviors are present (APA, 2013).

In 2000 the prevalence rate for autism spectrum disorder (ASD) was 1 in 150 children. In 2010, the year for which we have the most up-to-date statistics, the rate is the well-publicized 1 in 68 (Centers for Disease Control, 2014) under DSM-IV criteria. The changes in DSM-5 led to speculation regarding future diagnosis of autism spectrum disorder (ASD) in children. One of the concerns with the new diagnostic criteria is that the symptoms must show up from early childhood, even if not recognized until later (APA, 2013). While educational diagnosis may differ than DSM-V diagnosis (e.g., higher functioning individuals with an ASD diagnosis by DMS-V standards but not qualify for services because the disability does not impact educational progress), the latter is taken into consideration when determining eligibility for services under IDEA. Since parents interact with medical and educational professionals when seeking services for their child, the professional language used by both impact service provision (Prykanowski, Gage, & Conroy, 2015).

Several investigators examined the reliability of DSM-5 criteria against DSM-IV criteria using clinical samples, and concluded that the DSM-5 criteria have specificity and sensitivity against DSM-IV criteria (Frazier et al., 2012; Huerta, Bishop, Duncan, Hus, & Lord, 2012). Wing, Gould, and Gillberg (2011) also examined these criteria in some detail. They determined that the committee that developed the DSM-5 overlooked a number of important issues, including social imagination, infant and adulthood diagnosis, and the possibility that girls and women with ASD may continue to be misdiagnosed/undiagnosed under the new manual's criteria. The authors concluded that a number of changes would be required for DSM-5 criteria to be used with reliability and validity in practice and research. Matson, Hattier, and Williams (2012) also found that under the DSM-5, diagnoses of ASD would drastically decrease, and Ghaziuddin (2010) argued that the diagnosis of Asperger's syndrome (AS) should be retained and that diagnostic criteria should be modified. Clinical professionals rely on descriptive data for diagnosing ASDs, and changes from DSM-IV to DSM-5 may have implications for all professionals (including educators), even when educational diagnosis (which even varies between professional clinicians) utilizes other "gold standard" tools such as the Autism Diagnostic Observation Schedule (ADOS) and the Autism Diagnostic Interview-Revised (ADI-R), (Esler, 2013; Kulage, Smaldone, & Cohn, 2014).

Understanding Outcomes of Case Law

Analyses of case outcomes involving autism and IDEA decided between 1990 and 2002 (published between 2002 and 2004) yielded relatively split case decisions regarding prevailing party (50% parent, 50% school district) using different research approaches. Choutka, Doloughty, & Zirkel (2004) compared autism cases involving applied behavior analysis (ABA) and treatment and education of autistic and related communication handicapped children (TEACCH). Yell, Katsiyannis, Drasgow, & Herbst (2003) studied autism cases decided between 1990 and 2002, where violations were mainly in the areas of parental participation, evaluation, individualized education program (IEP), placement, lack of qualified personnel, behavior intervention plan (BIP), and extended school year (ESY) services. Zirkel (2002) studied cases involving students with any pervasive developmental disorder (PDD). Eligibility, methodology, attorney's fees, discipline, and ESY and related services were the focus of his study and yielded almost split outcomes between prevailing parties.

Research involving autism and case law between 2007 and 2010 (Hill, Martin, & Nelson-Head, 2011; Hill and Hill, 2012; Hill and Kearley, 2013) indicated that school districts prevailed more than twice as often over parents. There is a need to continue to evaluate results of autism litigation given rising numbers both in diagnosis and in students transitioning into adulthood. Compared to the earlier studies, the pendulum has swung with regard to transition. While the number of cases involving transition (both from early intervention to school and from school to the adult world) parents prevailed over schools in the study conducted using 2007-08 cases (6 cases ruled in favor of parents, 4 in favor of districts, and 7 outcomes were evenly divided; Hill, Martin, and Nelson-Head, 2011). In the study by Hill and Hill (2012) parents prevailed in 5 cases involving transition, school districts in 3, and 0 cases resulted a split decision between parents and districts. In comparison, outcomes in 2010 (Hill and Kearley) found that parents prevailed in 2 cases and school districts in 7 (there were no split decisions). Using these repeated measures to evaluate trends in a systematic manner informs stakeholders and helps in decision making and prioritizing educational focus for students with ASD. Transition also exemplifies

the shift from parent to school district as prevailing parties.

The purpose of the present study is to examine court cases at the US District Court level and to: (a) continue to monitor trends in prevailing parties regarding ASD and IDEA by year; (b) provide a historical legal analysis for determining if and/or when changes in diagnostic criteria for ASD may impact due process filing, and outcomes of case law; and (c) examine consistent and emerging factors involved in violations of IDEA and the provision of FAPE for students with ASD in light of the changing environment, such as the numbers of individuals transitioning to adulthood, and the impact of changes with NCLB and Every Student Succeeds Act (ESSA; Fennell,2016).

Method

Variables

Using the *LexisNexis*™ database of federal and state court cases and the search terms autism or Asperger's, IDEA, and 2013, the authors examined cases involving students between the ages of 3-21, and the provision of a free appropriate public education (FAPE) as required under the Individuals with Disabilities Education Act (IDEA) as the independent variables of the study. The cases were organized by circuit and were included using the most current stage of litigation to determine the prevailing party. As promoted by their website, the *LexisNexis*™ research system provides the most expansive collection of online legal content available anywhere and the tools needed to extract the essentials from the overwhelming amount of information available (LexisNexis, 2014). The dependent variables were the prevailing parties in each case (schools, parents, or a split decision) by the District or Circuit court judge (or equivalent). The authors realize that many cases settled through mediation are not included in the database, but this database provides a snapshot of those cases that reach the District or Circuit court level.

Each case was coded on variables including procedural violations (parent participation, IEP, placement, evaluation, and unqualified personnel), substantive violations (services not provided, services equal no progress, transition, functional behavior assessment/behavior interventions plan (FBA/BIP), data not collected, and ESY services), and demographic information (District or Circuit court, gender, diagnosis, and grade level). Based on commonalities found across cases, data were also coded under the category of "other" (e.g. private school, applied behavior analysis, student behavior, failure to exhaust administrative remedies, and whether the court indicated that the student was an English language learner). If the item was mentioned as part of the case it was coded and ultimately graphed by case outcome (parents, school district, or tie). These areas are worthy to note because they may be indicators of future trends in litigation.

Inter-observer Agreement

Inter-observer agreement (IOA; Cooper, Heron, & Heward, 2007) measures how much two raters come to the same agreement of some outcome. To ensure IOA in this study, the second researcher reviewed 23 cases (27 %). Data were categorized by prevailing party (1=parent prevailed on all/most issues, 2=school district on all/most issues, or 3=split decision). After training, the second researcher reviewed the cases, obtaining inter-observer agreement of 91% (21 of 23 cases included in the review). The cases where agreement was not met were reviewed and discussed again by the researcher until 100% agreement was reached. The agreed upon outcome was used in the final research.

Data Analysis Procedures

Comparisons in prevailing party were made to the 2007-2011 case outcomes (Hill, Martin, & Nelson-Head, 2011; Hill & Hill, 2012; Hill and Kearley, 2013) to determine if trends such as schools prevailing more than parents and number of cases heard continued to increase (see Table 1). Each case was coded by area if noted as part of the case. These were then graphed by case involvement and prevailing party.

Results

Eighty-five cases involving autism and IDEA in 2013 were examined using the *LexisNexis*™ database through a local university. The search terms used include autism, IDEA, and Asperger's. These were the same terms used in the 2007-08, 2009, and 2010. While more cases were discovered and examined for 2013 (an increase), outcomes were similar to the studies using data since 2007, and school districts (65%; n=55) prevailed more than twice as much as parents (26%; n=22), while 9% (n=8) resulted in a tie (see Table 1).

The majority of cases (73%) occurred in the 2nd (New York, Vermont, and Connecticut; n=31) and 3rd (Pennsylvania, New Jersey; n=10) as well as the 9th (cases from Arizona, California, Hawaii, Idaho, and Nevada; n=21; Figure 1) court circuits. At least one procedural violation to IDEA was involved in every case examined. Substantive violations were noted in 71 of 85 cases (84%).

Table 1
Case Outcomes between 2007-2010 compared with 2013

Years Covered in Research	Number of Cases	Prevailing Party		
		Parent	School District	Tie
2007-2008	99	27.3% (n=27)	53.5% (n=53)	19.2% (n=19)
2009	62	29% (n=18)	63% (n=39)	8% (n=5)
2010	68	35% (n=24)	60% (n=41)	4% (n=3)
2013*	85	26% (n=22)	65% (n=55)	9% (n=8)

*Current Study

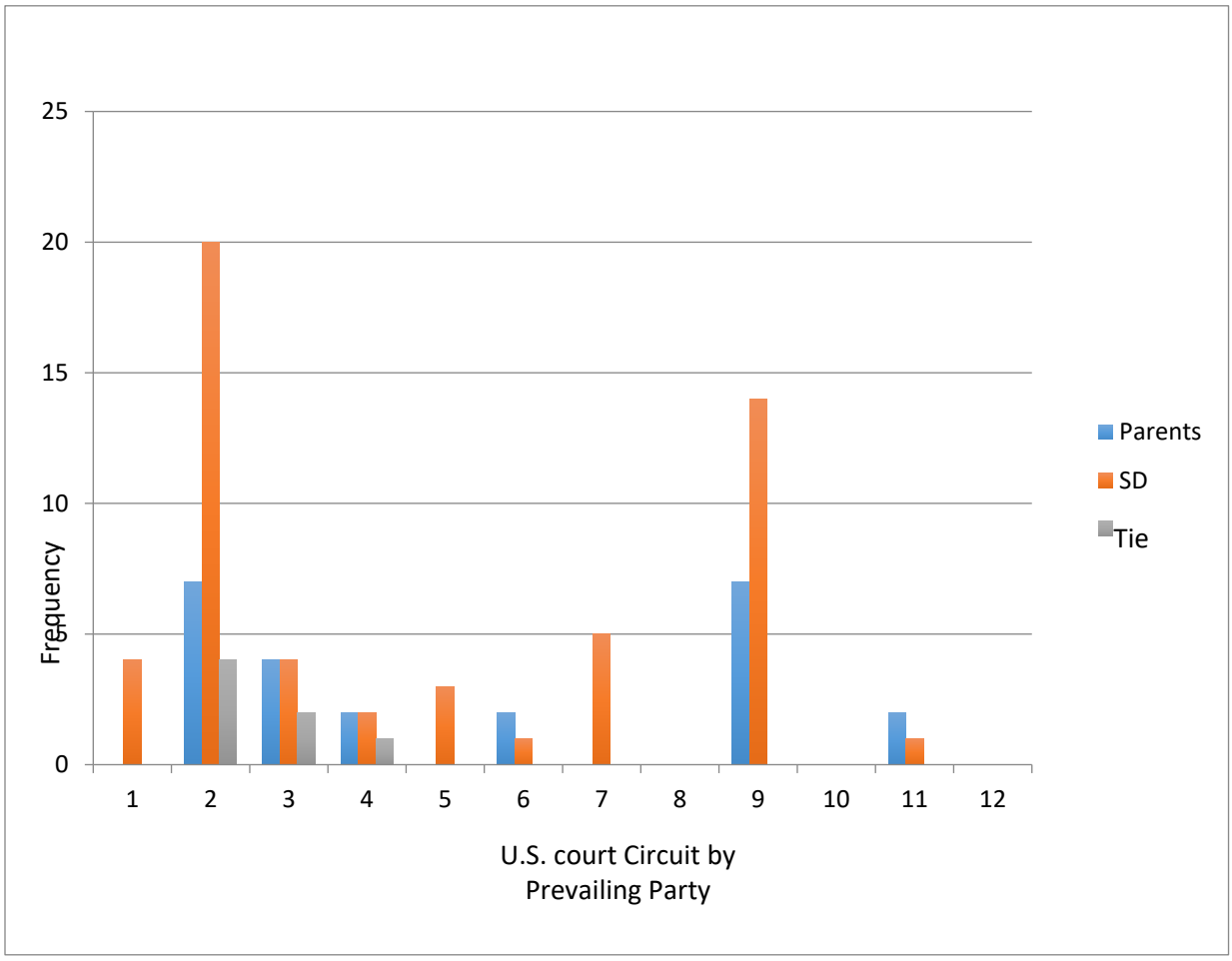

Figure 1. Outcomes by U.S. Court Circuit

SD- School District

Procedural violations to IDEA included issues regarding parent participation (41%; n=35), IEP procedures (91%; n=77), placement (72%; n=61), evaluation (45%; n=38), and unqualified personnel (20%; n=17). Substantive violations include services not provided (58%; n=49), services equal no progress (24%; n=20), transition (19%; n=16), FBA/BIP (31%; n=26), data not collected (7%; n=6), and provision of ESY services (16%; n=14). Procedural and substantive violations are graphed in Figures 2-3.

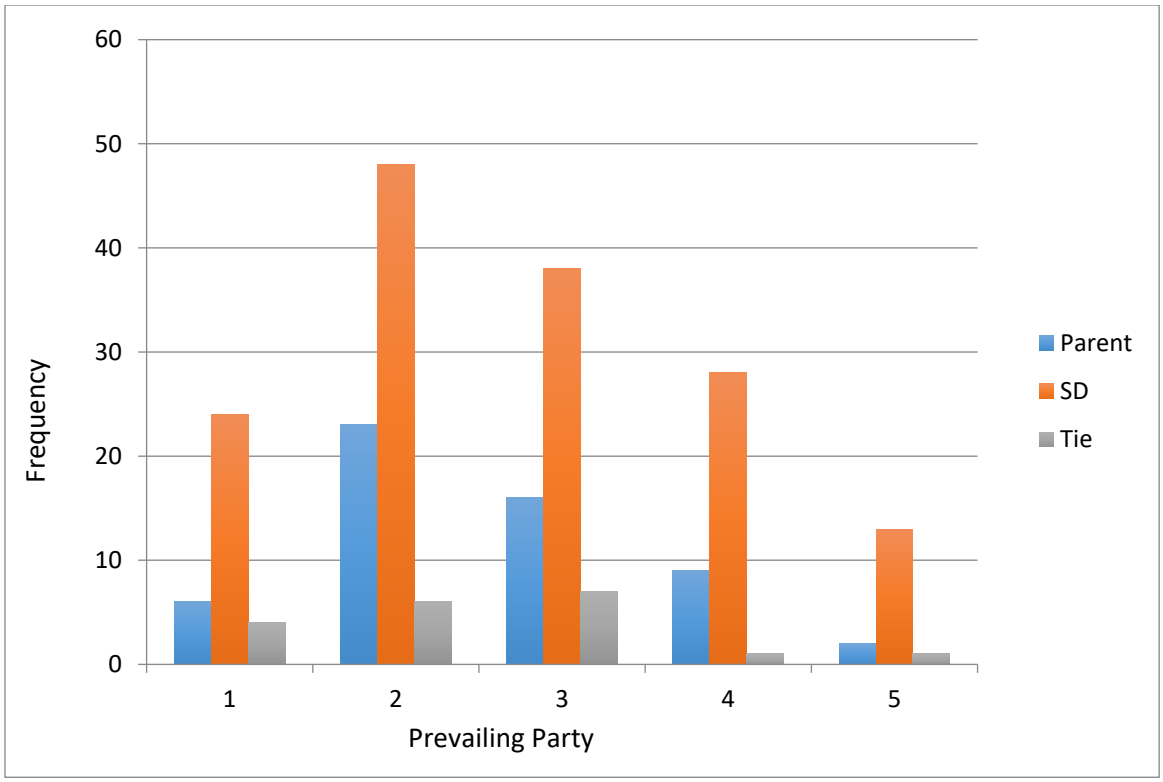

Figure 2. Procedural Violations

SD-School District

1-Parent Participation, 2-IEP*, 3-Placement, 4-Evaluation, 5- Unqualified Personnel
* In cases where the IEP was not part of the case, placement (n=5), Evaluation (n=1), or Unqualified Personnel (n=2) were the sole issues decided.

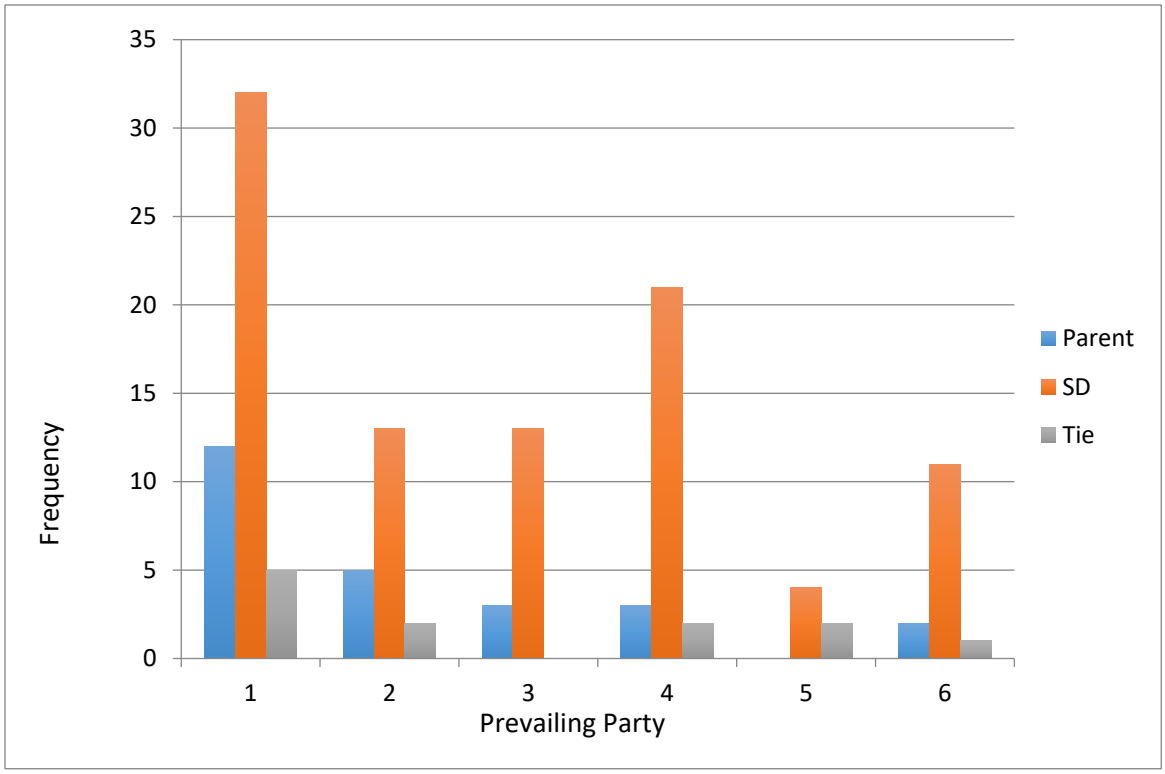

Figure 3. Substantive Violations

SD-School District

1-Services not provided, 2-Services equal no progress, 3-Transition, 4-FBA/BIP, 5- Data not collected, and 6-ESY

Demographic data were also coded and displayed. Males were involved in 71 of 85 cases (one case involved 5 boys, another involved two boys, and a third involved 2 boys and a girl), while 15 females were identified as the subjects in the 85 cases examined. In this study, the ratio of 71 males to 15 females (almost 5/1) was similar to the ratio of males to females outlined in the literature (Autism Speaks, 2015; Harrop, Gulstrud, & Kasari, 2015).

Thirty-five (41%) students had autism as well as a co-morbid condition, while 50 (59%) were identified as strictly having an ASD. School districts prevailed 2:1 over parents regardless of the co-morbidity or singular ASD diagnosis. When cases involved students in Pk-6, school districts prevailed at least 2:1 (n=34) over parents (n=16), with 5 cases resulting in a tie, but in cases involving students in grades 7-12, school districts prevailed (n=18) at least 3:1 over parents (n=6) with 2 cases resulting in a tie. Grade level was not indicated in 4 cases (Figure 5).

Finally, data were coded for new areas of interest in the cases examined. These data involved private schools (66%; n=56), ABA services (28%; n=24), student behavior (51%; n=43), and failure to exhaust administrative remedies (15%n=13). When the court cases examined involved provision of ABA services, parents fared better (parents-11, school districts-12). The other area that was close in outcome was failure to exhaust administrative remedies (e.g., when a parent pulls the child out of school without mediation) where parents prevailed in 6 cases and school districts in 7.

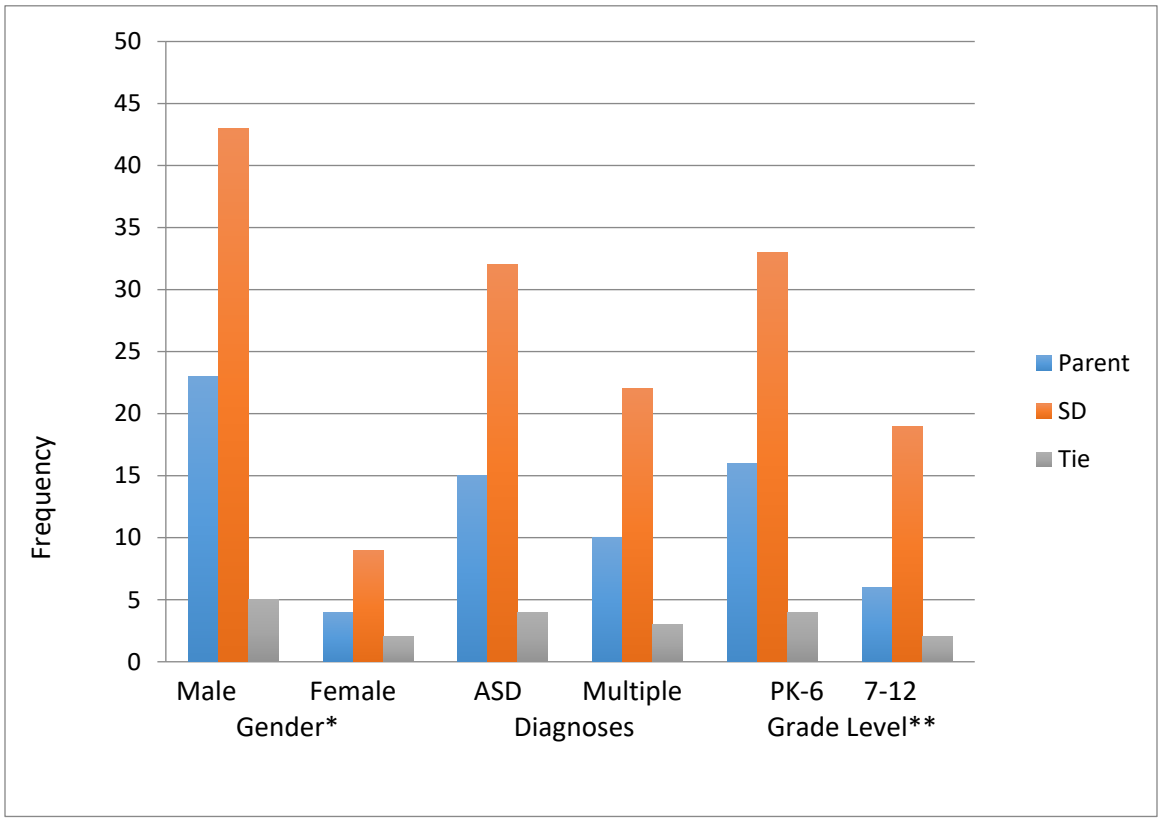

Figure 4. Demographics

SD-School District

*One case where parents prevailed involved 4 boys, one case where school districts prevailed involved 2 boys, and one case where parents prevailed involved 2 boys and 1 girl

** Grade level could not be determined in 5 cases

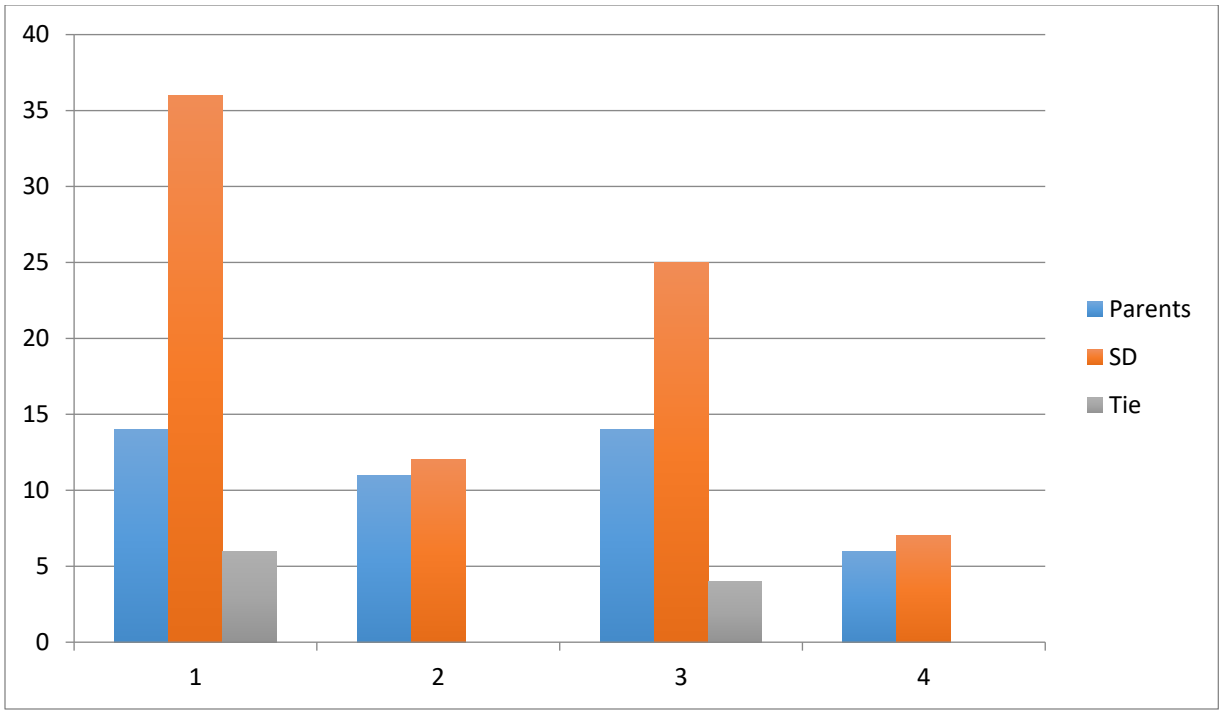

Figure 5. Other Issues Noted in 2013

SD-School District

1-Private School, 2-ABA, 3-Behavior, 4-Failure to Exhaust Administrative Remedies

Discussion

Changes in criteria of how individuals are diagnosed with ASD have the potential to impact educational decisions and future due process cases, whether because of changes in diagnostic criteria, individual state criteria for qualification, service provision or in the numbers of cases heard. Because transition overall (to, from, and between schools) continues to impact outcomes, especially when parents arbitrarily move their student to private placements without following due process procedures, the authors discuss several notable cases in and their roles in the provision of FAPE in the LRE in each case and ultimate rulings.

Transition

Cases involving transition included the move from home to school and IEP development, between schools (public/private, elementary/middle/high school, between states), focused on individual students or several students at a time, and transition from high school to adulthood. In some cases, transition was key to FAPE determination and in others it was a factor but was not key to denial of FAPE. Several cases are discussed as examples of these rulings. The shift from parents prevailing in 2007-08 and 2009 to schools prevailing in 2010 and 2013 is important to note. Since more students are reaching the age of transition, we will look a little closer at the cases involving transition for 2013.

In *R.C. v. Keller Independent School District*, the student moved from California to Texas and was diagnosed with a myriad of disorders including autism (mood disorder, PDD, ADHD, anxiety disorder, bipolar disorder). He was placed in a "behavior modification" classroom for part of the day and the general education setting part of the day. The Texas assessment team found that he qualified under emotional disturbance (not ASD or Asperger's). In eleventh grade, he was re-evaluated and homebound services were recommended due to anxiety, depression, and irritability. The teams discussed his return to school in a smaller group setting with plans for transitioning gradually to general classes with support. The parents began due process procedures claiming that not all his homebound services were provided. The school district's transition specialist sent a transition survey to the parents to complete. The survey was not returned and the parents did not sign the IEP. The student was offered compensatory education over the summer. The services were not completed as he was placed in a residential facility. R.C. failed his classes due to his absences from school. He was scheduled to repeat the eleventh grade the next year in a different school in the same school district, in a positive behavior support (PBS) classroom. The school district wanted to work with the student for at least 30 days before recommending residential placement. The parents declined the placement and any remaining compensatory education offered. They unilaterally placed R.C. in the "Vanguard Preparatory Academy."

The IEP team conducted the annual meeting and the parents did not attend. The team requested to speak with the professionals at his current placement and the parents refused. The team developed the IEP and recommended placement in the PBS classroom. The student never returned to the public school setting. The parents filed due process, a hearing was held, and it was determined that the school district provided R.C. with a FAPE, and that the parents were not entitled to tuition reimbursement or other relief.

P.V. v. The School District of Philadelphia was a class action lawsuit involving four students (all male) who were transferred as part of an upper leveling transfer program to schools with autism resources. The parents alleged that the school district transferred students (K-8) without parental notice/involvement to meet their administrative needs. The parents alleged that the school district made decisions on behalf of 1, 684 students with ASD without parental involvement. The district court ruled on behalf of the parents because the school district deprived the parents the opportunity to participate in the decision-making process regarding the placement and transition of their children with ASD under the IDEA.

In *Gibson v. Forest Hills School District*, the school district prevailed on every issue (assistive technology services, LRE, physical therapy, occupational therapy, parent participation, prompt dependency) except transition for a twenty-year-old girl with seizures, mental retardation, and pervasive developmental disorder (an ASD). She exhibited aggressive behaviors and had severe difficulty with transitions. They ruled in the student's favor because her interests and preferences were not considered in transition planning (the student was not invited to the meetings) and age appropriate assessments were not utilized.

N.W. v. Randy Poe involved a 9-year-old male student who was transitioning back to public school after an earlier mediated private placement. The parents argued that the school district failed to develop, implement, or revise the IEP to include transition back to the school district, which denied their son a FAPE. In this case the parents prevailed (at least temporarily) with the private placement deemed the stay-put provision until case resolution. The school district was ordered to reimburse parents for 5.5 hours per day of tuition in the private placement (plus transportation costs) until the end of judicial proceedings of the court.

Transition in one case involved the closure of forty-nine schools in the Chicago area. Two elementary students with ASD were part of a due process claim that revolved around the failure to change IEPs as a result of school closure, and the lack of a transition plan to address academic, social, cultural, staffing, and safety needs. The school district showed that transition plans had been prepared for receiving schools, and that the IEPs were student specific and not building specific. The receiving schools indicated that administrators and case managers were reviewing IEPs to ensure they would be implemented correctly. The district court found in favor of the school district and added that the plaintiffs failed to exhaust their administrative remedies before filing a due process claim.

Transition from an Individualized Family Service Plan (IFSP) to an Individualized Education Program (IEP) was at the center of the case involving *E.C. and M.W. v. Board of Education of the City School District of New Rochelle.* Parents sought transition support to help their 4 year-old son with ASD successfully transition to a school program from a home-based program for the 2009-2010 school year. After a year in the school system, the parents rejected the IEP for the 2010-2011 school year and unilaterally placed him in a private school. The court ruled on the side of the school district, and while transition was important to the initial move to public school and part of this case, it was the parents' dissatisfaction with the 57 IEP goals, training of the paraprofessional, placement, and lack of progress that initiated the due process complaint.

A New York District Judge found in favor of the school district in *F.B & E.B. v. New York Department of Education*. L.B. (age nine) was provided services in the private Rebecca School at district expense for two years prior to the due process hearing. The school district determined that they could then provide adequate services and proposed a transition back to the public school. The parents visited the school and rejected it as an appropriate placement. The judge ruled on there was sufficient evaluative data used, and that the failure to conduct an FBA and BIP or provide parent training did not deny L.B. a FAPE. He remanded the case back to the hearing officer to work out issues such as insufficient IEP goals and provision of transitional support services as LB moved from a private back into the public school.

In *P.C. and S.C. v. Harding Township Board of Education,* the New Jersey school district prevailed when a preschool placement in a "kids in transition" program, which included ABA interventions, was rejected by the parents, who opted to keep him in a private setting with a program for children with ASD. On a similar note, in *B.M. v. Encinitas Union School District,* the lack of a written transition plan and the District Court Judge stating that the "plaintiff has not shown that the student was in any manner prejudiced by the failure to specify the exact transition plan for his attendance at Flora Vista or that he was denied an educational benefit or that the student's parents were not involved in the discussion concerning the transition to on-campus services" impacted the school districts case and they also prevailed.

In the case where parents prevailed and pre-school transition was involved (*Blount County Board of Education v. James E. Carr*), an Alabama District Court Judge ruled that the parents were entitled to reimbursement of tuition to *Mitchells Place* in Birmingham. When the special education director acquiesced and approved the out of district placement, and communicated with them for implementation of the IEP, her role as the LEA committed district resources, whether that was or was not formally discussed.

Arbitrary Removal from Current Placement

When parents and schools disagree about issues pertaining to the provision of a FAPE, either party can request a due process hearing. Prior to the hearing, states are required to offer parents the option to resolve the dispute through voluntary mediation, where a trained mediator (impartial and familiar with the laws and regulations of special education) attempts to facilitate an agreement between parties on the disputed matter. If the matter is not resolved or the parents refuse mediation, the due process hearing is the next step. The hearing is a venue where both sides can present their issues or arguments to a trained, impartial third party. During the hearing, the student must remain in the program/placement in effect when the hearing was requested (Yell, 2012). For the majority of the cases involving arbitrary removal from the current placement (which often includes a failure to exhaust administrative due process remedies), the parents removed the student from the then current placement before mediation or a due process hearing could occur. Failure to exhaust administrative remedies and transition were sometimes inter-related and key to the ultimate ruling by the judge. In others, they were noted, but the judge did not determine them as key to the provision of a FAPE in the LRE, and the resulting violation of IDEA.

For example, in *Skylar Intravaia v. Rocky Point Union Free School District,* plaintiff parents claimed that exhaustion was excused because the school failed to implement services that were

specified and clearly stated in the IEP, and the school district demonstrated "serial" failure to provide their daughter Skyler with the services required by law in her then current placement. The District judge ruled to dismiss parent plaintiff's claim that the school district could file due process for parents' failure to exhaust their administrative remedies pursuant to IDEA.

In *T.B. and D.B. v. Haverstraw-Stony Point Central School District*, parents sought to overturn the State Review Officer's decision that the school district was not required to reimburse the parents for the unilateral placement of their son in a private "Community" school for second grade. During his first grade year, T.B. underwent a comprehensive evaluation. It was determined that he had significant speech/language delays, that he would "shut down" when anxious in large group settings, and would benefit from services to improve speech, strengthen academics and attention, reduce anxiety and behavior difficulties, and from typical peers who would be good social peer models. The evaluators recommended a small, self-contained class of no more than 12 students. T.B.'s mother approached the district asking that he be placed at a small, private school in New Jersey (they lived in New York). The end of year report showed that T.B. made progress on all 17 IEP goals and achieved 4 of them. The district suggested he remain in the general education setting, that small group reading instruction increase to 45 minutes each day, and that consultation by a certified special education teacher be incorporated to make accommodations and adjustments to meet T.B.'s individual needs. The judge ruled in favor of the school district and plaintiff's request for reimbursement was denied and ordered the case closed.

Similarly, in *B.M. v. New York City Department of Education*, parents challenged the New York State's Review Officers decision that their son with autism was not denied a FAPE and not awarded 960 hours of compensatory special education tutoring. The initial complaint stated that the IEP was not appropriate, that the paraprofessional did his work for him and did not monitor him sufficiently, and that the teachers did not have training to address his behavior issues. The hearing officer noted that B.M. benefitted from the most recent program placement and that the deficiencies identified in the initial complaint were remedied during the resolution period. The parents appealed this decision and stated that the IHO erred in denying the compensatory services and that their son was denied a FAPE. The school cross-appealed stating that in addition to dismissing the appeal, that the parents introduced a new issue questioning the qualifications of the special education teacher and counselor, and ruled that it was not addressed in the original complaint so the court lacked subject matter jurisdiction and that they needed to exhaust administrative remedies for that complaint.

In *L.V. v. Montgomery Township School District Board of Education*, the plaintiff filed a complaint on behalf of her son asking that the school district board of education pay for her son's placement in the school of her choice where she unilaterally placed him. She alleged the school district violated the IEP and did not provide L.V. (her son) with an appropriate education. She contended that she was excused from exhausting her administrative remedies in his current placement under IDEA because of the urgent nature of L.V.'s circumstances, but the administrative law judge ruled that L.V. had not met her burden of proof that an emergency existed, or that he would suffer irreparable harm, and therefore had not exhausted administrative remedies and ruled in favor of the school district.

Parents prevailed in *Alex Shadie v. Hazelton Area School District* when the Pennsylvania District Court Judge determined that the assault case could also be seen as an IDEA claim for tuition reimbursement. The student Alex, was enrolled in a 12th grade life skills class at Hazelton Area High School in Pennsylvania, where it was alleged that the aide assaulted him on several occasions, that the school district violated the provisions of IDEA, and that the statute of limitations had not expired for the IDEA claim. The IDEA claim was added when the plaintiffs charged that the school district misrepresented that problems regarding IDEA had already been resolved, and that they withheld information from the parents. The district contended that the plaintiff Alex Shadie's IDEA claim failed because he did not demonstrate that the school failed to implement the IEP when he was still a student. The court also found that the plaintiff sufficiently alleged "educational harm" through regression in language ability, increased agitation and aggressive behavior, and that the district raised no new novel arguments regarding the court's finding that tuition reimbursement may be available. The district argued that tuition reimbursement was an administrative remedy, which the plaintiff failed to exhaust. With two years of litigation before the court, the judge ruled that failure to exhaust administrative remedies was no longer a factor in dismissal, but that tuition reimbursement may be available for violations to IDEA.

The case of *Bethlehem School District v. Diana Zhou* involved M.Z., who was a gifted student diagnosed with central auditory processing disorder and PDD (an ASD). Mrs. Zhou requested a pre-hearing conference so she could discuss IEP concerns when M.Z. entered kindergarten (2001). Due process hearings (8) and mediations (10) continued and eventually included transition planning to middle school in 2007. The hearing officer found, among other things, that Mrs. Zhou attempted to dictate curriculum, telephoned teachers while in the classroom and violated the school sign-in policy. Even though he was making appropriate progress, she continued to file for more services than other students received. Her requests included smaller and quieter classes, teacher training, school-bus cameras, lunch-table concerns, and concerns that the school district was not considering other evaluations. Over the course of 7 years Mrs. Zhou failed to present evidence that the IEPs proposed for M.Z. failed to provide him a FAPE. In 2008, Mrs. Zhou rejected plans for M.Z.'s transition plan to middle school, as she wanted the school district to pay for private school tuition to private Moravian Preparatory School. Mrs. Zhou commented to the middle school supervisor of special education, after a two-hour meeting, "If the District would pay for a private school like Moravian, this would all go away." By 2009, expenses of the hearings and mediation proceedings were approaching $200,000.00. In April 2013, the district court judge ruled that Mrs. Zhou initiated the due process hearings for improper purposes, and in favor of the school district. He found the school district entitled to costs incurred and ordered counsel to meet to consider awarding attorney's fees to the school district.

Summary

There is much overlap in the violations of IDEA, provision of FAPE in the LRE, and outcomes based on the synthesis of case factors. Understanding the procedural and substantive issues involved in case law, as well as cultural issues and demographics of students, can assist stakeholders as they seek to provide services (including transition) to educate students with ASD. Teachers often fear the thought of legal issues, which can become a barrier to effective communication between stakeholders involved in the IEP process. An understanding of how judges rule with regard to the violations of IDEA and the provision of a FAPE in the LRE, can

assist parents in decision making and give the confidence to teachers and administrators that is needed to best serve the students in their classrooms and schools. The authors recommend several resources (Table 2) as guides to implementing evidence based practice, as tools for communication with parents, for professional development, and to access behavioral resources. Knowledge of IDEA, provision of FAPE, and how to implement research-based interventions, can enhance capacity in schools and foster the home-school collaboration required when providing services to students with ASD and other developmental disabilities. Future research should include examining the potential differences in case outcomes in the years following DSM changes, in-depth examinations of court cases using qualitative analysis, and examining long-term outcomes of students in the cases of this nature. Even though diagnostic criteria may have changed, and criteria for eligibility for services vary from state to state, students with the social, behavioral, and communicational challenges associated with ASD will continue to need educational, social, and behavioral supports to be successful.

Table 2
Stakeholder Resources

Resource	Website	Purpose
National Autism Center	www.nationalautismcenter.org	Provides free publications on evidence-based practice and ASD. They include: • National Autism Center's National Standard's Report • National Autism Center's National Standard's Report Findings & Conclusions • Evidence-based Practice for Autism in the Schools • A Parent's Guide to Autism and Evidence-based Practice
Autism Internet Modules	www.autisminternetmodules.org	Developed by the Ohio Center for Autism and Low Incidence (OCALI), these online learning modules include information on assessment and identification of ASDs, recognizing and understanding behaviors and characteristics, transition to adulthood, employment, and numerous evidence-based practices and interventions.
Autism Speaks	www.autismspeaks.com	The School to Community Tool Kit is a publication that provides helpful information about students with ASD and strategies to achieve positive interactions and increase learning.
National Professional Development	http://autismpdc.fpg.unc.edu	2014 report on evidence-based practices for children, youth, and

Center on ASD		young adults with autism spectrum disorder
Autism Society of America	www.autism-society.org	Improves the lives of those affected by autism through education, advocacy, services, research and support.
Behavior Analysis Certification Board	www.bacb.com	Established in 1998 to meet professional credentialing needs identified by behavior analysts, governments, and consumers of behavior analysis services. Use this website to find a BCBA in your area.

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Effectiveness of Pearson's SuccessMaker Mathematics for Students with Disabilities

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Abstract

SuccessMaker mathematics is an instructional learning system rooted in behaviorist instructional theory. Previous research efforts have left much to be desired and have produced inconsistent results. Recent research for this program appears to be tapering off, despite advances in technology signaling integration of concepts from other theoretical positions. A quasi-experimental review of data from a sample of students (N = 1186) from a central Texas school district over a five-year period was reviewed. Multivariate analysis of variance identified that changes in state testing performance were not linked to program use. Changes in the rate of academic achievement were found to exist between usage groups. Students who met or exceeded usage recommendations (>20 hours of use) were found to have significantly greater rates of achievement (ES: d = 1.02). Recommendations for further studies and limitations of the current study are provided.

Effectiveness of Pearson's SuccessMaker Mathematics for Students with Disabilities

Educators and researchers have spent more than thirty years investigating a class of technological interventions known as instructional learning systems (ILS). An ILS has been described as a "software program that provides tutorial instruction at several grade levels and keeps extensive records of student progress on networked computer systems" (Kulik, 2002, p. 1). Bailey (1992) expanded this description by identifying five key characteristics that separate an ILS from other instructional technology: (a) ability to target specific instructional objectives and connect these to specific lessons; (b) potential for integration into other curricula; (c) span multiple grade levels, possibly in multiple content areas; (d) the use of a networked computers; and (e) collection of student performance records. Though the National Council of Teachers of Mathematics (2000) has emphasized the inclusion of instructional technology in classrooms, the implementation and use of an ILS is more involved than the use of calculators or interactive smartboards. Various ILS technologies have been reviewed to include products developed by Wicat Systems and Jostens Learning Corporation, as well as programs such as Plato, Prescription Learning, and SuccessMaker (Becker, 1992).

Because ILS use is frequently treated as a supplemental curriculum, recommendations for ILS use have not always been followed. A number of ILS programs come with recommendations for minimum student usage (Gee, 2008; Manning, 2004). Failure to integrate the ILS with existing classroom curriculum has resulted in ILS usage of about 15-30% of program recommendations (van Dusen & Worthen, 1995). A matrix to evaluate technology implementations contrasted this "unacceptable use" with "ideal use" wherein the ILS is used "as a tool for regularly accomplishing classroom instructional objectives" (Mills & Ragan, 2000, p. 28). Because of such

variation, Slavin (1987) urged that time spent using the program be a factor in determining the effectiveness of an ILS.

SuccessMaker is an ILS for which a historical review may be necessary to identify relevant research. The program is rooted in the work of Suppes and Zancotti at Stanford University in the late 1960s (Kulik, 1994; Wood, 2004). Out of their work came the Computer Curriculum Corporation (CCC) and, ultimately, this program. The company was purchased by Simon & Schuster in 1990 (Manning, 2004). Pearson acquired Simon & Schuster and its holdings, including SuccessMaker, in 1998 (Pearson Digital Learning, n.d.). Previous research with the program has identified it as Stanford-CCC, SuccessMaker, SuccessMaker Enterprise, or even by a portion of the product such as Math Concepts and Skills (Manning, 2004). Given the changes in ownership and name, it is doubted that all previous relevant studies were identified in previous ILS meta-analyses.

A discussion about the nature of SuccessMaker Mathematics (SMM) is helpful for identifying an underlying theoretical framework. Students begin their use of SMM with an initial placement assessment designed to identify grade level skills. This process may take up to three hours (Pearson Digital Learning, 2012) or approximately 300 questions (Wood, 2004). Students may begin this initial placement at either their enrolled grade level or a level determined by the teacher managing the student's use of the program. Students are presented with questions that increase or decrease in difficulty depending on the accuracy of student responses. A branching algorithm is used to work through various skill strands and grade levels (Svoboda, Jones, van Vulpen, & Harrington, 2012). Students may work on skills at their ability level, in 15 strands of content (Pearson Digital Learning, 2004), with difficulty contingent on student success. Additionally, teachers may assign specific skill units to students instead of having students work only on grade-level skills. SMM, as anticipated by Bailey's (1992) description of an ILS, maintains an ongoing record of student skill capabilities and program usage, allowing the teacher to produce up-to-date records of student use and progress when needed. SMM also incorporates a regular review of previously mastered skills into student work to ensure continued understanding (Wood, 2004).

SMM is an interactive program within a multimedia environment. Students are provided with audio and video material regarding a particular concept or skill. Students have access to virtual tools such as a highlighter and sticky notes to keep students active during learning (Pearson Education, 2013). No research studies were found that examined these particular tools for effectiveness. SMM provides immediate feedback for student responses. A "cognitive coach who offers hints and insights" (p. 6) is provided when a student answers incorrectly. This use of a multimedia environment for learning has been found to improve student comprehension during instruction (Bransford, Sherwood, Hasselbring, Kinzer, & Williams, 1990).

Theoretical Considerations

The behaviorist definition of learning is the acquisition of a new behavior. A person learns what is practiced, and learning prepares the student to demonstrate "specific responses to particular stimuli rather than general responses to vague stimuli" (Schiro, 2013, p. 63). The learner is considered an active participant in the learning process, and exhibition of learned behaviors is necessary for continued learning (Ormrod, 2014). Shaping occurs as increasingly complex or

difficult behaviors are presented to the learner. Schiro (2013) noted that even the most complex tasks are considered by behaviorists as compositions of discrete simpler skills that can be taught. Immediate feedback is necessary, and technology increases that immediacy. Learning is self-paced; not all learners will acquire the same skill at the same speed or in the same number of discrete trials.

SMM has its foundations in behaviorism through programmed instruction. Programmed instruction, as developed by Skinner (1986), is a specific application of behaviorist principles built on the early work of Thorndike and Pressey. Material to be learned should be presented in small increments to reduce the likelihood of error. Material is arranged by complexity, and learners enter at the highest level at which they can demonstrate mastery (Svoboda et al., 2012). The learner is presented with a question in response to some stimulus, and the teacher (or, for SMM, the program) awaits a response. The student is provided differential feedback based on the response. Failure to respond correctly in SMM may result in continued exposure to the same skill with additional support from the "cognitive coach" or a change in skill or skill level following multiple failures suggesting frustration. Students experiencing consistent success may experience an increase in the grade level of skills presented through a process known as branching (Joyce, Weil, & Calhoun, 2009). The present level of student ability is identified as the skill level where the student's performance plateaus, and instruction is provided at that level.

Programmed instruction has changed significantly as technology has changed. The rise and fall in favor with programmed instruction has been directly linked to these technological changes (Svoboda et al., 2012). In early years, programmed instruction led to an over-reliance on technology which, coupled with a limited range of stimulating media, led to student boredom (McDonald, Yanchar, & Osguthorpe, 2005). Rigid application of the principles of programmed instruction identified above has relaxed in later years (McDonald et al., 2005), and later programs and versions have been more interactive and student-directed (Cruthirds & Hanna, 1997). Current iterations of SMM have retained core principles of programmed instruction – success-driven increases in complexity, immediate feedback, and active participation – while sprinkling in tools more consistent with cognitive and constructivist frameworks.

Programmed instruction works, though research findings are inconsistent. Early meta-analytic research found that programmed instruction yielded an effect size of just over $d = .20$ (Kulik, Kulik, & Cohen, 1980), at the low end of Cohen's (1988) bracket for a small effect. Two years later, another meta-analysis determined that programmed instruction was no better than traditional instruction (Kulik, Schwalb, & Kulik, 1982), with an effect size for mathematics of $d = -.01$. Another early estimate of the effectiveness of computer-aided instruction, to include systems utilizing programmed instruction, yielded an effect size of $d = .57$ (Schmidt, Weinstein, Niemiec, & Walberg, 1985). Ormrod (2014) contends that programmed instruction remains viable for students with little previous success, including students with learning or behavior difficulties, as well as those for whom previous attempts at teaching and learning have proven unsuccessful. Behaviorist principles are well-established, though their application may be time-intensive and less than enjoyable.

Behaviorist strategies have demonstrated success with learning-disabled students (Zafiropoulou & Karmba-Schina, 2005). The reason may be attributed to the ability of computer-based

interventions, such as SMM, to provide immediate feedback (Burton, Moore, & Magliare, 2008). Cooley (2007) proposed that students with mathematics disabilities be provided with step-by-step modeling of solving problems, frequent monitoring of progress, and the use of work sessions that are more frequent but less intense. Drill-and-practice models have been recommended (Pellegrino & Goldman, 1987) as a step towards building automaticity of skills (Cummings & Elkins, 1999). "Those who lack automaticity at the basic skills level exhaust their cognitive resources trying to recall math facts and, therefore, have few resources left for solving problems" (Wendling & Mather, 2009, p. 173). SuccessMaker Mathematics incorporates these recommendations and behaviorist principles, and it is anticipated that its use with students with learning and behavior disabilities should prove effective in increasing achievement levels.

Constructivist principles may also be seen in more recent iterations of SMM. By providing incremental increases in skills under review, SMM incorporates a mechanical version of Vygotsky's (1978) zone of proximal development. According to Vygotsky, students learn best when challenged with skills at or slightly above their current ability level. By reinforcing previously learned skills, SMM also provides instructional scaffolds on an individual basis. Though the interpersonal contact and communication are absent from a true sociocultural position, communication via the cognitive coach and program use facilitated by the teacher may serve as surrogates. The communication provided by SMM during its instruction is a version of math dialogue akin to Richards' (1996) "school math" characterized by rigidity and computational focus. This style is further characterized by an invitation-reply-discourse sequence; SMM provides a prompt-response-feedback communication loop. Mills and Ragan (2000) noted that the teacher should not be supplanted by any coaching provided through the ILS, and their ideal use of the ILS includes the teacher as an ongoing participant in the teaching process.

This author assumes a pragmatist position (Creswell, 2011; Creswell & Plano Clark, 2011) that avoids the discontinuities between the various theoretical frameworks above. Instead, pragmatism takes a "what works" approach and considers the question asked as more important than the underlying theory (Creswell, 2011; Creswell & Plano Clark, 2011; Tashakkori & Teddlie, 2003). This leads to a philosophical pluralism that allows for the inclusion of both behaviorist understandings of learning as well as constructivist epistemologies. Practicality, a focus on the outcomes and consequences of choices, is most valued (Cherryholmes, 1992; Tashakkori & Teddlie, 2003). The question being asked here is whether or not SuccessMaker is effective for improving mathematical learning for students with disabilities, not by what means it may do so.

Previous Research Findings

Though the research on instructional learning systems is rich, a historical review of SMM was more difficult. Possibly due to the variety of names by which the product has been called over the years, few primary source documents were found. Many studies that were identified had not been submitted to peer review through the journal publication process. A review of existing meta-analyses and research syntheses was undertaken. These studies are presented in Table 1, including selected details and effect sizes.

The studies presented in Table 1 are not without concern. Only six of the studies in Table 1 (Crawford, 1970; Delon, 1970; Mendelsohn, 1972; Ragosta, 1983; Suppes & Morningstar, 1969; Underwood, Cavendish, Dowling, Fogelman, & Lawson, 1996) have been subject to peer review. This increases the possibility that design flaws and inaccurate reporting may have led to erroneous results. Slavin and Lake (2008) identified design flaws in eleven studies, including Kirk (2003) and Underwood et al. (1996) presented here. A frequent design issue cited by Slavin and Lake (2008) was the lack of an adequate control group, though inadequate outcome measures and group equivalence were also noted as concerns among their excluded studies. Table 1 includes four institutional reports, and the most recent report included (Gatti, 2009) should be interpreted with caution as it appears to be research sponsored by the vendor for SMM.

Table 1
Previous SuccessMaker Research

Study	Type of Publication	Location	Grade	Number of Subjects	Effect Size (*d*)
†Cranford (1976)	Dissertation	Mississippi	5^{th} – 6^{th}		.64
†Crawford (1970)	Journal Article	California	7^{th}	2 classrooms, 36 students	.10
†Davies (1972)	Dissertation	California	3^{rd} – 6^{th}	240 students	.34
†Delon (1970)	Journal Article	Mississippi	1^{st}	5 classrooms, 99 students	1.08
Gatti (2009)	Institutional Report	4 states (AZ, FL, MA, NJ)	3^{rd}, 5^{th}	8 schools, 792 students	.14 (for 3^{rd}) .50 (for 5^{th})
Gee (2008)	Dissertation	Georgia	3^{rd} – 5^{th}	1 school, 180 students	.61
*Hotard & Cortez (1983)	Institutional Report	Louisiana	3^{rd} – 6^{th}	2 schools, 190 students	.39
†Jamison, Fletcher, Suppes, & Atkinson (1976)	Book Chapter	Mississippi	1^{st} – 6^{th}	12 schools, 600 students	.40
Kirk (2003)	Dissertation	Tennessee	2^{nd} – 5^{th}	4 schools, 348 students	.84 (.93 for 5^{th})
Laub (1995)	Dissertation	Pennsylvania	4^{th}-5^{th}	2 schools, 314 students	.56

Study	Type of Publication	Location	Grade	Number of Subjects	Effect Size (*d*)
Manning (2004)	Dissertation	Florida	6th	1 school, 64 students	.75
Manuel (1987)	Dissertation	Nebraska	3rd-6th	3 schools, 165 students	.06
†Mendelsohn (1972)	Journal Article	New York	2nd – 6th	20 schools, 3,282 students	.49
†Miller (1984)	Dissertation	Oregon	5th – 8th	15 schools, 577 students	.38
Mintz (2000)	Dissertation	Alabama	4th – 5th	8 schools, 487 students	-.06
†Palmer (1973)	Institutional Report	California	4th – 6th	3 schools, 171 students	.36
†Prince (1969)	Institutional Report	Mississippi	1st – 6th	12 schools, 544 students	.64
*Ragosta (1983)	Journal Article	California	1st – 6th	4 schools	.77
†Suppes & Morningstar (1969)	Journal Article	California	1st – 6th	7 schools, 1896 students	.28
Underwood, Cavendish, Dowling, Fogelman, & Lawson (1996)	Journal Article	United Kingdom	primary & secondary	9 schools, 173 students	.40
†Vincent (1977)	Dissertation	Ohio	9th – 12th	2 schools, 35 students	.34

Notes: †Included in Kulik (1994) meta-analysis. *Included in Slavin and Lake (2008).

The lack of recent research regarding SMM is of concern. No peer-reviewed research was found that was been conducted in the past twenty years. The most recent research studies located were conducted by doctoral students as part of their dissertations (Gee, 2008; Kirk, 2003; Manning, 2004; Mintz, 2000). Though the research has investigated the same program, that program has doubtlessly changed over time to leverage new technological capabilities. At present, Pearson (2015) is advertising SuccessMaker 8 as the newest version of their software. It is unclear if differences between this version and previous versions are cosmetic, functional, or instructional. Given the ages of the studies listed in Table 1, it is reasonable to assume that the underlying theoretical framework relied heavily on programmed instruction (Svoboda et al., 2012).

An average effect size was found for the studies provided in Table 1, though certain assumptions were required. It was assumed that the sample in Gatti (2009) was equally split into two groups. The low effect size for Kirk (2003) was used as representative of her study given the concerns presented by Slavin and Lake (2008). The simple mean effect size found for studies in Table 1 was $d = .46$ (95%CI [.34, .57]). Using Cohen's (1988) suggestions regarding the interpretation of effect sizes, this result would be considered small. Removal of two significant outliers (Delon, 1970; Mintz, 2000) yielded a similar though slightly lower simple mean effect size of $d = .41$ (95%CI [.32, .50]). Notably, three of the highest effect sizes from these studies were from studies conducted in Mississippi nearly forty years ago (Cranford, 1976; Delon, 1970; Prince, 1969). Restricting this process to only studies conducted since 2000 did not result in significantly different results.

An additional evaluation of SMM research was conducted by Becker (1992). Results from 11 studies conducted during the 1980s were included, though citations for these studies were omitted by the author. As a consequence, locating Becker's original sources is unlikely. Becker's (1992) studies are described in Table 2. Becker included both sample sizes and effect sizes for the included studies, and a weighted mean effect size can be calculated. It is assumed that the sample size from the Calvert Co., Maryland study was equal for all three groups. The weighted mean effect size was $d = .30$ (95%CI [.12, .47]). This small effect size was statistically significant. However, the New York study contained nearly one-third of the cumulative sample in Becker's presentation, and the effect size for that study was a statistical outlier. Removal of this study and recalculation of the weighted mean effect size yielded an effect size of $d = .45$ (95%CI [.28, .63]). Studies done most recently generated effect sizes greater than the confidence interval for the revised mean effect size, suggesting a time-based effect perhaps tied to technology innovations.

Table 2
Studies included in Becker (1992) Meta-Analysis

Study	Design	Location	Grade	Number of Subjects	Effect Size (*d*)
1988-89	Individual Change vs. Test Norms	Ft. Worth, TX	$1^{st} – 7^{th}$	120 students, ~25 hours use	1.60
1988-89	Individual Change vs. Test Norms	Omaha, NE	$2^{nd} – 6^{th}$	170 students, ~20 hours use	1.30
1987-88	Individual Change vs. Test Norms	Milwaukee, WI	$2^{nd} – 9^{th}$	600 students, ~40 hours use	.80
1987-88	Individual Change vs. Test Norms	Aiken Co., SC	$2^{nd} – 8^{th}$	600 students, ~30 hours use	.70
1983-88	Cohort Change to	Calvert Co., MD	3^{rd}, 5^{th}, 8^{th}	1,500 students, ~35 hours use	.10 (3^{rd}) .25 (5^{th})

	Statewide Change				.50 (8^{th})
1983-86	Individual Change vs. Test Norms	Calvert CO., MD	$4^{th} – 6^{th}$	653 students	.35
1977-80	Random Assignment	Los Angeles, CA	$1^{st} – 6^{th}$	750 students, ~50 hours use	.26
1980-81	Random Assignment	Lafayette Parish, LA	$3^{rd} – 6^{th}$	94 students, ~25 hours use	.19
1981-82	Comparison Group	Portland, OR	$5^{th} – 8^{th}$	80 students, ~25 hours use	.30
1984-86	Comparison Group	Rochester, NY	$4^{th} – 6^{th}$	2,600 students, 19 schools	.00
1984-85	Comparison Group	Atlanta, GA	Elementary, Middle	700 students, 7 schools ~25 hours use	.40

Note. Becker (1992) failed to provide authors for any of the studies included in his meta-analysis. Consequently, these studies are only descriptions of studies rather than identifications of studies. Most sample sizes are approximate.

A number of studies have been identified by previous authors but rejected for various reasons. Table 3 provides an overview of these studies. Many of the studies were rejected by Slavin and Lake (2008) for various reasons, though Pearson (2002) provided a collection of summaries for these. All of the studies in Pearson (2002) failed to provide sufficient statistical information from which to derive effect size information. Instead, percentiles and percentage passing rates appeared more frequently. None of the original studies could be found, though most appeared to be reports produced by either Pearson (vendor for SMM) or the school districts in which the product was used. None were submitted for peer review, and the likelihood of corporate authorship casts doubts as to the replicability of the studies. None of the studies were conducted in the past ten years.

Table 3
Documents Not Included in Meta-Analytic Comparisons

Study	Type of Publication	Location	Grade	Number of Subjects	Data Provided
Crenshaw (1982)	Dissertation				(a)
Donnelly (2004)	Presentation				(b)
Humphries (1997)	Institutional Report	North Carolina	3rd – 8th	11 classrooms	percentiles
Laub & Wildasin (1998)	Institutional Report	Pennsylvania	2nd – 6th	6 schools, 522 students	percentiles, grade equivalents (a)
McWhirt, Mentavlos, Rose-Baele, & Donnelly, (2003)	Institutional Report				(a)
Office of Research, Loudoun Co. Public Schools (1998)	Institutional Report	Virginia	3rd – 5th	3 schools, 254 students	qualitative overview
Phillips (2001)	Dissertation				(c)
Simon & Tingey (2001)	Institutional Report	Florida	4th – 5th	12 schools, 459 students	FCAT results
Tingey & Simon (2001)	Institutional Report	California	4th – 5th	9 schools, 597 students	mean gains, normal curve equivalents (a)
Tingey & Thrall (2000)	Institutional Report	Florida	4th – 5th	12 schools	percentage comparisons (a)
Tuscher (1998)	Institutional Report	Pennsylvania	3rd – 5th	4 schools	SAT-9 percentiles (a)
Wildasin (1984)	Institutional Report				(a)

Note. All deficiency comments from Slavin & Lake (2008).
(a) Lack of an adequate control group. (b) Insufficient control group matching. (c) Inadequate outcome measure.

Previous research has suggested that SMM produces a small but significant effect on student achievement. Findings were inconsistent across types of studies (journal article vs. dissertation, etc.) as noted above. Study location may have even impacted findings. Research efforts regarding SMM may be tapering off; the last peer-reviewed article was published twenty years ago. Previous research has also focused on elementary mathematics performance. Only eight studies included students in 7th or 8th grades (traditional junior high or middle school grades). It is telling that the What Works Clearinghouse provides no judgment of the evidence-based effectiveness of SMM. More research is needed to determine if SMM truly yields an effect on students' mathematics achievement.

Purpose of This Study

National standards have been set through No Child Left Behind and Race to the Top by which schools are expected to demonstrate adequate yearly progress in mathematics. Students with disabilities have historically underperformed on these assessments relative to their non-disabled peers. As the number of students with disabilities grows, it becomes increasingly important to provide adequate supports for these students in order to meet state and national standards (Manning, 2004). Students with disabilities generally only make small achievement gains, especially during the middle school years (Graham, Bellert, Thomas, & Pegg, 2007). Pressures for students with disabilities, especially learning disabilities, to succeed are increasing (Martindale, Pearson, Curda, & Pilcher, 2005) while the gap between high and low achievers grows wider every year (Cawley, Parmar, Yan, & Miller, 1998).

Despite the research base for SMM outlined above, limited research exists to support its effectiveness for students with disabilities (Wood, 2004). Vockell and Mihail (1993) suggested that consistent computer-based instruction may provide students with disabilities a greater chance of success through development of automaticity and overlearning of concepts. It has also been suggested that technology should be integrated into mathematics instruction for all at-risk learners (Li & Edmonds, 2005). The aim of this study is to determine if SMM effectively improves mathematics achievement for students with disabilities.

Methods

SuccessMaker Mathematics was purchased by a central Texas school district at the beginning of the 2010-2011 school year by the Special Education department. Consequently, schools were instructed that only students eligible for special educations services were to use the program. Licenses were purchased and given to all 12 middle schools in the district. Identification of specific students and development of a campus implementation plan was left to the campuses. Vendor recommendations to the district regarding yearly usage totals suggested that 20-25 hours of use per student should produce measurable achievement gains. Those recommendations are consistent with those currently provided by vendor representatives (D. Wayland, personal communication, January 28, 2016). A matrix of time usage estimates based on IP level and expected gain provided by the vendor (Pearson Education, 2012) was not available to the district at the start of their implementation. The array considers homogeneous clusters of students grouped by their IP level. Based on desired gain levels, usage levels are provided at three incremental levels of student success. The publication reads, in part, "Achieving the time in the 50th percentile column will result in approximately one-half of students reaching at least that

gain; achieving the time in the 75th percentile will result in approximately three-fourths of students reaching at least that gain" (Pearson Education, 2012). Given the wide range of achievement levels for students using SuccessMaker both district-wide and at each campus, the matrix was condensed to a yearly usage recommendation of approximately 20-25 hours consistent with on-site vendor recommendations. For students with an IP level of 3.0 or greater, the matrix provided indicates that usage at these recommended levels is capable of yielding at least 1.0 years of growth. For students with an IP level of 4.5 or greater, the matrix indicates that usage at these recommended levels is capable of yielding 1.5 years of growth. Data for this research spans 5 years beginning with the 2010-2011 school year.

Participants

Each year the program has been available, students with disabilities have had access to the program contingent on campus implementation plans. Consequently, some students have received multiple years of program usage. There is limited research available (McKissick, 2016) to suggest that multiple years of program use might affect program effectiveness. Each student-year of program use, then, will be considered unaffected by use in previous years.

The State of Texas has developed a number of end-of-year high-stakes examinations for its students. Prior to 2012, students took the Texas Assessment of Knowledge and Skills (TAKS). Five versions of that test were available to students: TAKS, a grade-level assessment identical to that taken by non-disabled students; TAKS-Accommodated, a grade-level assessment with additional allowable accommodations not believed to influence the rigor of the assessment; TAKS-Modified, testing grade-level concepts using simplified vocabulary, reduced answer choices, and a simplified format; TAKS-Alternate, for students with severe cognitive disabilities interfering with administration of paper-and-pencil examinations; and LAT, for students requiring linguistic accommodations. Beginning in 2012, students took the State of Texas Assessment of Academic Readiness (STAAR). Four versions of the STAAR were originally available, mirroring the versions available with TAKS, with the exception of a STAAR-Accommodated version. The STAAR-Modified test was replaced during the 2014-2015 school year with the STAAR-Accommodated version, an online assessment utilizing virtual tools such as a highlighter and sticky notes. State testing expectations are considered annually as part of the development of Individualized Education Plan for each student with disabilities.

During the five years of SMM use in the district, 2,441 student-years of data were collected. Of these, 156 were removed because prior-year (baseline) or current-year state testing data included the Alternate or linguistically accommodated version of the state assessment. Some students were introduced to SMM but did not complete initial placement. The reporting of state testing data for the previous year was taken as evidence that the student began the year in the district, and reporting of state testing data for the year of SMM was taken as evidence that the student ended the year in the district. Thus, an additional 668 were removed for lack of current- or prior-year state test data or SMM usage data indicative of either lack of treatment exposure or limited use due to partial-year enrollment. An additional 15 student-years of data were removed because no special education eligibility could be verified. Of the resultant 1,603 student-years of data, 398 included current- and prior-year state testing data at the different levels (grade-level or modified). These were removed for lack of adequate techniques to compare scores between various levels of the state assessments. The resultant dataset included 1,204 student-years of data

from 920 unique students. There were 673 students who used the program for one year, 210 in two different years, and 36 students in three different years.

Materials and Procedure

SMM was made available for all middle school campuses in the district for use with students with disabilities. Campuses assumed responsibility for implementation of the program, including which students would access the program during various times of the day. Students at most of the campuses were provided opportunities to use the program before and after school as time and access allowed. Students were also able to access the program from home. Campus plans have undergone revision and refinement in subsequent years, and some campuses have integrated SMM use as part of the curriculum for resource mathematics classes (McKissick, 2016). Variations in campus implementation plans have not changed the specific intervention, namely SMM.

The district provided two measures of student achievement. First, SMM cumulative usage reports by student for each year were reviewed. These reports included an initial placement score, a grade level placement identified by SMM based on an initial evaluation of student abilities. A final grade placement score was also included so that a measure of math achievement gain during program use could be calculated. Because students from multiple grade levels were to have their performance analyzed simultaneously, it was determined that a measure of previous learning was needed. It was expected that students beginning a grade level should have an initial placement score equal to that grade level, indicative of achieving one academic grade level for each prior year of school. Thus, an average rate of growth was calculated by dividing the initial placement score by the grade. Additionally, state testing results from the previous year were made available. As mentioned above, changes in state testing have been frequent. Though scaled scores were made available, changes in scales between test versions and across years have made comparisons nearly impossible. Using district means and standard deviations, these scores were transformed to *z*-scores by test type and year. The design for this study is modeled in the diagram below, where *O1* and *O2* represent state testing results and SMM grade placement results respectively:

NR	$\{O_{1A}, O_{2A}\}$	$X_{FULL\ (>20\ Hours)}$	$\{O_{1B}, O_{2B}\}$
NR	$\{O_{1A}, O_{2A}\}$	$X_{LIMITED\ (15\text{-}20\ Hours)}$	$\{O_{1B}, O_{2B}\}$
NR	$\{O_{1A}, O_{2A}\}$	$X_{LIMITED\ (10\text{-}15\ Hours)}$	$\{O_{1B}, O_{2B}\}$
NR	$\{O_{1A}, O_{2A}\}$	$X_{LIMITED\ (5\text{-}10\ Hours)}$	$\{O_{1B}, O_{2B}\}$
NR	$\{O_{1A}, O_{2A}\}$	$X_{LIMITED\ (0\text{-}5\ Hours)}$	$\{O_{1B}, O_{2B}\}$

Students were classified by their level of program use. Group A used SMM for 0-5 hours during a year, Group B used the program for 5-10 hours during a year, Group C used the program for 10-15 hours, Group D used the program for 15-20 hours, and Group E used the program for

more than 20 hours. Two revisions were made to the dataset. First, all students with an average rate of prior growth greater than 1.0 were removed. Though these 18 students had identified disabilities, it was not apparent that the disabilities had impacted their mathematics achievement. Second, it was determined that the unbounded upper end of Group E allowed for the inclusion of "super-users" who had accumulated well over 25 hours of program use (maximum use reported was 81.4 hours in a year). Consequently, Group E was amended to include students with 20-25 hours of program use, resulting in the exclusion of 194 "super-users." This resultant range coincides with vendor recommendations to the district regarding target usage levels.

A primary concern in the absence of random assignment is the establishment of between-group homogeneity. An analysis of variance identified no significant variations between groups regarding their prior year state testing performance, $F(4, 885) = 1.56$, $p = .1817$. Similar analyses were conducted between groups for all disability areas. A significant difference was found only among students with an intellectual disability, though the result may be due to a small number of students in the sample with that disability. An analysis of variance was conducted to determine if there were any differences between usage groups regarding the average rate of growth. Again, no statistically significant between-group differences were found, $F(4, 885) = 1.14$, $p = .3375$. Analyses for between-group differences in average rate of growth were conducted by disability area. Between-group differences existed for students with autism, likely due to small sample sizes. Summary information for theses analyses are provided in Table 4. Analyses of both variables were extended to grade, gender, ethnicity, and school year. All tests identified homogeneity of groups except for prior state testing in 2013 and average rate of growth in 2014. Both may indicate refinement of campus implementation plans, though it should also be noted that the state test changed from TAKS to STAAR for the 2013 school year. Based on these analyses, the usage groups demonstrate sufficient homogeneity to proceed with further analysis. Additional group description, including demographic information, is provided in Tables 5 and 6.

Table 4
Tests for Group Homogeneity
Dependent Variable 1: Average Rate of Growth Prior to SuccessMaker Use

		df	SS	MS	*F*	*p*
All Disabilities	Group	4	.0863	.0216	1.137	.3375
	Error	885	16.793	.0190		
Autism	Group	4	.218	.0544	3.025	.0280
	Error	42	.756	.0180		
Emotional Disturbance	Group	4	.0257	.0064	.267	.8979
	Error	44	1.059	.0241		
Learning Disability	Group	4	.0565	.0141	.825	.5093
	Error	540	9.244	.0171		
Intellectual Disability	Group	4	.0272	.0091	1.084	.3861
	Error	15	.1255	.0084		
Other Health Impairment	Group	4	.0299	.0075	.388	.8173
	Error	123	2.374	.0192		

Dependent Variable 2: State Testing *z*-Score for Year Before SuccessMaker Use

		df	SS	MS	*F*	*p*
All Disabilities	Group	4	3.942	.9855	1.565	.1817
	Error	885	557.45	.6299		
Autism	Group	4	2.049	.5121	.991	.4230
	Error	42	21.704	.5168		
Emotional Disturbance	Group	4	1.689	.4223	.618	.6518
	Error	44	30.048	.6829		
Learning Disability	Group	4	2.996	.7490	1.145	.3346
	Error	540	353.35	.6544		
Intellectual Disability	Group	3	8.033	2.678	4.051	.0270
	Error	15	9.916	.6610		
Other Health Impairment	Group	4	1.535	.3838	.6763	.6097
	Error	123	69.799	.5675		

Table 5
Usage Group Demographics

	Group A (0-5 hours)	Group B (5-10 hours)	Group C (10-15 hours)	Group D (15-20 hours)	Group E (20-25 hours)	Group F* (>25 hours)
N	227	292	190	102	79	194
Male/Female	137 / 90	188 / 104	116 / 74	67 / 35	45 / 32	121 / 73
Afr.-Amer.	91	144	75	39	26	80
Hispanic	57	63	51	31	27	58
White	68	72	54	26	25	48
Other	11	13	10	6	1	8
Autism	16	10	8	7	6	15
Emotional Disturbance	16	11	13	6	3	7
Learning Disabilitiy	128	180	125	66	46	121
Intellectual Disability	5	7	5	2	0	6
Other Health Impairment	34	45	22	11	16	20
Other Disabilities**	7	7	3	4	1	6
Multiple Disability Codes†	21	32	14	6	7	19

Notes: *Group F was not included in the MANOVA and follow-up ANOVAs. **This category includes students who have auditory, visual, or orthopedic impairments. †Students may have disabilities in multiple areas. They are grouped separately here as the impact of multiple disabilities is not known.

Table 6

Usage Statistics (Means and Standard Deviations) per Usage Group

	Group A (0-5 hours)	Group B (5-10 hours)	Group C (10-15 hours)	Group D (15-20 hours)	Group E (20-25 hours)	Group F* (>25 hours)
IP Level	4.44 (1.02)	4.27 (.94)	4.36 (1.07)	4.36 (.91)	4.37 (.89)	3.84 (1.04)
Avg. Growth Rate	.64 (.15)	.62 (.13)	.63 (.15)	.63 (.13)	.61 (.12)	.56 (.14)
Gain	.06 (.06)	.20 (.11)	.38 (.16)	.52 (.20)	.59 (.20)	1.07 (.51)
Prior Year State Testing *z*-Score	-.64 (.84)	-.70 (.81)	-.76 (.73)	-.70 (.79)	-.51 (.76)	-.34 (.91)
Current Year State Testing *z*-Score	-.52 (.82)	-.60 (.84)	-.57 (.73)	-.48 (.80)	-.25 (.84)	-.23 (.91)
Accuracy	.62 (.16)	.65 (.09)	.65 (.08)	.64 (.09)	.63 (.07)	.62 (.07)
Questions per Session	8.85 (6.71)	14.62 (7.27)	18.96 (8.17)	20.93 (9.87)	21.15 (9.52)	23.38 (9.27)
Questions per Hour of Use	37.76 (25.70)	61.58 (26.76)	75.08 (25.83)	76.93 (23.52)	75.85 (25.34)	83.13 (27.96)
Session Length (in minutes)	14.4 (4.2)	14.4 (3.0)	15.0 (3.6)	16.2 (4.8)	16.8 (5.4)	16.8 (4.2)

Note: Group F was not included in the MANOVA or follow-up ANOVAs.

Results

Two outcome measures were identified that were consistent with the variables used to determine between-group equivalence. Prior rate of learning was subtracted from SMM-reported achievement gain to determine a change in learning rate. State testing scores from the year of program use and the year prior to program use were transformed to *z*-scores, and a *z*-score difference was derived by subtracting the two. The use of both measures was indicated by the dual expectations of program used – improvement in state testing performance and growth in student achievement rates.

Multivariate analysis of variance (MANOVA) was conducted to determine if student usage significantly affected these achievement measures. Attention was given to the assumptions of MANOVA prior to analysis. Assumptions regarding sample size, independence of observations, and types of variables used in the analysis appeared to be met. Analysis of univariate distributions for the dependent variables resulted in the removal of 49 outliers. Analysis of multivariate distributions, resulting in Mahalanobis distances, resulted in the removal of 53 outliers. Multivariate normality was determined by examination of the normality of each dependent variable, inspection of *Q*-*Q* plots, and review of residuals from a generalized linear model. For each usage level for each dependent variable, the Shapiro-Wilk *W* was not significant. These are provided in Table 7. The generalized linear model yielded a measure of overdispersion of 0.4328, the ratio of deviance to degrees of freedom. Overdispersion rates greater than 1 are problematic (Carruthers, Lewis, McCue, & Westley, 2008), so the assumption regarding multivariate normality was resolved. A comparison of linear and quadratic fit lines between the two dependent variables resulted in fractional increases to R^2, suggesting that a linear relationship between variables existed. The Levene statistic identified no variance concerns for the change in state testing *z*-scores. Comparison of group variances for the change in growth rate involved a comparison of the highest and lowest group variances. This yielded an F_{MAX} = 2.048, and the greatest ratio of sample sizes was 3.696. According to Tabachnick and Fidell (2001), "F_{MAX} is the ratio of the largest cell variance to the smallest. If sample sizes are relatively equal (with a ratio of 4 to 1 or less for largest to smallest cell size, an F_{MAX} as great as 10 is acceptable" (p. 80). To assess multicollinearity, the correlation between dependent variables was found to be low yet significant based on the sample size, r = .082 (95% CI [.016, .147]). The sample appears to meet all assumptions for the MANOVA. The MANOVA yielded a Wilks' Λ = .5161, $F(8, 1768) = 86.63$, $p < .0001$.

Table 7
Shapiro-Wilk Values for DV Univariate Normality

	Change in Growth Rate	Change in State Testing *z*-Score
Group A (0-5 hours) *N* = 227	*W* = .9888 *p* = .0734	*W* = .9908 *p* = .1619
Group B (5-10 hours) *N* = 292	*W* = .9908 *p* = .0655	*W* = .9952 *p* = .5002
Group C (10-15 hours) *N* = 190	*W* = .9896 *p* = .1807	*W* = .9917 *p* = .3443
Group D (15-20 hours) *N* = 102	*W* = .9852 *p* = .3128	*W* = .9862 *p* = .3707
Group E (20-25 hours) *N* = 79	*W* = .9832 *p* = .3866	*W* = .9832 *p* = .3878

Univariate analysis of variance was conducted with each dependent variable. The analysis for change in state testing *z*-score was not significant, $F(4, 885) = 1.497$, $p = .2012$. Between groups *t*-tests found no usage groups to be statistically different for this outcome measure. The analysis of variance (ANOVA) for change in growth rate was significant, $F(4, 885) = 206.57$, $p < .0001$. All usage groups were statistically different from each other. Results for these analyses can be found in Table 8. The greatest change in growth rate was found for Group E, $\bar{x} = -.0213$ (95% CI [-.064, .021]). ANOVAs were also conducted to determine if there were any differences in both dependent variables for gender, ethnic, and disability groups; no group differences were found.

Table 8
Results of ANOVAs for Each Outcome Measure for Groups A-E

Change in Growth Rate

Source	df	SS	MS	*F*	*p*
Usage Group	4	30.457	7.614	206.57	<.0001
Error	885	32.621	.039		
Total	889	63.078			

Group	*N*	Mean	Lower 95%CI	Upper 95%CI
A	227	-.5819	-.6069	-.5569
B	292	-.4230	-.4451	-.4010
C	190	-.2514	-.2788	-.2241
D	102	-.1010	-.1383	-.0637
E	79	-.0213	-.0637	.0211

Change in State Testing *z*-Score

Source	df	SS	MS	*F*	*p*
Usage Group	4	2.538	.634	1.497	.2012
Error	885	375.153	.424		
Total	889	377.691			

Because the analysis of state testing *z*-scores was found to be not significant, attention was focused on the analysis of growth rate. All users, except for those with an average rate of growth before SMM use greater than 1.0, were considered for inclusion. This sample of 1186 included the 194 "super-users" excluded from previous analyses. In preparation for an ANOVA to determine if any variations existed between the six usage groups (previous five plus Group F, those who used the program for more than 25 hours) regarding a change in growth rate, the variable was analyzed for univariate normality. This resulted in the removal of 25 univariate outliers, resulting in a sample of 1161 student-years of usage. Subsequent Shapiro-Wilk *W* tests failed to confirm normality for 4 of the 6 groups on the dependent variable. A logarithmic transformation of the dependent variable was testing for univariate normality, and all groups demonstrated normality on the variable. A significant difference was found between groups, $F(5,1155) = 431.51$, $p < .0001$. Subsequent *t*-tests found significant differences ($p < .0001$) between all group pairings except Groups D and E (15-20 hours of use and 202-25 hours of use, respectively). Values for the means and confidence intervals of each group, converted into units of years change in growth rate, are provided in Table 9. The inclusion of previously excluded multivariate outliers resulted in minimal changes to the means for Groups A-D. The mean for Group E increased from the first to second ANOVA, though the 95% confidence interval still contains zero. The mean and confidence interval for Group F suggest that students with

disabilities who use SMM for more than 25 hours are likely to realize significant changes in their rate of mathematics achievement.

Table 9
Results of ANOVA for Change in Growth Rate for All Usage Groups

Source	df	SS	MS	*F*	*p*
Usage Group	5	39.578	7.916	431.51	<.0001
Error	1155	21.187	.018		
Total	1160	60.765			

Group	*N*	Mean	Lower 95%CI	Upper 95%CI
A	241	-.5910	-.6149	-.5667
B	312	-.4350	-.4584	-.4113
C	202	-.2499	-.2823	-.2169
D	121	-.0428	-.0895	.0051
E	94	.0115	-.0429	.0674
F	191	.4387	-.3922	.4860

Note: Means and confidence intervals have been converted from logarithmic values used in ANOVA to years of growth.

To determine if different student populations received differential benefit from program use, ANOVAs were conducted to determine variations existed within each usage group. No differences were found for gender or ethnicity groups. Small samples of students with intellectual disabilities and "other" impairments (not those with an OHI eligibility) were removed prior to analysis. No differences were found within usage groups to indicate differential impact of similar usage for students with different disabilities. ANOVAs were conducted across usage groups for each disability group. These analyses mirrored the combined ANOVA conducted above that indicated significant differences between all levels of usage. Results can be found in Table 10.

Table 10
Results of ANOVA for Change in Growth Rate for Disability Groups

	Autism	Emotional Disturbance	Learning Disabilities	Other Health Impairment
F	*F*(5,59) = 19.053	*F*(5, 54) = 10.783	*F*(5, 713) = 236.73	*F*(5, 153) = 32.054
p	< .0001	< .0001	< .0001	< .0001
N	65	60	719	159
Usage Group	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
A	-.63 (-.86, -.40)	-.58 (-.73, -.43)	-.57 (-.61, -.53)	-.58 (-.69, -.46)
B	-.49 (-.77, -.20)	-.44 (-.63, -.26)	-.42 (-.46, -.38)	-.41 (-.51, -.31)
C	-.13 (-.43, .18)	-.11 (-.28, .06)	-.23 (-.28, -.19)	-31 (-.45, -.17)
D	-.09 (-.42, 22)	-.16 (-.40, .08)	-.04 (-.10, .02)	-.01 (-.19, .17)
E	.09 (-.25, .44)	-.05 (-.42, .32)	.06 (-.01, .13)	.02 (-.14, .18)
F	.84 (.61, 1.08)	.37 (.13, .61)	.43 (.38, .47)	.51 (.36, .67)

Variation in usage patterns between campuses was identified. Fidelity of implementation has been identified as a reason why interventions fail (Mills & Ragan, 2000). A Chi-Square analysis of implementation variations between campuses, reflecting comparable number of students at each usage level, was significant, $\chi^2(44)= 245.77$, $p < .0001$. Students in Groups E and F, those who received the recommended usage and those who exceeded usage recommendations, were included in the same group for this analysis. Table 11 presents the percent of students from each campus that received or exceeded the recommended usage levels for each campus. The percentage of students in the current sample receiving or exceeding usage recommendations was 24.62%.

Table 11
Campus Fidelity of Use

Campus	Total *N* for Campus	Percentage of Users Receiving or Exceeding Usage Recommendations
A	89	14.61%
B	145	31.03%
C	154	20.13%
D	86	17.44%
E	72	45.83%
F	82	54.88%
G	139	17.99%
H	25	16.00%
I	147	13.61%
J	80	53.75%
K	76	1.32%
L	91	18.68%
Total	1186	24.62%

Note: Totals cover the five years of usage for this review, and includes only students whose data was used in the analyses conducted.

Variations in usage patterns between usage level groups were also identified. Table 6 presents information regarding performance variables for each usage group. Accuracy is defined as the percent of exercises completed correctly. To achieve normality for this variable, 20 outliers were removed and an exponential transformation was applied. Six users were removed who had 0% accuracy (each attempted fewer than 12 questions), and an additional 5 users with 100% accuracy were removed (each attempted fewer than 5 questions). The resultant ANOVA identified a significant variation in accuracy between usage groups, $F(5, 1150) = 6.372$, $p < .0001$. Post-hoc *t*-testing identified that users in Group F had a significantly lower accuracy rate than users in Groups A-D (all $p < .0002$). Session length was calculated as the total usage time divided by the number of sessions (included in the SMM usage report). Attempts to normalize

the variable were unsuccessful, so a non-parametric test was used to determine group differences. A Kruskal-Wallis analysis of variance by ranks found significant differences between groups on this variable ($H[5] = 98.107$, $p < .0001$).

Two measures of efficiency of use were identified. The number of questions per sessions provides a measure of the student's effort during each session of program use. To achieve normality for this variable, 16 outliers were removed and a square-root transformation was applied. Three users were removed who had 0% efficiency. All usage groups demonstrated normality except Group C (Shapiro-Wilk $W = .9832$, $p = .0154$), so interpretation of the resultant ANOVA should consider this normality concern. The ANOVA identified a significant variation in questions per session between usage groups, $F(5, 1161) = 126.52$, $p < .0001$. Post-hoc *t*-tests identified differences between all groups (all $p < .02$) except Groups D, E, and F. A second measure of efficiency, the number of questions per hour of use, was identified that removed the impact of session length differences between usage groups. Again, a square-root transformation was applied to achieve normality for each group level. Four outliers were removed, and three students with 0% efficiency were excluded from the analysis. The ANOVA identified a significant variation in the number of questions per hour between usage groups, $F(5, 1173) = 102.84$, $p < .0001$. Post-hoc *t*-tests identified difference between all pairings of Groups A and B with Groups C-F.

Each of these four performance variables was reviewed for differences between demographic groups. ANOVAs were conducted using the three transformed variables (accuracy, questions per session, and questions per hour), and a nonparametric test was conducted using session length. No differences for gender or ethnicity were found. Differences were found among disability groups for questions per session ($F[3, 999] = 3.475$, $p = .0156$) and session length ($H[3] = 9.626$, $p = .022$). Students with autism were found to answer more questions per session despite spending less time per session than students in other disability groups.

To determine the predictive capacity of these usage pattern variables regarding gain in achievement rates, a regression analysis was conducted. Since the amount of usage time has already been identified as having a significant impact on change in growth rates, this analysis was restricted to those students who had received or exceeded the usage recommendations ($N = 292$). A logarithmic transformation of time was required to achieve normality for this variable. The regression analysis identified time, accuracy, and questions per hour of program use as significant predictors of change in growth rate. Parameter estimates may be found in Table 12. A model including these three predictor variables accounted for 84% of the variance in student change in growth rate among students receiving or exceeding program usage recommendations ($R^2 = .8411$). Using the mean accuracy and mean number of questions per hour for these students, it was found that 25 hours of program use would result in growth rates commensurate with previous years of schooling. Increasing the use to 42 hours, holding the other two parameters constant, is predicted to yield a growth rate change of .5. This level of program use – nearly double the recommendations – may lead to closing the math achievement gap by half of a school year. To close the math achievement gap by a full school year, nearly 70 hours of program use is predicted to be necessary.

Table 12

Regression Analysis Results

	Intercept	Time (Log-Transformed)	Accuracy (Exponential-Transformed)	Questions per Hour (Root-Transformed)
All students receiving or exceeding usage recommendations	-7.11* (-7.74, -6.48	1.02* (.95, 1.10)	1.24* (1.04, 1.43)	.164* (.07, .258)
Students with Learning Disabilties	-4.81* (-5.34, -4.29)	.90* (.82, .98)	1.99* (1.62, 2.36)	.009* (.004, .014)
Students with Other Health Impairments	-6.35* (-7.69, -5.00)	1.07* (.85, 1.29)	3.60* (2.42, 4.79)	.008** (.001, .016)

Note: *Significant at $p < .001$. **Significant at $p < .03$

Regression analysis was also conducted for disability groups for those students receiving or exceeding usage recommendations. Small samples sizes prohibit generalizations for students with autism, emotional disturbances, and intellectual disabilities. Regression equations for students with learning disabilities and other health impairments (often, ADHD) identified the same parameters as significant. As the parameter estimates do not overlap, their differential impact may be of predictive value. Estimates for these parameters are also found in Table 12.

There are multiple ways to determine the effect size for the treatment used. When students are re-grouped dichotomously as to whether or not they received the treatment with fidelity, the impact on the outcome variable (logarithmic transformation in change in growth rate) is significant, F (1, 1159) = 907.42, $p < .0001$, with an accompanying $R^2 = .439$. Using Kabacoff's (2014) formula below for using R^2 to find effect size, $f^2 = .78$.

$$f^2 = \frac{R^2}{1-R^2} \quad (1)$$

Cohen's (1988) recommendations for interpreting this statistic consider .35 to be a large effect. Using Cohen's (1988) formulae for converting between effect sizes, this effect size is equivalent to $d = 1.77$, large by Cohen's standards. Problematically, this calculation involves the use of SMM data for students who used the program sparingly (consider those with 0-5 hours of use). Information from SMM regarding yearly growth rates may be limited to a portion of the reporting year due to the limited use, therefore creating validity concerns regarding this interpretation.

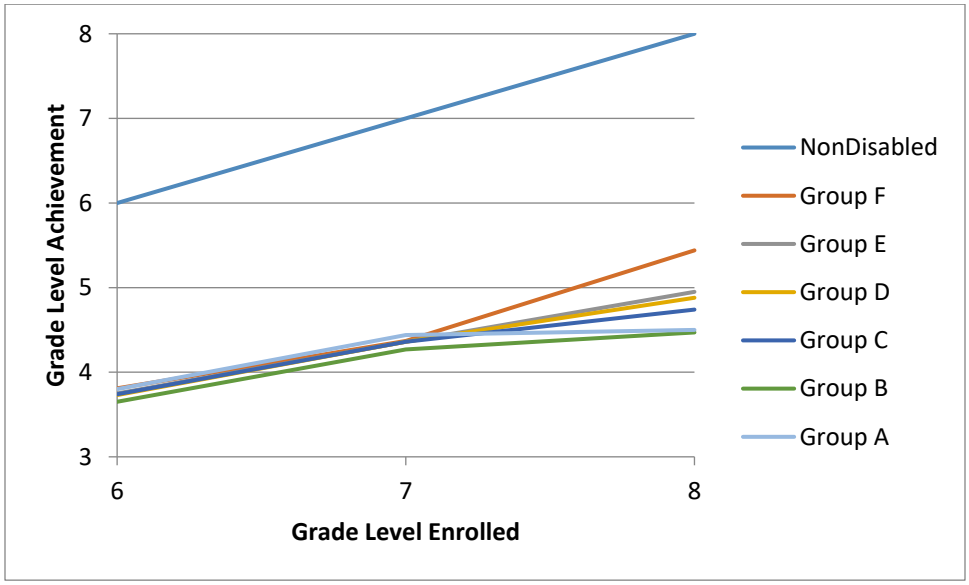
Alternately, students receiving the program with fidelity might have their rate of growth during treatment use compared to their rate of growth prior to SMM use. Students in Groups E and F, who met or exceeded usage recommendations (N = 292), had a combined mean growth during treatment of .93 (SD = .48). Their annual rate of growth prior to SMM use was .57 (SD = .13). Using formulae (2) and (3) below from Ellis (2010), an effect size was found, Cohen's d = 1.02. Cohen's (1988) benchmarks for evaluating effect sizes identify .80 as a large effect for this statistic. Similar comparisons for state testing performance utilize a prior mean z-score of -.387 (SD = .884) and end-of-treatment z-score of -.240 (SD = .889), yielding an insignificant effect size of d = .01.

$$d = \frac{\bar{M}_1 - \bar{M}_2}{SD_{pooled}} \quad (2)$$

$$SD_{pooled} = \sqrt{\frac{(n_A - 1)SD_A^2 + (n_B - 1)SD_B^2}{n_A + n_B - 2}} \quad (3)$$

Discussion

Regarding the effectiveness of SuccessMaker Mathematics for students with disabilities, the research conducted demonstrates the potential of the program for closing mathematics achievement gaps. The regression analyses identified that usage patterns regarding accuracy and efficiency (number of questions attempted per hour of program use), in addition to usage time, are useful predictors of changes in achievement growth rate. Though gender and ethnicity did not lead to group differences, variations between disability groups were present in various analyses. Figure 1 compares the changes in achievement growth rates for the six usage groups in this study to a hypothetical non-disabled student. Students are expected to experience one year of achievement growth for each year of school. Figure 1 illustrates that this has not historically happened for the disabled students using the program. Though the recommended use of SMM yields a learning trajectory similar to non-disabled students, much greater use would be needed to close the existing gaps.



Notes: The figure utilizes average growth rates and gains from Table 6. Data from 6th, 7th, and 8th grade students were consolidated into representative trend lines for 7th grade comparison. A hypothetical, non-disabled peer is provided as reference.

Figure 1. Learning trajectories of students with disabilities by usage group.

The use of outcome measures for this study present a variety of problems for interpreting the findings. State testing scores, the score of greatest concern to school districts, present significant comparison issues across years. Though equated scores may be useful for comparing across STAAR tests, no bridge was created to compare TAKS scores to STAAR scores. The issue is exponentially worse when addressing students with disabilities as the possible test versions and levels expands. This study has considered only those students whose state testing level (modified or on-level) remained constant from the previous year through the year of treatment. The use of *z*-scores for performance comparisons is less than desirable since students are compared to each other rather to an objective benchmark. Until the State of Texas provides a standardized and consistent measure of achievement, such poor comparison methods are likely to continue.

The consequence of poor state testing data is the need for measurement within SMM itself. Though the program provides an initial placement score, it is unable to assess student effort during the process. Consequently, students who are less motivated may intentionally perform poorly on the initial placement in an effort to meet a teacher's expectation for completion. It is believed that several students whose data was used in this study fall in this category of initial placement responding, though the large sample size and removal of outliers is believed to have reduced or eliminated their impact on analyses.

Further, use of treatment-provided achievement data as an outcome variable is not ideal. Identification and use of additional assessment instruments would be of assistance, and correlational analysis between those instruments and SMM would be useful. As with initial placement testing, performance on any other assessment instrument including state tests is subject to student motivational issues. A design that employs periodic evaluations of student motivation in addition to pre- and post-testing of achievement would improve upon these findings.

The quasi-experimental nature of this research also presents concerns. Though efforts were made to demonstrate homogeneity of usage groups on a host of factors, there is no good substitute for true random assignment. In the school setting, however, true randomization presents possible ethical and practical difficulties. Withholding access to a treatment believed to have benefit, especially for students with disabilities, may be ill-advised. Delaying access to treatment, as might be done in a design involving switching replications (Shadish, Cook, & Campbell, 2002), is difficult to implement for a year-long intervention. The use of a within-subjects design, as has been conducted here, may be necessary. Many interventions, such as SMM, are expensive purchases for school districts. In the absence of available funds or grants, researchers may be forced to utilize existing data. Forward-thinking districts are encouraged to develop an implementation plan that allows for appropriate data collection from the beginning to analyze program effectiveness.

This analysis considers effectiveness of SMM from a treatment dosage perspective. Students who received SMM with fidelity produced significantly higher mathematics achievement gains than students who did not receive the recommended usage of the treatment. When students who exceeded treatment usage recommendations are considered, those gains in achievement are even greater. Future research regarding SMM should consider implementing usage groups for greater usage levels than were considered for this project. Excessive use of the treatment was beyond the scope of this research. It is not yet known if use of SMM well beyond usage recommendations will result in continued linear growth or potential diminishing returns.

Though this paper has taken a pragmatist position, there is reason to believe that behaviorist instructional methods are helpful for students with disabilities. The behaviorist roots of SMM were reviewed above, and the effectiveness of the program for student with disabilities has been shown. This study did not investigate the use and perceptions of features more in line with cognitivist or constructivist theories. Instead, the repeated skill repetition and branching algorithms that serve as a foundation for skill presentation and assessment have yielded usage data consistent with this theoretical position. Further research that addresses the various components of the program is needed to determine what combined and individual effects these components have.

Previous research regarding SMM has included few studies in Texas. Most recently, Tucker (2008) found that SMM provided no benefit to 5th grade students using district passing rates as an outcome measure. This study has focused on the individual student, but has identified a similar lack of state testing differences following program use. Additionally, the current study has opted to address only those students with disabilities. Findings and conclusions from this study may not be generalizable to other student groups or school districts.

The need for effective remediation tools for students with disabilities is clear and ongoing. SuccessMaker has demonstrated an ability to assist struggling learners, but only if minimum usage recommendations are followed. Even then, these learners may not achieve learning gains commensurate with their non-disabled peers. Schools using SMM are encouraged to develop a clear plan for implementation that will allow students to meet targeted usage levels. Ongoing monitoring of student performance during program use is recommended so motivational issues discussed above may be addressed early. A discussion of implementation concerns is presented in McKissick (2016), though users are encouraged to identify the needs and target population for their campus.

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Teachers' Methodologies and Sources of Information on HIV/AIDS for Students with Visual Impairments in Selected Residential and Integrated Schools in Ghana

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Abstract

This study reports part of a national survey on sources of information, education and communication materials on HIV/AIDS available to students with visual impairments in residential, segregated, and integrated schools in Ghana. A multi-staged stratified random sampling procedure and a purposive and simple random sampling approach, where appropriate, were used to select 83 students with visual impairments to participate in a survey. Descriptive and inferential statistics, including frequency distribution, percentages, and chi-square (X^2) test, were used to analyze the data. The findings revealed that teachers used a variety of sources of information such as newspapers, storybooks, prescribed textbooks and recorded materials, and workplace HIV/AIDS policies to teach HIV/AIDS lessons to students with visual impairments. Additionally, teachers relied more on discussion, storytelling and lecture method, rather than interactive methodologies to teach HIV/AIDS lessons. Chi-square (X^2) computation at .05 significant level revealed that none of the students' responses was independent on gender. Recommendations were offered to the Ghana's Ministry of Education for consideration.

Teachers' Methodologies and Sources of Information on HIV/AIDS for Students with Visual Impairments in Selected Residential and Integrated Schools in Ghana

In Ghana, activities related to prevention and intervention of human immunodeficiency virus infection and acquired immune deficiency syndrome (HIV/AIDS) have been incorporated into the curriculum of educational institutions from the basic school level, through the second cycle schools to the tertiary level. These are done either through integration or infusion or as a stand-alone course. By integration, HIV/AIDS issues and activities are discussed in appropriate subjects, such as Health Science and Social Studies, which lend themselves to the teaching of HIV/AIDS issues. With regards to infusion, HIV/AIDS issues are strategically raised and discussed within a topic during lesson delivery because the subject, for example, Mathematics, does not lend itself easily to addressing health-related topics.

These measures were introduced to fulfill the 9th policy goal of the Education Strategic Plan of Ghana's Ministry of Education (MOE), which sets to identify and promote education programmes that will assist in the prevention and management of HIV/AIDS (Ministry of Education [MOE], 2003). As part of this policy goal, institutional and teacher-training curricula were to be reviewed to include aspects of HIV/AIDS awareness, prevention, and management at all levels, with an emphasis on behavioural change. Courses in HIV/AIDS prevention, counselling, care and support, and management have been provided for workers and practicing

teachers. The Ministry of Education further proposed the institution of Information, Education and Communication (IEC) programmes for HIV/AIDS by 2004, as well as encourage the formation of HIV/AIDS clubs and other relevant initiatives at all levels of education in the country.

Additionally, the MOE and the Ghana Education Service (GES) have implemented the Population and Family Life Education (POP/FLE) programme and the integrated HIV/AIDS topics in curricula for pre-tertiary institutions. The African Youth Alliance (AYA) scaled up the POP/FLE in a project under the United Nations Population Fund (UNFP) to improve adolescent sexuality and reproductive health (ASRA) status in basic schools in 20 districts in 10 regions of the country.

Besides, the Ministry of Health has also initiated and implemented youth-based services at some health centres. In 1996, the Planned Parenthood Association of Ghana [PPAG] designed and implemented youth-specific programmes by building youth-friendly service centers in four administrative regions: Greater Accra, Volta, Ashanti and Northern. These centers provide a variety of sexual and reproductive health services for young people, including information, counselling, family planning and post-abortion care (Awusabo-Asare, Abane & Kumi-Kyereme, 2004). Regrettably, none of these initiatives and agencies made provisions for individuals with disabilities, including those with visually impairments and blindness. The trend of educating individuals with visual impairments and blindness has been discussed to enhance understanding of the study.

Ghana's education system consists of a three-level structure: basic education, secondary education, and tertiary education. The basic education level comprises 2-year preschool, 6-year primary and 3-year junior high school. The secondary education level includes senior high, vocational, and technical education. Tertiary education consists of colleges of education, polytechnics and universities. In terms of educating learners who are visually impaired or blind, historically, Ghana has provided two residential special schools for the blind (Avoke, 2008). Over the last decade, however, three pilot integrated basic schools have been added to the two residential schools. At the secondary level, there are six integrated senior high schools for students with visual impairment; and three of the six schools are still at the pilot stage. Besides, there are two colleges of education that enroll a few individuals with visual impairment in their pre-teacher preparation programs. Ghana has adopted the integration model for educating individuals with visual impairments and blindness following becoming a signatory to the Salamanca Accord in 1994.

Besides, in Ghana, the MOE has overall responsibility for education sector policy, planning and monitoring. Education delivery and implementation is devolved to institutions, districts and regions through various agencies of the MOE. The Ghana Education Service (GES) is the agency that implements the Basic and Senior Secondary education components, including Technical and Vocational education (MOE, 2003).

The term visual impairment covers a wide variety of conditions, some present since birth and some resulting from gradual deterioration of sight. The vast majority of individuals with visual impairment have some useful residual vision, although the degree of vision can vary greatly.

Some are able to read newsprint, whilst others need large print of varying sizes (British Educational Communications & Technology Agency, 2000). A minority of individuals with visual impairment relies on non-sighted methods of reading and writing, such as Braille, touch typing and Moon. Interestingly, only 7% of registered individuals with visual impairments use Braille (British Educational Communications & Technology Agency).

Also, the type of partial sight from which a learner may suffer is extremely varied, reflecting the sources of different eye complaints which exist. It is therefore important, before starting any teaching programme, to establish a student's degree of useful vision, and determine what lighting conditions suit best and what methods are to be used for reading and writing. Essentially, the effects of visual impairment on both literacy and numeracy are complex. All reading and written tasks are made slower and more difficult by visual impairment (British Educational Communications & Technology Agency, 2000).

Students with visual impairment access information in different ways, for example Braille, audio, or enlarged print. Braille readers cannot skim read and may take up to three times as long as other students to read a text (California Department of Social Services, 2009). Also, students with low vision may be large-print readers or may not be able to read at all without using special computer software or equipment (California Department of Social Services). Teachers of students with visual impairments have to take these characteristics into consideration when designing, selecting and using information, education and materials for teaching such learners.

Besides, it takes longer for students with visual impairments to write down lecture notes and they may be unable to see PowerPoint slides or board work. Besides, some students with visual impairment may be sensitive to light or screen glare and therefore struggle with television and video conference. In line with this, several methods should be made available for people with visual impairments and blindness, who cannot read standard print to obtain information. Some alternatives to standard print are large print, Braille, recorded material, and computer-produced synthesized speech (California Department of Social Services, 2009).

Studies in South Africa, Uganda, Senegal and Zimbabwe, have reported that youngsters with visual impairments have many mistaken ideas about HIV/AIDS and sexuality because they have less access to information on HIV/AIDS and sexuality than do their peers without disabilities (Groce, 2003; IRIN & Plusnews, 2008; Kudzai, 2003). In Kenya, seminars organized by and for individuals who are visually impaired reported a lack of knowledge and access to information on HIV/AIDS among persons with visual impairments (NACC, 2006). Regrettably, other studies have revealed that special schools are excluded from prevention campaigns or lack sex education (Hanass-Hancook, 2009; Hanass-Hancook, 2008; Wazakili, Mpofu, & Devlieger, 2009; Dickman, Roux, Manson, Douglas, & Shabalala, 2006; Dube, 2004). Otte, Mass, and Boer (2008) also argue that participants with visual impairments accessed HIV/AIDS information mainly through spoken channels, via churches and mosques, whereas participants without disabilities accessed such information from posters, billboards, and other visual displays. Otte and colleagues reported in their survey that adolescents with blindness are prone to believing in wrong modes of transmission and prevention. However, in Ghana, most of the alternatives modes for transmitting information are not available for learners with visual impairments.

As part of the campaign to reduce the spread of HIV/AIDS, the MOE and the GES, have incorporated information on HIV into the curricula of all the levels of education in the country. Teachers adopt difference instructional approaches to teach topics on HIV/AIDS to students at all levels of education. However, since visual impairment adversely affect learning and in particular access to information teachers adopt and adapt methods, resources and materials to enable students who have lost their sight have access to information and participate successfully in learning. The aim of the study was to explore teachers' methodology and sources of information on HIV/AIDS for students with visual impairments in selected residential special and integrated senior high schools for learners with visual impairments and blindness in Ghana. The main objective of the study was to establish teachers' methodology and sources of information on HIV/AIDS for students with visual impairments in segregated and integrated schools in Ghana. Specifically, the study sought to (1) describe sources of information teachers use to teach students with visual impairments about HIV/AIDS in the selected residential and integrated schools in Ghana; (2) discuss the methods teachers employ in teaching HIV/AIDS lessons to students with visual impairments ; (3) examine the gaps in the sources of information and methods for teaching HIV/AIDS lessons to students with visual impairments; and (4) make recommendations to the MOE and the GES to improve sources of information and methods for teaching HIV/AIDS lessons to students with visual impairments. It was also hypothesized that there would be no significant differences in the responses of male students from the responses of their female counterparts to the issues raised.

Method

This study adopted the cross-sectional survey design, which involved the collection of data at one point in time (Creswell, 2005) from students with visual impairments (blind and low vision), and who then attending the two residential basic special schools for the blind, and the three well established integrated senior high schools in Ghana. All 278 possible participants were using Braille for reading and writing. The sample of 83 for the study was determined by using a table designed by Krejcie and Morgan (cited in Sarantakos, 1993). Their table gives figures for population ranging from 10 to 1,000,000 subjects and the corresponding figures for the required sample size. This table computes the sample size by means of a formula based on a chi-square with 1 degree of freedom, the population size, the population proportion at .50, and a degree of accuracy at .05. The formula, which was developed by the research division of the National Education Association (USA), is as follows: $S = \underline{X^{2NP}\ (1\text{-}P)} + X^{2P}\ (1\text{-}P)$, $d^2 = (N\text{-}1)$, where S is the required sample size, x^2 the table value of chi-square for 1 degree of freedom (3,841), N the population size, P the population proportion, and d the degree of accuracy.
Based on the table used by Krejcie and Morgan (1970), 83 of the students were chosen from an accessible population of 278, which agrees with the figure recommended by Krejcie and Morgan. Since the schools are widely separated, the researchers purposefully mixed and selected one residential basic and one integrated senior high school.

Research Instruments
The researchers employed two sets of questionnaire for data collection; namely, students' questionnaire and teachers' questionnaire. The World Health Organization's AIDS/KABP survey (World Health Organization/GP/SBR, 1988), which had been adapted by Ocansey (2006), was adapted further to suit learners with visual impairments. The instrument had six sections, but this

report focused on three sections A, E and F, and these addressed (a) participants' demographic characteristics, (b) pedagogical strategies, and (c) IEC materials used for teaching HIV/AIDS lessons in special schools. The Cronbach Alpha reliability co-efficient of the pupils' questionnaire was r =.76, while the teachers' questionnaire yielded r=.82. Additionally, the instruments were piloted to foster clarity and enhance reliability. A team of research assistants, who were proficient and skillful in Braille writing and reading, were trained to assist in the data collection. The questionnaires for all participants were hand-delivered by the research team. Prior to the visit to the schools, permission was sought from the relevant authorities including the District Directors of Education and the heads of the selected educational institutions. All participants independently completed the questionnaire, and the research assistants collected them after one week.

Data Analysis

As a descriptive survey study, both descriptive and inferential statistics were used. Frequency distribution, percentages, and chi-square (X^2) test, were used to analyze the data. All the data were subsequently presented as tables. Qualitative interpretation was given to the results to facilitate discussion, conclusions and recommendations.

Results

Table 1 highlights teaching and learning resources for teaching HIV/AIDS lessons to students with visual impairments.

Table 1

Teaching/Learning resources for teaching HIV/AIDS lessons to students with visual impairment

Item	Response	Male (n = 55)		Female (n= 28)		Total (N = 83)		(X^2)	Sig
		No.	%	No.	%	No.	%		
Video and film show	Yes	19	34.5	11	39.3	30	36.1	.181	.671
	No	36	65.5	17	60.7	53	63.9		
Resource person	Yes	28	50.9	20	71.4	48	57.8	3.203	.073
	No	27	49.1	8	28.6	35	42.2		
Posters and banners	Yes	19	34.5	8	28.6	27	32.5	.302	.583
	No	36	65.5	20	71.4	56	67.5		
Prescribed HIV/AIDS textbooks	Yes	28	50.9	16	57.1	44	53.0	.289	.591
	No	27	49.1	12	42.9	39	47.0		
Reference materials	Yes	33	60.0	14	50.0	47	56.2	.755	.385
	No	22	40.0	14	50.0	36	43.4		
Only pamphlets	Yes	16	29.1	62	1.4	22	26.5	.559	.455
	No	39	70.9	22	78.6	61	73.5		
Prescribed syllabus	Yes	39	70.9	18	64.3	57	68.7	.378	.538
	No	16	29.1	10	35.7	26	31.3		
Basic School HIV/AIDS Education Syllabus	Yes	33	60.0	19	67.9	52	62.7	.490	.484
	No	22	40.0	9	32.1	31	37.3		

Tape Recorders and	Yes	29	52.7	14	50.0	43	51.8	.055	.814
Cassettes	No	26	47.3	14	50.0	40	48.2		
Newspaper information &	Yes	38	69.1	20	71.4	58	69.9	.048	.826
storybooks	No	17	30.9	8	28.6	25	30.1		
Use of Examples	Yes	32	58.2	20	71.4	52	62.7	1.391	.238
	No	23	41.8	8	28.6	31	37.3		
Workplace	Yes	22	40.0	12	42.9	34	41.0	.063	.802
HIV/AIDS policy	No	33	60.0	16	57.1	49	59.0		

From Table 1, 69.9% of the students with visual impairment reportedly stated that their teachers used newspaper information and story books to teach HIV/AIDS lessons, and in terms of gender, 69.1% female and 71.4% males responded 'yes' to the use of newspapers. Also, 68.7% of them mentioned the use of prescribed syllabus, with 70.9% females and 64.3% males responding 'yes'. Additionally, 62.7% of the students reported that their teachers used examples and Basic School HIV/AIDS Education Syllabus respectively, and with respect to gender, 60% of the females and 67.9% of the males responded 'yes'. Again, 57.8% stated that resource persons were involved in the dissemination of HIV/AIDS information, and for that 50.9% of the females and 71.4% of the male participants said 'yes'. With regards to the availability of reference materials, 56.6% of the participants mentioned answered in the positive; specifically, 53% selected prescribed HIV/AIDS Textbooks, and 51.8% indicated tape recorders and cassettes. Other sources of information participants indicated include workplace HIV/AIDS Policy (41%), video and film shows (36.1%), posters and banners (32.5%), and pamphlets (26.5%).

The Chi-square (X^2) computation at .05 significant level indicated no significant differences in male and female students' responses and the null hypotheses were upheld. Specific areas of non-significance were video and film $X^2(1, N = 83) = .181$, $p = .671$; resource person $X^2 (1, N = 83) = 3.202$, $p = .073$; posters and banners $X^2(1, N = 83) = .302$, $p = .583$; prescribed HIV/AIDS textbooks $X^2 (1, N = 83) = .289$, $p = .591$. Thus the null hypotheses were all upheld; there were no differences between male and female students' responses about with respect to their teachers' usage of the mentioned sources for information on HIV/AIDS.

Table (2) highlights the interactive techniques and approaches teachers use to teach HIV/AIDS lessons to students with visual impairments in the selected schools.

Table 2

Interactive techniques and approaches teachers use to teach HIV/AIDS lessons to Students with visual impairment

Item	Sex	Response Never		To a limited extent		To a large extent		To a very large extent		X^2	Sig
		No.	%	No.	%	No.	%	No.	%		
Discussion	M	22	40.0	13	23.6	7	12.7	13	23.6	.344	.952
	F	10	35.7	8	28.6	3	10.7	7	25.0		
	T	32	38.6	21	25.3	10	12.0	20	24.1		
Inquiry/discovery	M	36	65.5	6	10.9	7	12.7	6	10.9	1.103	.776
	F	16	57.1	3	10.7	6	21.4	3	10.7		
	T	52	62.7	9	10.8	13	15.7	9	10.8		

Lecture	M	25	45.5	9	16.4	8	14.5	13	23.6	.661	.882
	F	14	50.0	3	10.7	5	17.9	6	21.4		
	T	39	47.0	12	14.5	13	15.7	19	22.9		
Role play	M	33	60.0	10	18.2	6	10.9	6	10.9	4.812	.186
	F	12	42.9	6	21.4	8	28.6	2	7.1		
	T	45	54.2	16	19.3	14	16.9	8	9.6		
Simulation	M	45	81.8	6	10.9	1	1.8	3	5.5	3.516	.319
	F	21	75.0	2	7.1	3	10.7	2	7.1		
	T	66	79.5	8	9.6	4	4.8	5	6.0		
Critical incident	M	41	74.5	6	10.9	6	10.9	2	3.6	1.834	.608
	F	21	75.0	1	3.6	4	14.3	2	7.1		
	T	62	74.7	7	8.4	10	12.0	4	4.8		
Storytelling	M	27	49.1	11	20.0	7	12.7	10	18.2	3.159	.368
	F	11	39.3	3	10.7	6	21.4	8	28.6		
	T	38	45.8	14	16.9	13	15.7	18	21.7		
Field visits	M	40	72.7	8	14.5	6	10.9	1	1.8	5.251	.154
	F	18	64.3	4	14.3	2	7.1	4	14.3		
	T	58	69.9	12	14.5	8	9.6	5	6.0		
Dramatization	M	40	72.7	8	14.5	4	7.3	3	5.5	3.654	.301
	F	20	71.4	3	10.7	5	17.9	0	0.0		
	T	60	72.3	11	13.3	9	10.8	3	3.6		
Case study	M	44	80.0	4	7.3	3	5.5	4	7.3	3.242	.356
	F	24	85.7	0	0.0	3	10.7	1	3.6		
	T	68	81.9	4	4.8	6	7.2	5	6.0		
Video	M	42	76.4	6	10.9	2	3.6	5	9.1	4.988	.173
	F	19	67.9	2	7.1	5	17.9	2	7.1		
	T	61	73.5	8	9.6	7	8.4	7	8.4		
Lecturettes	M	48	87.3	2	3.6	4	7.3	1	1.8	.243	.970
	F	24	85.7	1	3.6	2	7.1	1	3.6		
	T	72	86.7	3	3.6	6	7.2	2	2.4		
Demonstration	M	40	72.7	5	9.1	6	10.9	4	7.3	1.485	.686
	F	23	82.1	2	7.1	1	3.6	2	7.1		
	T	63	75.9	7	8.4	7	8.4	6	7.2		
Brain storm	M	44	80.0	4	7.3	2	3.6	5	9.1	.483	.923
	F	23	82.1	1	3.6	1	3.6	3	10.7		
	T	67	80.7	5	6.0	3	3.6	8	9.6		
Plenary discussion	M	45	81.8	5	9.1	3	5.5	2	3.6	.669	.880
	F	22	78.6	2	7.1	2	7.1	2	7.1		
	T	67	80.7	7	8.4	5	6.0	4	4.8		
Panel discussion	M	46	83.6	4	7.3	2	3.6	3	5.5	.988	.804
	F	23	82.1	1	3.6	2	7.1	2	7.1		
	T	69	83.1	5	6.0	4	4.8	5	6.0		
Jigsaw technique	M	52	94.5	3	5.5	0	0.0	0	0.0	.143	.705
	F	27	96.4	1	3.6	0	0.0	0	0.0		
	T	79	95.2	4	4.8	0	0.0	0	0.0		

fish bowl	M	53	96.4	1	1.8	0	0.0	1	1.8	1.043	.594
techniques	F	28	100.0	0	0.0	0	0.0	0	0.0		
	T	81	97.6	1	1.2	0	0.0	1	1.2		
ice breakers	M	53	96.4	2	3.6	0	0.0	0	0.0	2.982	.225
	F	27	96.4	0	0.0	1	3.6	0	0.0		
	T	80	96.4	2	2.4	1	1.2	0	0.0		
small group	M	50	90.9	2	3.6	1	1.8	2	3.6	2.688	.442
	F	23	82.1	2	7.1	0	0.0	3	10.7		
	T	73	88.0	4	4.8	1	1.2	5	6.0		

Fieldwork

Table 2 shows that only 38% of the students stated that their teachers used discussion as an approach for teaching HIV/AIDS lessons; interactive techniques and approaches such as fish bowl techniques to teach HIV/AIDS lessons; 26.5% of them said their teachers used inquiry/discovery or role play respectively; 10.8% mentioned simulation; 16.8% stated critical incident; 37.4% indicated storytelling; 15.6% mentioned field visits and demonstration respectively; while14.4% said their teachers employed dramatization, 13.2% case study, 16.8% video, 9.6% lecturettes, 13.2% brainstorm, 10.8% plenary discussion and panel discussion respectively. Also, while all the students stated that none of their teachers employed the use of jigsaw technique, only 7.2% and 1.2% stated that their teachers used small group and fish bowl techniques respectively to teach HIV/AIDS lessons.

As to whether male and female respondents shared the same sentiments, Table (2) shows that 40% of the males and 35.7% of the females responded that their teachers never used discussion. A chi square at .05 significance level to test if participants responses' was based on their gender differences indicated a value of .344 and a significance value of .952; $X^2(1, N = 83) = .344$, $p = .952$, which upheld the null hypotheses that gender was not a factor. Thus there were no significance differences between the responses of male and female students in the study. In other words both male and female students took a common stance in responding that their teachers never used the discussion method in teaching. Indeed, the Chi-square (X^2) computation of the responses from the students at the .05 significant level suggested that, like discussion method, students responses with respect to all other methods, were not influenced by their gender.

Table 3 describes the sources of information on HIV/AIDS available to students with visual impairment in schools involved in the study.

Table 3

Sources of information on HIV/AIDS available to students with visual impairment

Item	Response	Male (n = 55)		Female (n= 28)		Total (N = 83)		(X^2)	Sig
		No.	%	No.	%	No.	%		
Radio	Yes	48	87.3	19	67.9	67	80.7	4.495	.034
	No	7	12.7	9	32.1	16	19.3		
TV	Yes	41	74.5	17	60.7	58	69.9	1.686	.194
	No	14	25.5	11	39.3	25	30.1		
Newspaper	Yes	34	61.8	17	60.7	51	61.4	.101	.922
	No	21	38.2	11	39.3	32	38.6		
Books	Yes	39	70.9	17	60.7	56	67.5	.879	.349
	No	16	29.1	11	39.3	27	32.5		
Church Leaders	Yes	30	54.5	18	64.3	48	57.8	.722	.396
	No	25	45.5	10	35.7	35	42.2		
Parents	Yes	46	83.6	26	92.9	72	86.7	1.372	.241
	No	9	16.4	2	7.1	11	13.3		
Brothers & Sisters	Yes	42	76.4	26	92.9	68	81.9	3.409	.065
	No	13	23.6	2	7.1	15	18.1		
Guidance Coordinator	Yes	22	40.0	13	46.4	35	42.2	.314	.575
	No	33	60.0	15	53.6	48	57.8		
Teachers	Yes	52	94.5	21	75.0	73	88.0	6.689	.010
	No	3	5.5	7	25.0	10	12.0		
Friends	Yes	40	72.7	23	82.1	63	75.9	.899	.343
	No	15	27.3	5	17.9	20	24.1		
Signboards/Billboards	Yes	20	36.4	10	35.7	30	36.1	.003	.954
	No	35	63.6	18	64.3	53	63.9		
internet	Yes	24	43.6	15	53.6	39	47.0	.735	.391
	No	31	56.4	13	46.4	44	53.0		

Fieldwork

Table 3, reveals sources from which students who are blind obtain information on HIV/AIDS, in the order of popularity; according to the students, 88% of them obtained information from their teachers, 86.7% from parents, 81.9% brother and sisters, 80.7% from radio, 75.9% friends, 69.9% TV, 67.5% from books, 61.4% newspaper, 57.8% church leaders, 42.2% guidance coordinator, and 36.1% lastly, from signboards/billboards.

The Chi-square (X^2) computation revealed that students' responses with respect to the sources of their information on HIV/AIDS did not relate to gender at the alpha level of .05 with respect to sources such as TV, Newspaper, Books, Church leaders, parents, brothers and sisters, guidance coordinators, friends and signboards/billboards. However, on the issue of getting information from radio and teachers, there were differences in the responses from the male and female students as shown in Table 3. For radio the chi-square computation at .05 significance level was X^2 (1, N = 83) = 4.495, p = .034, while for teachers the computation was X^2 (1, N = 83) = 6.689, p = .010. Thus, the null hypothesis was rejected in both cases.

Discussion

From the data it became obvious that teachers of the visually impaired in residential and integrated schools for the visual impaired overly relied on traditional sources and methods of teaching HIV/AIDS lessons to the students. With respect to reference sources, Table 1 revealed that the teachers largely used prescribed syllabus, newspaper information, Basic School HIV/AIDS syllabus and Workplace HIV/AIDS policy. The drop in the number of teachers who used sources such as video and film shows, poster and banners, as well as pamphlets could be attributed to the dishomogeneous nature of visually impaired students (California Department of Social Services, 2009); perhaps, only few of them could benefit from the other sources.

In terms of teaching methodology, the students' responses were revealing. Indeed, no method emerged as the most widely used among teachers of the students in the study. According to Table 2, less than 40% of students stated that their teachers used the lecture, storytelling or discussion in teaching them about HIV/AIDS. Besides, only 30% of the students reported that their teachers used field visits to educate them about HIV/AIDS; while a little above a quarter of them reportedly stated that their teachers adopted the inquiry/discovery or role play. Thus, the study revealed that a high proportion of teachers limited themselves to the use of traditional methods. Students with visual impairment in the selected schools were not exposed to common interactive methodologies such as dramatization and small group work in their HIV/AIDS classes. Again, it could be speculated that majority of the teachers found traditional methods as more suitable for their students. It would be interesting to do a follow-up study on this issue.

Finally, in terms of available sources of information on HIV/AIDS for students with visual impairment in Ghana, the study reveals that such students rely mostly on individuals that they are familiar with; for example, their teachers, parents, siblings and friends as well as church leaders. Interestingly, less than 50% of the students, who participated in the study, got their information from School Guidance Coordinators, which show that this category of professionals are not actively involved in supporting students with visual impairment in the schools which participated in the study, as the case should have been. Elsewhere, school guidance coordinators collaborate with other professionals as multidisciplinary team to support students with disabilities including visual impairment to learn successfully in schools. Besides, due to paucity of appropriate sources of information on HIV/AIDS for such as Large Print, Braille, recorded material, and computer-produced synthesized speech (California Department of Social Services, 2009; UNESCO, 2009) in Ghana, the visually impaired overly rely on human sources for information HIV/AIDS, which makes their more vulnerable.

Finally, unlike advanced countries, computers and internet are still being introduced to basic schools in Ghana, majority of schools are yet be connected to electricity to enable them procure computers to enhance teaching and learning. The 'one laptop-per-child' project for basic schools in Ghana is still at the infancy stage. It will therefore take some time for the visually impaired to have equal access to information education and communication materials in general and on HIV/AIDS in particular.

Conclusion and Recommendation

The evidence is that teachers of students with visual impairment in the selected residential and integrated schools in Ghana relied more on traditional methods of teaching HIV/AIDS lessons; they also used textbooks, syllabus, tape recorders, as well as newspaper as the main sources of information on HIV/AIDS rather than modern technology and sources of information. Finally, the students did not have access to current technologies such as Screen reader programs, JAWS, and Talking books to expose them to comprehensive information on HIV/AIDS.

Consequently, the researchers recommended to the Ministry of Education and the Ghana Education Service to provide alternative sources of information on HIV/AIDS for teachers' use to teach students with visual impairment. Also, recorded information on HIV/AIDS should be provided to students with visual impairment. The students should be trained and given jaws and dolphin pens to enable them access information on the internet on their own with little or no assistance from sighted individuals. It is also recommended that Ministry of Education, The Ghana Education Service, should organize in-service training for teachers of students with visual impairment, in both special and integrated schools, in the use of different methodologies such as Peer education, plenary discussion in teaching lessons on HIV/AIDS. Finally, nation-wide programme to educate the citizenry about the epidemic should include strategies which address the needs of all individuals including those with visual impairments.

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Managing Asthma in Elementary and Middle Schools: Adherence to Federal Laws and National Guidelines

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Abstract

The current study examined teacher-reported asthma management practices in school and adherence to federal guidelines for students with asthma. 593 kindergarten-eighth grade teachers completed surveys regarding compliance with federal laws and policies, information-seeking behavior, asthma-related professional development, and asthma management practices. The extent to which asthma services varied as a function of adherence to federal policy statements or teacher characteristics was also examined. Results indicated a small percentage of teachers reported students with asthma had Individualized Education Plans or 504 plans. Teachers reported medication policies were in place for students with asthma, consistent with national guidelines, but a limited number of students with asthma were reportedly allowed to self-administer medications. Teachers generally reported low compliance to federal policies. Finally, provision of asthma-related professional development, teachers' own history of chronic illness, and information-seeking behaviors were significant predictors of whether students with asthma were served by an IEP or 504 plan.

Managing Asthma in Elementary and Middle Schools: Adherence to Federal Laws and National Guidelines

Asthma management is a pressing concern for American schools with limited resources to meet the needs of children and adolescents who present with the condition. Prevalence data from the Centers for Disease Control and Prevention's National Health Interview Survey indicate 7.1 million children and adolescents, or 9.6% of the population aged 17 and under, have an asthma diagnosis (Bloom, Cohen, & Freeman, 2010). As children with asthma are found in almost every classroom in the nation (National Asthma Education and Prevention Program, 2003; Neuharth-Pritchett & Getch, 2001), schools need to be responsive to the health needs of these students so students can access equal opportunities for learning (Clay, Farris, McCarthy, Kelly, & Howarth, 2008).

With the reauthorization of the Individuals with Disabilities Education Improvement Act [IDEIA] (2004), the educational rights of children and adolescents with chronic illness to equal access to services within schools were reinforced. Moreover, the ability of students to receive special education services and/or accommodations when their educational achievement is compromised as a result of their illness was strengthened. Despite the abundance of guidelines addressing asthma management in schools both in federal laws, such as IDEIA, and other federal policies, the degree to which schools comply with mandated policies and guidelines is not well understood (Jones, Wheeler, Smith, & McManus, 2009).

As in other environments, poor asthma management in schools might result in delayed intervention resulting in exacerbations including asthma attacks, the use of emergency medication, and need for emergency care or other medical intervention (National Heart, Lung, and Blood Institute, 2009). As a result, schools become increasingly responsible for asthma management, including control, which ultimately might reduce the estimated $3.2 billion in associated health costs (NAEPP, 2005; Weiss, Sullivan, & Lytle, 2000).

Students with chronic health problems frequently face challenges at school stemming from the cognitive, social, emotional, and behavioral sequelae of the disease process (Currie, 2005; Shiu, 2001). Those who support the education of students with asthma, including administrators, teachers, school nurses, and other school staff, must be cognizant of potential barriers to academic functioning.

Asthma is noted as a risk factor for a range of adverse educational outcomes, including increased absenteeism (Dean, Calimlim, Kindermann, & Khandker, 2009; Silverstein, Mair, Katusic, Wollan, O'Connel, & Yunginger, 2000), poor psychosocial functioning (Fiese, Everhart, & Wildenger, 2009; Röder, Kroonenberg, & Boekaerts, 2003), and decreased levels of academic achievement (Kohen, 2010; Liberty, Pattemore, Reid, & Tarren-Sweeney, 2010). The mechanisms by which asthma exerts its influence on such variables are not well understood. Whereas some researchers have found asthma independently predicts the presence of less positive school outcomes (Liberty et al., 2010), others have identified intervening variables accounting for this relationship such as severity (Moonie, Sterling, Figgs, & Castro, 2008), persistent nighttime asthma symptoms (Fiese, Everhart, & Wildenger, 2009), socioeconomic status (Koinis Mitchell, Adams, & Murdock, 2005) and self-esteem and self-efficacy in disease management (Schreier & Chen, 2008; Walker, Chim, & Chen, 2008). Thus, it is important to recognize the role schools play in promoting the health and school success of students with asthma.

Asthma Management

Treatment of asthma includes medical management of the disease and avoidance of environmental triggers, which can exacerbate disease symptoms (Environmental Protection Agency, 2010). Asthma management is enhanced when triggers in the school environment (e.g., dust, strong chemicals) are minimized. Medical management is often accomplished through quick-relief inhaled bronchodilators targeting sudden respiratory symptoms (Wang, Zhong, & Wheeler, 2006). Despite the effectiveness of medications in controlling asthma symptoms, researchers have documented underuse of long-acting preventative medications and the overuse

of quick-relief medications in school-age children (Wang et al., 2006; Adam et al., 2001; Lozano, Finkelstein, Hecht, Shulruff, & Weiss, 2003).

Barriers to adequate management exist in the degree to which students are permitted access to quick-relief asthma medications while at school. Although all 50 states protect the rights of students with asthma to carry and self-administer asthma medications, including inhalers, laws vary by state and individual school districts may have specific policies regarding medication administration (American Lung Association, 2011). Most states require written documentation of an asthma diagnosis from the child's health care provider along confirmation on an asthma action plan that the use of medication at school is necessary for management (American Lung Association, 2011). Written consent from the child's guardian(s) is also required (a) to allow the school to supervise and directly administer medication, and (b) to release the school from liability for claims that may arise relating to administration of approved medications (American Lung Association, 2011).

Whereas all states currently allow students with asthma to carry quick-acting medications on their person at all times, some states (e.g., Arkansas, Delaware) require medications be kept in their original containers with original prescription labels (Allergy and Asthma Network, 2011). Other states (e.g., Arkansas, California, Colorado) require that asthma inhalers be kept in the school nurse's office should the student forget medication at home. Some states also require students with asthma to demonstrate adequate skills in and responsibility for the self-administration of asthma medications before they are allowed to self-carry (e.g., Alaska, Colorado, Hawaii) (Allergy and Asthma Network, 2011).

The National Asthma Education and Prevention Program [NAEPP] (2005) provides guidelines for health care providers to decide whether a child with asthma has the maturity to carry and to self-administer quick-relief medications at school. Despite the existence of federal policies for asthma management in schools, previous research has not adequately addressed the degree to which schools follow policy statements or whether adherence varies as a function of school setting (e.g., elementary vs. middle-school). Given that previous research has demonstrated a higher incidence of medication use in older children with asthma with more complicated treatment regimens (Wang et al., 2006), it is reasonable hypothesize compliance with policies might be higher in secondary schools. However, this finding has not been evidenced in the literature.

What Asthma Policies Are Available for Schools?

Federal education statutes. IDEIA (2004) mandates the free and appropriate education of all students with disabilities within the least restrictive school environment. Disability includes children and adolescents with other health impairments, who as a function of the disability necessitate special education and related services to make meaningful progress in comparison to typically-developing peers (Margolis, 2002). IDEIA specifically includes chronic or acute health problems such as asthma, which adversely affect a child's educational performance. The educational performance of students with asthma might be adversely affected by absences, difficulties concentrating as a result of breathing problems, or more direct cognitive effects of the disease. In making a determination of what services are appropriate for students with asthma in encouraging educational progress, IDEIA also mandates Individualized Education Plans (IEPs)

be written and revised accordingly for students with disabilities served under the law (IDEIA, 2004).

For students whose asthma impedes their access to learning or an appropriate education, the development of an asthma management/action plan is often a necessary part of the IEP process (Jones & Wheeler, 2004). The asthma management plan should include instructions from healthcare providers regarding management of the student's asthma during the school day, medication schedules, appropriate use of self-administered medication, typical symptoms, and guidelines for school staff during presentation of asthma symptoms at school (Jones & Wheeler, 2004; National Heart, Lung, and Blood Institute, 2009).

Recent research suggests school officials lack sufficient knowledge of the implications of chronic illness, which can serve as a barrier to identifying appropriate accommodations for students with asthma (Wodrich & Spencer, 2007). Although students with asthma may be eligible for services under IDEIA, including the implementation of an IEP, this is not typical practice (Grice, 2002). That is, if students with asthma are receiving services in accordance with IDEIA, services are likely the result of the presence of a co-occurring condition affecting school functioning (i.e., ADHD) or the direct effects of the student's asthma on educational performance. As such, the needs of students with asthma are more often addressed with 504 plans (Grice, 2002).

Section 504 of the Rehabilitation Act of 1973 exists as another federal statute that guides schools in supporting the needs of students with asthma (Zirkel, 2009). This law prohibits discrimination against otherwise qualified individuals on the basis of disability alone (Section 504 of the Rehabilitation Act, 2000). The definition of disability under Section 504 is much broader than the IDEIA definition and subsumes any person who "(i) has a physical or mental impairment which substantially limits one or more major life activities, (ii) has a record of such impairment, or (iii) is regarded as having such an impairment" (Section 504 of the Rehabilitation Act, 2000).

As Section 504 recognizes any major life activity, and not just educational functioning as in IDEIA, might be affected by a disability such as asthma. The law is particularly useful in providing access to non-academic accommodations (i.e., to medication access) within the school setting (Section 504 of the Rehabilitation Act, 2000). Furthermore, this law, in serving as an anti-discrimination statute, holds schools to rigorous standards in ensuring appropriate and adequate accommodations are made for students with disabilities (Section 504 of the Rehabilitation Act, 2000). Despite the high prevalence rate of students with chronic health difficulties such as asthma in schools, results of a recent national survey indicate that only 1.2% of the public school population are served under section 504 alone (i.e., in the absence of an IEP plan) (Holler & Zirkel, 2008). This finding may result from a misunderstanding of 504 eligibility standards by schools, which prompts the under-identification of students for services (Holler & Zirkel, 2008). Finally, Section 504 is an unfunded mandate and schools are often hesitant to offer 504 as a solution as the schools would incur costs associated with any accommodations afforded the child (e.g., use of specialized filters to address environmental triggers in classrooms).

Other Federal Policy Statements for Asthma Management at School
A number of federal agencies have provided extensive guidance on school-based asthma management. Although these policies and suggested procedures are not regulatory, they do provide useful tools for schools on ensuring access to students whose asthma conditions necessitate intervention in school settings.

NAEPP resolution on asthma management at school. In 2005, the National Asthma Education and Prevention Program [NAEPP] released a position statement encouraging schools to adopt specific asthma management policies with the goals of ensuring the safety of students with asthma, allowing for the active participation of students with asthma in all school activities, and encouraging greater self-management of asthma by students (NAEPP, 2005). The core policy recommendations put forth in this statement are (i) smoke-free environments, (ii) an asthma emergency plan guiding staff during asthma episodes, (iii) professional development for all staff regarding medication policies, steps for communicating about health concerns of students, and emergency procedures, and (iv) a written medication policy that allows for safe and easy access to asthma medications as needed (NAEPP, 2005). Regarding this last recommendation, NAEPP encourages all schools to allow students with asthma to carry and self-administer quick-relief medications when possible.

NAEPP guidelines also state schools should provide access to regular health services at school, including monitoring and treatment of asthma symptoms, school nurse support, and individualized asthma action plans for all students with asthma (NAEPP, 2005). Recommendations also suggest schools should provide appropriate physical education options for students with asthma, and the development of healthy environments through indoor air quality management plans, pest management activities, and reduction of exposure to common school-based asthma trigger (NAEPP, 2005). A recent study examined adherence to NAEPP recommendations and found that, although a large percentage (80% or more) of schools nationwide allowed students to carry and self-administer quick-relief asthma medications and kept asthma action plans on file for students, adherence to other recommendations was not as high including, for example, the provision of a full-time school nurse (Jones, Wheeler, Smith, & McManus, 2009).

Centers for Disease Control and Prevention. The Centers for Disease Control and Prevention [CDC] (2006) also provides written policy guidelines for schools on best practices in asthma management. While fairly consistent with NAEPP guidelines, the CDC policy guidelines add a further provision, which is a recommendation for coordinated family, school, and community efforts to improve asthma symptoms and reduce school absences of students with asthma (CDC, 2006). Whereas CDC guidelines regarding the usefulness of coordinated efforts in managing asthma can certainly be helpful to schools in addressing the needs of students with asthma, like other federal guidelines, not much is known regarding their implementation.

Environmental Protection Agency. The Environmental Protection Agency [EPA] (2010) has developed materials for school administrators and staff on the successful management of asthma at school. The EPA offers three overarching guidelines for schools. Their first two guidelines, in contrast to NAEPP and CDC statements, focus more on optimal school environments for students with asthma including adequate indoor air quality and the reduction of student exposure

to asthma triggers within the school environment, such as animal allergens, pests, dust mites, and other indoor air pollutants[3]. Finally, the EPA, in agreement with NAEPP and CDC statements, encourages the development of a school-wide asthma management plan, the implementation of individualized asthma action plans, allowing easy access to medications as needed, and clear emergency procedures for dealing with students' asthma attacks (EPA, 2010).

The Current Study

The purpose of the current study was to examine elementary and middle-school teacher-reported efforts in school-based asthma management and adherence to policy guidelines. The first goal was to examine teacher-reported school compliance with policy recommendations regarding asthma management at school. Compliance regarding reducing exposure to environmental asthma triggers as measured by the number of reported irritants present in classrooms, the presence of formalized medication policy statements, encouraging coordinated family, school, and community efforts regarding asthma management as evidenced by teachers' information-seeking behavior, and providing asthma-related professional development opportunities to school staff, was examined. The second goal was to determine the degree to which students with asthma in Georgia are currently served under appropriate federal statutes, including section 504 of the Rehabilitation Act and IDEIA as reported by teachers. The third goal was to describe the nature of current teacher-reported asthma management practices related to medication administration (i.e., in accordance with self-carry of asthma medication laws). Finally, the fourth aim of the study was to discover whether the provision of services (e.g., in the presence of a 504 plan or IEP) varied as a function of teacher-reported adherence to federal policy statements.

Method

Participants

Study participants consisted of 593 teachers who completed a survey as part of the Georgia Healthy Schools Asthma Study (Neuharth-Pritchett & Getch, 2001). The study was approved by the institution's Institutional Review Board with surveys returned by teachers indicating consent to participate. Data were collected on 291 elementary school teachers in 1999 and 302 middle-school teachers in early 2001. The sample represented an equally balanced distribution across the nine grade levels. Teachers from elementary schools taught kindergarten (7.4%), first grade (9.8%), second grade (7.9%), third grade (8.3%), fourth grade (5.2%), fifth grade (5.1%), special education (.7%) and other classrooms (5.2%). Middle-school teachers taught in sixth grade (17.7%), seventh grade (13.3%), eighth grade (14.3%), and special education classrooms (1.7%). Survey respondents were representative of all the metropolitan statistical areas of the state of Georgia. Further, 60% of counties across the state were represented in the sample, as areas ranging from major metropolitan to very rural. Gender of the teachers was reported as 89% female and 11% male. The ethnic breakdown of the teacher respondents was 85% Caucasian and 12.5% African American, with less than 1% identifying themselves as Hispanic/Latino, Native American, or other. Most teachers reported an age of 30 or older (90%). All teachers reported having earned a minimum of a bachelor's degree and two thirds reported the attainment of a graduate degree. Teaching experience reported by teachers ranged from 1 year to 36 years (M = 15.45 years, SD = 8.66). Of note, although data was initially collected in 2001, a further

look at this data is warranted in reference to more recent policy guidelines concerning students with asthma in schools.

Procedures

From 1999 to 2001, as part of the Georgia Healthy Schools Asthma Study (Neuharth-Pritchett & Getch, 2001), a survey was sent to a random sample of 2000 kindergarten through eighth grade teachers across the state of Georgia. 593 teachers completed and returned the survey, representing a 30% return rate that is consistent with the response rate to the U.S. Center for Disease Control's Behavioral Risk Factor Surveillance Survey [39.8%] (CDC, 2006). Data collected included teachers' levels of training and professional development on chronic health conditions including asthma, classroom environments, teacher knowledge regarding asthma, level of comfort in the school's current asthma management activities, and school policies regarding meeting the needs of students with asthma.

Asthma management by teachers. Teachers' confidence in their own abilities to manage asthma in the classroom and to seek out information when needed was assessed using the Teacher Asthma Management and Information Seeking Scale (Getch & Neuharth-Pritchett, 2007). The scale consists of 13 items for which teachers were asked to identify how certain they were that they could engage in each behavior presented (1 = not sure, 10 = very sure) including signs of asthma, warning signs, and identification of triggers. Construct validity of the scale is indicated by a strong two-factor structure. Internal consistency for both subscales is also adequate with Cronbach's alpha values of .90 and .71, respectively. Both subscales were examined in the current study for the purposes of determining adherence to federal guidelines. An additional asthma management item was administered and summarized the Level of Exposure to Classroom Asthma Triggers, which includes the presence of triggers such as carpeting, chalkboards, cleaning supplies, and plants.

Training and professional development. Teachers' levels of training and professional development around issues of asthma in schools were assessed by the following item: During your professional preparation, did you have specific course work on asthma? Participants were asked to specify whether such training was received at the (i) undergraduate, (ii) graduate, or (iii) in-service level. Participants also responded to a question asking them to estimate the percentage of teachers in their school who have received staff development around the presence of students with asthma in the classroom.

School resources. The Teacher Capability and School Resource Scale for Asthma Management (Neuharth-Pritchett & Getch, 2006) was used to determine teachers' levels of confidence in their school's asthma management capabilities. This 10-item measure asked teachers how capable they were in managing stressful asthma-related episodes in the classroom and identifying any concerns regarding current school policies, regulations, and liabilities regarding management practices (Neuharth-Pritchett & Getch, 2006). Two subscales were present in the measure and included Teacher Capability and School Resource scales with internal consistency for both scales on Cronbach's alpha as .83 and .86, respectively.

Results

Of note, missing data were present across surveys and respondents. In such cases, listwise deletion was employed before running statistical analyses. The first set of analyses addressed whether students with asthma were currently being served under appropriate federal statutes (IDEIA or 504). Frequency counts were examined for the questions asking teachers whether children in their school had an individualized education plan (IEP), or whether children in their school had a 504 plan. The data indicated some teachers were unaware of the presence of these policies for students with asthma. Regarding the use of an IEP, 12.1% (n = 72) of teachers reported that their schools employed IEPs for children with asthma while 72% of teachers indicated that their school did not use an IEP to assist children with asthma. It should be noted that 94 teachers (15.9%) did not respond to the question. The same pattern held for the use of 504 plans for children with asthma. Specifically, 102 teachers (17.2%) reported that students with asthma in their schools had a 504 plan while 346 (58.3%) indicated that 504 plans were not used for students with asthma. In response to this question, 145 teachers (24.5%) did not respond to the item perhaps indicating either their unawareness of the use of 504 plans or perhaps their lack of knowledge of what a 504 plan provides. Phi analyses were conducted to examine potential differences in response patterns between elementary and middle-school teachers on the same two questions. Significant differences were found regarding the use of IEPs and 504 plans in the different schooling environments. That is, middle-school teachers were more likely to report the use of IEPs (φ (499) = -.14, p = .00) and 504 plans (φ (448) = -.15, p = .00) to assist children with asthma.

The second set of analyses addressed the question of whether schools were currently following available federal policy statements regarding asthma management at school. On the presence of a medication policy, 97.6% of teachers responded that their schools did have medication administration policies in place. A chi square analysis revealed no differences between elementary and middle-school teachers' responses to this question.

Frequency counts were also conducted to examine the number of triggers present in elementary and middle-school classrooms as reported by teachers in this sample, a further indicator of adherence to policy statements. The total number of triggers in each classroom was calculated. Across all classrooms, the modal number of triggers present was three (21.6%). Of the 13 triggers present, 59.8% of classrooms had four or more triggers present. Of these 13 triggers, the mean number was also calculated and a comparison made between elementary and middle-school classrooms. Elementary school classrooms were found to have more triggers present [F(1,588) = 151.67, p <.00]. Table 1 presents the frequencies for each of 13 triggers indicated as present or absent by the teachers who completed the survey. In all cases where a significant difference was found between school settings, there were a greater proportion of triggers present in elementary than in middle-school classrooms.

Table 1
Summary of specific asthma triggers present across classrooms with tests for differences in the presence of specific triggers between elementary and middle-schools

Trigger	Elementary	Middle-School	Phi	Significance
Carpeting	236 (81)[a]	168 (56)	-.25	.00
Furry animals	24 (8)	12 (4)	-.09	.04
Chalkboard	167 (28)	129 (43)	-.13	.00
Eraser board	221 (76)	197 (65)	-.10	.02
Cloth Furniture	38 (13)	37 (11)	-.01	.87
Cleaning Chemicals	96 (33)	104 (34)	.03	.54
Plants	128 (44)	110 (36)	-.07	.11
Fish bowl	47 (16)	23 (8)	-.13	.00
Cockroaches	78 (27)	54 (18)	-.10	.02
Strong smells	38 (13)	44 (15)	.03	.51
In-class storage of personal items	240 (82)	97 (32)	-.50	.00
Pillows for reading	78 (27)	17 (6)	-.29	.00
Toys	132 (45)	7 (2)	-.50	.00

[a]Percentages of classrooms reporting the presence of a given trigger are presented in parentheses

An additional six trigger items were posed to middle-school teachers given the diversity and specialization in the curriculum covered in middle-school. Specifically, middle-school teachers were questioned about the presence of chemicals for science experiments, art supplies, materials for agricultural or technical training, materials for family and consumer science, storage facilities for student belongings, and carpentry supplies. Of these six triggers, two were found to be relatively prevalent in middle-school classrooms and were chemicals for science experiments (16.1%) and art supplies (45.3%).

Teachers also responded to three items that focused on their professional development on asthma management at the undergraduate, graduate, or in-service level. Of the 593 teachers, 15.9% (n = 94) indicated some professional development on the topic. No significant differences were found in the reporting of professional development experiences between elementary and middle-school teachers [$F(1,592) = 2.65$, $p = .104$].

To examine the extent of coordinated efforts in asthma management at school, teachers' responses on the Information Seeking (IS) subscale of the Teacher Asthma Management and Information Seeking Scale were examined. The mean score for the total sample of teachers on the IS subscale was 7.34 (SD = 2.25). No significant difference was found among elementary and middle-school teachers on their skills in seeking information to assist students with asthma ($F(1,586) = 1.12$, $p = .29$). It should be noted that the mean score for both elementary and middle-school teachers representing their skills in seeking information fall below a scale score of

7.5, indicating that these teachers have mixed capability in seeking information to support students with asthma.

A third set of analyses was undertaken to address the question of the current nature of asthma management in Georgia classrooms, particularly in regard to compliance with self-carry laws. The Teachers completed the Asthma Management (AM) subscale of the Teacher Asthma Management and Information Seeking Scale as an indicator of current asthma management practices. On the AM, the total sample had a mean score of 4.69 (*SD* = 2.13), indicating mixed skill capabilities in managing asthma in the classroom. No statistically significant difference was found on the mean score between the elementary and middle-school teachers ($F(1,587) = .04$, $p = .85$). Teachers also completed the School Resources/Institutional Capability subscale of the Teacher Capability and School Resources Scale For Asthma Management as a measure of school-wide asthma management practices. On this subscale, the total sample had a mean score of 3.06 (*SD* = 1.12), with scores of 3.5 or higher denoting feelings that schools are capable in meeting the needs of children with asthma. On average, middle-school teachers reported greater resources for students with asthma than elementary school teachers, although both groups' scores were below this cutoff ($F(1,585) = 23.08$, $p < .00$).

Teachers also responded to an item questioning them about a student with asthma's ability to self-carry their rescue medication and administer such medication. The number of elementary and middle-school teachers who reported that children were able to self-administer medication was 36 (6.1%). No significant difference was found between elementary and middle-school teachers on this item ($\varphi (587) = -.03$, $p = .49$).

Finally, a logistic regression analysis was employed to answer the question of whether adherence to federal policy statements is a significant predictor of whether students with asthma are served under IEPs or 504 plans in schools. Separate models were tested for each of these questions. In the first model, an analysis was conducted to predict the presence of IEPs for students with asthma using teachers' past professional development regarding asthma, level of information seeking behavior, number of years of teaching experience, teachers' reported diagnosis of a chronic illness or asthma, their school's presence of a formal medication policy, and level of reported school resources for students with asthma as predictors. Results of this logistic regression can be found in Table 2.

Table 2
Summary of logistic regression predicting presence of an IEP for students with asthma

Variable	β	SE β	Wald's X^2	*p*	*OR*
Professional Development	1.29	.30	19.05	.00*	3.64
Information Seeking	-.09	.30	1.86	.17	.91
Teaching Experience	.01	.02	.56	.45	1.01
Teacher's Illness	.01	.42	.00	.99	1.01

Teacher's Asthma	-.38	.48	.62	.43	.69
Medication Policy	.82	.92	.79	.37	2.27
School Resources	-.08	.13	.37	.54	2.15

Note. df = 1
*$p < .01$

A test of the full model indicated that these predictors as a set reliably distinguished between whether or not students with asthma were reportedly being served by an IEP ($\chi^2(7) = 23.04$, $p = .00$). Furthermore, the Hosmer and Lemeshow test indicated good model fit for included variables ($\chi^2(8) = 7.32$, $p = .50$). The Wald criterion indicated that only past professional development regarding asthma accounted for significant unique variance in the model beyond the contribution of other variables ($\chi^2(1) = 19.39$, $p < .00$). The odds ratio for this predictor portrayed that those teachers who reported having received some previous professional development regarding asthma were 3.64 times more likely to report that students in their schools were currently being served under an IEP.

In the second model, an analysis was conducted to predict the presence of 504 plans for students with asthma using these same variables as predictors. Results of this logistic regression can be found in Table 3.

Table 3
Summary of logistic regression predicting presence of a 504 plan for students with asthma

Variable	*β*	SE *β*	Wald's X^2	*p*	*OR*
Professional Development	.90	.29	9.72	.00**	2.46
Information Seeking	-.12	.06	4.33	.04*	.88
Teaching Experience	.01	.01	.50	.48	1.01
Teacher's Illness	-.81	.34	5.66	.02*	.45
Teacher's Asthma	.37	.44	.70	.40	1.45
Medication Policy	.47	.99	.22	.64	.95
School Resources	-.05	.11	.94	.33	2.93

Note. df = 1
*$p < .05$, **$p < .01$

A test of the full model indicated that this set of variables reliably distinguished between whether or not students with asthma were currently being served by 504 plan as reported by teachers ($\chi^2(7) = 22.58$, $p = .00$). Furthermore, the Hosmer and Lemeshow test indicated good model fit for included variables ($\chi^2(8) = 1.76$, $p = .99$). The Wald criterion again indicated that past professional development regarding asthma accounted for significant unique variance in this model ($\chi^2(1) = 9.72$, $p = .00$) with those having received professional development around this issue 2.46 times more likely to report that students with asthma in their schools were being served by 504 plans. Additionally, teachers who reported having a diagnosis of a chronic illness were .45 times more likely to report the presence of 504 plans for students with asthma as this variable also made a significant contribution to prediction ($\chi^2(1) = 5.66$, $p = .02$). Finally, results demonstrated that those teachers who reported engaging in less information-seeking behavior were 0.88 times more likely to report that students with asthma are served by 504 plans in their schools ($\chi^2(1) = 4.33$, $p = .04$). This result might indicate a feeling among teachers that the medical treatment of students' asthma is under control and, thus, there is no need to seek additional information from others regarding the condition.

Discussion

The purpose of the current study was to examine teacher-reported aspects of asthma management at school with the purpose of identifying whether schools in Georgia are adequately following available federal statutes and policy statements in addressing the needs of students with asthma. Specifically, it was hypothesized that teachers would report compliance with certain policies, namely the provision of services through an IEP or 504 plan and the presence of medication policy statements allowing students to self-carry and administer asthma medications at school. It was also expected that compliance with other guidelines, including reducing exposure to asthma triggers in the classroom, coordinating efforts between all those involved in the care of students with asthma, and the provision of professional development to teachers regarding asthma would not be as high. Finally, it was hypothesized that those teachers who reported having more teaching experience, a personal experience with chronic illness or asthma, the presence of a formal medication policy in their school, higher levels of confidence in their school's capability to address the needs of students with asthma and coordinated family, school, and community efforts regarding asthma management will be more likely to also report that the needs of students with asthma are currently being addressed by an IEP or 504 plan. Hypotheses were partially supported.

First, only 12% and 17% of teachers respectively reported that students with asthma in their schools were being served by an IEP or 504 plan. Of those who responded to the presence of an IEP or 504 plan, teachers more often reported students had 504 plans instead of IEPs. These results are consistent with previous research indicating students with asthma more often receive services under 504 plans as they often don't meet the stipulation under IDEIA that their condition adversely affects educational performance (Grice, 2002). The finding that middle-school teachers were more likely to report the presence of formalized services in the form of an IEP or 504 plan might further suggest either older students with asthma are in greater need of formalized school services as they progress in their schooling or that the middle-school teachers in this sample were more knowledgeable regarding the provision of formalized services to students with asthma than their elementary school counterparts. Additionally, as expected, most

teachers (98%) reported that their schools did have medication policies in place for students with asthma, as is consistent with guidelines from NAEPP (2005), the CDC (2006), and the EPA (2010). However, it should also be noted that only 6% of teachers responded that students with asthma in their schools were allowed to self-administer medication, more often noting that medications were administered by the school nurse, teachers, or other school staff. As this question did not delineate between rescue and maintenance medication, it is not clear whether this finding is due to a misunderstanding of the question by teachers or truly that students in their schools were not allowed to self-administer medication. If the latter is true, it appears that schools in this sample are not compliant with NAEPP guidelines and other federal mandates regarding self-administration.

Also as expected, teachers reported lower compliance to other federal policy guidelines regarding asthma management at school. First, regarding reducing the number of potential asthma triggers in the classroom, results indicated nearly 60% of teachers reported more than four asthma triggers were typically present in classrooms surveyed. As policy recommendations from NAEPP, CDC and EPA all stipulate that exposure to such triggers should greatly be limited and indoor air quality ensured, classrooms in this sample are again at odds with this guideline. Second, only 16% of teachers surveyed reported having received some professional development regarding asthma throughout their training, again indicating incongruence with policy recommendations. Additionally, teachers' reports regarding current asthma management practices as well their own abilities to seek out information and help coordinate services for students with asthma denoted less than adequate abilities in these areas. These findings are consistent with the literature regarding schools' compliance with asthma guidelines including a 2009 study conducted by Jones and colleagues in which compliance with NAEPP guidelines was found to be low with the exception of the implementation of medication policies.

Finally, in examining what factors might play a role in determining whether a student with asthma receives formalized services (i.e., in the form of an IEP or 504 plan), hypotheses were again partially supported. That is, it was found that the provision of professional development to teachers regarding asthma is a reliable predictor of whether students with asthma are served by an IEP, at least as reported by teachers. This finding supports the importance of continued professional development for teachers as emphasized by NAEPP and the CDC in helping to ensure that the needs of students with asthma are adequately addressing at school. Furthermore, this same variable as well as a teacher's own diagnosis of a chronic illness were found to serve as viable predictors for the presence of a 504 plan for students with asthma. It is reasonable to believe that a teacher's own experience with chronic illness might make him/her more likely to advocate for or at least be aware of the educational needs of students with asthma. The finding that teachers' information-seeking behavior around asthma management was negatively predictive of teacher-reported provision of 504 services is somewhat surprising. Namely, it might be expected that teachers who are more confident in their own abilities to seek out information about asthma management when needed would be more likely to report that the educational needs of students with asthma are being addressed by a 504 plan. Alternatively, this finding could represent a lack of understanding by teachers of section 504 in general as noted in the literature (Holler & Zirkel, 2008).

Despite an increased understanding of how federal policies and guidelines for asthma management are implemented in schools, several limitations of the current study exist. First, it must be noted that variables regarding the current nature of asthma management in schools were measured solely by teacher report. For example, although a majority of teachers reported that students with asthma in their schools were not currently being served by an IEP or 504 plan, it is feasible to believe that actual student records might point to the contrary. Thus, future research investigating the provision of services to students with asthma could benefit from examining student records in corroborating teacher reports.

Another limitation of the current study is the potential difficulty in generalizing study results to other areas of the United States. As data were collected from teachers across a large southeastern state and from a variety of both metropolitan and rural areas, it is evident that results are representative of teacher viewpoints and school policies within that geographical region. However, it is less clear whether similar results might be found within schools throughout other areas of the country. Future research could continue to examine these issues at more of a national level in gaining a clearer picture of nationwide school policies related to students with asthma.

Despite its limitations, this study adds to the understanding of how schools are functioning in addressing asthma management and how teachers view this process. Although best practices and related policy guidelines for serving the needs of students with asthma have been developed, this is one of the first studies examining the question of actual implementation of these standards. In particular, results suggest that whereas teachers view schools as adequately meeting policy recommendations in some areas (i.e., in the implementation of medication policy statements, providing services to students with asthma), compliance with other guidelines is not as high. That is, teachers recognize a failure to limit exposure to potential asthma irritants in classrooms, lower levels of coordinated asthma efforts, inadequate confidence in schools' capabilities for asthma management, and a lack of professional development around asthma. However, it was also noted that the presence of potentially protective factors such as these, particularly the provision of professional develop to teachers, can play a role in determining whether students with asthma ultimately obtain access to needed services within the school setting. Therefore, future investigations into similar factors ensuring the successful implementation of asthma-related policies by schools are warranted.

Implications for Schools

This study helped illuminate the asthma management practices in a representative sample of one state's elementary and middle-schools. Findings suggest that teachers and school administrators need support in implementing best practices associated with asthma management. It is imperative that schools are well informed regarding policies and guidelines for best practices for school-based asthma management that are available. Of note, results of the current study indicate the potential of continued professional development provided to school staff around these asthma-related issues for ensuring the unique needs of students with asthma are met at school.

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Use of Social Narratives as an Evidence-Based Practice to Support Employment of Young Adults with Autism Spectrum Disorders: A Practitioner's Guide

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Abstract

The statistical data reports that current unemployment rates for young adults with an Autism Spectrum Disorder (ASD) in the United States is bleak. In 2004, Hurlbutt and Chalmers noted that difficulties obtaining and keeping employment are many times connected to issues involving social interactions and communication skills rather than performing specific job skills. Research from Wehman, et al. (2012) recently noted that students with ASD with access to intensive strategy training have more employment potential than previously realized. In addition, Klin, Volkmar and Sparrow (2000) note that there is a need to explicitly teach social skills to enhance the chance of employability. The purpose of this article is to give teachers, service providers, parents, job coaches and/or employers practical evidence-based strategies in the use of social narratives to support employment for young adults with an ASD.

Use of Social Narratives as an Evidence-Based Practice to Support Employment of Young Adults with Autism Spectrum Disorders: A Practitioner's Guide

The Centers for Disease Control and Prevention (CDC) currently list the prevalence for a child to be born with autism as one out of sixty-eight live births (2014). This disorder impacts all races, ethnicities, and economic groups. The increase in prevalence data indicates an increase in the number of students requiring specific transition programming at the secondary level of school to prepare them for employment (Shattuck et al., 2012). To develop appropriate interventions for individuals with Autism Spectrum Disorders (ASD) and prepare them for work, practitioners need to know which interventions have a positive evidence base for effectiveness.

Students with disabilities account for 13% of the total population of all students educated in public schools in the United States (National Center for Educational Statistics [NCES], 2015). Of this percentage of students with disabilities, 8% are students identified as having an ASD. An ASD is a pervasive neurodevelopmental disorder characterized by difficulties with communication, social interactions, and repetitive and restricted behaviors. These challenges cause significant impairment in social and occupational areas of functioning (Mayo Clinic, 2013). White, Keonig, and Scahill (2007) add to the definition by revealing that social impairments extend across all individuals on the Autism spectrum, regardless of their level of language and cognitive functioning.

The participation rate of employment for people ages 16 to 25 with disabilities is 32.7% as compared to same age peers whose participation rate is 56% (Bureau of Labor Statistics [BLS],

2013). Based on findings from a report from the National Longitudinal Transition Study-2 (Newman, Wagner, Cameto, & Knokey, 2009), youth with an ASD have a lower rate of employment when compared to others with any other type of disability with the exclusion of an intellectual disability. This could be clarified by the explanation that young adults with ASD struggle to exhibit appropriate social skills across settings (Mayo Clinic, 2013). Lorenz, Frischling, Cuadros, and Heinitz (2016) reveal that social problems are a main barrier to successful employment.

Lorenz et al. (2016) added to the Mahwood and Howlin (1999) study that raised concerns with social challenges that include an absence of social understanding, lack of personal space, an excess of or reduced amount of talking, and an over-reliance on supervisors as just some of the social concerns impacting employment. Howlin and Yates (1999) identify possible work place skills that require good social skills such as initiating a conversation, asking purposeful questions, and interacting with colleagues and supervisors. Attainment of these skills requires explicit instructions and frequent reminders to coach the adolescent through the social situation.

ASD and Post School Outcomes

According to Shattuck et al., (2012) high school graduates with an ASD had the highest risk of staying home instead of participating in additional post-secondary education or employment during the first two years after high school. Youth with an ASD are at great risk for struggling to participate in work and school after leaving high school. Wehman, et al. (2012) report that the number of those being identified with ASD is growing, creating a greater need to prepare these students and their families for meaningful post-secondary employment opportunities. This increasing number means special education professionals need strategies to help these students leave public education ready with the skills needed to gain and maintain employment.

Unfortunately, young adults with ASD face a variety of challenges both in seeking and keeping a job (Shattuck et al., 2012). One of the challenges includes confusion during the hiring process. Job interviews require specific social skills that are difficult for adolescents with ASD. Due to a lack of understanding of social cues, or rules, people on the Autism spectrum often face challenges when having to respond to social behavior and engage in social interactions. Social difficulties are a significant barrier to successful employment for people with ASD (Lorenz et al. 2016). Chiang, Cheung, Li, and Tsai (2013) confirmed this research by examining 830 cases of secondary school graduates who were on the spectrum, and they discovered that those with poor social skills were significantly less likely to be employed. For those securing a job, remain obstacles in navigating employment settings which can be taxing physical, social, and sensory environments. Also, in 2012, Richards found that many employers do not have adequate personnel to provide individualized supports to those who might need it. Moreover, employers simply are not aware of the level or kinds of support needed for an employee with ASD (Richards, 2012).

Evidence-Based Practices

As young adults transition from school to work, teachers and job coaches must provide evidence-based practices (EBP) to prepare the students for the challenges of employment. The National Professional Development Center (NPDC, 2013) on ASD and the National Autism Center (NAC, 2015) have identified a variety of EBPs that have been shown to be effective for teaching social

skills to students with ASD;m. These EBPs met a set of quality indicators for research. The EBPs are applicable to students with an ASD aged 14-22 years. The EBPS must also show an improvement in a functional skill (NPDC, 2013). The lack of social skills is a defining characteristic of an ASD. Due to a lack of understanding of social cues or rules, people on the autism spectrum often face challenges when having to respond to social behavior and engage in social interactions. Social narratives were identified as an evidence-based intervention.

Social narratives (SN) are interventions that describe social situations by stressing pertinent cues and offering examples of appropriate responding (NPDC, 2013). SN can promote appropriate social interactions and also help to break complex situations into smaller steps for students. SN have been shown to be effective with transitions, new activities, and daily routines (NAC, 2016). SN can teach new social skills and encourage individuals to regulate their behavior through the use of narratives or scripts. SN can be written for various situations to guide the individual with ASD toward appropriate behaviors or responses (NPDC, 2013).

SN with Secondary Students

Although there is a wealth of research showing evidence of positive effects for younger children, there are only a handful of studies that have involved the use of social narratives with teens or adults. Cihak, Kildare, Smith, McMahon, and Quinn-Brown (2012) completed a study involving four teens who participated in a brief functional analysis and a video Social Stories™ intervention to remediate attention-seeking and task-avoidance behaviors. Results indicated that matching video Social Stories™ to specific functions of behaviors increased the students' task-engagement behaviors in the general education classroom. In addition, teachers, as well as participating students, reported positive social acceptability of the intervention (Cihak, et al., 2012). Klin, Volkmar and Sparrow (2000) talk about the importance of adolescents developing an appreciation of social expectations associated with a given setting and to attach the appropriate set of behaviors to that setting.

In addition, Samuels and Stansfield (2012) examined the use of social stories with four adults with social impairments. Each adult was involved in two Social Story™ interventions. Results from the intervention indicated that all target behaviors showed a positive change during at least one phase of the study. The use of SN had a positive effect on improving social interactions in the adults and this research helped to identify SN as an EBP (Samuels & Stansfield, 2012).

Implementing Social Narratives

SN are interventions that describe a social situation in detail by highlighting cues and giving appropriate examples or responses. The purpose is to help learners adjust to changes in routine and adapt behaviors or to teach specific social skills. Narratives should be individualized based on the employee's needs. Collet-Klingenberg and Franzone (2008) identified skills to address with social narratives on the job site. These skills could be behavior difficulties, personal hygiene, social skills, and effective communication skills, i.e., asking for help. As with implementation of any intervention, the interventionist must first identify the behavior, and then collect baseline data by direct observations. After reviewing the data, establish a measurable goal. This information will lead to identification of an EBP to implement (Collet-Klingenberg & Franzone, 2008).

Once it has been identified that the implementation of an EBP of SN could be helpful, then decide which SN skill to implement. The NPDC (2013) identifies three areas under the practice of social narratives with an evidence-base. These are social scripts, social stories™, and power cards. Social scripts can be used to teach social skills, reduce challenging behavior, help cope with change, and teach new routines. Social scripts provide pre-taught language to assist a young adult in a very specific situation (Kamps et al., 2002). An example would be providing needed language support in a job setting to deal with a confusing scenario, such as asking for help from another employee or a supervisor.

Social stories™ were developed by Gray over twenty years ago as a tool to help individuals with ASD better understand the distinctions of interpersonal communication so that they can relate more successfully and appropriately. The social stories™ are individualized short stories used as a teaching tool to describe a challenging situation in terms of relevant social cues, perspectives, and accepted responses (Gray, 2000). The social story™ is not intended to be a list of appropriate behaviors, but a story to encourage better behaviors and should be written on the young adult's level and apply to a specific vocational behavior (Gray, 2000).

The third strategy in the EBPs of SN includes the usage of power cards. In 2001, Gagnon introduced power cards as a visual aid to support a social skill and incorporates a young adult's special interest to teach appropriate social interaction. Power cards use the young adult's special interest to describe rules and behavioral expectations of a social situation. The Power Card has two parts: a brief story scene and a small card with rules outlining the appropriate behavior. If the young adult idolizes a particular sports star, the story would have an example of the sports star performing the appropriate behavior. Pictures on both the story and the card can be used to support the message (Gagnon, 2001).

Intervention Steps

The following steps will assist teachers to better implement the intervention with fidelity.

1. Develop the narrative. Be sure to personalize it to the learner's specific need. The presentation should be matched to the learner's academic skill level. Pictures, visuals, audio, or video can be used to increase comprehension.
2. Identify the settings, times, and/or situations to use the narrative.
3. Introduce the narrative individually with an explanation of the narrative. Have the learner read it and discuss the key concepts to learn. Role play a possible situation in which the narrative could be used. Have the learner practice the narrative. Prompt and reinforce as necessary.
4. Monitor the use by collecting data. If progress is noted, then continue the narrative. If no progress is observed, check for fidelity of implementation and check the learner's comprehension. Revise if needed.
5. Work on generalization by practicing the target skill in new settings or with new partners. After the adolescent is able to generalize the skill across settings, time, and people, then the narrative can be faded.

Practitioners must remember that the research to practice gap is often blamed on poor implementation. Best practice indicates 1) following the above implementation checklist 2) collecting data daily 3) noting the target skill, and then commenting and planning for each step.

Example of Social Script

When I don't understand something at work, I will quietly walk to my boss and ask him for help. Here are some words that I might use.

I need help.

I do not understand what to do.

May I ask a question about work?

Example of Social Story™

Sometimes I get angry when my job at work changes.
The boss usually tells me before the job changes.
Sometimes the boss cannot tell me before the change.
I should ask the boss or another worker what to do if I am confused about the new task instead of yelling.
I will try to understand and respect what the boss or co-worker says.
Jobs can be changed, and it is okay to complete a different job.
When the job or task changes, I will do the new job.

Example of a Power Card

WWE wrestler, Steve Austin wants me to remember these 2 things.

1. When someone enters the store, I will look at him in the face area and say, "Hello or welcome."
2. I will ask the person, "Can I help you?"

We must acknowledge that an important component of an intervention program for individuals with ASD involves the need to promote effective communication and social competence. Explicit instructions in these areas is needed to help increase employability. An effective transition plan would address social needs on the job site among students with ASD. Many adults struggle to get or keep a job due to weaknesses in being an effective conversational partner or adjusting to work situations. As special educators, we must act to improve the post-secondary employment outcomes for students with an ASD. As noted in the current research, many students with an ASD are capable of learning new skills to obtain and sustain employment so that they do not become just another discouraging statistic (Wehman, et al., 2012).

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