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Note from the Editor

Welcome to the 2012 edition of *The Journal of the International Association of Special Education (JIASE)*. Like previous editions, this edition covers a variety of special education issues from around the world – issues that I believe you will find interesting and thought provoking.

I thank the Department of Educational Psychology and Special Education at Southern Illinois University Carbondale for the support they continue to provide to make publication of this journal possible. I would also like to thank the Editorial Board and the Consulting Editors for their continued service to the journal. Finally, I would like to thank Dr. Jie Zhang and Dr. Festus E. Obiakor who served as guest field-reviewers for this edition.

This issue does not include a PRAXIS article. The PRAXIS section of the journal is supposed to have immediate practical application for those providing direct services to individuals with disabilities. I, therefore, encourage you to submit your ideas in manuscript form for consideration for publication in this section of future editions of the journal.

Sincerely,

Morgan Chitiyo, Editor

A Comparative Study of the Preliminary Effects in the Levels of Adaptive Behaviors: Learning Program for the Development of Children with Autism (LPDCA)

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Abstract

The purpose of this study was to investigate preliminary intervention effects of the adaptive behavior on the autism intervention program known as the Learning Program for the Development of Children with Autism (LPDCA). The adaptive behavior scores of two groups of students with autism spectrum disorders (ASD) were compared, with one group receiving the LPDCA (n=121) and the other not receiving this intervention (n=119). Results of the study indicated that the students receiving the LPDCA intervention demonstrated statistically significant higher scores in composite adaptive behavior, communication, daily living, and socialization than did the students who did not have the LPDCA intervention program. The implication and limitations of the present study and recommendations for future studies are discussed.

During the past decade, the prevalence of autism spectrum disorders (ASD) has risen so sharply that it has emerged as a major public health concern in the United States (Charman, Howlin, Berry, & Prince, 2004; Cummings & Carr, 2009; Paul et al., 2004; Towle, Visintainer, O'Sullivan, Bryant, & Busby, 2009; Yeo, 2008). ASD is defined as a neurodevelopmental disorder that results in a significant, incurable, disheartening, lifelong disability (Ben-Itzchak & Zachor, 2007; Tager-Flusberg & Joseph, 2003). Until recently, the prognosis for children with autism was extremely poor, and intervention programs have typically focused on reducing the general level of impairment among individuals with autism. Intervention programs mainly focus on specific secondary visible disorders such as language, socialization, and behaviors which directly impact the children's everyday lives (Cummings & Carr, 2009; Eikeseth, Smith, Jahr, & Eldevik, 2007). However, Rutter (1983) indicated that the extent and severity of a child's cognitive deficits are powerful predictors of intervention outcomes.

Students with ASD, through their natural growth and/or various interventions, develop functional skills to a certain point, though the pace of development is slower than that of their peers without ASD. Their development, however, is limited and they still function abnormally in social contexts (Yeo, 2008). This is primarily due to their deficits in mental processing, information processing, imagination, mental representation, comprehension, and other components of central cognitive capability (Bogdashina, 2006; Schwartz, Sandall, McBride, & Boulware, 2004). This implies that if the child with ASD can develop or recover his/her cognitive ability and process incoming information properly, consequential disabilities of language, social, emotional, and self-control on externalizing problem behaviors will greatly improve accordingly. In other words, even though the students' functional communication, social, and independent skills improve, if their central cognitive capability remains dysfunctional, these students will remain on the autism spectrum (Yeo, 2008).

The intervention, therefore, should have an additional consideration beyond these secondary disorders alone; it should target improving cognitive functioning as well as adaptive behavior. The fundamental question is whether any intervention program can help students with ASD to overcome their cognitive deficits and recover from their cognitive dysfunction. While various intervention programs have been implemented to lessen the autistic symptoms for students with ASD, there has been a lack of comprehensive educational intervention approaches

which target students' cognitive deficits (Charma, et al., 2004). This primary cognitive function will ultimately impact a student's development of his/her communication, social skills, and behavioral and emotional skills accordingly.

Adaptive Behaviors and Autism Spectrum Disorders

Adaptive behavior refers to one's responsibility in his/her life and society and independent performance of daily activities (National Research Council, 2001). Students with ASD typically show a more varied pattern of skill development across different adaptive behavior domains and demonstrate difficulty with cognitive, social, emotional, behavioral, and language function (Burack &Volkmar, 1992; Stone, Ousley, Hepburn, Hogan, & Brown, 1999). Even if a cognitive deficit is identified as the critical feature causing all other autism related problems, the level of adaptive skill development remains the determining factor in whether an individual with ASD needs a life-long support and constant supervision or is able to function more independently.

As adaptive behaviors are one of the critical determinant factors for cognitive impairment diagnosis in the United States, difficulty in adaptive behavior strongly correlates with early language and cognitive development, especially with autistic symptoms in young students with ASD (Liss et al., 2001). Age appropriate adaptive behaviors are considered as a strong indicator that the students with ASD can function normally in their environment. Lord and Schopler (1989) attested that adaptive behavior scores are more stable than cognitive scores throughout childhood. Adaptive behavior scores obtained at young ages appear to be better predictors of language acquisition in nonverbal students than Performance IQ scores.

Comprehensive Cognitive Intervention Program

The Learning Program for the Development of Children with Autism (LPDCA) is a comprehensive cognitive educational intervention, which has been designed to treat the central cognitive dysfunction of students with ASDs (Koh, Shin, & Yeo, 2010; Yeo, 2008). This educational intervention program aims to enable students with ASDs to achieve the developmental and educational goals that are comparable to their peers. The LPDCA is rooted in cognitive learning theory and the belief that cognitive factors are the primary cause of problems associated with autism (Frith, 1989; Yeo, 2002).

The guiding principle behind the LPDCA program is: the development of students' cognitive, language, social, and emotional functions progress interdependently and integrally, each affecting the development of the other (Konstantareas, Oxman, & Webster, 1982). That is, cognitive development stimulates language development, the progress of language development affects social and cognitive development, and social development impacts language and cognitive development. Thus, the development of central cognition governs the development of the other sub areas of language, sociability, intelligence, and emotion. Based on this principle, Yeo (2008) designed a program to develop students' central cognitive ability. This program differs from other interventions which mainly target the students' functional communication, sociability, and adaptive skills.

The Basic Structure of LPDCA

The LPDCA program consists of 12 structured and sequenced intervention stages with each stage containing from 3 to 20 intervention activities (total of 168 intervention activities). Intervention provides both intensive one-on-one individual and group intervention sessions. Typically, intervention activities break down a complex task into many small manageable tasks. The level of a student's cognitive impairment and the severity of self-absorption are the main determinants of how many small, learnable tasks will be needed to master a particular activity. The nature and severity of stereotypical or external behavior problems and verbal status are not usually considered a strong indicator of the student's learning pace (Yeo, 2008). The extent and severity of self-absorption and self-engagement, however, is a fairly reliable predictor of the length of time required for the child to complete the entire LPDCA program (M. H. Yeo, personal communication, July 8, 2007). It does not forecast ultimate success, merely the length of time required to achieve success (Yeo, 2008).

As would be expected in recognition of the importance of early childhood intervention, the most effective time to begin receiving LPDCA intervention is around the ages of three to four. The length of intervention depends primarily on each individual's initial ability levels and age of initial intervention. According to M. H. Yeo (personal communication, July 8, 2007), preschoolers with high-functioning autism take approximately three to four years to complete all 12 stages. According to the LPDCA clinic centers in South Korea, upon completion of all 12 stages, preschool students with ASD usually begin schooling with their peers in a general education environment, without the need for special education services. Students with severe self-absorption, low cognitive levels, and/or older ages usually require lengthier interventions, even as long as

seven to eight years, but have nonetheless achieved remarkable levels of success (Yeo, 2002).

Students with ASD receive individual, one-hour interventions three times per week. At Stage Seven, they are evaluated for their readiness to benefit from group intervention, and as soon as is appropriate, three additional group intervention sessions per week are added. The 12 stages are categorized into three levels: readiness, foundational, and core interventions. The readiness intervention is focused on the establishment of an emotional trusting relationship, self-regulation-control, the recovery of sensory perception, and sustained attention. The foundational intervention concentrates on the development of object concepts, visual perception, and pattern and structure recognition. These make up the fundamental ground for the next stage of advanced cognitive development. Core Intervention emphasizes development of cognitive capacity, the activation of mental representation and processing, imagination, and self-identity formation and recognition.

Purpose of the Study

The purpose of this study was to investigate the preliminary evidence of the LPDCA intervention program and its effectiveness by examining the level of adaptive behavior of target students being taught through this program versus those not receiving this intervention. Before initiating for a rigorous scientific longitudinal study to determine overall intervention effects, this study was intended to provide preliminary results for better understanding of the intervention program and to share any outcomes. The hypothesis is that if the cognitive intervention by the LPDCA program is successful, the outcomes would result in improving adaptive behaviors. This study wanted to answer the following research question: Are there any statistically significant differences between the perceptions of the two groups of parents (LPDCA and no-LPDCA groups) in their child's composite adaptive behavior, communication, daily living, and socialization skills?

Method

Participants

Participants of this study were 240 parents in South Korea, whose children were diagnosed with ASD. Among these participants, approximately 50% (n=121) received comprehensive cognitive intervention (LPDCA group) in private clinic centers and the other group (n = 119) did not receive this intervention (no-LPDCA group). The participants in the LPDCA group (121 out of 172 students with ASD) were recruited from seven LPDCA clinic centers and the participants in the no-LPDCA group (119 out of 181 students with ASD) were recruited from a special school (n=89) for ASD and a parents organization for autism (n=30). There were no recruitment controls or restrictions of the students in both groups by their cognitive abilities, age, gender, or any other factors. However, none of students in the no-LPDCA group had received the LPDCA program previously. The detailed recruitment process is described under the procedures.

According to principal Y. Choi, in the participating special school in South Korea (personal communication, July 12, 2009), the placement of the students with special needs in South Korea depends on the parents' decision. In other words, once students qualify for special education services, the parents are given an option to choose a placement for their child, either a neighborhood general school or special school. Even though their child's level of disabilities are severe enough for intensive special education services, they could choose the neighborhood general school with self-contained or resource room services. This implies that the students with special needs who attended a special school might not have had a more severe disability condition than students who attended the general schools.

Measure

The two groups (LPDCA intervention vs. no-LPDCA intervention) in this study were compared using parent rating scores on the *Vineland Adaptive Behavior Scales II (Vineland II)*. Four subsets (adaptive behavior composite, language, socialization, and daily living) of the *Vineland II* (Sparrow, Cincchetti, &Balla, 2005) were used for this study.

The *Vineland II* is the most widely used standardized instrument for measuring adaptive behavior (Carter, Gillham, Sparrow, &Volkmar, 1996; Paul et al., 2004). The *Vineland II* assesses adaptive behavior including abilities of communication, daily living, socialization, and motor-skills. The communication domain is designed to measure students' receptive, expressive, and written language. The daily living skill domain includes skills related to caring for oneself and home, living in the community, academic, and school environment. The socialization domain consists of interpersonal interactions, playing and using leisure, time management, and adapting skills. The motor skill domain involves fine and gross motor items. The *Vineland II* is appropriate for all ages from birth to 90 years of age except for the motor skill domain, which is for students below the age of six. This study did not

include the motor domain because it could not be consistently used for all students involved in this study.

The Vineland II has three versions. This study used the parent/caregiver rating form. According to criteria detailed in the manual, each item is rated by a parent or caregiver with: 0=No, 1=Sometimes/ partially, and 2=Yes. Raw scores from the Vineland II are converted to raw score equivalents on the survey edition. According to the *Vineland* manual, the internal consistency of reliability is .83 to .90 for domains and .94 for Adaptive Behavior Composite (total combined score). This study employed the Korean version of the Vineland II.

Four Korean-English bilingual researchers, including the first two authors of this article, were involved in forward and backward translation upon receiving permission from Dr. Sparrow, the first author of the Vineland II. Two researchers worked on the forward translation and the two authors worked on the back translation. Each researcher separately translated and then collaboratively reviewed each other's results. Upon reaching an agreement of the final version, the copies of the Korean Vineland II were distributed to the participants.

Procedure

The first two authors visited South Korea for data collection after receiving human subject approval. Upon receiving permission from the director of the LPDCA clinic centers and the principal of the special school for students with autism, the *Vineland-Parent/Caregiver Rating Scale* questionnaires were delivered to the two agencies. For the LPDCA group, the parents who wished to participate came to the front desk of the clinic centers, signed the parents' informed consent form, and picked up the questionnaire. The parents filled out the questionnaire while their children were in intervention sessions. The teachers in the special schools sent envelopes to the students' homes. The envelopes included a parent consent form, a Vineland questionnaire, a description of the procedure of filling out the questionnaire, and a principal's letter encouraging parents to participate in this study.

For the autism parent's organization, the envelopes were mailed out to the parents by one of the staff members in the organization. The envelopes included the same documents as the special school, but the principal's letter was substituted by the responsible staff member's letter. It was promised to the parents that the results of the *Vineland* assessment would be sent home upon completion of the data analysis.

A total of 140 questionnaire responses in the LPDCA group and 151 responses in the no-LPDCA group were returned. The 51 responses were excluded from the analysis due to missing demographic information (the

participant's age was frequently left out) and/or skipped questions.

Data Analysis

In order to answer the research question, three different methods were used: descriptive analysis, one-way analysis of variance (ANOVA), and multivariate regression analysis. For the demographic information, descriptive analysis was conducted. Frequencies, raw numbers, and percentages were computed. If there was a statistically significant difference between the perceptions of the two groups of parents, both a one-way ANOVA as well as descriptive analysis for the mean scores of the *Vineland II* subtests, as rated by parents were utilized. The dependent variables were the parent rating scores for composite adaptive behavior, communication, daily living, and socialization. Multivariate regression analysis was conducted to see if there was a significant difference in the parent rating scores for the three subtests and composite adaptive behavior after controlling for ages due to different age distributions in both groups. The independent variables were two student groups and students' age.

Results

Demographic Information

The overall ratio of male and female participants was the same for each group, 6.74:1. This included 209 males (87%) and 31 females (13%). After data collection, the students were divided into five age groups to compare the age distributions: preschool age (0-59 months old), primary elementary (60 – 83 months), intermediate elementary (84 – 119 months), junior high (120 – 167 months), and high school (168 months or older). The range of age distributions of the two groups was very different. Approximately 46% students in the LPDCA group were in the preschool and primary elementary groups (0-83 months old) and only 1% of the students in the no-LPDCA group were in this age range. However, 39% of the students in the no-LPDCA group were high school ages and none (0%) of the students in the LPDCA group were in this age range.

The two groups showed few differences in having the number of other private treatments or interventions such as speech/language therapy, art or music therapies, adaptive physical education, ABA therapy, etc. other than the LPDCA intervention. However, while the LPDCA group of students had more simple skill-based therapies, the no-LPDCA group students had more comprehensive interventions as well as simple skill-based ones. Detailed demographic information is

provided in Table 1.

Differences between Two Groups

A one-way ANOVA was used to compare the scores of adaptive behaviors between the two groups of students with ASD who received the intervention and who did not receive it. A statistically significant difference was found between the two groups on composite adaptive behavior, $F(1,232)=45.829$, $p=.00$, communication, $F(1,237)=48.641$, $p=.00$, daily living, $F(1, 238)=24.882$, $p=.00$, and socialization, $F(1, 238)=39.029$, $p=.00$. The ANOVA table is shown in Table 2 and the mean scores and standard deviations are displayed in Table 3. The mean differences between the two groups are shown in Figure 1.

Differences between Two Groups after Controlling for Ages

A series of multivariate regression analyses were conducted to see if the students in the LPDCA group and no-LPDCA group showed significant differences in their levels of adaptive behavior, communication, daily living, and socialization when the differences in their ages were controlled. First, the students' adaptive behavior, communication, daily living, and socialization skills were regressed on intervention condition and students' age. An indicator variable was created for intervention condition (1 = LPDCA group, and 0 = no-LPDCA group), and age was measured by months. The result indicated that the students in the LPDCA group had significantly higher scores for their adaptive behavior, 6.923 higher than that of students in the no-LPDCA group ($t = 2.993$, $p <.001$), controlling for their age. The students' ages also had a significant relationship with their adaptive behavior after controlling for the intervention condition. As students' age increased by one month, the score of adaptive behavior decreased by .084 ($t = -3.446$, $p <.01$). The LPDCA group and age together explained 20.6% of variance in students' adaptive behavior, $(/F/ (2, 231) = 29.926$, $/p/ <.001$.
Second, for the students' communication skill scores, the result showed that the students in the LPDCA group demonstrated significantly higher scores, 8.380 higher than that of students in the no-LPDCA group ($t = 3.135$, $p <.001$), controlling for their ages. Age also had a significant relationship with the students' communication after controlling for intervention condition. As students' age increased by one month, the communication score decreased by .095 ($t = -3.363$, $p <.01$). The LPDCA group and age together explained

Table 1

Demographic Information

Gender	LPDCA #	LPDCA %	No-LPDCA #	No-LPDCA %
Male	106	87	103	87
Female	15	12	16	13
Ages				
Preschool age	22	18	0	0
Primary elementary	34	28	1	0
Intermediate elementary	47	38	29	24
Junior high age	18	14	42	35
High school age	0	0	47	39
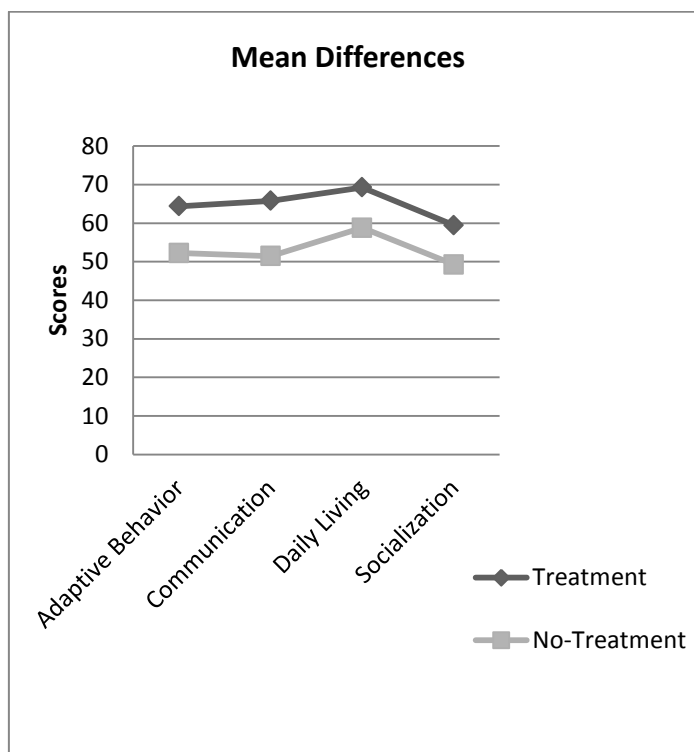
Figure 1: Mean Differences Between the Two Groups.

Table 2

ANOVA table: Differences Between Two Groups

	SS	df	MS	F	Sig.
Composite Adaptive Behaviors					
Between Groups	8604.885	1	8604.885	45.829	.000
Within Groups	43560.073	232	187.759		
Total	52164.957	233			
Communication					
Between Groups	12239.852	1	12239.852	48.641	.000
Within Groups	59638.014	237	251.637		
Total	71877.866	238			
Daily Living					
Between Groups	6572.128	1	6572.128	24.882	.000
Within Groups	62862.806	238	264.129		
Total	69434.933	239			
Socialization					
Between Groups	6234.676	1	6234.676	39.029	.000
Within Groups	38018.924	238	159.743		
Total	44253.600	239			

Table 3

Means and Standard Deviations of Two Groups on Four Ability Areas

Areas	LPDCA		No-LPDCA		Mean difference
	M	SD	M	SD	
Adaptive Behavior	64.37	13.34	52.24	14.04	12.37
Communication	65.78	15.92	51.47	15.79	14.31
Daily Living	69.26	15.33	58.79	17.13	10.56
Socialization	59.45	13.66	49.26	11.50	10.19

Table 4

Summary of Hierarchical Regression Analysis for Variables Predicting Adaptive Scores between LPDCA and No-LPDCA Groups (N = 240).

	B	SE B	t	Sig.
Adaptive Behavior				
Constant	64.972	3.895	16.682	.000
Ages	-.084	.024	-3.446	.001
Groups	6.923	2.313	2.993	.003
Communication				
Constant	82.630	3.261	25.341	.000
Ages	-.095	.028	-3.363	.001
Groups	8.380	2.673	3.135	.002
Daily Living				
Constant	80.917	3.391	23.861	.000
Ages	-.045	.029	-1.529	.128
Groups	7.647	2.788	2.743	.007
Socialization				
Constant	71.945	2.570	27.995	.000
Ages	-.086	.022	-3.879	.000
Groups	4.775	2.113	-2.260	.025

Note. R^2 = .206 for adaptive behavior; R^2 = .208 for communication; R^2 = .103 for daily living; R^2 = .192 for Socialization.

20.8% of variance in students' adaptive behavior, (/F/ (2, 236) = 31.034, /p/ <.001.

Third, for the students' daily living skills, the result showed that the students in the LPDCA group demonstrated significantly higher scores, 7.647 higher than that of students in the no-LPDCA group (t = 2.743, p <.001), controlling for their age. Age also had a significant relationship with the students' daily living skills after controlling for the intervention condition. As students' age increased by one month, daily living scores decreased by .045 (t = -1.529, p <.01). The LPDCA group and age all together explain 10.3% of variance in students' adaptive behavior, (/F/ (2, 237) = 13.681, /p/ <.001.

Fourth, for the students' socialization skills, the result showed that the students in the LPDCA intervention demonstrated significantly higher scores, 4.775 higher than that of students in the no-LPDCA group (t = 2.260, p <.001), controlling for their age. Age also had a significant relationship with the students' socialization skills after controlling for intervention condition. As the

students' age increased by one month, their socialization score decreased by .086 (t = -3.879, p <.01). The LPDCA group and age all together explain 19.2% of variance in the students' adaptive behavior, (/F/ (2, 237) = 28.192, /p/ <.001). The detailed information is shown in Table 4.

Discussion and Conclusion

Without conducting a scientific longitudinal study on the efficacy of the intervention program, it is difficult to conclude the long-term effectiveness of any intervention program. As a preliminary investigation, this study was conducted to measure the outcomes of LPDCA intervention by comparing the scores of adaptive behaviors of two different groups of students with ASD.

Overall, the results of this study demonstrate that the students receiving the LPDCA intervention demonstrated significantly higher scores in composite adaptive behavior, communication, daily living, and socialization. The LPDCA group achieved significantly

higher overall adaptive behavior and sub-areas scores than the no-LPDCA group. There was more than a 10 point difference in each domain area between the two groups. The most significant difference between the two groups was regarding the students' communication scores and the least significant difference between the two groups was their socialization. It could be assumed that they might have better communication skills, but the results did not support this hypothesis.

To control large age differences between the two groups, multivariate regression analysis was conducted to see if this age difference affected the ANOVA results. After controlling for ages, the significant differences in the scores of adaptive behavior between the two groups were still obvious. Even though the LPDCA group had younger students and the no-LPDCA group had older students, the students receiving the LPDCA intervention had significantly higher scores in adaptive behavior, communication, socialization, and daily living skills.

It is interesting to find the severely disproportionate ratio of boys and girls with ASD in South Korea: 6.74 times more boys than girls. Even if it cannot be generalized to the general population with ASD without conducting a specific study on the prevalence of ASD in South Korea, the male prevalence in autism spectrum disorders is surprisingly larger than that of 4 to 1 ratio found in the United States (Kim et al., 2011; Towle et al., 2009).

The age distributions of the two groups were also very interesting. There were no students above the high school level with ASD in the LPDCA group and no preschool and primary elementary age students in the no-LPDCA group. The largest number of the LPDCA group students fell into the intermediate elementary ages and in the high school ages for the no-LPDCA group. According to the LPDCA centers, they do not have any age, gender, or other restrictions on admitting students with ASD for intervention. It might tell that many Korean parents recognize the importance of early-on intervention for the young students with ASD. Thus, this disproportionate age distribution in the LPDCA group could be interpreted as the results of the parents' recognition of the importance of early intervention.

The special school for ASD has only two preschool classrooms and according to the principal of the school, these two classrooms had less than five students with ASD because of the trend of inclusion of young students with special needs into general education classrooms in South Korea. As mentioned earlier, the parents actively participate in the decision making of students' placement in South Korea. With the current inclusion movement, parents tend to choose the general school for their child's education. It is safe to assume that younger students with ASD are more likely to be included in the regular schools in South Korea.

Since this study was a preliminary experimental study in a pre-set research site for the program efficacy, there was no restriction in limiting other private therapies for both groups of students as the individual parent choice. The LPDCA center strongly encourages parents not to partake in extra therapy sessions even though they are simple skill-based sessions due to the conflict of the therapy's effects. However, based on the demographic information, the parents have still provided extra therapies other than the LPDCA to their children. The no-LPDCA group students received various therapies alongside simple-skill based programs as well. Thus, the results of this study are drawn by a group comparison between the LPDCA and no-LPDCA groups rather than any effects from other therapies that participants received.

As Liss and colleagues (2001) stated that adaptive behaviors are one of the critical determinant factors for the diagnosis of cognitive impairment, many educators predict the students' level of independent skill through the level of adaptive behavior along with cognitive ability. The LPDCA program targets developing and increasing cognitive ability for students with ASD. Students' language ability, sociability, self-control in behavior and emotion, and self-help skills are all consequent functions of the executive cognitive ability. Thus, once their cognitive ability improves, these secondary abilities will improve too. The Vineland II assesses communication, sociability, daily living, and behaviors. Therefore, increasing the scores of these areas mean increasing their cognitive ability as well and vice versa. The higher scores in the Vineland II imply that the LPDCA program positively impacts developing and improving the cognitive ability of students with ASD.

Limitation of this Study

Although this study revealed the positive results on the efficacy of the LPDCA intervention program using the students' adaptive behavior, there are several limitations to this study. Firstly, this study relied on only parents' self-reported data. Even if the *Vineland II* is a standardized measurement, it was primarily dependent on parents' perceptions of their children's abilities in the three areas of communication, daily living, and socialization. Future studies should use various measures to assess students, using direct observation and orally interviewing participants.

Secondly, although the difference in ages in the two groups did not critically impact the results, the students' age distributions were quite disproportionate between the two groups. It could be questionable if the age variable was a valid way of separating the two groups of

students. Since participation in this study was voluntary, the authors could not control age distribution. As stated previously, parents tended to send their child with ASD to general public schools by the inclusion movement. The special school, therefore, did not have sufficient numbers of students to participate in this study.

Thirdly, the validity of this study may be suspect due to using a translated Vineland II protocol. There was no published instrument for measuring adaptive behavior in South Korea. Thus, the authors decided to translate the Vineland II into Korean and acknowledged that there might be a potential threat to internal validity from the translation effect.

Fourthly, internal validity could also be questioned by comparing two groups of students with different educational backgrounds. The LPDCA group attended various types of classrooms in general or special schools while two thirds of the no-LPDCA group were recruited in special schools. Even if there was no recruitment restriction on the age, gender, educational backgrounds, and private therapies, the appropriateness of comparison could be questionable. The researchers could not find more proper comparison groups to the LPDCA program, which provided a comprehensive intervention program to students with ASDs in South Korea.

Future Research

With the growing number of students identified with ASD, research needs to continue finding educational intervention programs with positive effects for normalizing behavior of these young students on the spectrum to the maximum extent possible. This disability occurs worldwide, which challenges researchers to note new programs being conducted in other countries and needing research-validation. The LPDCA is just such a program. Noting the limitations of this study, rigorous longitudinal studies on the effectiveness of the LPDCA program should be conducted. In addition, future studies should consider if the child's age, cognitive ability, and/or communication ability at the beginning of the intervention significantly impacted therapy duration or outcomes (development of communication, social, and daily living skills) and suppression of autistic symptoms. Another similar future study can be conducted using more authentic instruments specifically for language and sociability as well as adaptive behaviors.

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Ontario Educators' Perceptions of Barriers to the Identification of Gifted Children from Economically Disadvantaged and Limited English Proficient Backgrounds

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Abstract

A cross section of educators from Ontario, Canada, many of whom were beginning teachers, volunteered to complete the survey at an Ontario Faculty of Education. Of the 121 educators who participated, 55% worked with students at the elementary school level, 24% at the middle school level, and 23% at the high school level. This investigation of educators' perceptions of barriers to identifying gifted children from economically disadvantaged and limited English proficient backgrounds discovered three major barriers. Firstly, test bias was deemed a major barrier. Second, teachers' inability to recognize indicators of potential in certain groups was deemed a major barrier. Third, differences in language experiences can cause one group to misunderstand the other which can lead to dysfunction and the result is errors in judgement and a narrow Eurocentric 'dominant' norm group predominates within gifted programs. Results were compared to similar studies in Africa and the United States.

Many students have demonstrated remarkable intelligence in schools across the province of Ontario, located in Canada. The intelligence referred to herein was understood as the type or kind defined by Gardner in previous articles written in 1983, 1999, and 2003. For example, students who complete math tasks, and the entire (grade) curricula in just a few months; other students would paint and draw amazing images, some would move faster and jump higher than any other in their age group. Some students seemed to be natural leaders who could befriend the entire class in just a few days, and eventually the school, with ease, while others struggled to make a few good friends. Observations such as these, recursively occurred across Ontario and aligned with the work of Gardner, who had in 1983, put forward his initial theories of Multiple Intelligences (MI) incorporating several constructs such as, linguistic, musical, logical-mathematical, spatial, bodily-kinaesthetic, intrapersonal, and interpersonal intelligences. Using the Gardner framework in Ontario classrooms, as a lens to plan and teach students, from all parts our province has proved fruitful, especially when Gardner added naturalist and existentialist intelligences, to the model of MI.

Often a new student would arrive in an Ontario school who clearly demonstrated limited English proficiency, yet their ability, and intelligence stood out. A variety of student strengths and needs would surface; however, some teachers had trouble looking past the communication issues (English as a second language) and tended to focus solely on this deficit. Any differences of opinion could have been linked to our understanding of intelligence, yet their foci presented barriers for some students, barriers that needed attention, hence this research was undertaken to illuminate barriers to the identification of gifted students from economically disadvantaged and limited English proficient backgrounds.

Deciding what student is positioned where in the educational system (school/classroom) is at times influenced by factors that have little to do with neither performance nor ability. Being from an economically disadvantaged background can lead to placement issues/errors. Elhoweris (2008) found that "teachers tended to refer and place more likely the student who represented an upper socioeconomic status in the gifted and talented program than the student who represented a lower socioeconomic status" (p.37). Socioeconomic status (SES) herein was understood as a compilation of parent education level, income, and occupation status which has been shown to impact both student outcomes (achievement) and increase placement in special education (Eamon, 2005; Hochschild, 2003; Hutchinson, 2009; Winzer, 2007). Some have suggested an inverse relationship exists between special education identification and low SES (Whitley, Lupart, & Beran, 2009). Schools and School Boards can do many things to level the playing field, such as providing enriched curricula, homework, home-school communication programming, breakfast, lunch and clothing as necessary, which has been something many Ontario schools have done for all students, not only the economically disadvantaged. Being an intelligent student is one matter for school personnel; however, being of limited English proficiency and/or economically disadvantaged while a gifted student presents another complex matter for stakeholders (Ryan, 2007; Winzer, 2007).

It is for this reason, and others, that the perceptions educators hold regarding the problems of identifying gifted children from economically disadvantaged and/or limited English proficiency backgrounds was investigated. The term gifted is admittedly problematic as different regions of Canada and throughout our world utilize dissimilar definitions however within this project the Ontario conception of gifted was made use of. Educators in Ontario look towards their provincial education authority for understanding of the term gifted.

Ontario's Ministry of Education defines giftedness as "an unusually advanced degree of general intellectual ability that requires differentiated learning experiences of a depth and breadth beyond those normally provided in the regular program to satisfy the level of educational potential indicated." Characteristic traits of giftedness include: advanced cognitive abilities, high intellectual curiosity, high creativity and sensitivity, capacity for intense motivation and advanced affective capacity. Learners identified as gifted often have exceptional intellectual, academic and social needs. (Waterloo Catholic District School Board, 2010, http://www.wcdsb.ca/spec-ed/gifted/gifted.html)

Determining which student is worthy of the gifted label is far from straightforward as various school Boards in Ontario employ dissimilar criteria. We can say that most educators use assessment means that include teacher nomination and tests to locate student performance within a framework of norms often referred to as percentiles listed in developmentally appropriate charts (Coleman & Gallagher, 1995; Miller, 2009). "Teacher nomination is of limited value because of the shortcomings of checklists of gifted characteristics, and a tendency to stereotype" (Bowd, 2003, p. 16).The point made is not to suggest the process is wrong, it is to illustrate the shortcoming within the mode of screening, identification and process widely supported and currently employed in Ontario and beyond. To illustrate, one Board of Education in Ontario,

uses a cognitive screening tool (Canadian Cognitive Abilities Test – CCAT) and an educational assessment to determine giftedness in students. Students scoring at or above the 98th percentile in two batteries of the CCAT are identified as "gifted". The educational assessment analyses and summarizes the achievement levels, learning style, characteristics of giftedness, and strengths and needs of the student. Together, these assessments form the basis of a recommendation

for development of an Individual Education Plan (IEP) for the student. (Waterloo Catholic District School Board, 2010)

Purpose

From the onset the purpose of this study was to replicate the work of Frasier, Hunsaker, Lee, García et al. (1995) who investigated educators' perceptions of barriers to the identification of gifted children from economically disadvantaged and limited English proficient backgrounds. In doing so this article makes use of and attempts to closely follow the work produced by the National Research Center on the Gifted and Talented housed at the University of Connecticut. In this earlier research the researchers suggested,

The first step typically used by schools to identify students for participation in gifted programs is to involve educational staff, especially classroom teachers, in observing and referring students for assessment. Teachers' ability to make accurate observations is critical in creating the pool of students to be considered for gifted program participation. (Frasier, Hunsaker, Lee, García, et al., 1995, p. viii)

Therefore, illuminating and discussing Ontario educator's perceptions may uncover similar or dissimilar results which allowed Frasier, Hunsaker, Lee, García, et al. (1995) to identify barriers gifted children from economically disadvantaged and limited English proficient backgrounds could encounter. This research further acknowledges, as required, that the original research (Frasier, Hunsaker, Lee, García, et al., 1995) was supported under the Javits Act Program (Grant No. R206R00001) as administered by the Office of Educational Research and Improvement, U.S. Department of Education. This report, therefore, does not necessarily represent positions or policies of the Government, and no official endorsement should be inferred.

Scott (2008) who replicated the Frazier, Hunsaker, Lee, and García, et al., study of 1995 asked: What issues do South African student educators currently perceive as barriers to identifying Black and second language learners as gifted? The results of this South African study can be located in Table 1. Similarly, the Ontario research hoped to reveal issues Ontario student educators currently perceived as barriers when identifying economically disadvantaged and limited English proficient students as gifted?

Theoretical Background

Historically, most authors reviewing gifted literature begin with Terman's (1916) notion of advanced aptitude which has always been built upon measures of intelligence via tests such as the Stanford-Binet. Those who attend an Ontario Faculty of education are exposed to a variety of literature and frameworks such as Thorndike (1927) who embraced mutually the biological and environmental aspects while Piaget (1950) concentrated on developmental theories. Another scholar of note is Renzulli who in 1978 fashioned a theory based on ability, commitment, and creativity which supports Gardner's position in a limited manner. We must also note that,

> Renzulli has claimed . . . two kinds of giftedness . . . schoolhouse giftedness, representing the kinds of abilities most valued in traditional, academic school learning situations, and measured by cognitive aptitude tests. The second, creative productive giftedness refers to successful performance in activities where a premium is placed on the development of original ideas, products, artistic expressions, and areas of knowledge that are purposefully designed to have an impact on one or more target audiences. (Bowd, 2003, p. 6)

This model of two distinct kinds begins to fuse with Gardner's (MI) model yet it is limited in typology. In the eighties Sternberg (1985) suggested psychometric testing, found in Terman's model was limited and failed to capture the larger picture of the gifted person. Bowd (2003) concluded that "Gardner's multiple intelligences and Sternberg's triarchic model, for example, appear to have promise in providing flexible models for describing gifted and talented" (p. 56).

In the province of Ontario where education is a provincial responsibility the Ministry of Education (Ontario College of Teachers) insists, via its accreditation process (accountability scheme), on basic coverage of these scholars. In spite of this required curricula, the ability of university educators to blend theory and apply it within the teaching act so that students within their classes comprehend, understand and synthesize this information is not a straight-forward proposition (Ryan, 2007). The breadth and depth of gifted education is not something that takes hold quickly in the mind of educators. Miller (2009) suggested "teachers with more training and expertise in gifted education tend to value creativity and have more inclusive conceptions of giftedness (Copenhaver & McIntyre, 1992; Siegle & Powell, 2004). However,

teacher training in gifted education does not ensure that teachers will hold inclusive conceptions of giftedness" (Miller, 2009, p. 66). The result, we now have a "general consensus that minority and economically disadvantaged children are underrepresented in gifted programs, the problem remains unresolved, a concern that has been well established in the literature in gifted education" (Speirs Neumeister, Adams, Pierce, Cassady, & Dixon, 2007, p. 479).

As an educator, rarely does the opportunity or political will to explore the philosophical orientations or worldviews of fellow educators concerning giftedness, present itself, due to the fact that teachers are most often chaotically busy with students, parents and administration. Still, "there are several factors that may have an effect on teachers' perceptions of giftedness. The two factors that arose most prominently in the literature are the effects of teacher expertise and the effect of cultural differences among gifted students" (Miller, 2009, p. 66). As well "evidence suggested that the gifted identification process may, in part, be driven by teachers' perceptions of how children behave in the classroom (i.e., social competence)" (Curby, Rudasill, Rimm-Kaufman, & Konald, 2008, p.740). This leads to the question: Are perceptions of barriers really providing a means to gauge student social competence? While the answer to this question may be found in another study this inquiry addressed the gifted education matter by looking at educators' perceptions of barriers to the identification of gifted children from economically disadvantaged and limited English proficient backgrounds.

Method

Participants

A cross section of educators from all parts of Ontario, Canada, many of whom were beginning teachers, volunteered to complete the survey at an Ontario Faculty of Education. Of the 121 educators (82 Female/39 Male) who participated, 55% worked with students at the elementary school level, 24% at the middle school level, and 23% at the high school level. These educators, whose mean age was 26.5 years, have studied and become qualified to teach in a variety of disciplines such as music, physical education, English, French, science, history, and geography teachers. However, the majority of participants were classroom teachers from the elementary level who taught all subjects. All teachers herein have studied special education within their initial training (Bachelor of Education degree), completed pre-service teaching practicum and many were now teaching

full-time in schools while completing this additional qualification course at our University in Ontario.

Within the South African study respondents "consisted of currently employed educators from 22 primary and secondary schools in the Johannesburg area" (Scott, 2008, p. 134). Most were primary educators (81%) and most were female (87%). Ages ranged from 20 to 50, with 55% under the age of 40. Most of the respondents were White (56%) with the remainder Black or Indian. Half of the sample (*N*=112) teachers had under 10 years experience teaching.

In the Frasier, Hunsaker, Lee, García, et al. (1995) study it was reported that 750 educators in 14 school sites across the United States responded; 65% were elementary, 14% middle school and 23% at the high school level. The majority of participants were classroom teachers.

Survey Instrument

The instrument was developed to survey the perceptions of educators regarding identification barriers. It was entitled: Why Do We Identify So Few Children from Economically Disadvantaged (ED) and Limited English Proficient (LEP) Backgrounds? One source for the ten items on the instrument was the literature on gifted minority and economically disadvantaged students. The other source was the professional judgment of researchers at the University of Georgia (Frasier, Hunsaker, Lee, Mitchell et al., 1995). The survey instrument was designed as a 5-point Likert scale with response possibilities ranging from "strongly agree" to "strongly disagree."

Historically, within the original study,

> the survey instrument was administered by the site coordinator or designee prior to providing any training that was a part of the larger investigation into effective methods to identify gifted children from economically disadvantaged and limited English proficient backgrounds. Participants were told that the purpose of the survey was to find out their perspectives regarding the problems encountered when identifying gifted children from economically disadvantaged and limited English proficient backgrounds. (Frasier, Hunsaker, Lee, García, et al., 1995, p. iv)

Similar instruction was given to Ontario participants in order to encourage educators to respond to each item within the survey based on their experiences as an educator to help us understand why so few children from economically disadvantaged (ED) and limited English proficient (LEP) backgrounds have been identified as

gifted in the province of Ontario.

Analysis of Survey Responses

The author followed the previous study which,

reduced from five levels to three for data analysis. That is, "Strongly Agree "and "Agree" were combined to form a category called "Agree"; "Strongly Disagree" and "Disagree" were combined to form a category called "Disagree." The third category, "Neither Agree Nor Disagree," was renamed "Uncertain." Frequencies were calculated and then used to determine the percentage of participants who felt that a particular issue was a barrier to identifying gifted children from economically disadvantaged and limited English proficient backgrounds. A barrier was considered to be major if 60% or more of the participants agreed or strongly agreed with a statement. A barrier was interpreted as moderate if the percentage of the participants' agreement was between 40% and 59%. If the agreement was 39% or less, a barrier was interpreted as minor. (Frasier, Hunsaker, Lee, García, et al., 1995, p. X)

Table 1 displays the results in a manner that was deemed both holistic and coherent. The data were compared to the (Frasier, Hunsaker, Lee, García, et al., 1995) data from the United States and also to data that were collected by Scott (2008) via educators in South Africa (*N*=112) who used the same survey tool.

Results

Similar to the previous study replicated herein participants in this study perceived that two issues were major barriers to the identification of gifted children from economically disadvantaged and limited English proficient backgrounds: (a) standardized tests are biased against children from economically disadvantaged and limited English proficient backgrounds (60%), and (b) teachers' inabilities to recognize indicators of potential giftedness (60%). In addition however within our inquiry, one other major barrier was identified suggesting that differences in language experiences (62%), was critical for identification. Also, in our study two issues were considered by the participants to be moderate barriers to identification: (a) nonstandard English and limited English proficiency (44%), and (b) prejudicial attitudes held by teachers (41%). Five issues were considered to be minor barriers to identification: (a) beliefs that intellectual giftedness is not valued in certain groups (32%), (b) teachers' fear about "watering

Table 1

Respondents Agreement and Level of Barrier

Variable		Percentage Agreed	Level
Differences in	U.S.A	55	Moderate
Language	Ontario	62	Major
	Africa	84	Major
Lack of Stimulating	U.S.A	54	Moderate
Home Environment	Ontario	38	Minor
	Africa	83	Major
Teacher's Inability	U.S.A	62	Major
to Identify Potential	Ontario	60	Major
Giftedness	Africa	59	Moderate
Standardized Test	U.S.A	70	Major
Bias	Ontario	60	Major
	Africa	59	Moderate
Teacher Prejudicial	U.S.A	43	Moderate
Attitudes	Ontario	41	Moderate
	Africa	21	Minor
Beliefs About	U.S.A	26	Minor
Limited Number of	Ontario	16	Minor
Gifted in Group	Africa	12	Minor
Use of Narrow	U.S.A	48	Moderate
Screening/Selection	Ontario	17	Minor
Process	Africa	37	Minor
Intellectual	U.S.A	15	Minor
Giftedness not	Ontario	32	Minor
Valued	Africa	37	Minor
Teacher Fears of	U.S.A	29	Minor
Quality Reduction	Ontario	17	Minor
	Africa	10	Minor
Limited	U.S.A	54	Moderate
Proficiency	Ontario	44	Moderate
In English	Africa	57	Moderate

Note. Major Barrier Over 60% , Moderate 40-59 %, Minor <39%. U.S.A (Frazier et al., 1995) Africa (Scott, 2008)

down" program quality (17%), (c) use of narrow screening/selection process (17%), (d) beliefs about the limited number of gifted children who come from economically disadvantaged limited English proficient backgrounds (16%), and (e) a lack of a stimulating environment (38%), was identified. The similarities and differences can best be reviewed by reference to Table 1.

In the United States study by Frazier, Hunsaker, Lee, García, et al., (1995) it was revealed,

the two major issues perceived as barriers to the identification of children from economically disadvantaged and limited English proficient backgrounds . . . were: (a) test bias, and (b) teacher inabilities to recognize indicators of potential giftedness (70% and 62%). Moderate barriers . . . were: (a) limited proficient English (57%), (b) differences in languages (55%), (c) lack of a stimulating home environment (54%), (d) screening/selection process too narrow (48%), and (e) teachers' prejudicial attitudes (43%). Barriers perceived as minor . . . were: (a) intellectual giftedness not valued by certain groups (37%), (b) fear about reducing program quality (29%), and (c) beliefs about the limited number of gifted students in these groups (26%). (Scott, 2008, p. 137)

Again, the best was to ascertain the comparatives is to view Table 1 below. You will note that a study by Scott (2008) considered African educators perceptions using the same instrument hence the African study outcomes are noted as comparative data.

Discussion

Differences in Language

Ontario - Major
U.S.A. - Moderate
Africa - Major

Data from the Ontario survey indicated 62% of educator's view language differences as a major barrier for students who may have been identified as gifted. In addition, students who are economically disadvantaged and have limited English proficiency are even more likely to be excluded from gifted programs by Ontario educators. This result aligns with South African educators who indicated "that language difference is viewed as a major barrier to identifying children who are from Black or second language backgrounds (84%)" (Scott, 2008, p. 138). Language difference also was an identification barrier in the Frazier et al. (1995) study yet it was reported as a moderate barrier (55%) by U.S. educators. This was categorically significant yet only seven percent different than the Ontario educators. Scott (2008) suggested,

In South Africa issues related to the diverse and multiple languages spoken or written prevail

throughout all segments of schooling. Classrooms at both primary and secondary levels might encounter . . . as many as six languages spoken fluently and possibly half of the learners proficient enough in their vernacular language to write fluently. . . . Additionally, teacher-student ratios and large class sizes within most schools provide teachers with firsthand experience and knowledge about the realities of providing special attention or identifying exceptional learners, especially those who exhibit traits of giftedness and multilingualism noting that teachers often associate nonstandard speech with less competent students. (p.138)

The picture is not brighter for education of the gifted in Ontario which is a bilingual province that includes First Nations languages found in largely rural areas (Bowd, 2003) as well as a large multicultural and multiethnic population that is largely urban presents numerous barriers and issues. For most this diversity is viewed as strength and not a predicament in gifted education.

Lack of Stimulating Home Environment

Ontario - Minor
U.S.A. - Moderate
Africa - Major

The lack of a stimulating home environment was perceived by only 38% of the Ontario respondents as being an issue therefore it was deemed a minor barrier. It could be that the low number results from an understanding and appreciation that "many of the under-represented students can be considered educationally disadvantaged as a result of educational, linguistic, cultural, and other environmental factors, causing disparity in test performance "(Lewis, DeCamp-Fritson, Ramage, McFarland, & Archwamety, 2007, p. 38), which as was noted earlier (Canadian Cognitive Abilities Test – CCAT) is a prime ingredient for gifted identification in the province of Ontario.

Both the U.S. (moderate) and African (major) studies found that respondents perceived home environment as being more of a barrier than Ontario educators. In the case of U.S. teachers it has been observed that "a middle or upper class home environment was mentioned by some of the teachers as support for a child's nomination as gifted" (Miller, 2009, p. 67). Clearly this stereotyping creates barriers and gateways. Perhaps this stereotyping is commonplace as Scott (2008) found that "gifted education literature consistently pointed to high positive correlations between parent education attainment and

giftedness, between resources at home and student achievement and between a family's socioeconomic status and giftedness" (p. 138). Whether this is a feature or outcome of stereotyping or something else at play needs to be investigated. In sum, teachers who want understand the home "need to be provided with information about the family processes which operate within the homes of economically disadvantaged and limited English proficient students" (Frazier, Hunsaker, Lee, García, et al., 1995, p. 3), and work to amend stereotypic awareness.

Test Bias

Ontario - Major
U.S.A. - Major
Africa - Moderate

The term test bias according to the Peel Board of Education (2009) can,

refer to the 'construct-irrelevant components that result in systematically lower or higher scores for identifiable groups of examinees'. . . In fact traditional IQ tests are moderately to highly correlated with achievement and therefore have also been associated with education of their parents, wealth and occupational success. (p. 19)

The images of who is gifted and the nomination practices combined with built in covert bias seem to set the students up for a predictable outcome. Lewis et al. (2007) upset with identification methods contended that,

the traditional measures of cognitive abilities in question include IQ tests, standardized achievement tests, and aptitude tests. . . [Researchers] report that many of these tests are culturally loaded verbal assessment devices that do not take into consideration the colloquial language used by many culturally different children. (p. 38)

With Africa at 59% just one person shy of the major category of barrier, Scott (2008) explained,

an educational plan to identify gifted children is not currently embraced in South Africa, teacher perceptions are more than likely based upon the overall lack of testing used to place children in classrooms or school matched to their abilities. Collectively, gifted students in South Africa are not presently being tested, identified or served by individual schools or school districts. One might

not expect movement of this variable from moderate to major. In South Africa, achievement, aptitude, intelligence, and other such standardized tests used to identify children with great potential or giftedness, must take into consideration school related multilingual language issues. (pp. 139)

In the United States study it was found that this issue was perceived to be a major barrier affecting the identification of gifted children from economically disadvantaged and limited English proficient backgrounds (70%).

Within Ontario, at least one Board of Education has reviewed gifted programming recently and determined,

standardized tests discriminate against students whose linguistic orientation, cognitive style, economic status and cultural or social background differ from the dominant norm group . . . .In fact traditional IQ tests are moderately to highly correlated with school achievement . . . .various tests (i.e. Raven Progressive Matrices) have been suggested to be freer of cultural bias . . . . Still when tests are used to assess for giftedness, bias is an issue. (Peel Board of Education, 2009, pp. 19-20)

This is what the Ontario respondents indicated as 60% perceived test bias as a major barrier affecting the identification of gifted children from economically disadvantaged and limited English proficient backgrounds.

Teacher Inabilities to Recognize Indicators of Potential Giftedness

Ontario - Major
U.S.A. - Major
Africa - Moderate

To begin, Elhoweris (2008) explained that, "one impediment to good teacher judgment about gifted and talented but culturally different students may very well be negative teacher attitudes toward children from diverse cultural backgrounds" (p. 35). Teacher inabilities to recognize indicators of potential giftedness was found to be a major barrier in our Ontario sample (60%) and this is possibly due to the stereotypical images of the gifted student and the belief that gifted students are socially successful, middle or upper-class, who demonstrate high achievement on assessments which may skew teacher nominations and reduce selection diversity. The U.S. study concluded that teachers'

inabilities to recognize indicators of potential giftedness were a major barrier at 62% whereas the African investigation found this to be moderate at 59%. However, the 1% is actually only a difference of one person hence I conclude that all three studies have identified the barrier as significant. Scott (2008) added,

given that gifted education courses are not offered in higher education teacher education programs and identifying gifted students is not addressed within the current South African education inclusive policies, the results are somewhat puzzling. One would expect the results to be major for this variable. (p.139)

A study out of the United States by Gannon (2005) resulted in several recommendations to address teacher training shortcomings, for example,

approximately 68% [of teachers] held erroneous beliefs about the [gifted] characteristics. Teacher beliefs about best practice may stand in opposition to research-based practice for instructional strategies suitable for gifted students. . . .[and a need to] improve pre-service teacher education programs and provide teachers with information and resources to increase their awareness of those qualities and characteristics associated with gifted students. (p. 2)

Frazier, Hunsaker, Lee, García, et al., (1995) noted that children from various cultural, socioeconomic or language backgrounds may express themselves quite differently in the classroom than they do at home or in the community hence this could increase Teacher inabilities to recognize indicators of potential giftedness.

Limited Proficiency in English

Ontario - Moderate
U.S.A. - Moderate
Africa - Moderate

The Ontario respondents perceived limited English proficiency as only a moderate barrier at 44%. However, this issue is often viewed as "one of the most pressing and controversial topics in the field of gifted education . . . underrepresentation of culturally and linguistically diverse students in gifted education" (Ford, 2003, p. 143). Nonetheless, teachers in all three studies, in different regions of the globe, only view limited proficiency in English as a moderate issue. Current underrepresentation is,

caused by the fact that given any definition of giftedness, the construct is still determined by society's present definition. This definition has changed over time and is relative to the people who are responsible for creating it. Further, students possess strengths and weaknesses in varying degrees, and the weight given to these talents will depend on the social and cultural setting from which they are being examined. Thus, despite the fact that students in one locale may all receive the same assessment measure; their sociocultural backgrounds will inform their individual success on it. To this end, historically, gifted programs have failed to identify gifted students from culturally and linguistically diverse backgrounds, simply because of the nature of the identification measures. (McGlonn-Nelson, 2005, pp. 50-51)

The data from Africa reveals 57% of the respondents believed students not proficient in English would encounter only a moderate barrier to identification as a result. Scott (2008) concluded,

in general, English instruction as a second language is not required until the 4th grade level in South Africa. Learners will receive instruction in the language of their native tongue until then. As language issues related to language differences (e.g., Venda, Zulu, Xhosa, etc.) are perceived as major in this study, the respondents do not perceive limited proficiency in the English language as a major barrier, but moderate. (p. 139)

In the United States study limited proficiency in English was perceived to be moderate (54%) and Frazier (1995) proposed that students not proficient are those who speak nonstandard English, such as Ebonics, a language system characteristic of certain speech communities of Black Americans. Ebonics speakers are often assessed as incompetent students socially. "South African educators surveyed seem to dispel such a notion" (Scott, 2008, p. 139).

Narrow Screening/Selection Process

Ontario - Minor
U.S.A. - Moderate
Africa - Moderate

Educators have been identified in the literature as people who often use stereotypes to inform their perceptions, understanding and actions when it comes to screening and/or selection to be screened or placed in gifted programs (Peel Board of Education, 2009, p. 20). Elhoweris (2008) further made the point that in,

most schools, entering the screening pool is based on teacher referrals (Colangelo & Davis, 2003). This practice or policy hinders the effective screening of culturally diverse and economically disadvantaged students because they are seldom referred by teachers for screening . . . Specifically, a poor student may meet the school district's criteria for giftedness, but be overlooked because he/she has not been referred for screening. Indeed, perceptions about economically disadvantaged students combined with a lack of cultural understanding may undermine the ability of educators to recruit economically disadvantaged students into gifted education. (p. 35)

Nevertheless respondents in the current Ontario study saw the selection process as only a minor barrier at 17% compared to the moderate 37% of respondents in the African study. The U.S. study found educators perceived it as a moderate barrier also at 48%. Clearly, the Ontario sample viewed this barrier very differently than the African educators who in turn were very different from the United States educators. Scott (2008) does note, "the relationship of screening to test bias, inability to recognize gifted qualities and language differences. . .[suggests that] more than half of the respondents understand that selection processes for identifying gifted learners encompasses more than IQ tests alone" (p. 139).

Prejudicial Teacher Attitudes

Ontario - Moderate
U.S.A. - Moderate
Africa - Minor

Prejudice can best be understood as "a set of biased and generalized beliefs (stereotypes) about outgroups derived largely from inaccurate and incomplete information" (James, 2003, p.134). These stereotypes have been noted throughout this investigation as problematic images in the minds of educators which obstruct the identification of gifted children from economically disadvantaged and limited English proficient backgrounds. Researchers such as Miller (2009) recently summarized, "results of the studies seem to indicate a bias toward students with the characteristics of the majority Anglo culture that was not deliberate but instead was a function of teachers' internal unexamined conceptions of what it means to be gifted" (p. 65).

Within Ontario only (41%) perceived this to be a moderate barrier and this aligns with the perceptions of United States educators who reported this as a moderate barrier also at (43%). In Africa Scott (2008) found,

only twenty-one percent (21%) of the South African educators completing the survey indicated that teacher prejudicial attitudes would be a barrier to identifying Black and second language learners as gifted. Although not tested to be statistically significant or meaningful enough to suggest a real difference, such a low percentage of the respondents perceiving prejudicial attitudes as a barrier was encouraging. (p. 140)

Researchers have put forward several explanations for the underrepresentation of minority students, including cultural prejudice and indifference to the issue (Bracken, 2000) and negative cultural perceptions of, and attitudes toward, giftedness (Morris, 2002; Speirs Neumeister et al., 2007). Nevertheless, the barrier was perceived not to be a major one by any educators within the three referenced studies.

Intellectual Giftedness Not Valued

Ontario - Minor
U.S.A. - Minor
Africa - Minor

To best understand the term value or valued, we need to understand the cultural implications of the term gifted. Earlier we briefly addressed the types of giftedness (Gardner) however, Bowd (2003) has explained,

Practical giftedness is perhaps more readily applicable in situations that are not representative of the dominant culture. It refers to the application of both analytic and synthetic skills to the problems of everyday life. Examples cite success in careers; however, this definition may be applied to problems and tasks valued within other cultural environments (e.g., skills associated with successful hunting and fishing). Sternberg and Zhang (1995) argued that giftedness is defined by a consensus within cultural groups. They claimed that people intuitively share a common belief in five criteria defining giftedness, assuming that the construct has meaning in most (or all) cultures. Briefly, the five criteria proposed for judging gifted behavior are: 1. *Excellence*. The individual is clearly superior to others in performance of a valued skill. 2. *Rarity*. The level of skill performance is achieved by very few members of the cultural group. 3. *Demonstrability*. The individual must be able to demonstrate the skill, not simply claim to have it. 4. *Productivity*. The individual's performance must lead, or potentially lead, to some valued product. 5. *Value*. The skill or characteristic is highly valued within the society. The criteria for judging whether an individual=s behavior is gifted or talented are assumed to be culturally universal: In one culture, the gifted individual might be a hunter; in another, a gatherer; and in a third, a student. The first two cultures might not even have any form of formal schooling. Just as cultural standards for beauty may vary, so may cultural standards for giftedness. We do not suggest that within a culture no objective criteria for giftedness can be defined. We do suggest that the criteria are determined by one's external culture rather than by one's internal physiology. (p. 7-8)

If the survey were to be repeated it would be useful to ask the respondent to define giftedness and further explain the kind which is valued most by the respondent. As this is an educational investigation, intellectual giftedness is the foci and clearly the educators have indicated their perceptions of intellectual giftedness as valued or not valued by 'some cultural groups'. Scott (2008) suggests, "South Africa is clearly a country where grouping individuals by racial classifications, socioeconomics and especially language is normative . . . the applicability of this survey item is very fitting for South Africa" (p. 140). The African survey found that only fifteen percent (15%) of the participants agreed that intellectual giftedness may not be valued by certain groups suggests it is not perceived to be significant barrier to identification. The United States survey was double this at 37% and although still classified as minor verges on moderate, hence it was viewed by many more respondents as being a barrier to identification just as is the case in Ontario at 32%. This could be suggesting that respondents perceive other types of giftedness as valued more by 'some' cultural groups just as Bowd (2003) points out above.

Fear of Reducing Program Quality

Ontario - Minor
U.S.A. - Minor
Africa – Minor

All three studies determined that this issue was only a minor one. "Only ten percent (10%) of the respondents completing the survey indicated that fear about reducing program quality would be a barrier to identifying Black

and second language learners as gifted" (Scott, 2008, p. 140). In addition, the Ontario respondents suggested this issue was only a minor barrier at 17% and the study by Frazier et al. (1995) found that this was also a minor barrier at 29%. The survey question, designed to elicit a response that indicated a level of concern or fear that placement of students who are from economically disadvantaged and limited English proficient backgrounds would 'water-down' the program was carefully examined. This watering down (selection, identification, and placement modes) is generally a derogatory term as Schroth and Helfer (2008), who explored identification issues and gifted program virtues, points out:

> How one identifies gifted students has tremendous ramifications for a gifted education program's size, curriculum, instructional methods, and administration. Little is known, however, regarding educator beliefs regarding gifted identification methods. The current national study surveyed 900 public school educators regarding which identification methods they supported. The educators believed that standardized tests, portfolios of student work, and teacher nominations were valid means of identification but did not support parent or peer nominations. (p. 155)

This reluctance to move away from the current modes of selection and identification suggests that there is a desire to protect the status quos via standardized tests, portfolios of student work, and teacher nominations. A large Ontario Board of education that recently reviewed its gifted programming suggested a need to diversify its identification process to make it more multidimensional and at the same time increase home school communications to enhance inclusiveness, learning, and build understanding (Peel Board of Education, 2009, p. 13).

Beliefs about the Limited Number of Gifted Students in Groups

Ontario - Minor
U.S.A. - Minor
Africa - Minor

Once again, all three studies determined that this issue was only a minor one. The sample in this study did not believe this was a major nor moderate barrier as only 16% of the sample agreed or strongly agreed this was a minor barrier. This outcome aligns with the 12 % within the African study and the United States sample found

that only 29% of the respondents believed there was a limited number of gifted students from economically disadvantaged and limited English proficient backgrounds. The issue is complex and deals with several factors of interest in,

> particular gifted education models often have a distinct population in mind and an individual approach to curriculum and instruction that fits that population. Identification policies, processes, and procedures influence and affect the internal operational requirements of various gifted education models. (Schroth & Helfer, 2008, p. 155)

Therefore, the selection/nomination, screening and identification modes actually disclose a great deal about the beliefs of the proponents who develop and erect these policies, processes, and procedures. To have a gifted program that excludes anyone is less than perfect and needs attention however, to have educators who believe there are fewer gifted students from among certain populations of students is a far more significant issue. In sum, "little is known about the beliefs regarding identification of students for gifted education programs held by those who deliver services to students. Knowledge about such beliefs is important because educators' beliefs influence their practices and actions" (Schroth & Helfer, 2008, p. 157) this would indeed be an area of future study worthy of investigation.

Limitations

Several limitations needed to be underscored. The current research and data analyses were limited by the very content of the survey which was item centred and inflexible. Respondent comprehension and understanding of the survey items, words, and terms used, may have actually infused confusion, lowering the trustworthiness of the outcomes. Respondent recall may have been incomplete or imperfect during the administration of the survey. Resultant comparisons were useful however; admittedly, samples were disparate in many ways beyond the obvious global contexts and surveys were completed in only one sitting therefore any larger picture is missing.

Conclusion

The purpose of this research was to replicate the Frasier, Hunsaker, Lee, García et al. (1995) investigation of educators' perceptions of barriers to identifying gifted children from economically disadvantaged and limited English proficient backgrounds. Accrued data herein

indicated three major barriers were perceived by Ontario respondents. Test bias was deemed a major barrier (Peel Board of Education, 2009; Scott 2008), as "many of these tests are culturally loaded verbal assessment devices that do not take into consideration the colloquial language used by many culturally different children" (Lewis et al., 2007, p. 38).

Second, teachers' inability to recognize indicators of potential in certain groups was deemed a major barrier possibly because "one impediment to good teacher judgment about gifted and talented but culturally different students may very well be negative teacher attitudes toward children from diverse cultural backgrounds" (Elhoweris, 2008, p. 35). Attitude does impact ability and if you possess a negative attitude towards certain groups you may follow this downbeat mind-set to arrive at a decision/selection/nomination that is flawed. Third, differences in language experiences can cause one group to misunderstand the other. This misunderstanding can lead to dysfunction and the result is errors in judgment and a narrow Eurocentric 'dominant' norm group predominates within gifted programs.

Within the Ontario sample two moderate barriers emerged which again where essentially language and attitudinal in nature. Students' use of nonstandard English and/or limited proficiency in the English language was deemed a significant barrier and this is mostly related to the understanding and appreciation that language based "tests discriminate against students whose linguistic orientation, cognitive style, economic status and cultural or social background differ from the dominant norm group" (Peel Board of Education, 2009, p. 19). This understanding seems to complement the perception that teachers' prejudicial attitudes are very much the centerpiece of another barrier for students from economically disadvantaged and limited English proficient backgrounds.

The five minor barriers identified suggest that respondents did not view these issues as significant barriers hence the ability to overcome one or all of these appears much more feasible than a major perceived barrier. Yet the interpretational nature of these issues is undeniable. Educators need to grow their knowledge, understanding and proceed in an informed manner when screening, identifying and nominating, especially when they are placed in positions of added responsibility. Throughout the article it has been noted that there is much to do to further refine our understanding of barriers in gifted education and this position, as has been shown, is a need not limited to Ontario (Canada), Africa or U.S. inquiries.

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Learning Daily Life and Vocational Skills in Natural Settings: A Tanzanian Model

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Abstract

At a special education school in Tanzania, children learn in natural settings using a functional curriculum that has been adapted to their local context. Children with developmental disabilities are supported in learning the skills and knowledge they need to participate in their families and the community. The school utilized funds of knowledge (Gonzalez, Moll, and Amanti, 2005) and cooperation between parents, teachers, and community members to design an appropriate curriculum. During an ethnographic case study, I observed how students with developmental disabilities could learn vocational and daily life skills in a natural environment at their school and successfully transfer those skills to multiple settings in their community. These strategies could be utilized in other countries, including the United States, in the same manner to support students with disabilities to learn the skills they need for home, school, and job success.

Introduction

Evidence-based practice is the recommended starting point for curriculum development, but in unique locations, like rural Tanzania, it is also essential to focus on the needs of the local community. All children, including children with disabilities around the world learn first from their families and their environments. A culturally and socially relevant curriculum provides individuals with the knowledge relevant to living in their local community and the skills necessary for success in that community (Baca & Cervantes, 1998; Faircloth, 2011; Lipka, 2002). Students at the Irente Rainbow School, a school for children with developmental disabilities in Tanzania, are prepared for life in their community using a functional curriculum individualized to the local context.

Functional Curriculum

A functional curriculum teaches students the knowledge and skills they will need in the community as adults, but there are few studies that support its effectiveness (Agran, Cavin, Wehmeyer, & Palmer, 2006; Nietupski, Hamre-Nietupski, Curtin, & Shirkanth, 1997). The emphasis in the functional curriculum is on students' learning skills to improve their quality of life. In this case, *functional* is a term used to describe activities in which people without disabilities would engage independently in natural settings. Such activities as shopping at a grocery store or riding a bus are considered functional in the United States (Dymond & Orelove, 2001). The rationale for a functional curriculum is that students with developmental

disabilities need explicit instruction in life skills and functional academics, because they do not typically acquire them through daily interaction with peers and adults (Halpern & Benz, 1987; Snell, 1997). "When a person's repertoire of various life skills increases, his or her independent functioning, social competence, and quality of life is also thought to increase" (Alwell & Cobb, 2006, p. 3).

Participation in the functional curriculum in which students practice activities typically completed by adults in the community helps students to learn the skills they will need as members of their community (Bigge, Stump, Spagna, & Silberman, 1999). In one Australian study, researchers found that students with disabilities who could complete daily domestic and self-care skills were more likely to be able to complete work tasks after leaving school (Eagar et al., 2006). Students who have the opportunities to learn and practice everyday life skills daily become more autonomous in their skills (Sheppard & Unsworth, 2010).

In the United States, curricula for students with developmental disabilities have shifted the focus from working on functional skills to aligning with the general education curricula for typically developing students. Current legislation and the latest authorization of the Individuals with Disabilities Improvement Act (2004) supports all students except those with the most severe disabilities in participating in the general education curriculum and taking standardized state tests (Browder & Cooper-Duffy, 2003; Browder et al., 2007; Dymond & Orelove, 2001). However, several researchers have emphasized the need to use functional curricula in recognition that students with disabilities are not well prepared for adult life (Bouck, 2004; Cronin, 1996;

Dever & Knapezyk, 1997; Polloway, Patton, Smith, & Roderique, 1991).

The Local Context

In order for education of students with disabilities to be successful, the learners' backgrounds and the community culture, including local beliefs and values, must be understood (Stone-MacDonald, 2010). People are embedded in the local environments, culture, and routines and the local context is embedded in the culture. Local context and culture also play a role in family, school, and community interactions (Harry, 2002). Children enter school exhibiting the characteristics of their families, developed through interactions and experiences with their families. Understanding the culture and the community then enables a researcher to make inferences about the interactions impacting the children's development and education.

Special Education in Tanzania

In many developing countries, children with disabilities are not given the same opportunities for education as typically developing students (Baine, 1988; Kalyanpur, 1996; Kisanji, 1995; Rao, 2001). In the 2002 Census, it was estimated that there were 190,000 children with disabilities between ages eligible to attend primary or secondary school. In Tanzania in 2005, only 1% of students with disabilities attended school and few children with developmental disabilities participate in general education classrooms or even regular schools (Karakoski & Stroem, 2005). Most Tanzanian children with intellectual disabilities, visual impairments, or hearing impairments are educated in self-contained classrooms in a public school or in a separate school (Karakoski & Stroem). Students with disabilities are often taught a functional curriculum to provide them with the skills and knowledge to participate in society (Kisanji, 1995). Special schools and classrooms for students with intellectual disabilities use a functional curriculum provided for these students by the Ministry of Education. The curriculum includes basic academics, communication skills, and vocational skills (Waziri ya Elimu na Mafunzo ya Ufundi, 2008).

Tanzania is coping with other challenges such as teacher and school shortages, lack of resources, and societal barriers to school enrollment for students with developmental disabilities (Society has failed children with disability, 2010). Tanzania has signed all of the Millennium Development Goals Education for All documents and has a National Disability Policy, but little is done to implement the policy (Ministry of Labour Youth Development and Sports, 2004; World Bank

Group, 2008). The Ministry of Education states that children with disabilities should be admitted to public schools, but not all district education officers enforce the policy (Stone-MacDonald, 2008). Tanzania has plans and some legislation in process to provide inclusive education opportunities, but at this time most children with disabilities still do not attend school (Dawson, Hollins, Mukongolwa, & Witchalls, 2003; Eleweke & Rodda, 2002; Lipka, 2002; Ministry of Labour Youth Development and Sports, 2004).

Conceptual Framework

This study utilized a conceptual framework centered around the work of Gonzalez, Moll, and Amanti (2005) to understand the "funds of knowledge" that informed the curriculum daily work of the school to prepare children for life in their community. At the Irente Rainbow School, the teachers utilized and augmented the "funds of knowledge" the students gain from family and the community. Gonzalez et al. (2005) define ''funds of knowledge'' as ''historically accumulated and culturally developed bodies of knowledge and skills essential for household or individual functioning and well-being'' (p. 72). At the school, funds of knowledge inform teaching practices to provide locally and culturally relevant lessons.

Norma González, Luis Moll and Cathy Amanti completed their studies in Latino households and developed the concepts of funds of knowledge, its members saw the importance of viewing the families and living members of culture (González, Moll, & Amanti, 2005; González et al., 1995; Moll, Amanti, Neff, & González, 1992). They discussed the goal of their work in the Southwest United States.

> The primary purpose of this work is to develop innovations in teaching that draw on knowledge and skills found in local households. Our claim is that by capitalizing on household and other community resources, we can organize classroom instruction that far exceeds in quality the rote-like instruction these children commonly encounter in schools. (Moll, et al., 1992, p. 132)

In their research, they used ethnographic and other qualitative methods to examine the households and the knowledge that existed there. They also looked at what was taught in the children's classrooms and the congruence and dissonance between the funds of knowledge at home and the enacted curriculum at school.

Through my research at the school, I sought to determine the funds of knowledge present in Lushoto

Table 1

A Sample of Community Funds of Knowledge in Lushoto

Household Skills	Agriculture Skills	Self-care Skills	Social Skills
Sewing	Feeding a goat	Bathing	Greeting people
Cooking	Cleaning animal areas	Dressing	Receiving guests
Sweeping	Using a machete	Using the toilet	Washing hands for guests
Washing dishes	Using a hoe	Brushing teeth	
Washing the floor	Planting seeds	Washing hands with a pitcher	Helping neighbors
			Riddles and myths
Setting the table	Preparing a garden	Hair care	Singing
Fetching water	Harvesting produce	Shining shoes	Cell phone use
Caring for children or elderly	Shucking corn		
Fixing broken utensils/tools	Carrying leaves and produce		
Washing clothes			

and the surrounding community and how those funds of knowledge correlated with the curriculum taught at the Irente Rainbow School. Through my research, I developed a table of the funds of knowledge based on qualitative methods described below. Table 1 represents those funds of knowledge.

Description of Study

This data is from a larger ethnographic case study conducted at the Irente Rainbow School (IRS) in Lushoto, Tanzania. The purpose of the larger study was to explore how local context and beliefs about disability played a role in how participants understood their roles at the school and how the curriculum was implemented. In this manuscript, I examine the role of the functional curriculum in preparing these students for life in their community after school. I examine how students at the Irente Rainbow School in Lushoto, Tanzania learned practical life and vocational skills at school that could be applied to life in their community.

Definitions of Disability in Tanzania

In Tanzania and other East African communities, integration into communal life relates to how well individuals fit within the social norms and, importantly, if they can do their share in the community, whether or not they have a disability as defined by the developed

world (Mallory, 1993). People with disabilities are seen as "abnormal" if they are unable to carry out daily activities (Talle, 1995). Disability is a physical or mental deficit that impedes a person from being independent and participating in manual labor that is part of daily life (Ogechi & Ruto, 2002; Talle).

In Tanzania, there is no concrete definition used for intellectual disability. In Kiswahili, people call a person with a disability "mtu wenye mlemavu wa akili" or "person with a disability of the mind." The term is frequently translated as "intellectual impairment" (Stone-MacDonald, 2010; Stone-MacDonald & Butera, 2012). No specific measures are used or available to assess intellectual disability, because there are no standardized assessments normed in Swahili to measure cognitive or academic functioning.

Method

Setting

Tanzania. In Tanzania, only 25% of students attend secondary school and some will drop out because they cannot afford it or cannot pass the exams. Approximately, 72% of adults are literate, but the author found many adults in the Lushoto area to only be functionally literate (UNESCO, 2008). Primary education is free, so students usually attend school through standard seven (approximately equivalent to

Table 2

Table of Participants by Their Activity in the Study

Participants	Gender		Participated in					Total
	M	F	Obs-S	Obs-C	Int	FG	FBI	
Students	20	15	35	20	0	0	0	35
Parents/ Guardians	7	14	2	15	14	6	3	21
School Staff (Teachers, Administration, Staff)	7	12	19	10	19	0	10	19
Local leaders	1	4	2	5	5	0	0	5

Note. Obs-S=observation at school, Obs-C-observation in the community, Int-interview, FG-focus group, FBI-feedback interview

grade 6). Reading and literacy is neither essential nor critical for daily life as subsistence farmers. Over 80% of Tanzanian households rely on agriculture for their primary source of economic activity (World Bank, 2012). Most farmers (over 70%) are farming by hand hoe and 85 % of farmers are producing food for their families and communities (Ministry of Agriculture, 2011).

Lushoto. The Irente Rainbow School is located in Lushoto, Tanzania, a town of 23,256, in the Tanga region (United Republic of Tanzania, 2003). Lushoto is the largest town in the Western Usambara Mountains. Nevertheless, the area is rural and most people consider themselves peasants or subsistence farmers. Agriculture is the most common occupation in the region and ecotourism is very popular, especially among European visitors. Most of the farming is carried out without machinery, due to the steepness of the mountainsides. The staple foods are corn and beans. German Lutheran missionaries have been active in this region since the 1950s and many of the residents are Lutheran. Most people are members of the Wasambaa and speak Kisambaa, in addition to Kiswahili.

The families of the students at the Irente Rainbow School represent more than one socioeconomic class. The school charges school fees of approximately $24 per year (30,000 Tanzanian shillings), but parents who cannot afford them are exempted from paying or allowed to pay in kind from their farm (Stone-MacDonald, 2010).

The Irente Community. For children and adults in this community, routines are similar from day to day. When they wake up, they boil hot water for baths and for tea and porridge. The food is cooked and people get ready to go to the fields or the market. The day is spent farming with hoes, buckets, and machetes. Children and young men also care for the goats, sheep, and cows. The women go to market to sell their goods by carrying them in big baskets on their heads. Many walk approximately half a mile to three miles to get to the market. In the evening, food is prepared on a charcoal or wood stove. Many homes in this community have neither electricity nor running water. People have to get water from a water source and work by candlelight at night. Functional skills in Lushoto include gardening/farming, caring for animals, doing dishes, and getting water.

The Irente Rainbow School. Irente Rainbow School was founded in 2005 to meet the needs of children who were being turned away by the local primary schools in Lushoto. The day school in 2009 served approximately thirty children, ages 6–25, with developmental disabilities such as mental retardation, autism, and cerebral palsy. Approximately 50 percent of the students at the school are Muslim. The school was founded by the Evangelical Lutheran Church in Tanzania, Northeastern Diocese (ELCT-NED) in 2005. Although Irente Rainbow School is a Lutheran school, by Tanzanian law all children must be allowed to attend regardless of religion. The school follows the government curriculum for students with intellectual disabilities, but also incorporates the primary school curriculum for Swahili and mathematics. The curriculum also incorporates local knowledge for survival and daily life into the functional curriculum. All instruction is in Swahili.

Members of the school and local community participated in this study. The students were observed in the school, at home, and in the community but no interviews were conducted with them due to human subjects/Institution Review Board restrictions based of complexities of working in another culture with parents with limited literacy and children with disabilities. All of the school staff participated in the study through observations, interviews or focus groups. Most families with children at the school participated. The children were all diagnosed with intellectual disabilities, autism, cerebral palsy, or multiple disabilities. Two children had visual impairments and intellectual disabilities. Two children had both hydrocephalous and intellectual disabilities. As stated above, the children were not diagnosed using specific assessments; observations of the students were made and school officials or doctors interviewed the parents about the children's health and developmental history and how the children functioned at home. Table 2 shows the types of participation of participants in the study.

Role of Researcher. I spent six weeks living in Lushoto and working at the Irente Rainbow School during the summer of 2007 and returned in September 2008 for ten months of fieldwork at the school. Over thirteen months, I was a participant-observer at school and in the community. I also conducted interviews, largely in Kiswahili. I lived in the community and participated in daily community life. My husband and I shopped in the market, attended church services, and visited with community members in their homes.

Data Collection and Analysis

To develop this ethnography, I observed and participated in the daily activities of the school and community for a total of 13 months over two research periods 3-6 days a week; I conducted semi-structured interviews using a representative sampling of parents, teachers, and community members lasting between 90-120 minutes each; I collected documents relevant to daily work at the school, life in the community, and the development of the local and national curricula; and I used photos, video, and feedback interviews to record additional data at the school and check my understanding.

I recorded day-to-day activities of students, school staff, and myself as the researcher in a field diary. The data was organized under four subheadings: (1) Contextual information, which provided information about participants, the school and individual classes, and the community, was recorded. (2) Analytic memos, in which a record of systematic thinking about the data was written. Such memos contained (a) new concepts that emerged, (b) emergent hypotheses that require testing, and (c) information about future data collection required in order to "ground" the emergent concepts more fully. (3) A record of data contained pertinent logistical information from participant observation of situations, events, interactions, and activities, including descriptions and quotations from those events. (4) Methodological notes included my questions or concerns with regard to processes and procedures associated with the collection of data in the field. The field note format was adapted from models by McCall and Simmons (1969), Merriam (1998), and McMillan and Schumacher (2006).

I also employed several techniques to ensure credibility of my findings, which will be discussed below. Constructivist grounded theory methodology was determined to be most appropriate for capturing the experiences and perceptions of the teachers, students, family members, and community members in order to gather a richer understanding of the total context (Charmaz, 2006). This methodology allows a researcher to identify a process or phenomenon to study and focus on a few key local concepts or features (Glaser & Strauss, 1967).

In this case, the educational process for students at the Irente Rainbow School was the focus. Key concepts included cultural beliefs about disability, various influences on the curriculum, and the participation of the students in the local community. Initial decisions about data collection were guided by my knowledge of the phenomenon and further decisions about data collection were made during the process based on the analysis of data gathered (Glaser & Strauss, 1967). Grounded theory allowed me to accurately develop categories and explain the experiences of the particular case under investigation and then to make general statements that may be useful in comparable situations. Using this methodology, preconceived categories were avoided initially. Initial data analyses led to emerging categories and themes. This approach allowed me to capture the uniqueness of the situation, gather a richer understanding of the total context, and make assertions that may be applicable in other settings. To understand the context, one must explore how the participants' world is constructed and the processes therein (Charmaz, 2005). I used six strategies outlined by McMillan and Schumacher (2006) to ensure the validity of the data. Specifically, I used prolonged time in the field; in-depth interviews; triangulation of interviews; observation, and documents; member checks; and peer debriefing.

Results

In these results, I present the funds of knowledge that were critical in this community and show how they informed the curriculum and daily activities at the school. I present two student profiles, discuss how the curriculum was developed, and explain the parts of the vocational curriculum based on the key funds of knowledge in Lushoto. I examine how students at the Irente Rainbow School in Lushoto, Tanzania learned and demonstrated practical life and vocational skills at school that could be applied to life in their community. The students at Rainbow School are learning the skills and knowledge necessary to take an active role in their families and communities. Each community has a different set of skills and knowledge that need to be acquired to participate socially and economically in the daily life. In Lushoto, the funds of knowledge that all children need are to (a) show respect for their elders and people in the community, (b) demonstrate self-care skills, (c) participate in labor or work at home to support the family, and (d) participate in the social and religious life of their families. These four areas will be the focus of the results presented. At the school these skills are modeled, taught, and practiced in explicit and implicit modes of instruction. Being independent in your daily life and participating in the communal work of survival is critical. With these abilities, students can participate as active members of the community regardless of their IQ or disability.

To start, I will provide brief profiles on two students who represent the most typical two disability profiles (mild cerebral palsy and mild intellectual disability; unspecified learning disabilities) and age range (10-14 years) at the school. I have chosen one boy and one girl. All 35 students are very different and would produce a unique view on the school and the community; however, due to the limitation of space, I am concentrating on these two individuals to tell one part of the story within a larger ethnographic case study.

Musa and Grace

Musa's mother is very proud of what he has learned at school and believes that the curriculum at the Rainbow School has helped Musa. She said,

> He works, like when his sister is not here, if you tell him. He washes the dishes well and they are very clean. If he got work in a hotel, he could go there and wash dishes. He goes to the Mosque on Fridays and he can go by himself without any problems. We send him to the store. We can give him a piece of paper with the name of the item if

he doesn't understand, and he can give it to the storekeeper and he will get whatever he needs.

Musa is a 13-year-old boy who lives in the rural community of Lushoto, Tanzania. On Saturday, he takes his goat to the watering hole and collects leaves to feed the goat. He and his younger cousin are trusted to do their work independently. They walk with the goat about a mile to the water hole and use a machete to cut leaves on the way back. When the boys return home, Musa greets his mother's guests and helps clear the dishes from tea and bread. Then, he helps his older sister prepare food for lunch for themselves and their two younger relatives who live in the house. Musa has cerebral palsy and mild intellectual disabilities. His walking is a little clumsy and he sometimes has an uneven gait. He does not have full use of his right hand, and his speech is not always clear. Nevertheless, Musa is an active member of his family and community.

Musa is a cheerful boy. He is learning important vocational skills so he can attend to his daily needs, care for his goat, and help out his family at home with farming. However, his learning is embedded in real work that relates to his family's needs. In the morning before school, he escorts a younger student down the mountain to the main road where the school car picks them up.

Grace is a 12-year-old girl who also attends the Irente Rainbow School. She walks 45 minutes each morning to attend school and 45 minutes to return to her home near the top of the mountain. She is a small girl, but very strong. Her mother believes that she is very capable of working and contributing to the family. She explained,

> Grace does work very well, even clothes which are left for her to wash. She washes her own school clothes, I don't wash them. She washes dishes, she carries water. If I ask her to harvest vegetables, she goes. She looks for firewood with her siblings and friends. Truly she has no problem at all.

On weekends, Grace walks to the market with her mother to sell charcoal for cooking. Grace carries a heavy bag of charcoal on her head for the seven kilometer journey to the market. At home, she helps her mother sweep their home, prepare tea and uji porridge and chop ingredients for dinner. She is quiet and very polite to the teachers and school visitors. She is the youngest of six children and her mother is a single mother. Currently, she lives with her mother, three sisters, and her older sister's baby. Aunts, uncles, and cousins live in nearby huts. She lives in a small clay hut at the top of a hill without running water or electricity. One of her daily jobs is to collect water each day for

bathing, washing dishes, and brushing teeth. Grace walks with her mother and sisters to the stream to do laundry once a week. She has many skills and can do the work in the kitchen independently without being told what to do. In fact, since coming to school and learning these many skills, including financial skills, her mother wants her to work at home because she is so helpful to the family and can go to the market to also earn money selling charcoal. She has gained this sense of independence and the skills to live in her community through her participation at school and the generalization of her knowledge at home and in the community. She learns the skills at school and then repeats them at home and in the market.

Determining the Curriculum

During the planning process for the Irente Rainbow School, the school leaders and organizers worked with many different people to put together the curriculum and ascertain the most important things to learn. In 2003–2004, when they were planning the curriculum, they had no national curriculum to use as a guide; they had to look to other sources. (The first Tanzanian curriculum for students with intellectual disabilities came out in 2005). Several individuals and groups were part of the process to determine how to start the school and what to teach the students. The school sought assistance from educators, therapists, and doctors inside and outside Tanzania (Munga & Bidmon, 2004). But most importantly, the school organizers looked to their own community to figure out what the children needed to know to participate in the community then and in the future. A school administrator explained:

The first thing was to organize parents' meetings and seminars on disabilities and to get to know each other. And at that time when people knew that there was going to be a school at Irente, they started to come to the church and ask for the opportunity to send their child to school. So we thought it is a good idea to talk to the parents first and just understand their views and opinions and what is the whole meaning of the school, what they will get from the school and what will be the role of the parents in the school. And then we started to prepare a curriculum together with the ministry of education. So we had to go to Dar es Salaam and visit some schools and also go to [the special needs education college] and ask for advice from them. And from there we managed to prepare curriculum that was suitable for us…this all was part of the preparation for the Rainbow school.

The school leaders understood that the students needed to work from a curriculum and a pedagogy that were relevant to their everyday lives. At the Rainbow School, the school organizing committee followed a process to determine the funds of knowledge that were important in the community and that they wanted the students to learn. The process was not formalized and they did not call the outcome *funds of knowledge*, but the result was similar. The teachers then used the funds of knowledge to plan a school schedule and curriculum for the students.

Through the meetings, the school administration determined the most important skills, vocational and life skills. One teacher explained the most important skills:

Day to day skills, I mean, domestic skills - scrubbing the floor, sweeping the grounds, washing the utensils, cooking - especially cooking simple foods, tea, making vegetables. We are doing those things because they are important to the community. And almost everyone has to be able to make a simple food at home because there are some times when everyone goes to the shamba [farm] and the child may be at home alone so he should be able to take care of himself. He should be able to take care of himself, to dress himself, to wash himself, to cook for himself while others are not at home.

As it happened, the curriculum at the Irente Rainbow School is based on vocational and life skills, because the parents want their children to learn those functional skills to allow their children to participate in home and community settings now and in the future. The curriculum was based on the informal funds of knowledge process and was developed before the national curriculum was released. I argue the practical, enacted curriculum at Rainbow on a daily basis is more extensive and individualized to the diverse students' needs than the national curriculum.

Functional Curriculum at the Irente Rainbow School

At the Irente Rainbow School, the functional curriculum was taught during approximately 80% of the hours the students spent at school (Stone-MacDonald, 2010). The functional curriculum used at the Irente Rainbow School focused on vocational skills appropriate for their age and their needs in future environments. For most children, they will stay in the Lushoto area with their families or in nearby rural farming communities.

The understanding of community funds of knowledge informs the preparation of students with disabilities for integration into their communities after schooling.

Teachers are from the community or neighboring areas that also rely on subsistence farming. All of them live near the school and participate in similar activities on a daily basis, such as cleaning, cooking, washing, tending a garden, caring for animals, and going to the market. When designing the curriculum, the teachers and school administrators interviewed parents about what was important to them and examined the activities of daily living in the community for children and adults.

In Lushoto, reading, writing, and mathematics as learned in school were not part of the funds of knowledge. People only needed functional literacy to read signs, exchange money, or read simple announcements. One teacher explained that academic classes are to support functional literacy.

> The [academic] lessons are required [for the students] to understand [basic ideas] and in order to participate with their peers. Math is important because they will use money in their community and language is important for the purpose of communicating with people in the community and to explain themselves to people they will meet.

Books were not a part of daily life. In fact, the only books sold in Lushoto were textbooks for school and bibles. Some individuals did read the newspaper, but most listened to the radio for their news (Stone-MacDonald, 2010). In the curriculum, literacy and mathematics were taught using rote direct instruction with the main focus on memorizing letters and words, and numbers and basic facts. Little emphasis was placed on written comprehension, but oral comprehension was very important. One teacher explained:

> I think these children, especially the older children, because Rainbow children started school at an older age, they have not had lots of instruction, they understand only a very small amount of school subjects. Therefore, these vocational skills and daily living skills will help them more.

In Lushoto, knowing how to tend a garden and care for animals is critical because both skills can support survival.

Social Skills

In this community, it is essential that students show respect to their elders and know how to greet the people they meet. At the school, many guests from different places visit the school. When guests come, children sing a song to show respect and demonstrate their social

abilities. During my research, the Rainbow students sang for the students and teachers from a private school in Dar es Salaam, the capital. The teachers were very proud of the students' behavior and ability to sing their school song. All the students participated.

The teachers prepare students to know the right social skills to use with different people. A teacher explained:

> Because of how we teach the students, first there is a science lesson about greetings, how we greet important people, ways to greet each other and to show each other respect, and ways to talk with people and use good language. These are the things that we teach here at school.

The school is providing lessons, modeling with visitors, and furnishing opportunities for guided and independent practice. Social skills, particularly greeting, are very important. In Lushoto and Irente, many people know each other or know everyone's friends and relatives. When walking on the road, it is required that you greet people as they pass by. As a foreigner, I was not always greeted by people because they did not know me or know about me, but my friends and acquaintances always expected to be greeted and to have a short conversation. In Lushoto, it would be rude to ignore this social obligation.

Self-care Skills

Self-care skills are very important and necessary for independence. Students need to know how to wash themselves, keep their clothes clean, go to the bathroom, and feed themselves. This school is unique in Tanzania because it does accept students without self-care skills and takes time to teach these skills to students with a range of disabilities. Children needed to learn how to wash their hands and assist guests in hand-washing when running water was not available. The local custom is to use a pitcher and bowl, rather than a sink, at home and for guests. After the teacher modeled the behavior, the children practiced one by one before lunchtime. This activity was part of communication club, a time where students with limited verbal ability learn vocabulary and skills to help with meals and guests at home. Hand-washing and cleaning are being taught through modeling, guidance, and practice. Figure 1 shows students in the youngest class cleaning their own classroom using a bucket and rags, the standard method.

Students need to have self-care skills and present themselves well to be accepted. In Tanzania, there is a belief that students with disabilities are dirty and unable to care for themselves. Part of the school's mission

Figure 1. Boys in the Youngest Class Cleaning Their Classroom

through education of the students and the community is to dispel these misconceptions. A parent discussed the positive changes in her children's self-care skills since attending Rainbow:

> The changes are present because for example, Solomon likes to iron his clothes, which is good, he hates dirtiness, he likes his bed and room to be clean, he likes to be smart and he is able to prepare himself to go to church. He knows when it is time to go to school, he wakes up in the morning, brushes his teeth, and goes to school. Vincent is the same way, except that he does not like to get up in the morning. … They like visitors, they like friends and they know how to prepare the table and wash dishes. They have made big changes really, they are able to wash their clothes and do not like to wear dirty clothes.

Work at Home-Household Skills

In this community, families rely on all members to complete daily tasks. People with disabilities have a more difficult time contributing to their family's well-being, making it more difficult for them to be fully accepted in the community. In most African societies, families and communities care for their children with disabilities, but the children and family members are not always accepted into the community if the individual cannot contribute economically. People without disabilities who are not considered "whole" may encounter the same discrimination as some people with disabilities. Harknett (1996) found people with disabilities can also be considered "whole" even if they

have some physical impairment, as long as they participate in the community.

At the Rainbow School, students learn to clean and garden so that they can help at home with tasks, but also possibly work outside the home caring for flowers or working in a hostel or restaurant. The following clips show children cleaning in the classroom, washing dishes, and working in the garden. In each situation, the students learn and practice the skills using the same tools and techniques as they would at home or in the community. In the US, students might learn these activities in a simulated setting with less dangerous versions of the tools. When they attempt the real task, they may have difficulty with the new tool or setting. Students at the Irente Rainbow School can more seamlessly go between settings because the multiple settings are very similar.

Learning to support the family-Agriculture Skills

Children participate in activities throughout the school day and year that they can use to help their family and earn a little money. At the school, learning these contributions not only support the school, but also teach them skills to help out at home and support their neighbors. A local pastor wrote in his Master's thesis,

> The [Wasambaa] work together and help each other in various activities. During cultivation, harvesting, or if a person builds a house, he/she may invite neighbors, friends or clan and family members to join him/her without official payment; only some food is required for them. This time is used not only for work but also for looking on their culture and wellbeing of the community. (Shemweta, 2008, p. 17)

Students carried wood that had been chopped in the area to stack for the wood burning stove and husked and shelled corn raised at the school that will used for *ugali* and *uji* (local foods made from corn flour).

There were several examples of students working to support their family outside of school using skills practiced at school as part of the vocational curriculum. A parent explained that his child came and told him they had learned to shell corn, but the parent was skeptical. A few days later when the father starting to shell the family's corn he was pleasantly surprised to see his son step right in and help the family. The student learned and transferred a task to the real world that was immediately useful and demonstrated his capability to participate in the community and contribute to the family income and wellbeing.

One afternoon I saw Musa walking down the road

carrying a machete. In the United States, I might be alarmed if I saw one of my students with developmental disabilities carrying a knife in public, but I knew that he knew how to be careful and was on his way to get leaves for the goats at home. He carried a feed sack to put them in when he was done. He greeted me and we talked briefly. Not only was Musa able to go and cut leaves for the animals and bring them back, he was also doing it independently and safely. At school, he had learned to cut grass for the goats with a machete and he practiced many times never using a toy knife or a stuffed animal. Using the actual tools he needed to perform the task, he easily transferred what he learned at school to his home environment. The students at the school are learning through the use of Vygotsky's theory of the zone of proximal development and improving their skills until the students can perform as well as the adults during daily activities (Chaiklin, 2003). His mother explained to me,

> The school is important and necessary in the community and society. When a child goes to the school his/her intelligence will be changed and his/her ability will increase compared to if her/she never attended school. Therefore, a child going to school in the community is necessary. He will learn things for his/her future because when he/she is an adult he/she will be independent and he/she will have an easier life compared having not gone to school.

When I interviewed Musa's mother, his older sister was also sitting with us and listening. When I asked if the other children in the village knew about Rainbow School, his sister assured me they did and that they respected the children with disabilities; they did not laugh at them. Musa has learned the skills help at home and has a loving and supportive family. He will have a place in his family working on the farm and with the livestock.

Grace's family and teachers believe that she will be successful living and working in the community (Stone-MacDonald, 2010). Because she can do so many things around her home, go to town, and help in the family business, she will probably be successful as a subsistence farmer and charcoal vendor. Her sisters and their families will support her. She may get married and have children. She will benefit because her family believes in her skills and her ability to be independent.

Discussion and Implications for Practice

Gonzalez et al. (2005) have provided a model of the funds of knowledge that must be understood in order to understand the content and skills that are most important in a community. When working with schools and families to serve children with developmental disabilities, knowing the community funds of knowledge can support the development of a functional curriculum and make it individualized and authentic for that community and those children. For example, if a child likes working on cars and his family can help her/him help work on the car to do oil changes or washing the car, it is helpful for her/him to learn skills that will work in an auto shop or car dealership. As the same time, a child in a city needs to learn the subway or bus system, while a rural child needs to learn to walk or find other types of transportation. In addition, community funds of knowledge can help teachers connect more directly with parents by valuing and employing community knowledge and local ways of learning and knowing (Stone-MacDonald, 2010).

Students with developmental disabilities need extensive instruction in functional life skills, social skills, and functional academics that other typically developing students will learn through interactions in their daily lives (Dymond & Orelove, 2001). Second, classrooms should represent natural settings for that community. Students acquire and maintain skills better when they learn and practice in community-based settings (Westling & Fox, 2000). The lessons from Tanzania remind educators and policymakers that while academic content is important, functional and life skills provide students with many of the necessary proficiencies to live successfully in their community (Stone-MacDonald, 2010). Learning to work in comparable settings at school and at home increases students' competence and confidence to live independently in the community.

The curriculum designed around the funds knowledge about local skills that were needed in the community. The curriculum was originally enacted without the national curriculum for students with intellectual disabilities, and school administration utilized their knowledge of the primary school curriculum and the local knowledge about farming, animal husbandry, cleaning, carpentry, self-care skills, and social skills students would need to be accepted in the community as active members. The school found, through parent meetings and interaction with other organizations in Tanzania working with people with disabilities, that students needed both self-care and social skills like their typically developing peers and also to possess work skills to help with tasks in the home and on the farm to contribute to the family well-being. This collection of knowledge and skills was determined through an informal process by stakeholders to find the community funds of knowledge (González, et al., 2005;

González, et al., 1995). Community funds of knowledge were then utilized in the educational process at the Irente Rainbow School.

This study has applicability in the United States as well. First, the results of this study show that local context is important and knowledge of local context in designing functional curricula for students with developmental disabilities is essential. A curriculum must address not only the various domains in functional academics, life skills, social skills, and vocational skills (Patton, Cronin, & Jairrels, 1997), but the manner in which these domains are addressed needs to reflect the local context. To accomplish these goals, teachers need to know the important community funds of knowledge that impact their students and their families (Stone-MacDonald, 2010).

The overall goal of education is to create members of society who can participate economically and socially (Merrick, 2001). The Irente Rainbow School has designed a curriculum that prepares students to know the community knowledge and practical skills needed when they leave the school. While only two students have left the school to enter the community as adults since the school began, those students and others show signs of being able earn money for their basic needs and work in the family, as well as evidence they are accepted by their neighbors and friends in the community as equal members. One Rainbow staff member described the school as "[a] very friendly environment, staff respect our children, we don't treat them as idiots, we treat them as children. They are very natural in the environment."

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Grading Students with Significant Disabilities in Inclusive Settings: Teacher Perspectives

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Abstract

The present study describes teacher (K-12) opinions and practices related to grading and providing modified instruction, assignments, and assessments for students with low-incidence disabilities in inclusive settings. One hundred and thirty nine teachers working in K-12 inclusive schools in Arizona and California completed an on-line survey regarding modifications to the general education curriculum and grading practices. Findings of this study include: (a) general and special education teachers use different practices and have different preferences for grading students with disabilities; (b) General and special educators also reported differences in their level of comfort and training for grading, with special educators feeling more prepared to grade students with disabilities; (c) Elementary teachers were more likely to accept modified work than secondary teachers; (d) Secondary teachers report using modifications to instruction less frequently than elementary school teachers. Implications and recommendations based on these findings are reported.

Grading Students with Significant Disabilities in Inclusive Settings: Teacher Perspectives

Recent decades have witnessed a significant increase in the number of children with disabilities being educated in general education, or inclusive, settings (Katsiyannis, Conderman, & Franks, 1995; Kochanek & Buka, 1999). In fact by 2004, 50% of all students with disabilities were reported to spend 80% or more of their school day in general education classes (U.S. Department of Education, 2005). Furthermore, UNESCO and the Salamanca Conference affirmed the rights of all students to be educated in an inclusive setting (UNESCO, 2009). In short, the placement of students with disabilities in general education is based on empirical, philosophical, and legal grounding.

While evidence supports inclusive practices, challenges in the implementation of inclusive education remains for students with significant disabilities. For our purposes here, significant disabilities are those low-incidence disabilities such as autism, cerebral palsy, and severe intellectual disabilities. We consider low-incidence disabilities to be those that occur in less than 2% of the school population, with students requiring significant supports to meet their educational needs. Both special and general education teachers are often unsure of how to manage the needs and supports of diverse students in general education settings (Carter & Hughes, 2006; Dymond, Rengzaglia, & Chun, 2008). Yet students with disabilities are to access and participate in the general education curriculum (Individuals with Disabilities Education Improvement Act, 2004; No Child Left Behind Act, 2001) as well as receive a specially designed education program planned

to address their unique needs (Education for All Handicapped Children Act, PL 94-142, 1975).

Thus, teachers and students are under the direction of two education processes: the general education curriculum and its associated local and state assessment procedures, and the Individual Education Program (IEP). The IEP is required to specify the goals, services, and specially designed instruction for students with disabilities to enable them to attain maximum success in all areas of identified need. To obtain access to both processes, students receiving special education often have adaptations made to the general education curriculum to allow access and participation in the core curriculum regardless of ability level (Browder & Spooner, 2006; Downing, 2008).

Adaptations can take many forms, including individualizing learning goals, teaching, and supports (Giangreco, 2007; Janney & Snell, 2006; Lee et al., 2006). Adaptations for students with significant disabilities typically alter the product or assessment document, necessitating different grading procedures from other students in the class. For example, an eighth grade history assessment on the causes of the civil war may contain vocabulary and concepts that are not accessible to a student with significant disabilities. This student may take a modified version of the test, with different and/or fewer questions or different output modalities.

In addition to curricular adaptations, grading adaptations are also permissible and often necessary (Bursuck, Munk, & Olson, 1999). In the above example, teachers grading the adapted assessment would most likely be unable to use a standard rubric to grade the adapted test, and would likely need to adjust questions, acceptable answers, and the weights given to correct responses. Therefore, while grading adaptations are permissible as part of the IEP, teachers are often unsure of how to report student grades on report cards as the student's disability significantly impacts his or her ability to demonstrate grade-level progress (Ring & Reetz, 2002).

Adapted curriculum and adapted grading will often go hand in hand, as it is necessary to have a different grading scheme for students who complete adapted materials. Likewise, it is important to ensure that both general and special education teachers understand the purpose of the adaptations and that the provision of appropriate materials and instruction are in place for students with disabilities. Without appropriate materials and instruction, student grades cannot be seen as a fair and accurate representation of what the student has learned. In short, the availability of an appropriate curriculum with meaningful adaptations and supports is essential to meaningful grading of students with

significant disabilities. Research into adaptations and grading of students with disabilities has focused on students with mild disabilities, such as learning disabilities. As a result, parents and teachers of students with low-incidence disabilities have little information on how to provide adaptations to class work, tests, and grades.

The purpose of this survey study is to expand the literature on grading practices for students with significant disabilities. Specifically, this study sought to determine the practices and preferences held by teachers of modified grading procedures for students with significant disabilities who were included in general education settings. The following research questions were addressed in the present study: (1) What are the beliefs, knowledge, and practices of teachers with regard to how to grade students with significant disabilities in inclusive settings? Do these beliefs, knowledge, and practices differ depending on type of educator (special or general) and level of teaching (elementary or secondary)? (2) What are the beliefs, knowledge, and practices of teachers with regard to modifying instruction for students with significant disabilities in inclusive settings? Do these beliefs, knowledge, and practices differ depending on type of educator (special or general) and level of teaching (elementary or secondary)?

Method

Participants

An on-line, anonymous survey was constructed based on the existing literature on grading practices and sent to 270 teachers in seven school districts who practice inclusive education for students with significant disabilities in California (3 districts) and Arizona (4 districts). School districts were representative of urban, suburban, and rural areas as determined by city population densities, as shown in Table 1. Schools that practice inclusive education within the school district were emailed the surveys. Schools were determined to practice inclusive education based on input from a teacher contact known to at least one of the authors. The teacher contact was either a current or completed graduate student in special education from an accredited university that teaches and promotes inclusive practices. Upon input from the special education teacher contact, the schools were visited by the first two authors to determine that in fact students with significant disabilities participated in general education for at least 80% of the school day. Two hundred and seventy teachers were sent the email survey, with a total of 139 teachers responding, yielding a response rate of 51%. A

Table 1

School Demographic Information

School	State	Setting	Per Pupil Expenditure	Per Capita Income	Percent Free and Reduced Lunch	Number of Schools Mailed Surveys	Number of Teachers Mailed Surveys	Percent Responded
A	AZ	S	$5965	$35,173	13.70	1	21	49
B	AZ	R	$8127	$19,455	59.90	2	24	44
C	AZ	R	$9574	$10,479	92.40	1	31	53
D	AZ	S	$5829	$17,518	50.30	1	7	86
E	CA	U	$8284	$22,937	15.29	8	110	48
F	CA	U	$8125	$15,245	53.31	1	38	37
G	CA	S	$8163	$26,811	33.60	1	39	50

Note. R = Rural; S = Suburban; U = Urban

total of 117 general and 22 special education teachers completed the survey (84% and 16%, respectively).

Procedure

The survey was developed based on a review of the grading and adaptations literature for students with significant disabilities. A total of 22 items were included on the survey instrument, including five demographic questions, ten questions related to grading practices and beliefs, and seven questions related to modifications practices and beliefs. The internal consistency of the survey instrument was determined using a split-halves method, and a correlation of 0.89 was determined, indicating adequate consistency of the survey. Prior to administering the survey, it was pilot tested with four teachers: one 8th grade English teacher, one 7th grade history teacher, one elementary school special education teacher and one middle school special education teacher. These teachers provided their input regarding the utility and ease of understanding the survey questions. The survey was available for teachers to complete on-line for approximately two months (4/29/09-7/1/09). We stopped collecting surveys on July 1 as no teacher had attempted the survey for three weeks, likely because the teachers were on summer break and not checking their emails.

Demographic Information. The demographic information collected had two primary purposes: to determine the subject and grade levels taught by the teacher participants, and to determine years of teaching experience and years of teaching specifically in inclusive settings.

Grading Information. A review of the literature was completed to determine literature-based grading practices and teacher beliefs for students with disabilities in inclusive settings. The following five grading options (Silva et al., 2005), were included in the survey instrument: (a) *Progress towards meeting IEP goals and objectives*: Teachers assign grades based on mastery of IEP goals and objectives, rather than progress on state standards, (b) *Improvement over past performance*: teachers assign grades based on how well they determine the student is improving over past performance, (c) *Performance on prioritized, modified work:* Teachers assign a grade for a student based on accuracy of completing modified assignments and assessments, (d) *Improvement in student learning process (rather than product):* Teachers assign a grade based on student demonstration of learning to complete a task, rather than the quality or quantity of the final product, (e) *A system of modified weights and scales:* Teachers assign grades based on a modified system of assigning grades, so that, for example, only 50% accuracy is required to earn an A whereas other students would require 90% accuracy to earn an A grade.

Teachers described their grading practices and beliefs

related to each of these five grading schemes. Using these schemes as referents, teachers were asked to determine which grading option they believed was most and least fair, and which were the most and least informative to other teachers and parents. Teachers were also permitted to enter a description of an "other" practice if they felt it was more fair, appropriate, or informative. Additionally, teachers reported on their current level of knowledge related to grading students with significant disabilities, their beliefs about the value of these assigned grades, and their grading practices using a forced-choice Likert scale with options strongly agree, agree, disagree, strongly disagree, and don't know/not applicable. In addition to ranking preferences, teachers were asked to complete an open-ended response describing their current grading practices for students with significant disabilities. Lastly, teachers were asked to report their grading preferences for Pass/Fail or letter grading, the average grade students with significant disabilities receive in their courses, and whether or not they assign grades primarily based on state standards or IEP goals and objectives.

Modification Information. Practices for modifying student instruction, assignments, and assessments were also collected. Teachers answered forced choice Likert questions related to how well modifications align with state standards, how often students with significant disabilities complete modified work, and the person who is primarily responsible for creating the modified work. Further, teachers reported who they thought should be primarily responsible for creating the modified work. Teachers also completed an open-ended question regarding their thoughts or concerns on modified instruction, assignments, and assessments.

Additionally, teachers reported their preferences for the following types of modified work:

1. *Alternate or parallel assignments and assessments:* students complete a different assignment or assessment than their peers in the general education class.
2. *Alternate instruction:* students receive instruction using modified materials such as modified text books or worksheets.
3. *Students demonstrate knowledge in alternate form:* Students are permitted to demonstrate what they have learned in a different form, such as by drawing pictures, making collages, or dictating their answers to a scribe.
4. *Shortened assignments:* Students complete the same work as their peers, but complete less quantity of work.
5. *Extended time:* Students receive additional time to complete the same assignments and

assessments as their peers.
6. *Classroom aides:* An adult teacher assistant (e.g. para-educator) assists the student in completing their assignments and keeping the student on-task.
7. *Peer tutors:* Peer tutors assist the student in completing their assignments and keeping the student on-task.
8. *Student exemptions:* Students receive non-penalized exemptions from completing entire assignments, assessments, or portions of those assignments and assessments.

Data Analysis

The data generated from the on-line survey were analyzed using both quantitative and qualitative analyses. Descriptive statistics were utilized to describe the demographic information of the survey participants and the basic results of the survey instrument. Independent-samples t-tests were used to describe how different groups of teacher participants (e.g. special and general education, or elementary and secondary teachers) responded to survey questions. Statistically significant results are reported.

All comments submitted by the teacher respondents were copied verbatim into a single word document and then coded for themes by four independent coders. Inter-rater reliability for coding and identifying themes had a kappa of .86. A qualitative data analysis procedure was employed that involves highlighting and organizing themes based on grounded theory techniques (Attride-Stirling, 2001; Corbin & Strauss, 1990).

Results

Demographic Information

A total of 139 teachers responded to the on-line, anonymous survey. Teachers representative of Kindergarten through 12th grade completed the survey, as depicted in Table 2. Elementary school teachers and secondary teachers (those teachers at middle, junior high, and high schools) were surveyed. Further, teachers representing multiple, single, and special education subjects completed the survey. As depicted in Table 3, general education (GE) and special education (SE) teachers had similar years of teaching experience, although SE teachers had slightly more experience in inclusive settings than their GE counterparts. Elementary school (ELEM) teachers had slightly more years of teaching experience and teaching experience in inclusive settings on average when compared to secondary (SEC) teachers.

Table 2

Description of Participants Teaching Experience

Participant	Percent of Respondents	Mean Years Teaching	Mean Years Teaching in Inclusive Setting	Percent Received Professional Development for Inclusion
Elementary Teacher	34.3	15-19	10-14	61.4%
Secondary Teacher	65.7	10-14	5-9	65%
Special Education Teacher	8.4	15-19	10-14	93.8%
General Education Teacher	91.6	15-19	5-9	57%

Table 3

Teacher Professional Development for Inclusive Education

Theme	Exemplar Quotes	Percent of Total Comments
College Courses / Credential Courses	Credential courses introduced the concept.	30%
In-Service / Staff Development	On-Site Special Education Teacher Presentations	28%
Conference / Workshop	I think one afternoon workshop	14%
Not Related to Inclusion	Autism workshops County office Ed	14%
Non-Specific	Some training on how to include sped students into the regular program and how to read an IEP	10%
Parent	Mostly as a parent of a special needs child, not as a teacher.	2%
No Training	I understand that it means to include physically or mentally handicapped students in your class to teach them. I just know the meaning of the term and have not really been trained.	2%

In addition to describing subject matter, grade level, and years of teaching experience, teachers reported whether or not they had received professional development of any form for inclusive education. Special education teachers were much more likely to report receiving inclusive professional development. However, less than two thirds of general education teachers received this preparation, with secondary teachers slightly more likely to have received professional development than elementary teachers. Those teachers who did receive professional development for inclusive education were asked to describe that preparation.

Fifty-eight respondents (42%) provided information about their professional development for inclusive education, as depicted in Table 3. Most teachers received their preparation for inclusive education either in their teacher preparation courses or through in-service presentations and staff development opportunities in their schools or school districts.

Grading Results

Independent-samples t-tests were conducted to describe the grading and modification practices of elementary and secondary teachers and special and general education teachers. There were significant differences on a number of variables. As depicted in Table 4, ELEM teachers in this sample believed that the most fair and appropriate grading for students with disabilities is based on improvement over past performance, whereas SEC teachers believed grades based on their performance on prioritized tasks was most fair and appropriate. However, ELEM teachers believed that performance on prioritized tasks was most informative and SEC teachers believe that improvement over past performance was the most informative type of grading. There were no other significant differences between ELEM and SEC teachers in their beliefs and knowledge regarding grading practices.

Analysis of the responses of special education and general education teachers reveals additional significant differences between the grading beliefs and knowledge of these groups of teachers. As shown in Table 6, GE teachers reported having less knowledge on how to grade students than SE teachers. SE teachers further report they collaborate more than GE teachers and have a better understanding of how the grade assigned by them contributes to the student's grade promotion, graduation, and college admission. GE teachers report that they rarely use specialized rubrics to grade the unique assignments of students with disabilities, while SE teachers report that they usually use these kinds of rubrics. GE teachers report that they rarely grade students based primarily on effort, while SE teachers report that they usually grade students with disabilities based on the effort they put forth. Lastly, SE teachers appear to understand how students are progressing on their IEP goals in the context of inclusive settings better than do GE teachers.

As part of the survey instrument, respondents had the opportunity to respond with "other" and provide open-ended responses to seven of the ten questions about their beliefs related to grading and one open-ended question in which respondents were asked to describe how they grade students with disabilities in their classes. Ninety-eight teachers (71%) provided written responses to these questions, which were qualitatively analyzed into seven themes, as depicted in Table 5. Of these 98 teachers, 59% of respondents reported on how they currently grade students with disabilities, with most teachers reporting they assign grades based on student effort or participation. Another 7% of respondents indicated how they would prefer to grade students if given the choice, with most teachers reporting they would prefer to assign grades based on anecdotal reports. Despite teaching students in inclusive schools for a number of years, 10% of the respondents indicated that they were unsure of how to grade students with disabilities (6%) or that they did not differentiate grading practices for those students with and without disabilities (4%). Seven percent of teachers also described their frustrations or discomfort with current grading practices, even though this was unsolicited in the survey.

Modifications Results

Teachers were also asked to report their knowledge and beliefs regarding modifications practices for students with significant disabilities in inclusive settings. A number of statistically significant differences between ELEM and SEC teachers and SE and GE teachers were noted in the surveys. As depicted in Table 4, SEC teachers were more likely to report using specific modifications in their classes than ELEM teachers, including the use of alternate or parallel assignments, alternate instruction, peer tutors, and allowing students to demonstrate their knowledge in alternate forms. ELEM teachers, however, reported using modifications in their classes more frequently than SEC teachers and agreed that the modified work reflected concepts or standards presented in their class more strongly than SEC teachers. Differences between GE and SE teachers were also found, as illustrated in Table 6. Overall, SE teachers were more likely to agree that students with disabilities have modifications in place, and that specific modifications were in use than GE teachers in nearly every modification category.

Variable	Elementary Mean	Secondary Mean	F	Significance
GRADING:				
Have questions about grading [a]	2.86	3.05	.297	.348
Grade like other students [a]	3.42	3.37	1.611	.737
Modified grades count [a]	2.66	2.93	1.026	.247
Knowledge of how to grade [b]	2.61	2.70	.305	.653
Comfort level grading [a]	2.43	2.57	.092	.504
Worry how others perceive grade [a]	3.07	3.03	1.143	.860
Collaborate to assign grade [a]	2.21	2.44	.350	.349
Know how grading developed [a]	2.83	2.77	.081	.811
Know how grade contributes [a]	2.88	2.51	.540	.128
Use rubrics to assign grade [c]	2.63	2.83	.000	.427
Grade reflects effort [c]	2.26	2.47	4.421	.355
Understand how progressing on IEP [a]	1.91	1.95	6.029	.808
Comfortable talking to parents [a]	1.91	2.08	.002	.342
Preferred type of grading [d]	1.91	1.68	.747	.143
Estimated current GPA	3.89	3.02	7.608	.480
Most Fair & Appropriate [f]	2.25	2.90	2.778	.017**
Least Fair & Appropriate [f]	4.58	4.35	2.120	.440
Most Informative [f]	1.98	2.43	1.007	.076*
Least Informative [f]	4.59	4.23	3.960	.243
MODIFICATIONS				
Modifications reflect subject [a]	1.70	2.15	2.753	.009*
Alternate/Parallel Assignments [a]	2.19	2.65	8.693	.023**
Alternate Instruction [a]	2.16	2.62	8.353	.026**
Alternate Form of Knowledge [a]	2.28	2.70	1.417	.065*
Shortened Assignments [a]	2.14	2.32	1.988	.408
Extended Time [a]	2.16	2.13	.447	.002

Table 4 (continued)

Peer Tutors [a]	2.36	2.93	.291	.009**
Exemptions from Assignments [a]	2.63	2.73	.087	.650
Students have Modified Work [c]	2.12	2.17	.506	.795
SE Teacher makes modifications [c]	2.67	2.88	4.605	.343
Para-educator makes modifications [c]	2.95	2.87	7.588	.720
GE Teacher makes Modifications [c]	2.29	2.64	8.210	.124
Who should make modifications [g]	2.39	2.30	.002	.669
% of Time Use Modified Work [e]	5.07	4.49	.689	.097*

Note. *Significant at p<.10; **Significant at p<.05

[a] 1=Strongly Agree, 2 = Agree, 3 = Disagree, 4 = Strongly Disagree 5 = Don't Know/Not Applicable
[b] 1 = No knowledge, 2 = Limited Knowledge, 3 = Average Knowledge, 4 = Above Average Knowledge, 5 = I'm an expert
[c] 1 = Always, 2 = Usually, 3 = Rarely, 4 = Never, 5 = Don't Know/Not Applicable
[d] 1 = Pass/Fail Grading, 2 = Letter Grading
[e] 1 =0% of time, 2 = 1-20%, 3 = 11-40%, 4 = 41-60%, 5 = 61-80%, 6 = 81-99%, 7 = 100% of the time
[f] 1 = Progress towards meeting IEP goals and objectives, 2 = Improvement over past performance, 3 = performance on prioritized, modified work, 4 = How well student is learning to complete a task, 5 = A system of modified weights and scales
[g] 1 = GE teacher, 2 = SE teacher, 3 = Para-educator

Table 5

Grading Beliefs and Practices Qualitative Themes

Theme	Exemplar Quotes	Percent of Respondents
Non-specific comment about grading practices or beliefs	Depends on the individual student and the recommendation of the SPED teacher. Differentiated curriculum is a given!	12%
Uncomfortable or concerned with current grading practices	Modified grades should count, but not be weighed the same. Otherwise, a student who receives a modified "C" would appear to have all the skills associated with an unmodified grade. The grades I post are changed by the sped teacher later. I do not agree with that! I'd grade differently if the grades meant something for promotion, graduation, college.	7%
Unsure of how to grade	We don't have a grading system for students with disabilities	6%
Teacher does not assign a grade to the student	At third grade, grades are not given SPED teachers usually give those grades to us as a teacher.	5%
No grading differences	I grade the student as an average student.	4%
		(continued)

Table 5 (continued)

Table 5 (continued)

Teacher assigns grades using:		
Effort/Participation	I grade them on the work they produce and the effort/amount of time they spend working on assignments.	18%
IEP Goals	I use the IEP goals to help with "grading" students	13%
Collaboration	I frequently conference with the special education teachers about the grades I'm giving and my rationale	10%
State Standards	…A notation is made on the level of progress that is being made on that standard	7%
Modified system	I give modified assignments but they cover the same content areas.	7%
Behavior	…I also grade them on their ability to behave appropriately in the general education setting. Part of their grade is the number of "stars" or points they earn for behavior in each class.	2%
Work Production	Quality and quantity is relevant in a language course and must count as part of the student's grade	1%
Progress or Improvement	Academic or behavioral improvement	1%
Teacher prefers to grade using::		
Anecdotal Reports	I'd rather see some kind of descriptive narrative, explaining what work was done, how work has been adapted, what a student has done with the new information, new knowledge	3%
Alternate Assessment	Rubric grading based on personal goals	1%
State Standards	Standards based—1, 2, 3. 3 means the standard has been achieved, 2 is on its way, 1 below grade level	1 %
Note Modifications	[I prefer] letter grading, but with a comment that says "grade achieved with modifications and support" [This] depends on the class; for a gifted class or high achieving class, some of these choices are inappropriate	1%
Course Content	Improvement over past performance is important	0.5%
Learning Process		0.5%

SE teachers also believed that they made more modifications than GE teachers. GE teachers were more likely to report that SE teachers should make modifications, and SE teachers were more likely to report that SE teachers or paraprofessionals should make modifications.

Respondents were provided an opportunity to describe "other" modifications practices they use in two survey questions, and two additional survey items were open-ended questions for teachers to respond to. Ninety-three teachers provided written responses to these questions (67%), which were qualitatively analyzed into 10 themes, as depicted in Table 7. The most common type of modification was reducing the length of assignments, with 33% of respondents describing this kind of modification. Nearly a third, or 27%, reported developing alternative assignments as a modification.

Lastly, teachers were provided an opportunity to express any of their thoughts or concerns about modifications of student work in inclusive settings in an open-ended format. Sixty-one teachers responded to this question, with responses coded into 10 themes, as depicted in Table 8. Most teachers, 44%, reported feeling that they lacked time, resources, or knowledge to adequately create modifications for students with disabilities in inclusive settings. A quarter of the teachers also reported believing that student success was paramount and that modifications enabled students to be successful in inclusive settings.

Limitations

The present study described teacher beliefs, practices and knowledge for grading and modifying assignments and assessments for students with significant disabilities. At present, research into grading and modifications has focused primarily on students with learning disabilities and this study extends our knowledge to grading and modifications practices for students with more significant disabilities. However, a number of factors limit the generalizability of the findings reported here. First, the survey was delivered in a two-month time frame by e-mail. It is possible that we would have achieved a higher response rate had we collected surveys for longer than two months. Additionally, it is possible that we would have obtained a richer dialogue about teacher practices, knowledge, and beliefs had we used an in-person (e.g. focus group format) rather than an on-line format. Secondly, School E received nearly half of the surveys sent. School E was larger in population that the other schools surveyed, but as a result, School E is likely over-represented in the sample of our study. Lastly, this survey research represents a relatively small sample size

(139 teachers) in a relatively small geographic area of the United States (California and Arizona). As a result, the findings must be interpreted with caution.

Discussion

Differences between General and Special Education Teachers

The present study found differences between general and special education teacher along a number of variables. Of interest, general and special education teachers report using different practices for grading students with disabilities. However, these two groups of teachers are presumably referring to the same students. It is possible that SE teachers over-estimate how often the modifications they have created are implemented and how frequently they collaborate with GE teachers. It is also possible that SE teachers and GE teachers are using different language, in that SE teachers consider simple and general adaptations (such as providing a computer for written assignments) to be modification whereas GE teachers consider only more detailed, specific adaptations (such as alternate assignments) to be modifications. These results appear to suggest that SE teachers believe that inclusive education practices, such as adaptations and collaboration, are being implemented to a larger extent than GE teachers. Quality inclusive education occurs when students have appropriate supports and services in place and good collaboration among the professionals supporting their education (Downing, 2008; Jorgensen, Schuh, & Nisbet, 2006). A lack of shared knowledge between GE and SE teachers was also apparent in the survey responses. SE teachers reported a stronger understanding of how to assign grades to students with disabilities, how the grade assigned contributes to student promotion and graduation, and how students are progressing on their IEP goals compared to GE teachers. It is possible that this difference in knowledge can be attributed to the teacher preparation programs of SE and GE teachers, whereby SE teachers by definition have preparation in special education and also were significantly more likely to have inclusive education professional development (93.8%) than GE teachers (57%).

There also appears to be a lack of collaboration occurring between GE and SE teachers to share their knowledge of the curriculum and how to provide grading and modifications to students receiving special education services. Several teachers noted this as a specific concern, and wished for more opportunities to hear from the SE teacher about IEP goals, modifications, and expectations. Further, research indicates the benefits of collaboration between GE and SE teachers to promote

Table 6

General (GE) & Special Education (SE) Teachers

Variable	GE Teacher Mean	SE Teacher Mean	F	Significance
GRADING:				
Have questions about grading [a]	3.06	2.69	.266	.168
Grade like other students [a]	3.43	3.25	.611	.353
Modified grades count [a]	2.78	3.14	.025	.291
Knowledge of how to grade [b]	2.46	3.50	.021	.000**
Comfort level grading [a]	2.56	2.31	1.305	.394
Worry how others perceive grade [a]	3.09	2.80	.019	.342
Collaborate to assign grade [a]	2.43	1.94	9.786	.032**
Know how grading developed [a]	2.87	2.47	5.504	.131
Know how grade contributes [a]	2.80	2.06	15.319	.001**
Use rubrics to assign grade [c]	2.87	2.09	3.866	.049**
Grade reflects effort [c]	2.45	1.90	5.571	.023**
Understand how progressing on IEP [a]	2.20	1.56	.018	.070*
Comfortable talking to parents [a]	2.06	1.75	.252	.094
Preferred type of grading [d]	1.71	2.00	2.913	.161
Estimated current GPA	3.94	3.06	6.069	.115
Most Fair & Appropriate [f]	2.60	3.00	1.626	.263
Least Fair & Appropriate [f]	4.40	4.58	.315	.690
Most Informative [f]	2.22	2.50	.084	.429
Least Informative [f]	4.39	4.17	1.144	.684
MODIFICATIONS				
Modifications reflect subject [a]	1.97	1.94	.341	.889

Table 6 (continued)

Alternate Form of Knowledge [a]	2.61	2.06	16.284	.002**
Shortened Assignments [a]	2.30	1.94	8.131	.034**
Extended Time [a]	2.14	2.19	.601	.862
Classroom Aides [a]	2.33	1.75	13.994	.004**
Peer Tutors [a]	2.80	2.13	7.067	.026**
Exemptions from Assignments [a]	2.78	2.25	5.097	.032**
Students have Modified Work [c]	2.19	1.88	3.397	.068*
SE Teacher makes modifications [c]	2.92	2.06	.738	.004**
Para-educator makes modifications [c]	2.96	2.50	3.228	.129
GE Teacher makes Modifications [c]	2.45	2.88	2.227	.139
Who should make modifications [g]	2.20	2.88	11.089	.072*
% of Time Use Modified Work [e]	4.73	4.94	8.716	.668

Note. *Significant at p<.10; **Significant at p<.05*
[a] 1=Strongly Agree, 2 = Agree, 3 = Disagree, 4 = Strongly Disagree 5 = Don't Know/Not Applicable
[b] 1 = No knowledge, 2 = Limited Knowledge, 3 = Average Knowledge, 4 = Above Average Knowledge, 5 = I'm an expert
[c] 1 = Always, 2 = Usually, 3 = Rarely, 4 = Never, 5 = Don't Know/Not Applicable
[d] 1 = Pass/Fail Grading, 2 = Letter Grading
[e] 1 =0% of time, 2 = 1-20%, 3 = 11-40%, 4 = 41-60%, 5 = 61-80%, 6 = 81-99%, 7 = 100% of the time
[f] 1 = Progress towards meeting IEP goals and objectives, 2 = Improvement over past performance, 3 = performance on prioritized, modified work, 4 = How well student is learning to complete a task, 5 = A system of modified weights and scales
[g] 1 = GE teacher, 2 = SE teacher, 3 = Para-educator

Table 7

Qualitative Description of Modifications Provided by Teachers

Theme	Exemplar Quote	Percent of Total Comments
Shorten/reduce assignment	It might be shortened (10 comprehension questions rather than 20) The assignment may require fewer pieces or less detail.	33%
Different or altered assignment	Reading an alternative curriculum at instructional level A science test—matching images with terms—sun, moon, stars	27%
Non-Specific	Almost all assignments have latitude for being completed on different levels with different abilities Make-up of the class	10%
Modification used is direct instruction	They also may be pulled to the back table to have one on one time with me. Most modified work is completed with a para-educator adapting the assignment with the full inclusion student.	8%
Complete work elsewhere / No modifications are made	Students rarely do modified work in my class. They do it in the special education class.	8%
More Time only	Extended time	5%
Alternative Materials Used	Used rubber stamps or word processors	4%
Limited Information on how to modify	The amount of time they are in class is minimal	3%
Alternate Assessments or Rubrics	Alternate rubric is developed to match [the modified assignment] and still keep the bar high.	2%

Table 8

Thoughts or Concerns About Modified Work for Students with Disabilities

Theme	Exemplar Quote	Percent of Total Comments
Lack of time, resources, or knowledge on how to provide modifications	Can be very time consuming and is sometimes difficult to maintain regular contact with the resource teacher and para-educator. Things can get hectic. Sometimes I don't know how other general education teachers are dealing with the same students with disabilities.	44%
Students Successful	I really think that most of students with disabilities need to have modified work. This helps them get work done on time and at their own level	25%
Content, activity, or personnel specific	This is hard because I teach math, and math is a building block to other math concepts…so it's important that students understand the concepts being taught.	8%
Learn content / Look like others	My biggest concern is that they won't learn the actual content I feel that the work should resemble the work others are doing is an important factor	6%
Collaboration	I think the special education teacher needs to sit down with the classroom teacher at the beginning of each year to specify the IEP goals for the student and the expectations for the use of the para-educator in the classroom	3%
No thoughts or concerns / Have not considered	None Since I teach 3rd grade I haven't given much thought to how students might be graded in secondary schools and how that might affect college entrance, honors programs, etc.	4%
Non-Specific	I think this has to be considered on a case by case basis Not so much about the work but the availability of the para-educator to be at the parent/teacher conference. Since my student has a full time para I would feel more comfortable having the para speak to how the student is doing on IEP and/or state standards—it is the para-educator that works with the child the most—so he/she should be able to talk	4%
Qualifications	Qualified teachers should teach children with disabilities	3%
Fairness	My prime concern is the anger other teachers have about these children earning credits. I also hear from students in this school how it is not fair for some to use notes on tests. Differences in who's the case manager of particular students---some students get different conditions…There isn't a consistent set of rules across the board for students	3%

The results of this study suggest that inclusive education practices for students with disabilities would be strengthened by increased collaboration between GE and SE teachers. Further research is warranted to demonstrate the effectiveness of collaboration strategies and how readily the ideas generated in collaborative sessions are implemented in the daily practices of teachers.

Differences between Elementary and Secondary Teachers

Additional differences between the beliefs and practices of elementary and secondary teachers were noted in the survey responses. ELEM teachers appeared to use modifications more readily than SEC teachers, and were more interested in assigning grades based on overall improvement. SEC teachers, on the other hand, reported using modifications to a lesser degree and preferred to grade students based on their ability to learn important skills. Given the weight grades carry in secondary schools in terms of determining graduation, college, and career opportunities, it is not surprising that SEC teachers were more interested in having grades closely tied with learning specific skills.

Given the differences in grading and modifications practices between elementary and secondary schools, it is possible that students and families experience a sense of shock in terms of the different expectations related to grading and modifications as students exit elementary and enter secondary schools. This may promote further anxiety and confusion for students and families who are already experiencing anxiety about moving from primary to secondary schools (Jindal-Snape & Miller, 2008). Additional research focused on understanding how differences in expectations between elementary and secondary schools affect student and family stress and anxiety warrant additional research attention.

In addition to differences in values related to grading and modifications between elementary and secondary schools, it appears from comments made by teachers that some elementary teachers are not planning and preparing for the students to enter secondary schools and later adult life. For example, some elementary teachers reported that they had not given a great deal of thought to how the student would be graded and the implications of grades in later school years. Current federal special education law (IDEA 2004) requires that transition planning begin by age 16. Many professionals and parents agree, however, that this planning should begin well in advance of the legal minimum. It is unclear from the current study if and how well teachers are preparing for post-secondary transition in their grading and modification practices, much less when parents and students are informed of post-secondary transition issues such as housing, employment, guardianship, and education issues. Research is needed to determine when and how families and students are best provided with this information and how grading and modification practices impact post-secondary opportunities for students with significant disabilities.

Concerns on Practices Reported

In addition to documenting differences in teacher beliefs and practices based on subject matter or grade level taught, a number of findings related to practices of teachers in general are noteworthy. First, the types of modifications employed by teachers are troubling. Teachers reported using shortened or reduced quantity of assignments as their most common type of modification. It is unlikely that simply reducing the quantity of assignments is an appropriate modification for students with significant disabilities; rather, providing materials and information at the instructional level of the student would seem more suitable. Likewise, the provision of paraprofessionals and one-to-one instruction was deemed an important facilitator of inclusion by many teachers, while peer tutors and co-teaching were rarely reported. It is unclear from the present study how well paraprofessionals, and teachers, develop modifications for students and if peer tutors or co-teaching would improve the modifications available to students with significant disabilities. Further research is necessary to determine the quality of modifications provided to students with significant disabilities in inclusive settings.

An additional concern is related to the apparent disagreements or miscommunication regarding responsibilities for grading and making modifications for students with disabilities. The survey results appear to illustrate that teacher's place primary responsibility on the other; that is, SE teachers assume the GE teacher is responsible, and vice versa. There were also a small percentage of teachers who, despite working in inclusive schools, believe that only SE teachers should teach children with disabilities. It appears from the results of this survey that teachers working in inclusive schools may benefit from a clear delineation of roles and responsibilities of SE teachers, GE teachers, and paraprofessionals regarding the development, teaching, and grading of modified student work. Research describing the outcomes of role clarification on the implementation of modifications and student grading would be useful.

Lastly, several teachers reported concerns about fairness and equity related to grading and modification practices, including how both teachers and students perceive these practices. Bursuck and colleagues (1999)

noted that teachers are more likely to implement grading adaptations if they perceive that other students find these adaptations to be fair and acceptable. It is possible that teachers in this survey sample used simple, general adaptations (e.g. reduced quantity, extra time) because they did not believe that other students would find more intensive, specific modifications (e.g. texts books rewritten with pictures) to be acceptable and fair. It is also possible that teachers are facing a different grading climate today, with the strict requirements for meeting standards in No Child Left Behind (NCLB), which has made the issue of fairness and equity significantly different than those teachers in Bursuck's pre-NCLB climate. When asked what type of grading system seemed fair and appropriate, teachers in this sample agreed that grading based on improvement and prioritized, modified work was most fair. The finding that they did not necessarily implement opportunities for students to be graded in this manner (rather, they largely implemented simple, general modifications) warrants further investigation.

Recommendations for Practice. Analysis of the results of this survey indicate that the teachers surveyed do not all engage in best practices related to inclusive education for students with significant disabilities. This is not to imply, however, that the soundness of inclusive education is in question. Rather, the inclusive education practices of teachers in this survey can be strengthened. It appears from our results that teachers are in overall agreement related to the ideological aspects of inclusive education. That is, most teachers reported believing that they could effectively teach all students and believed that modified instruction, assignments, assessment and grading were acceptable. The disconnect appears related to bridging this belief to practice. A number of teachers reported that they lacked the time and resources for collaboration and effective inclusive practices, although they very much craved the ability to engage in these professional practices.

A number of strategies to promote collaboration exist, including co-teaching to allow teachers to share minute-by-minute knowledge, block scheduling (particularly in secondary schools) to allow teachers to combine subject areas and engage in cross-discipline teaching, joint professional development rather than segregated learning opportunities, planned team meetings during early release or late start days, and planning for teachers to share common preparation periods (Wallace, Anderson, & Bartholomay, 2002). All of these suggestions require administrative support, but the benefits of collaboration on teacher ability and student performance will likely be deemed worthy of the time or effort necessary to plan for collaborative opportunities.

Less time intensive methods of collaboration include the use student participation or inclusion plans, which describe the goals for the class, the goals for the student with disabilities, how the student with disability will participate in class activities, and what supports will be provided (Downing, 2008). IEP goal matrices, in which the time and activity each IEP goal are addressed in the context of the entire school day (Downing, 2008) is another tool that can be useful in depicting when and how IEP goals are addressed and for GE teachers to understand the IEP goals of their students. Finally, tools such as student information profiles (Downing, 2008) can be used to describe the services, IEP goals, learning characteristics, and supports and accommodations of students receiving special education services in general education settings. These tools are available on-line (e.g. www.circleofinclusion.org). Furthermore, changing practices such as ensuring that SE teachers are part of curriculum adoption committees and receive professional development together with GE teachers can help reduce barriers to inclusion and create opportunities for dialogue and joint learning. Additional research is warranted to describe what types of collaboration teachers prefer and what types of collaboration administrators deem most feasible and successful given shrinking education budgets. Further, research regarding the incorporation of research-based practices into daily school routines is needed.

The results of the present survey also suggest a struggle related to defining what is fair for students with disabilities. Most teachers would likely agree that fair does not mean that all students have the same instruction or materials, and as illustrated in the survey results, teachers are willing to make accommodations and modifications to enable each student to demonstrate their learning. However, this philosophical approach to appreciating and respecting diversity of learning does not work well when school systems place a value on transcripts and single letter grades. Further, the implications of these grades may mean different things to a student with significant disabilities. It is important, then, for IEP teams to specify exactly how a student will be graded and what that grade means to the promotion, graduation, and post-secondary education options of a student with significant disabilities. Individual grading plans are useful tools in terms of describing what standards are being addressed, the IEP goals targeted during instruction, the instructional materials used, and the types of assessments given (Jorgensen et al., 2006). These types of tools may provide additional information for teachers across the grade span to better understand how to grade students and how the grade provided affects grade promotion, graduation, and post-secondary education.

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The Impact of Cultural Diversity on Special Education Provision in the United States

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Abstract

Cultural background influences one's understanding of intellectual and/or developmental disabilities. More specifically, the cultural perspectives of parents and special education professionals may affect decision-making in providing appropriate services for children with disabilities. Therefore, cultural distinctions may present a unique challenge for families, special education professionals, and related service providers in collaboratively working toward a comprehensive educational plan of action for children with disabilities. The purpose of this paper was to examine the issues of cultural dissimilarity among Asian parents, special education professionals, and related service providers that influence service delivery for school children with disabilities in the United States. First, the literature regarding cultural beliefs about perceptions of disabilities will be reviewed. Secondly, the impact of cross-cultural perception among parents and professionals toward team collaboration will be discussed. Thirdly, the process of special education services, including referral, diagnostic evaluation, and special education placement resulting from cross-cultural perspectives will be discussed. The paper also discusses what families and special educators might do to account for their cultural differences so that quality and productive special education services could be provided to fulfill the potentials of children with special needs.

The Impact of Cultural Diversity on Special Education Provision in the United States

According to the Twenty-Sixth Annual Report to Congress on the implementation of the Individuals with Disabilities Education Act, 1.9 % of Asian and Pacific Islander children in the United States were diagnosed with an intellectual and/or physical disability (U.S. Department of Education, Office of Special Education and Rehabilitative Services, 2004). Moreover, Asian American and Pacific Islander children were more likely to receive special education and related services for hearing impairments and autism than other ethnic groups. Some researchers have reported that this group of students may be overrepresented in special education in the U.S. due to misunderstandings about cultural differences and/or language barriers (e.g., Lee & Kumashiro, 2005; Olsen, 1997). Additionally, parents' beliefs and perceptions about disability are related to their beliefs about education and intervention. Therefore, cultural background is considered to play a key role in working collaboratively to provide special education services to Asian children with disabilities (Hayashia & Okuhirab, 2008; Lamorey, 2003; McCarthy, 2003).

The term "culture" generally refers to the beliefs, attitudes, and communication trajectories that affect each individual's thought, perception, and interaction in making judgment about events or people (Birukou, Blanzieri, Giorgini, & Giunchiglia, 2009; Chamberlain, 2005). Lamorey (2003) claims that cultural background influences perceptions about why some children are born with disabilities, how these children should be treated, and the responsibilities of family and other members of their communities for these children. Understanding cultural beliefs about disabilities is helpful in appropriately providing support for children with disabilities. It leads to the high quality of service provision in promoting independent living with dignity and equality. Therefore, this paper aims to examine the following questions concerning Asian cultural distinctions that potentially influence the special education provision for their children with disabilities in the U.S.: (a) How do cross-cultural perceptions of disabilities among Asian parents and professionals in the U.S. educational system affect the provision of special education services?; (b) What might Asian families and special educators do in order to overcome their cultural differences in order to overcome their cultural differences so that quality special education services can be provided for their children with special needs?

Cultural Perception of Disabilities

There are several ways in which the various Asian

cultures influence the understanding of disability. For example, disability in Thai culture is "Pikan," which means incompletion (Brightman, 2005). It can be interpreted to mean that the Thai culture views people with disabilities as people who lack some body parts and look different from ordinary people. In Chinese culture, disability is called either "ts'anchang" or "ts'anfei," which means individuals with barriers and worthlessness (Chiang & Hadadian, 2009). The term disability connotes desperation and helplessness of people with disabilities in Chinese culture. In India, disability is regarded as a tragedy with being dead regarded as better than being disabled (Gupta & Signal, 2004). This attitude conveys the unhappy and poor living quality of people with disabilities in India. Japanese culture views disability as a family matter and, therefore, rarely involves outsiders (Brightman, 2005). Likewise, according to Kim-Rupnow (2001) some Koreans believe that disability is caused by supernatural influences. Korean people view a disability as a payback for something they did wrong in the past. As a result, Koreans with disabilities and their families tend to feel ashamed, helpless, and depressed. Finally, some Filipinos view disability as a punishment by evil spirits (Shapiro, 2002). When Filipino families discover their child has a disability their first reactions are shock and disbelief, but they tend to seek help from relatives, friends, and professionals.

Religious beliefs also influence perceptions of disabilities in Asian populations. For instance, giving birth to a child with a disability in China or Korea is supposed to be an indication of bad behavior from a prior life time of a parent and the result of breaking cultural norms (Chiang & Hadadian, 2009; Kim-Rupnow, 2005). Some Thai people believe that a disability is caused by karma or bad deed in previous incarnation of that person which makes Thai people feel sympathetic for people with disabilities and results in them doing charity work and donations for people with disabilities. Based on the first author's own experience as a teacher at a school for students with visual impairments in Thailand, she found that some parents denied taking their children to participate in religious activities because they believed that the children were possessed by evil spirits and were consequently not allowed to participate in auspicious ceremonies. One student, for example, was hidden in her home until she was 7 years old. After conducting a needs assessment, it was found that she was overweight and developmentally delayed because she had never received any treatment.

The cultural understandings of disability in the above examples convey a derogatory and negative attitude toward people with disabilities. That is, people with disabilities in Asian cultures may be viewed as people who bring shame and embarrassment to their families, so parents may avoid taking their children with disabilities into public settings. Negative perceptions and misunderstanding about disability in each society may therefore lead to exclusion, discrimination, and unequal treatment of people with disabilities in general.

Effective provision of special education for children with disabilities results from good collaboration among parents and professionals. Even though special education systems are different in each country, parents and special education professionals in the U.S. work together to make sure that all children with disabilities are provided with an appropriate education that meets their individual needs. The next section describes the cross-cultural challenges that can emerge as Asian parents of children with disabilities and special education professionals in the U.S. try to collaborate on education provisions.

Cultural Influence on Collaboration among Parents and Professionals

Cultural and/or linguistic differences are often cited as one of the main factors contributing to poor collaboration between Asian families and special education providers (Harry & Malyanpur, 1994; Olivos, Gallagher, & Aguilar, 2010). In addition to cultural perceptions of disability in general, there are two distinct ways in which culture influences partnership between parents and professionals: Communication, and family values (e.g., Chan, 1998; Chin, 1996; Park & Turnbull, 2001; Smith, 1981, Sue & Sue, 1999). For example, a significantly high proportion of Asian American students speak a language other than English at home (U.S. Bureau of Census, 2007). These language differences are often ignored or misunderstood by educational institutions, resulting in placement into inappropriate English Language Learning (ELL) classes or in special education (Chin, 1996; Park & Turnbull, 2001). Hernandez & Isaacs (1998) pointed out that a parent forced into using their limited English skills not only undermines collaboration, but these parents may also perceive that service providers are dismissing their culture of origin. However, language barriers are only one aspect of communication that can lead to miscommunication between parents and special education providers.

Sue and Sue (1999) suggested the communication styles can lead to conflicts of interest since communicators from these two types of culture often do not understand each other. High-context communication emphasizes the physical or social circumstances of a situation and relies heavily on nonverbal cues with shared meaning by the communicators. For example,

Chinese and other Asian populations in general communicate less directly and less explicitly and their communication often relies on body movements, facial expressions, eye messages and other non-verbal signals. They may smile when they feel embarrassed or shy, and view direct eye contact as disobedience or an intimidation tactic.

Low-context communication is associated with opportunism, being more individual-than group-oriented and greater focused on rules of law and procedures (Sue & Sue, 1999). For example, Caucasian-Americans are taught to look at others when speaking to them. During interpersonal interactions with others, they are more likely to be direct and to the point. In addition, Caucasian-Americans generally view eye contact as an indication of mutual understanding and trust. Unlike some Asian cultures, smiling generally means agreement or a positive reaction. Thus, misinterpretations of emotional state and/or intent can occur based on the contextual meaning of verbal and nonverbal actions. However, it is important for providers to be mindful that contextual meanings between cultural groups are broader communication styles reflective of cultural traditions, and may not be shared among each individual from a specific cultural background.

Many Asian cultures view child rearing as an opportunity to maintain family unity by teaching obedience, proper conduct, control of emotion and personal desire, achievement and the acceptance of social obligations (Chan, 1998). Children remain an integral part of their families rather than establishing their own independence. The client-centered approach used by the U.S. special education providers may create concerns for some Asian families since this approach is counterintuitive to their cultural and familial values. Thus, when service providers collaborate with parents, there are some general familial values that should be considered. For example, parents are the highest authority in the family. Addressing older family members by their first name can be perceived as disrespectful. Likewise, if a child's parents or other older relatives are participating in the collaboration process, it is extremely important to give deference to the older family members of the child for whom services are being discussed. Adding to the challenge of collaborating with families holding traditional family values is that many Asian parents view the service providers as experts and may not assert themselves during conversations (Chan, 1998).

If professionals do not understand the goals valued by families of children with disabilities from different cultural backgrounds this may cause conflict when the goal of education has been set. For example, if economic productivity is a measurement of human worth in some culture, people who may be considered as non-productive may be undervalued (Harry & Kalyapur, 1994). On the other hand, if independent living in adulthood is valued it may be considered quite an appropriate goal. That is, people with intellectual impairments are at disadvantage if that society values intellectual strength. If the society values physical strength, then the people with intellectual impairments are not disabled. By contrast, cultures valuing intellectual prowess are more likely to see someone with intellectual impairments as being disabled. Therefore, as people in diverse cultures take on the challenge of working together, cultural values sometimes plays an essential role in the U. S. special education system.

The Impact of Culture on the Special Education Process

As might be expected, some difficulties in the U. S. special education process resulting from cross-cultural perspectives occur when professionals lack understanding of cultural diversity. According to Trainor (2010) many parents feel that some teachers rely on their own stereotypical attitudes and beliefs about parents from different cultures, resulting in negative assumptions and barriers to participation in the educational process (Trainor, 2010). Thus, understanding of cultural and social differences can contribute to mutually respectful relationships between parents and professionals in working together in the special education processes for referral, evaluation, and placement.

Referral is the first step of special education process (Trainor, 2010). During this process, a formal request is made by school personnel to a special education team to verify whether the student is qualified for special education and related services. The professionals collaborate with parents to acquire information that will lead to appropriate educational interventions. Hardin, Mereoiu, Hung, and Roach-Scott (2009) proposed that obstacles related to language and communication is the main aspects that challenge parents and professionals in a referral process. For example, teachers claimed that using different languages prevented them from acquiring and understanding significant information regarding children's home environments, family backgrounds, and factors that influence children's development during a referral process. Once professionals can involve parents in a referral process, an appropriate intervention and special education services can be provided for the children who are eligible based on the discussions made by the parents and professional teams leading to the process of evaluation.

The evaluation process is a step where the professionals, parents, and related service providers are asked to share their perspectives and expertise regarding the diagnostic assessment when a child is referred. The needs of the child along with the appropriate strategies and suggestions for improving the child are addressed in this process. Different perceptions about disabilities and language differences of the parents from diverse cultures may cause confusion during evaluation. For instance, Korean American parents of children with hearing impairments may not have believed that hearing capacities of their children were exactly reflected from English phonic sound to which their kids were being exposed (Park & Turnbull, 2001). Another example was reported by Tzeng (2007) that Taiwanese children from economically and culturally disadvantaged families would be more likely to be identified as having learning disabilities. In this case, aboriginal students, who had no linguistic relations to Taiwan's official language, had significantly lower academic achievement than non-aboriginal students. They were diagnosed as having learning disabilities at a higher rate than their non-aboriginal peers. So, it is important for professionals to take into consideration cultural differences during an evaluation process in order to diagnose and seek suggestions to improve the child before considering placement.

Once a child is determined to be eligible for special education and related services, the Individualized Educational Plan (IEP) meeting is organized to consider the child's placement. Placement decisions are made to determine where the child receives special education and related services. Parents must be included in the IEP teams to make decision and advocate for their children based on their own perspectives, knowledge and beliefs regarding their children. According to Hardin and colleagues (2009), parents and professionals alike reported that limited language abilities were considered to be barriers in IEP meetings with Asian parents. The language used in the IEP meeting is academically specific, so the parents who understand little English cannot express exactly what they want. Furthermore, Danseco (1997) argued that the beliefs about causes and nature of a disability influence treatment and intervention. For example, some parents believe that an evil spirit might cause a disability, so they look for a way to drive the evil spirit out. Some parents believe that the disability is caused by a negative behavior, so improving one's life circumstances is a matter of changing their negative behavior as opposed to seeking educational intervention. Consequently, professionals need to understand the cross-cultural differences of each family and take responsibility to engage the parents through intervention strategies and the placement process.

Recommendations and Conclusion

Culture influences the understanding of disabilities in three ways: by its cause, by its effect on valued attributes, and by the status of a person with disabilities as an adult (Groze, 1999). These cultural viewpoints affect the way people in each society treat and give support for people with disabilities. There are three main barriers that challenge parents and professionals in the special education process, including language barrier, parental involvement, and insufficient collaboration between professionals and parents. When professionals understand cultural and social differences, mutually respectful relationships between parents and professionals can contribute to effective collaboration in the processes of referral, evaluation, and placement of children with disabilities in special education.

There are several things a special educator can do to improve not only communication with Asian families, but also to improve the quality of educational services provided to the child with a disability. On a systemic level, teacher preparation programs may focus more attention on service delivery for ELLs. By doing so increases the cultural competence of teachers for insuring all students have access to the best educational experiences possible. Furthermore, recruitment efforts by teacher education programs may specifically target Asian American students to pursue careers as educators and administrators to increase the number of mentors and role models for other Asian children. Finally, curricula reflecting the sociocultural, linguistic, and experiential backgrounds of the students increase the likelihood that children will respond to them in a positive manner (Gollnick & Chinn, 2009).

In terms of the special education process, assessment of an individual's language competency in both English and his or her native language should be completed before administering other tests. This step will rule out language as the barrier for educational advancement as opposed to the presence of a disability. In other words, a student must exhibit a disability when evaluated in his or her native language. Teachers should also incorporate ecological assessments that gather information from the student's teachers, the student's parents, and the student in order to better provide educational services that are culturally sensitive while maintaining academic standards appropriate for the child's current level of academic achievement and functional performance. Teachers must also consider the academic content, the instructional environment, and student behaviors, and how they are influenced by the linguistic and cultural heritage (Hoover & Patton, 2005; Voltz, Sims, Nelson,

& Bivens, 2005).

Finally, cultural sensitivity can be improved by establishing an ongoing relationship between educators and members from a student's cultural community. Educators can identify people who speak the native language to serve as translators and interpreters. However, it is important that the translator and/or interpreter be aware not only of cultural and linguistic characteristics of the family, but also the language and ideas commonly conveyed in special education law and services. Park and Turnbull (2001) stated that the use of an interpreter can have disadvantages. For example, some participants interviewed by Park and Turnbull (2001) reported that the interpreting took too long to finish the conversation and some parents believed that some interpreters were trying to persuade them to accept the professionals' opinions, rather than interpreting. The school administration might also consider people with whom parents might get familiar to be an interpreter, such as a community member who can speak both languages. However, the use of an interpreter needs further research to find out what the advantages and disadvantages are and how interpreters can be used effectively in the special education processes.

Teachers can also initiate their own education process for understanding the student's family structure and how to work within the family's cultural background. When services are provided, they should be offered in ways that do not conflict with their beliefs, customs, and cultural values. However, the responsibility for collaboration need not fall solely on the educators. Families of children with disabilities should be educated on the special education process so that effective involvement in cross cultural settings among teachers and parents can be improved. Additionally, schools might offer training for parents in order to prepare and make them thoroughly knowledgeable of the entire processes in which they must participate. Hardin and colleagues (2009) proposed that a cultural navigator or a parent connection could be applied in order to help families better understand and actively participate in the process of special education.

Understanding the way parents raise their children can lead professionals to understand the view-points of parents of children with disabilities. When parents feel free to communicate with teachers about culturally-based treatments they used for their children, trust between parents and teachers is developed. Secondly, the expectations set for people with disabilities may also differ across cultures, so professionals need to recognize the cultural basis of various parental assumptions. It is important for professionals to recognize that human behaviors are shaped by a particular culture. Thus, key characteristics for effective professionals in these cases

should be sensitivity and confidentiality. Professionals should understand the purpose of their interaction in order to achieve the optimal purpose of services. The concerns about cultural value and social perspective above, which include parenting styles, educational goals, family and community concerns, and practical communication, are significant components that special education professionals should take into consideration while collaborating with families in diverse cultures. By doing this, professionals and special education providers can work in partnership with families of children with disabilities and get them fully involved in the processes of decision making, planning, and intervention without cultural dissonance. Incorporating parent thoughts, perceptions, and concerns into the process will inevitably help in identifying appropriate, meaningful educational activities for students with disabilities. The goal in such a collaborative process is to identify areas of mutual concern and to address the educational needs of the student based on family input. As families begin to trust professional guidance and observe positive development in their children, barriers related to cultural differences may be attenuated.

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School Psychology Services in Hong Kong and Implications for Special Education and Professional Development

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Abstract

This study examines and presents a discussion on school psychology services available to students with special needs in Hong Kong primary and secondary schools. An in-depth case study was conducted to describe the professional development experiences of a Hong Kong school psychologist named Cindy (pseudo name). Using the case-study method with verification via various sources, we investigated Cindy's professional training and the services she provides in school. This article presents challenges facing Cindy and their implications for her personal adjustment in the school team. This article concludes with certain reflections regarding school psychologists' roles in the 21th century and presents suggestions for professional development.

Introduction

Psychology is a popular and well-respected discipline in Hong Kong. Over the last four decades, school psychology services in Hong Kong have evolved from center-based services to school-based services in both special and regular schools.

Development of Professional Psychology in Hong Kong

School psychology in Hong Kong has grown significantly in recent years because of its contributions to the reform of education, which is high on the agenda of the Hong Kong SAR government. The traditional service delivery model that was individually focused, and based on remedying deficits, has been replaced by a contextual, systemic, proactive, and competence-based one (Lam, 2005). This evolvement implies significant changes in the service delivery model. The role of school psychologists (or so called "educational psychologists," (EPs)) in Hong Kong was extended further when school-based services were introduced into regular schools in the 1990s. From then until today, the school psychology clientele are no longer restricted to the population with special educational needs (Lam, 2005). To ensure the effective deployment and management of EP human resources, explicit policies and procedures must be in place to guide recruitment, promotion, acting appointments, performance management, retirement, and succession planning. The School Development Section of the Education Bureau has also developed guidelines regarding the appointment of EPs and the provision of their services (Education Bureau, 2009).

In Hong Kong, there are two types of EP, respectively EP-One (EP-I) and EP-Two (EP-II). An EP-I is a senior psychologist with at least six years' relevant post-degree experience, including at least three years of practice. An EP-II is a junior EP with less than three years of practice. In accordance with the Education Bureau, EPs provide school-based services to help school staff prevent or manage students' behavioral, emotional and learning problems. EPs also support schools to cater for diverse student needs through consulting in the areas of guidance, discipline, learning, and teaching. An EP-I is also expected to support the EP-II and to help with planning, executing, managing and evaluating the services. While each EP has a particular sponsor and serves more than one school, the EP is formally employed by only one school (known as the base school) and is considered a member of the non-teaching specialist staff of that school.

Before making a substantive appointment, the base school is advised to consider offering an acting appointment to an EP-II for one year. This offers the school a chance to assess the EP's suitability for a substantive promotion. EP promotions and acting appointments are required to adhere to the principles and procedures detailed in the Bureau's *School Administration Guide*. The Bureau also organizes professional sharing and development sessions, including case conferences with related professionals where the EP's attendance is required.

A section entitled *Guides to Appointment of Educational Psychologist* in the *School Administration Guide* (Education Bureau, 2009) states that, "with effect from September 2008, the employed EP must be a registered member of either the Division of Educational Psychology [DEP] of the Hong Kong Psychological Society [HKPS] or an equivalent internationally recognized professional organization of Educational Psychology" (p.146). Only psychologists who are members of the DEP and of the Division of Clinical Psychology (DCP) of the HKPS may use the Hong Kong Wechsler Intelligence Scale for Children-Fourth Edition (Division of Educational Psychology, 2008). Nevertheless, and as mentioned earlier, no legal requirements exist currently in Hong Kong for a person to register with a recognized body before practicing as a psychologist. Until such time that a statutory list of qualified psychologists is prepared, the Registration Board of the HKPS assumes responsibility for the registration of qualified psychologists, and regularly updates the Society's register.

School Psychology Services and Special Education

In 1999, the Hong Kong government launched the Inclusive Education Project to help students with special education needs (SEN). The Education Bureau embarked on providing official EP consultation services and special education teacher subsidies so that mainstream schools could hire resource teachers (Sin, 2007). In 2000, the Bureau released the *Inclusive Education Implementation Guide*, which identified the need to foster a diversified school environment, and recommended methods of doing so (Lian, 2004). In 2003, the government launched the New Subsidy (*Xin Zi Zhu* in Mandarin) Model to encourage an atmosphere of schoolwide participation. The subsidy of $10,000-20,000 HKD per student with special education needs, and a maximum of $ 55,000 HKD for each school, allows schools to provide extra learning support (Sin, 2007).

Research conducted by Jimerson et al. (2006) showed that school psychologists in Hong Kong spent 32 % of their work time consulting with parents and school teachers, 23 % assessing students, 17 % counseling students, 17 % training teachers, and 11 % generating intervention plans. Some experts in the field of special education in Hong Kong have suggested that schools should encourage co-teaching and organizational management, while utilizing itinerant special teachers, facilitators, or consultants (Lian, 2004). The goal of inclusive education is likely to be achieved when different professionals (for example, special education teacher and school psychologists) collaborate with one another. An EP may be an important link within the school team as he or she provides crucial support to the special education services.

Cindy's Case

To gain further insight into EP services in Hong Kong, this study used the qualitative case-study approach. According to Yin (2008), social scientists make wide use of this research method to examine contemporary real-life situations. Qualitative research often provides the basis for applying ideas and extending methods. Yin defines the case study method as an empirical inquiry that investigates a contemporary phenomenon within its real-life context.

After conducting a literature review of EPs in Hong Kong, the authors of this study formed research questions and carefully selected Cindy (pseudo name) as the target participant based on former research connections with local schools. Cindy is a licensed and registered EP-I employed by the Education Bureau. The first author created interview protocols, reviewed Cindy's work documents under her permission, and conducted observations to her base school. Field notes and within-case examination along with literature review was also conducted to ensure external validity. The following section provides details regarding various aspects of Cindy's personal story serving as an EP.

Professional Background

Several years ago, Cindy received her Master's degree in Social Sciences (Educational Psychology) from the Department of Psychology at the University of Hong Kong (HKU). The training program was a full-time course, which ran over two years, with an emphasis on a scholar- practitioner training model. During the period of study, Cindy finished 14 formal courses and 180 days of practicum. Each formal course consisted of three credits, which each required three hours of attendance at weekly lectures, seminars, or workshops. She learned the theory of psycho-educational assessments and how to use diagnostic and remedial procedures when serving students with special needs. Cindy also studied intervention methods and techniques such as how to structure individualized educational programs (IEPs), how to offer counseling and guidance, and how to apply different approaches of psychotherapy.

Additionally, Cindy learned to use research designs to generate quantitative and qualitative data, and she put this knowledge into practice during the writing of her thesis. She completed her supervised internship in three different settings in her local area. This practice exposed her to a broader spectrum of an EP's work and enabled her to accumulate adequate hands-on experiences at

different levels. As required by the government, Cindy is now a registered member of the Hong Kong Psychological Society (HKPS). Every three years, the HKPS periodically reviews her units of continuing professional development (CPD) to decide whether she may retain her title as a registered psychologist (that is, "Reg. Psychol."). She has received in-service training by attending workshops at HKU, and has meticulously followed the training procedures designed by HKU.

Targets of Services

Cindy initially worked as an itinerant EP among 12 primary and secondary schools in the Kowloon area. In the secondary schools where she served as an itinerant, she predominantly provided psycho-educational assessments and remedial interventions. In 2011, the Education Bureau assigned her to a school-based EP post in one of the secondary schools she had worked for (i.e., "School X"). Cindy maintained her itinerant status for the other 11 schools. Most often, due to her busy schedule, she launches necessary client-centered procedures only when she receives referrals for children who are eligible for status of special education needs.

According to the Capacity Enhancement Grant policy, which began in 2000, all subsidized and government schools in Hong Kong are entitled to a grant for enhancing their provision of teaching and learning. School X qualifies for this grant and is using the money to hire its own EP. Since many schools have high expectations for EP services as a result of the educational reform, Cindy's work in School X has focused largely on preventive interventions (e.g., assertiveness training for a student at risk of being bullied, stress-management or crisis-management workshops for teachers) and developmental interventions (e.g., leadership training for peer tutors, consultation on school development planning). New immigrant children have been enrolled in the primary schools where she serves, raising the challenge of forming an appropriate school-wide comprehensive service delivery model.

For Cindy, working with so many different schools feels a bit like making several long journeys all at the same time. Shaping partnerships and building a dynamic process of collaboration can be challenging. As she commented, it takes time for a school to trust and accept her before she can really raise any critical issues and act as a consultant to meet the school's needs.

Work Contents and Time Concerns

Currently, Cindy provides both direct and indirect services. Her direct services include administering tests (for example, intelligence scales or scales for specific learning disability) and interviewing students. She also makes classroom visits and conducts observations. Her indirect services include consulting with parents and homeroom teachers. Cindy's weekly schedule and daily agenda show dense bookings for referrals and interventions to be fulfilled at different schools. Her time seems too pressured to allow her to make the most of her consultations.

Roles in School Teams

Cindy assertively regards herself as a crucial member of the multidisciplinary team in each school. However, she also noted that the key person in establishing successful teamwork in Hong Kong schools is the school principal. A school principal's leadership is critical in order to provide the correct perspectives about inclusive education, and clear visions for the school's future. When asked of the challenges or barriers she faces when working in the team, Cindy mentioned that a "self-facilitating attitude" really matters. Through Cindy's eyes, such an attitude means that instead of describing any substantial barriers that face her as an EP, she underlines the need to balance one's self-adjustment and self-demands of ability. Therefore, when a supportive, flexible, and nurturing school culture exists, it greatly enhances the quality of Cindy's consultation services for the school staff. Cindy finds it easy to engage with schools that highly value and welcome her EP expertise as soon as she joins the school team.

Professional Development Support

To respond to the diversity of students with SEN (for example, new immigrants from Mainland China), every EP in Hong Kong is encouraged to specialize, and to join a research panel hosted by the Education Bureau that focuses on certain topics. Therefore, Cindy signed up with several interest groups; for example, research panels focusing on students with attention deficit hyperactivity disorder (ADHD), creativity and giftedness (CGT), specific learning disability (SLD), and emotional and behavioral disorders (EBD). Additionally, Cindy participates in the panel for curriculum development.

Cindy works hard as a practitioner and a scholar. Nevertheless, she feels the unavoidable pressure of regular EP evaluation by the Education Bureau and schools' sponsoring bodies. In June at the end of every academic year, Cindy reports to each school principal with all her documents and evidence (i.e., school visit reports, student referrals and intervention data as well as continuing education accreditation).

Beyond her daily professional role, Cindy is also a

working mother with two school-aged children. With more than 10 schools to serve and professionalization to pursue, her ability to manage her own time and stress levels have become essential. Hopefully, Cindy's steadfast enthusiasm and easy-going personality will enable her to succeed in her career.

Reflections and Implications

Service Model Guides Psychologist Roles

Many psychologists employed by school systems tend to be reactive rather than proactive regarding providing support, often citing a "lack of time for planning in view of service demands" (Siegel & Cole, 2003, p.7). Therefore, basing a service delivery model (e.g. school-based or itinerant-based) on explicit principles makes staff and schools more likely to prioritize their service needs, and less likely to underutilize valuable psychological knowledge and skills (Siegel & Cole, 2003). This notion was seen in Cindy's case. Although her time availability has not yet become a significant struggle in planning to meet schools' needs, the explicit models of service delivery seem to have provided a clear direction for her.

Siegel and Cole (2003) indicated that schools facing a rapid transformation of the community may require an emphasis on certain specific services. It is thus common for school psychologists to note that each school they are assigned to may utilize different types of services at different levels, allowing either for expanded roles or for one-dimensional functions. Cindy's employment is guided by government policies and assignment, which require an EP to help enhance instruction and learning. She also follows the school psychologist's traditional roles by being a consultant and progress monitor in the multidisciplinary team. Nevertheless, the type of school service model and school readiness for professional collaboration are crucial to her service quality.

Attitude Change Brings Systems Change

The fact that Cindy provides indirect consultation to parents and teachers implies that her role is expanding to include maximizing her influence on school personnel, regardless of the school's service model. Cindy, however, must be prepared to face the following challenges: (a) a large number of clients or schools to serve; (b) inflexible school administration; (c) underlying constraints in the school culture; and (d) the need for staff support (for example, team collaboration and the willingness to implement Cindy's advice). Siegel and Cole (2003) raised the point that practitioners themselves can do much to implement system change.

They suggested that school psychologists must understand educators' needs and attitudes and must evaluate possible areas for change, while being assertive about what they can do to help. The same authors suggest that school psychologists should encourage mechanisms such as a School Team and Assessment Consultation to cut down on assessment time.

Professional Development in Response to Paradigm Shift

Assessing students for suitable placement will continue to be a major part of the school psychologist's role. However, the collaborative consultation approach represents a paradigm shift in school psychology (Noell, 2008; Reinke, Lewis-Palmer, & Merrell, 2008; Reschly & Ysseldyke, 1995; Sugai & Horner, 2006). The collaborative approach is less test-dependent than traditional assessments, but it must still be fully implemented (Siegel & Cole, 2003). Major considerations contributing to this shift in paradigm toward a collaborative approach are described below:

Encouraging Systemic Mindset and Realistic Goal Setting. School psychologists must develop a "preventative" mindset and an attitude of flexibility in selecting service options. They also must be realistic regarding setting goals, and they must be patient. Goals that are acceptable and possible for all stakeholders, as well as school psychologists, will be easier to achieve than unrealistic goals (Siegel & Cole, 2003). As Merrell, Ervin and Gimpel (2006) state, knowledge of systems and possessing the skills to implement systems-level change have become increasingly important qualities for school psychologists. School psychologists must do introspection by asking questions such as, "What skills do I have? What skills do I need? How can I learn?" (Siegel & Cole, 2003).

Getting Prepared for Expansion of Role and Competency. The U.S. Bureau of Labor Statistics (2010) indicates a demand for school psychologists in the next decade, which is driven by a growing awareness of students' improvement of learning and its relation to mental health and behavioral problems. Thus, school psychologists will need to be trained for general student counseling on a variety of issues, including working with students with disabilities. Cindy's registered membership of HKPS and her gaining of CPD units as required by the government show that she is on the right track for developing long-term competency.

Merrell et al. (2006) believe that "assessment" will continue to be an important role for school psychologists throughout the 21st century, although the school psychologist role will increasingly expand beyond assessment and classification. However, while surviving

the "assessment marathon" (Merrell et al., 2006, p. 7) remains a critical role, School psychologists willing to engage in innovative services would benefit themselves in terms of personal and professional growth, for example, organizational theory and team-building skills have come to represent a core competency in responding to the needs of a "lifelong learning" society (Siegel & Cole, 2003). The same authors suggest that school psychologists must develop their consultation skills, which help them make more decisions that are systematic on the implementation of interventions. In addition, interpersonal communication skills remain crucial to them as a team member. However, neither of these skills has been particularly incorporated nor emphasized in the profession (Siegel & Cole, 2003).

Conclusion

Although the field of school psychology in Hong Kong is still relatively young, it has made significant progress. From Cindy's case, this study found that school psychology services in Hong Kong seem to be moving steadily toward a proactive system of service delivery. However, close examination of the school psychologist's roles as part of a multidisciplinary team indicated that there is more that needs to be done. School psychologists need to be well versed on the intricacies of the special education population and school-wide service system. Instead of considering themselves as an "outsider," school psychologists should respond to children's needs in a variety of ways.

Additionally, school psychologists need support in their professional development. Such support is necessary at the systemic (i.e., legislation, training program, school team) and the individual (i.e., the psychologist's personal sphere) levels. All school psychologists must develop courage and perseverance in implementing change. In summary, school psychologists in the 21st century have a tremendous opportunity and obligation to fulfill the promises that are now within their reach to improve the lives of individuals throughout their service community.

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A Review of Naturalistic Interventions with Young Children with Autism

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Abstract

In the recent years there has been a ten-fold increase in the incidence of autism in the USA. It is also estimated that approximately 67 million people are affected by autism worldwide. This worldwide epidemic has led to an increased interest in the identification and use of evidence-based interventions for individuals with autism. Interventions with children with autism can be broadly categorized into two primary types: (a) discrete trial training and (b) naturalistic interventions. This article provides an overview of the various components of evidence-based promising naturalistic interventions and their effectiveness with young children with autism. Naturalistic interventions that are reviewed in this article include pivotal response training, incidental teaching, and naturalistic language teaching paradigm. The evidence base for the interventions, limitations, and implications for practice are discussed.

Autism is a high prevalence, debilitating spectrum disorder that affects the typical development of communication and social skills in individuals across the world (Smith, Polloway, Patton, & Dowdy, 2012). It is one of the five disorders that constitute pervasive developmental disorders (PDD) or autism spectrum disorder (ASD). The prevalence of autism has increased by more than 10-fold since the 1980s and the recent estimates indicate that one in 110 individuals is affected by ASD in the US (Centers for Disease Control and Prevention, 2009). It is estimated that approximately 67 million people are affected by autism worldwide (Coleman, 2005). Further, the societal costs for caring for individuals with ASD are estimated to be between 35 to 90 billion dollars (Ganz, 2007; Interagency Autism Coordinating Committee [IACC], 2009). Given the magnitude of the problem and the growing societal concern, there has been an increased emphasis on the identification and use of evidenced-based interventions with this population.

A multitude of instructional methods have been employed to teach children with autism. These technologies are conceptualized on a continuum with the massed discrete trial on one end and the social-pragmatic, developmental approaches on the other (Prizant & Wetherby, 1998). Traditionally, discrete trial formats were employed in teaching children with autism (Bernard-Optiz, Ing, & Kong, 2004). While successful as a teaching procedure, the discrete trial method often failed to promote skill generalization in children with autism (Kaczmarek, 1990; Smith, 2001). In the discrete trial method, the therapist (a) chooses materials and events to use in teaching, (b) defines the nature of the interaction with the child, (c) initiates interactions, (d) uses "indirect" consequences (e.g., tokens and food), (e) presents multiple teaching episodes/opportunities in a session, and (f) provides positive consequences only for correct responses (Delprato, 2001; Prizant & Wetherby, 1998). In the social-pragmatic, developmental approaches; the emphasis is on the child's initiation and spontaneity. In this approach, the adult follows the child's focus of attention and motivation, builds on the child's current communicative repertoire (even on nonconventional means of communication), and uses natural activities and events as contexts for intervention (Prizant & Wetherby).

Naturalistic interventions are considered hybrid approaches (Yoder, Kaiser, & Alpert, 1991) or contemporary Applied Behavior Analysis approaches (Prizant & Wetherby, 1998) that take the middle ground between the traditional behavioral approaches and the social pragmatic approaches. They draw upon principles from the fields of applied behavior analysis, developmental pragmatics, and caregiver-child interactions (Prizant & Wetherby). Naturalistic interventions occur during routine daily activities (Rule, Losardo, Dinnebeil, Kaiser, & Rowland, 1998). They capitalize on the child's preferences, interests, needs, and abilities and are characterized by (a) child-initiated episodes for teaching, (b) adults reinforcing the child's attempts to respond, and (c) adults providing inherent or natural consequences of the behavior as the reinforcer to the child (Delprato, 2001).

Even though a number of interventions are termed as "naturalistic" many of them vary in their component procedures (Hepting & Goldstein, 1996; Rule et al., 1998). For example, a pivotal response training (PRT; Stahmer, 1995) and an incidental teaching procedure (McGee, Almeida, Sulzer-Azaroff, & Feldman, 1992) differed on three parameters: (a) the presence or absence of questions by the interventionist; (b) whether a correct and complete response, an approximation of the correct response, or an attempt to respond was required for the delivery of consequences; and (c) the presence or

absence of a turn-taking strategy. In the incidental teaching procedure, only the child's complete responses to the interventionist's questions resulted in the delivery of consequences. In the PRT procedure, the adult provided positive consequences not only for correct responses, but also for approximations or attempts to respond to the interventionist's models. Turn taking between the interventionist and the child was incorporated in PRT procedures but absent in the incidental teaching procedure.

Similarly, naturalistic interventions under the same label may differ in their component(s). For example, while the PRT intervention in the Pierce and Schreibman (1995) study included the strategy "asking questions" to elicit verbal initiations, this strategy was not included in the PRT intervention in the Stahmer's (1995) study. Similarly, consequences for errors and expectations for performance were defined in the Stahmer study, but were absent in the Pierce and Schreibman study (see Table 1).

White et al. (1988) in their seminal article described 11 strategies that have been used to facilitate generalization with students with severe disabilities. Naturalistic interventions incorporate three of the 11 generalization strategies identified by White et al. These are: (a) teaching in natural situations (setting strategy), (b) introduction to natural maintaining contingencies (consequence strategy), and (c) teaching to child-selected stimuli (train loosely). These three components are assumed to promote skill generalization when children are taught through naturalistic procedures. Thus, it is considered that naturalistic interventions may ameliorate generalization difficulties frequently exhibited by children with autism than when taught using discrete trail method.

The purpose of this review was to analyze the components of naturalistic interventions employed with young children with autism (children below 10 years). Such analysis helps practitioners with better understanding of the intervention components. This is not an extensive review, but a sampling of often used naturalistic interventions with children with autism with the aim of providing some clarity to practitioners. The questions for the study are as follows: (1) What are the components of naturalistic interventions employed with children with autism? (2) What are the effects of naturalistic interventions on the acquisition of skills with children with autism? (3) What are the outcomes of the studies that compare the discrete trial method and naturalistic intervention procedures for children with autism?

Review of Literature

The following criteria were employed to select articles for the review: (a) The study included at least one child below or at the age of ten years with the diagnosis of autism, (b) the study employed an experimental design, and (c) studies in which naturalistic intervention formed a part of the interventions were included if the effects of the naturalistic intervention were reported separately from the results of other interventions. Studies that collapsed data for all the children, i.e., group data on children with and without autism and which made it impossible to differentiate the intervention effects on the children with autism from the effects on other children were dropped from the review.

Computer search using the ERIC and psychLIT indexes was the primary mode employed to identify articles for the review. Computer search was undertaken using the following key words: autism, naturalistic language paradigm (NLP), incidental teaching, pivotal response training (PRT), mand-model and autism, naturalistic teaching, time delay and autism, activity-based instruction, transactional teaching, milieu teaching, modeling and autism, child preferred activities. Further, an author search was conducted (Koegel, McGee, Hart, Schreibman, Krantz) to identify articles for the review. The reference lists of the articles identified through the computer search were then used to identify related studies. The review of literature identified nine common naturalistic intervention procedures that have been conducted with children with autism. These include (a) incidental teaching, (b) pivotal response training, (c) naturalistic language teaching paradigm, (d) milieu language, (e) motivational intervention, (f) modified incidental teaching, (g) incidental teaching with social conditioning, (h) child-preferred activities, and (i) reinforcing attempts to produce speech sounds. Only three of the above intervention procedures were more commonly researched (i.e., with more than two research studies published in referred journals). These were incidental teaching, pivotal response training, and naturalistic teaching paradigm. Hence, the components of these three interventions are examined in this review. A quick review of the literature identified a total of 12 research studies that examined the effectiveness of incidental teaching, pivotal response training, naturalistic teaching paradigm interventions with children with autism. Intervention procedures were labeled as incidental teaching in four of the studies (i.e., McGee et al., 1992; McGee, Krantz, & McClannahan, 1985; McGee, Krantz, & McClannahan, 1986; Miranda-Linne & Melin, 1992). Pivotal response training was examined in five studies (i.e., Ball, 1996; Pierce & Schreibman, 1995, 1997;

Stahmer, 1995; Thorp, Stahmer, & Schreibman, 1995). Naturalistic language teaching paradigm was researched in three of the studies (i.e., Koegel, O' Dell, & Koegel, 1987; Laski, Charlop, & Schreibman, 1988; R. L. Koegel, Koegel, & Surratt, 1992). Most of the studies that were published in the recent years were second generation studies in that they included a combination of intervention packages that included naturalistic components and some discrete trial teaching components and thus were excluded from this review.

Results

Components of Naturalistic Interventions

Incidental Teaching Procedures. There were six common components of a teaching episode in incidental teaching method. These were (a) the child's initiation for an item by looking, reaching, naming, requesting, or gesturing towards an item; (b) the interventionist asking a question based on the interaction (i.e., where is the car?, depending on the target skill being taught) or providing a verbal prompt; (c) the interventionist demonstrating if the child did not respond correctly; (d) the interventionist giving the child another opportunity to respond; (e) using strategies such as decreasing assistance (i.e., fading verbal prompts) or increasing assistance (i.e., from verbal prompts to physical prompts) to assist the child in giving the correct response; and (f) after a correct or elaborated response to the questions or prompts, providing the child with access to the teaching item (which was considered to be the natural consequence) for a particular amount of time and praising the child (see Table 2).

The incidental procedures varied on at least three component procedures across incidental teaching interventions examined. First, the amount of time the child had access to an item varied across the studies. The child had access to the target objects for 5 seconds in one study to 60 seconds in another study. Second, the type of prompts used to facilitate the acquisition of the skills targeted for intervention varied across studies. For example, increasing assistance as used in one study, decreasing assistance of prompts was used in two studies, and no prompting method was used in one study (see Table 2). Third, a turn- taking strategy was used in one study (McGee et al., 1992) but not in others.

PRT Procedures. There were eight common components of PRT procedures across studies. These were: (a) the child selected toys through touching, verbal request, eye gaze, and so forth; (b) the interventionist presented toys that varied frequently according to the child's interest; (c) the interventionist played with the toys and modeled the target behavior; (d) if the child

failed to produce a response the interventionist played with the toy and modeled the response again; (e) either a correct response or an approximation of the target behavior was consequated; (f) consequences included praise and an opportunity to play with the teaching item; (g) prerequisite skills were interspersed with new skills, and (h) turn taking (see Table 2).

Interventions labeled as PRT varied on two parameters across the studies. First, as the child's skills improved, the interventionist consequated only behaviors of increased complexity in only two studies (Ball, 1996; Stahmer, 1995). Second, the interventionist asked questions to extend conversations during play on only two of the studies (Pierce & Schreibman, 1995, 1997).

NLP Procedures. There were six common components of the NLP across the studies examined. These were: (a) the child's initiation for a teaching item by looking, reaching, naming, gesturing, and so forth; (b) presentation of the item by the interventionist in ways that varied frequently according to the child's interest; (c) the interventionist modeling appropriate behavior with the stimulus item; (d) if the child failed to produce a response, the interventionist modeled the response again; (e) the interventionist consequated either an exact correct response, a successive approximation, or a clear verbal attempt to respond; and (f) the consequences included opportunities to play with the stimulus item and praise for correct responses (see Table 2).

The Laski et al. (1988) study incorporated two additional components along with the above listed common NLP procedures. These were: (a) turn taking and (b) a multiple-exemplars strategy. In this study, the interventionist paired identical words with different referents (e.g., "open a box" and "open the door") and different actions were paired with identical referents (e.g., blow or pop bubbles) to provide multiple examples of target responses to the child. The interventionist also took turns with the child in playing with the teaching material. This turn-taking strategy facilitated the modeling of appropriate behavior for the child and also created additional teaching opportunities (see Table 2).

Common Components Across Intervention Labels. Interventions generally shared the following four components. First, initiations by the child toward a teaching material resulted in a teaching episode. Second, the interventionist either modeled the correct response or used questions to elicit the correct response. Third, if the child did not respond, the interventionist modeled the correct response again or used prompting strategies to elicit correct response. Fourth, correct responses or an approximation resulted in the child's gaining access to the teaching material (see Table 2).

Variations Across Intervention Labels. The components of the intervention procedures varied across intervention labels. For example, in the incidental teaching intervention studies, the interventionist employed increased or decreased assistance tactics for correcting errors. In contrast, in the PRT intervention studies, the interventionist simply modeled the desired response and waited for the child to respond. In PRT intervention studies, interactions that required use of prerequisite skills were interspersed with interactions addressing skills being taught. Further, the interventionist took turns with the child in order to model appropriate behavior and to create additional learning opportunities. In contrast, incidental teaching studies involved the use of prompts to complete the interaction and gave the child an opportunity to select materials addressed in the interaction. Similarly, while PRT procedures included a turn-taking strategy, used increasing responding criteria for providing natural consequences, and interspersed maintenance tasks when teaching new skills, NLP procedures generally did not (see Table 2).

Effects of Naturalistic Interventions on the Acquisition of Skills

Skills Learned. In all the studies the naturalistic interventions were effective in facilitating the acquisition of skills. Specifically, incidental teaching techniques were found to be effective in promoting reciprocal peer interactions acquisition and generalization of prepositions, acquisition and generalization of color adjectives, and acquisition and generalization of sight-word reading responses. Pivotal response training (PRT) was found to be effective in teaching social skills, facilitating acquisition of symbolic play skills, increasing parallel play skills, increasing socio-dramatic play skills, and facilitating generalization of social interactions. The natural-language teaching paradigm was found to be effective in increasing imitative utterances in nonverbal children and generalization of those skills to novel settings, and increasing language behavior and decreasing disruptive behavior of children with autism.

Computation of a Common Metric on the Primary Measures. A metric called percentage of non-overlapping data (PND) was used to assess the effectiveness of the interventions. PND is computed by counting the number of data points in the treatment phase that fall outside the range of baseline/control phase data points divided by the total number of data points in the treatment phase (Scruggs, Mastropieri, & Casto, 1987). This method is considered useful to synthesize information across single subject designs (Scruggs et al., 1987) and is used to detect changes in a child's performance on the target responses across phases. For example, if the PND is 100%, it means there was no overlap between the data points of the baseline and the intervention phases. However, a PND doesn't tell if the effects are due to the independent variable and if the changes in target children's behavior are significant or meaningful. Also, the PND metric does not rule out the influences of confounding variable(s) for changes in target children's performance across phases.

Results of PND Analyses for Variations in Intervention Labels. For assessing the primary effects, the PND was considered "very high," if it was greater than 90%; "high," if it was between 71-90; "medium," if the PND was between 51-70; and "low," if it was below 50%. Mean PNDs were computed for analyzing the effects of intervention labels across studies. In terms of average magnitude of effects, the mean PND for studies that employed natural language paradigm techniques was in the very high range (94%). The mean PND for the studies that employed incidental teaching or PRT techniques was in the high range (86% and 79% respectively).

Outcomes of Comparative Studies

Four studies compared naturalistic interventions (NLP and incidental teaching techniques) with the discrete trial method in terms of their effectiveness and/or efficiency. In Koegel et al. (1992) study, the NLP and the traditional discrete trial conditions were alternated using a reversal design. In Koegel et al. (1987) study, the traditional discrete trial method was used as baseline/control condition and the NLP as the intervention condition. In the two studies that compared incidental teaching procedures with the traditional discrete trial method, the skills (prepositions or color) being taught were randomly assigned to both the procedures and a multiple schedule design nested in a multiple baseline design was employed to study the relative effectiveness of the procedures.

Koegel et al. (1992) compared the effectiveness of NLP and the discrete trial method and found that NLP was superior to the discrete trial method (DT) in reducing the disruptive behavior in children and in increasing the number of target responses that were correct. On the language measures, which were the primary measures for the study, the children showed more utterances (82 in NLP to 72.5 in DT), more words (3.4 in NLP to .28 in DT), more attempts to express words (35% in NLP to 14% in DT), and more approximations (47 in NLP to 42.5 in DT) in the NLP

Table 1

Comparison of Procedural Similarities and Differences in Two PRT Interventions

Procedural Categories	Pierce and Schreibman's (1995) PRT Intervention	Stahmer's (1995) PRT Intervention
Selection of Intervention stimuli	(a) The child chose between different play activities.	(a) The child selected the toys by touching, verbal request, eye gaze, etc.
	(b) The interventionist varied the toys frequently, according to the child's preferences.	(b) The interventionist varied the toys frequently according to the child's preferences
Procedures for teaching skills	(c) The interventionist provided various examples of appropriate play, social social skills, including verbal statements, and complex play actions	(c) The interventionist modeled symbolic actions while playing with the toys
	(d) The interventionist described play actions and scripts (e.g. "I am cooking pizza" when playing with the oven p. 288).	(d) Functional play (pre-requisite skill) was interspersed with symbolic play to provide successes for the child
	(e) The interventionist provided prompts when the child was attending	
	(f) The interventionist talked about the object properties and encouraged the child to comment on object properties	
Error correction		(e) Incorrect responses by the child resulted in the interventionist modeling the response again
Turn taking strategy for teaching skills	(g) Turn taking was incorporated during play to provide examples of appropriate play to promote sharing, and to increase motivation	(f) Turn taking was incorporated to increase social interaction skills and to provide example of symbolic play.
Criteria for consequences	(h) The child's attempts at functional play or functional play or social interaction were the criteria for natural consequences	(g) The child's correct response, a successive approximation, or clear verbal attempts to respond were followed by natural consequences
	(i) Praise	
Additional strategies	(j) The child was asked questions or encouraged to converse about the tangible objects in the room.	

Table 2

Comparison of Components of Naturalistic Interventions

Naturalistic Interventions Components	Mc Gee (1992) (IT)	McGee (1998) (IT)	McGee (1986) (IT)	Miranda (1992) (IT)	Pierce (1995), (1997) (PRT)	Stahmer (1995) Ball (1996) (PRT)	Thorp (1995) (PRT)	Koegel (1987), (1992) (NLP)	Laski (1998) (NLP)
Target stimuli selection									
Child initiations	✓	✓	✓	✓	✓	✓	✓	✓	✓
Teaching tactics									
Mands	✓	✓	✓	✓					
Modeling					✓	✓	✓	✓	✓
Error correction									
Increasing Assistance			✓						
Decreasing Assistance		✓		✓					
No correction	✓				✓		✓	✓	✓
Modeled again						✓			
Criteria for consequences									
Correct responses	✓	✓	✓	✓		✓	✓	✓	✓
Approximations/attempts					✓	✓	✓	✓	✓
Old and new responses					✓	✓	✓		
Natural consequences									
Access to teaching material	✓	✓	✓	✓	✓	✓	✓	✓	✓
Praise	✓	✓	✓	✓	✓	✓		✓	
Practice opportunities									
After a teaching episode		✓	✓	✓					
Turn taking	✓				✓	✓	✓	✓	✓
Additional strategies									
Multiple exemplars									✓

conditions than in the discrete trial method. The performance on multiple word utterances (for a child) was almost identical (58.6 in NLP to 58 in DT) in both the conditions. On the collateral measure of disruptive behavior, the mean number of intervals in which disruptive behavior occurred for the three children during the NLP conditions was 5.3%, whereas it was 49.6% during the discrete trial conditions.

In another comparative study that analyzed the relative effectiveness of NLP and the discrete trial method, Koegel et al. (1987) found that nonverbal children with autism showed more imitative utterances with NLP instruction than with the discrete trial method. They also found that generalization to spontaneous utterances outside the training setting and generalization of skills to home setting occurred only with NLP instruction. Analyses on the primary measures using the PND metric revealed that the children performed better in the NLP conditions than in the baseline/discrete trail condition on all the primary measures. The average PND for the two children was 100% for immediate imitations (no overlapping data points between the DT and the NLP conditions for both the children), and 81% for differed imitations (all in favor of NLP). The average PND was 73% (favoring NLP condition) for spontaneous speech outside the training situation (collateral effect). Generalization was assessed for all the three dependent measures and it was found that PND favored the NLP conditions for immediate imitations (100%) and spontaneous speech (75%). However, there were no differences in the performances of both the children on differed imitations in both the conditions.

In their comparative study, Miranda-Linne & Melin (1992) examined the relative effectiveness and efficiency of the incidental teaching (IT) procedure and the discrete trial method. The authors found that the traditional discrete trial teaching resulted in faster acquisition of color adjectives, higher frequencies of correct color adjective use during acquisition probes (91% in IT to 98% in TD), efficient teaching (based on the time taken to conduct the teaching trials) of color adjectives (6 min for IT and 3 min for TD), and the skills generalized more rapidly and at higher levels to home and parents initially (mean frequency of correct use of color adjectives was 10 for IT and 21 for TD). However, adjectives taught through incidental teaching procedures increased and surpassed the generalization of the adjectives that were taught by the traditional discrete trial method at follow up (mean frequency for correct use of color adjectives was 19 for IT and 13 for TD). The findings were similar for spontaneous use of color adjectives, i.e., at the end of the intervention the mean percent of correct spontaneous use was higher for adjectives taught by the traditional discrete method (it

was 36% for TD and 26% for IT) and at follow up it was higher for incidental teaching (22% for IT and 20% for TD). When generalization to novel stimuli was assessed, mean percent of correct responses was 40 for adjectives taught by incidental teaching procedures and 13 for adjectives taught by the traditional discrete trail method.

In their comparative study on the effectiveness and efficiency of incidental teaching method with the discrete trial method in teaching preposition use in children with autism, McGee et al. (1985) found that: (a) there were no significant differences in the acquisition or retention of prepositions taught with both procedures (95% correct for IT and 94% correct for TD); (b) traditional sessions (average length per session was 9-min) were completed slightly faster than the incidental sessions (average length was 12-min); (c) incidental procedures yielded higher levels of preposition use when the target children encountered different teachers in a new setting (mean frequency for correct use was 7 for IT and 3 for TD) (d) incidental procedures yielded higher levels of preposition use when the target children encountered new stimuli (mean per session was 3 for IT and 1 for TD); and (e) both procedures resulted in spontaneous use of prepositions taught, but the highest levels of spontaneous use were for the prepositions taught with incidental teaching procedures (mean percent was 30 for IT and 12 for TD).

To summarize, the naturalistic procedure, NLP, was more effective than the traditional discrete trial method in the production and generalization of language skills and in promoting spontaneous use language skills. Also, children with autism showed less disruptive behavior during the NLP intervention in one study. In two studies that assessed the relative effectiveness of incidental teaching procedures and the traditional discrete trial method, the discrete trial method was found to be more efficient in terms of the time required for instruction. The discrete trial method was also equally effective (in one study) or more effective (one study) than the incidental teaching in the initial acquisition of cognitive skills (prepositions and color names). Both the procedures facilitated generalization of skills and spontaneous use of skills (in one study, it was faster for discrete trial method initially, and in other it was higher for incidental teaching). Incidental teaching procedures were more effective than the discrete trial method in the transfer of skills to novel stimuli (one study). At follow up the performance of the children on skills taught by incidental teaching procedures were higher than the skills taught by discrete trial method.

Discussion

The results indicated that naturalistic interventions

were effective in facilitating the acquisition of skills such as: (a) promoting reciprocal peer interactions; (b) acquisition and generalization of prepositions; (c) acquisition and generalization of color adjectives; (d) acquisition and generalization of sight-word reading responses; (e) teaching social skills; (f) facilitating acquisition of symbolic play skills; (g) increasing parallel play skills; (h) increasing socio-dramatic play skills; (i) facilitating generalization of social interactions; (j) increasing imitative utterances in nonverbal children and generalization of those skills to novel settings; and (k) increasing language behavior and decreasing disruptive behavior of children with autism. In terms of average magnitude of effects, the mean PND for studies were in the very high to high range.

Consistent with other reports (Hepting & Goldstein, 1996; Rule et al., 1998), the naturalistic interventions reported here varied procedurally. All capitalized on children's interests and provided natural consequences. However, there were no "standardized" interventions associated with procedural labels. That is, interventions employed differing types of teaching tactics. These procedural differences (e.g., whether prompts were used or modeling was used) sometimes depended on or correlated with the skills targeted for intervention. For example, incidental teaching procedures that targeted cognitive skills employed prompting and fading strategies while PRT interventions that targeted different types of play skills or social interactions employed modeling procedures. Further, while turn taking was employed in PRT procedures (which mostly targeted play skills), this strategy was used in only one incidental teaching intervention, and children were prompted for correct responses in other incidental studies. Thus, the differences in procedures appear to be correlated with the differences in the type of skills targeted for intervention.

Some proponents of naturalistic procedures might view the interventions reviewed with skepticism. This is because the teaching episodes were provided in a one-on-one fashion and were massed rather than distributed over a period of time. In teaching children with autism, this structure may facilitate learning. In the studies reviewed, naturalistic interventions were found to be effective in teaching language, social and play skills, and cognitive skills.

Limitations in Studies

Some major limitations in a majority of the studies reviewed that reduce confidence in the results are: (a) lack of documentation of the treatment implementation, (b) lack of social validity measures on the procedures used and on the outcomes achieved, (c) lack of

information on the (average) number of learning opportunities in a session and number of successfully completed opportunities, and (d) lack of documentation of the access time to the reinforcers or target stimuli.

The major limitation in the studies reviewed is the lack of documentation of the independent variable implementation. Shaver (1993) gives three reasons to document the independent variable implementation: (a) without the documentation of the independent variable implementation it is difficult to conclude that the effects on the dependent variable(s) are due to the independent variable and not due to extraneous variables, (b) documentation of independent variable implementation provides necessary information for replication of the study by other researchers, and (c) verification of the implementation of the independent variable helps in the synthesis of the research findings. The lack of information on whether the independent variable was implemented as planned in the studies reviewed makes it difficult to attribute the findings to the interventions. This in turn reduces the confidence in the findings and the ability to generalize the results.

Secondly, social validity measures were not reported in a majority of the studies reviewed. Measures of social validity of intervention procedures, especially for new intervention procedures, are essential as they serve as indicators for their potential acceptance in the real world. Similarly, social validation of the skills taught is essential for analyzing the importance of the skills targeted for intervention and the meaningfulness of the interventions. Thus, the lack of social validity measures on the intervention procedures and on the skills targeted for intervention in a majority of the studies makes it difficult to interpret the importance of skills being targeted and whether naturalistic interventions would be accepted by practitioners in the field of autism.

Thirdly, the number of learning opportunities provided for the children in a session was not reported in a majority of the studies reviewed. Information on the total number of times the target child initiated and percentage of initiations that resulted in successful teaching trials is essential to assess the intensity of the intervention and to judge the efficiency of an intervention procedure. The lack of information on the number of teaching trials per session in the majority of the studies makes it difficult to judge the practicality of the interventions, and the pros and cons of using naturalistic interventions over the traditional discrete trial method.

Fourthly, only few studies reviewed reported the access time to the training stimuli which also served as reinforcer, i.e., the natural consequence for the child's initiation. These times ranged from 5-sec to 60-sec. Access to the training stimulus (which in naturalistic

interventions is generally an identified reinforcer for the child) could be an important variable influencing the effectiveness of naturalistic interventions. Also, there could be many variables affecting the duration of access time to the training stimulus in children with autism (i.e., the skills being taught, the severity of the disability, etc.). Information on the amount of access time and/or the criteria for determining the access would be useful in defining effective practices of naturalistic interventions.

Suggestions for Future Research

To promote a deeper understanding of naturalistic interventions and facilitate the translation of research to practice, future studies should identify the minimum competencies (such as ability to initiate) that children with autism should display in order to benefit from naturalistic interventions and/or examine strategies to facilitate initiations in children with autism. This is important as many children with autism do not initiate spontaneously. Further, it would be helpful if a framework is provided to provide a rationale for variance in procedures. Such understanding will help promote better translation of research to practice. Future studies should also examine if naturalistic interventions are equally effective when learning opportunities are dispersed across daily routines for children with autism. Continued investigations will help in refining understanding of these strategies that appear, thus far, to be effective in teaching and in promoting generalization of social/play, cognitive, and language skills in children with autism.

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Perceived Problems of People with Visual Impairment in Rehabilitation Centers in Nigeria and the Counseling Implications

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Abstract

The main objective of this study was to find out problems of people with visual impairment in rehabilitation centers in Nigeria. The sample consisted of 600 participants. A Questionnaire was used to collect data for this study. Two null hypotheses were formulated and tested at the 0.05 alpha-level of significance. Data were analyzed using t-test statistic. The findings revealed that the major problems of the participants included health, communication, accommodation, economic/finance and psycho-social. The results also indicated that there were no significant differences in respondents' problems based on gender whereas there were significant differences in respondents' problems on the basis of type of rehabilitation services. The findings of this study shed light on the problems encountered by participants in rehabilitation centers in Nigeria. Hence, it is recommended that Community Based Rehabilitation (CBR) should be fully developed in Nigeria as an alternative approach to Institutional Rehabilitation.

Introduction

In Nigeria, within the past decade, dramatic advances at the local, state and federal levels in the education and rehabilitation of people with disabilities have raised challenging issues for professionals in the field. These issues are the results of dynamic changes in population, movement from rural to urban areas, patterns of services provided and increasing interest in the provision of equality of educational and rehabilitation opportunity by government and voluntary organizations. These situations have posed problems in concepts and current practices in education and rehabilitation service delivery.

The genesis of rehabilitation services in Nigeria is not yet well articulated to give a clear trend from the earliest known times to the present (Ozoji, 2003). However, prior to the introduction of Western form of rehabilitation, Nigeria witnessed an informal or traditional rehabilitation system located within the confines of the community. Life in the community was simple, so also were the vocational skills. As Ozoji (1992) puts it, people with visual impairment at the time were taken care of through the extended family. Instances of begging were either few or none existent (Agomoh, 2006).

It is certain, however, that the missionaries pioneered formal rehabilitation services through the establishment of rehabilitation centers. Nevertheless, the work of other voluntary associations within and outside Nigeria (e.g.

the Royal Commonwealth Society for people with visual impairment) made significant impact in instituting vocational rehabilitation services and centers in Nigeria (Ayoku, 2000; Mba, 1995; Ozoji, 2000).

The Nigeria civil war and other inter-ethnic and religious crises brought about a lot of dislocation in the family set-up and economic empowerment of the people. Many people lost their belongings including, in some cases, various parts of their bodies due to the impact of ammunition used to prosecute the war (Ozoji, 1992). This brought about an increase in the number of beggars in the community. This development also brought about awareness on the part of the government of the need to establish rehabilitation centers for wounded war veterans. The objective of these centers was to empower people with disabilities to become as much independent, self-reliant and self-sufficient in life as possible (Agomoh, 2006).

In addition, the services to be rendered by the rehabilitation centers, established by government, were targeted at reducing or removing the handicapping effects of disability and thus facilitating the integration of people with visual impairment into the society for them to participate in gainful and social activities of the community with their peers without disabilities (Ozoji, 2003). These centers train people with special needs on skills which include, daily living, self-care, communication skills, socialization and vocational skills such as typing, cane-work, tie and dye, leatherworks,

farming, art and decorations. These centers are scattered all over the country. The most significant efforts of government at establishing rehabilitation centers were in 1981 when the Federal Government in conjunction with six states in the Federation in collaboration with the United Nation executed a project titled: "Vocational Rehabilitation of People with visual impairment".

Defining Rehabilitation

According to Vandeh (2011) rehabilitation can be defined as bringing back somebody who has a physical disability or who is considered delinquent to a normal life by special treatment. Rehabilitation is a process whereby people with visual impairment come to have a new perspective of themselves and their disability, the new skills necessary for their present condition of life and a new control of their conditions and their environment. The field of rehabilitation stands out as a rescue mission for the purpose of restoration, conservation and advancement of individuals who live under the threat and incapacitation of disability (Ozoji, 2003). The rescue mission will require an integrated approach requiring linking prevention and rehabilitation with employment strategies and changes in attitudes.

Mba (1995), Ajobiewe (1996), and UNESCO (2000) noted that vocational rehabilitation entails, collective services such as vocational guidance, vocational training and selective placement planned to enable people with visual impairment secure and retain suitable employment. The services are provided through inter-disciplinary co-operation. These professionals, according to Mba (1995) include teachers, psychologists, psychiatrics, physicians, social workers, counselors and physiotherapists.

Rehabilitation services in Nigeria were either institutionalized or community based. Whatever the case may be, rehabilitation services must be geared toward educational, vocational and empowerment (Bitter, 1998). Bitter (1998) defined rehabilitation services as medical, psychological, social and vocational services which are necessary for rendering a person with visual impairment fit to engage in gainful activity. Bitter adds that successful delivery of rehabilitation services will enable people with visual impairment to engage in employment or other gainful activities. From the foregoing, rehabilitation can be seen as a process of preparing a person to be self-reliant and self-sufficient in life. Basically, people with visual impairment suffer visual limitation, because the condition does not allow them to perform activities that require visual ability. Such disability affects their learning and motor abilities.

Defining Visual Impairment

People with visual impairment as Bakhalpup (2011) has observed, are those whose sense of vision is defective ranging from having the ability to see a little to total blindness. Abang (2005) viewed people with visual impairment as those with some amount of visual problems which could be remedied either by surgical operation or by optical corrections. Abang further explained that people with severe visual impairment are those with serious visual problems which do not enable them to read or write print. A person with visual impairment becomes limited when his activities require visual performance which may be difficult for him to do.

Challenges/Problems of People with Visual Impairment in Rehabilitation Centers

People with visual impairment are faced with the challenges of personal, social, educational and vocational adjustments. Rehabilitation is one of the keys to any meaningful adjustment of people with visual impairment. Hallahan and Kauffman (2000) found that there is no research evidence indicating that people with visual impairment cannot adjust well like their peers without disabilities.

Jernigan (1999) also reported that when an individual becomes a person with visual impairment, they face two major problems. First, they must learn the skills and techniques which will enable them to carry on as a normal productive citizen in the community and second, they must become aware of and learn to cope with public attitudes and misconceptions about people with visual impairment. These attitudes and misconceptions go to the very roots of our culture and permeate every aspect of social behavior and thinking (Jernigan, 1999).

The first of these problems is far easier to solve than the second. For it is no longer theory but established fact that with proper training and opportunity, the average person with visual impairment can do the average job in the average place of business and do it as well as his sighted neighbor. In other words the real problem of visual impairment is neither the condition itself, nor the acquisition of skills or techniques or competence. The real problem is the lack of understanding and the misconceptions which exist (Jernigan, 1999).

Abosi and Ozoji (1985), Ezera (1995), and Gbegbin and Sokale (1996) agreed that vocational rehabilitation of people with visual impairment in Nigeria had failed to achieve the desired goals. Ojile (2000) argued that service provision for people with disabilities had failed in Nigeria for a number of reasons which among others included: existence of high illiterate rate among the population, massive corruption in the government and

diversion of resources meant for people with visual impairment to other avenues through manipulation and lack of transparency, and absence of reliable statistical data about the official number of the people with visual impairment, their distribution, categories, severity and enrollment figures which make planning and allocation of adequate resources extremely difficult.

Umar and Maina (1995) noted that many people with visual impairment had been turned down from the interview table on the basis that, they could not see and were therefore incapable of doing the job. Umar and Maina (1995) also reported that the ultimate goal of rehabilitation for people with visual impairment was to enable them to acquire skills that ensure their having some measure of positive control over their environment.

Need for Counseling

From the foregoing there is no doubt that some people with visual impairment also need counseling. The professional counselors by the nature of their training are likely to be able to help resolve the psychological and emotional problems that go with visual impairment and thereby minimize the depression and frustration of the individual (Ajobiewe, 2008). The self-esteem and self-reliance of people with visual impairment can also be restored. This means that in counselor training in Nigeria, there is need to expand the curriculum so as to include rehabilitation counseling with people with disabilities in mind (Ajobiewe, 2008).

Statement of the Problem

Using the epidemiological model of the World Health Organization (WHO, 1997) for people with visual impairment estimates, a developing nation like Nigeria, where trachoma, measles, xeropythalmia (deficiency of Vitamin A) and Onchocerciasis, among others, are major causes of visual impairment, the estimated population of people with visual impairment is about two million (Eleweke, 2002). These causes of visual impairment are preventable or treatable but because of the inadequacy of eye-care facilities and services, many become blind or visually impaired (Ayoku, 1993; Guteng, 2007; Smith, 1997).

It is estimated that 250,000 of people with visual impairment in Nigeria are of school age. However, a study of the Federal Ministry of Education (1996) indicated that less than 6% of this population attended school while the others were probably concealed, over-protected, neglected or maltreated at home by parents or released to survive in society through begging as social

parasites without self-respect or self-esteem (Ayoku, 1999).

Moreover, without appropriate and timely intervention, blindness imposes restriction on the physical, emotional and social development of children with visual impairment (Barraga, 1996; Lowenfield, 1994). It limits their range and variety of experience and restricts their mobility thereby affecting their learning (Barraga, 1996; Lowenfield, 1994). An estimated 75% of people with visual impairment live in developing countries (Degener & Quinn, 2004). However, as WHO (2003) reported, if the present trends of poverty, ignorance, superstition and fear continue the figure may rise to 80% by the end of the century. The present model of rehabilitation based on institutional care, would absorb more than the total health budget of most countries if serious attempts were made to meet the needs of all the people with visual impairment (WHO, 2003).

Research has revealed that there are inadequate facilities and resources for the development of vocational rehabilitation programs in Nigeria (Abosi, 1993; Ashinze, 2000; Ntukidem, 2000; Oni, 2001). Some vital facilities for rehabilitation programs are either obsolete or non-functioning or perhaps non-existent (Nwazuoke, 1995). More so, not much effort has been recorded regarding evaluation of the vocational training programs. One of the major problems is that rehabilitation education in Nigeria is accorded the lowest priority because most government functionaries and the general public have not shown much interest on rehabilitation programs of people with disabilities; more so, there has been a kind of general feeling that the people with disabilities who are beneficiaries of the program are already with visual impairment and cannot meet the scheme of things in our competitive society. Many have questioned why government resources should be spent on rehabilitation of people with disabilities while many other sections of our educational system have not been provided with adequate facilities and funds (Ntukidem, 2002).

There is a dearth of research in rehabilitation of people with disabilities in Nigeria, and on adult people with visual impairment in vocational training institutions specifically. Furthermore, to the best knowledge of the researcher there is no known research work in Nigeria carried out on problems of people with visual impairment in rehabilitation centers in Nigeria. Although researchers on closely related issues have done some work, there is still a gap in the research body. This current study therefore, investigated the perceived problems of people with visual impairment in

Table 1

Distribution of Respondents by Zones, State and Rehabilitation Centers (N=605)

S/N	Geo-Political Zone	State	Rehabilitation Centre	Number Issued	Number Returned
1	South-South	Cross-River	St. Joseph Rehabilitation Centre, Obudu.	30	30
2	South-West	Lagos	Farm Craft Rehabilitation Centre, Oshodi.	122	121
3	South-East	Enugu	Emene Rehabilitation Centre, Enugu	49	48
4	North-Central	Kaduna	Kaduna Rehabilitation Centre, Kaduna.	144	143
5	North-West	Sokoto	Sokoto Rehabilitation Centre, Sokoto.	116	116
6	North East	Kano	Mariri Rehabilitation Centre, Kano.	144	142
			Total	605	600

Note: 605 questionnaire forms were issued while 600 were returned

rehabilitation centers across Nigeria.

Purpose of the study

The main purpose of this study was to find out the problems experienced by people with visual impairment in rehabilitation centers in Nigeria. The study also aimed at determining the influence of gender and type of rehabilitation on problems faced by people with visual impairment.

Research Hypotheses

The following research hypotheses were formulated for the study: (a) There is no significant difference in the problems experienced by people with visual impairment in rehabilitation centers in Nigeria on the basis of gender, (b) There is no significant difference in the problems experienced by people with visual impairment in rehabilitation centers in Nigeria on the basis of type of rehabilitation services.

Method

Sample and Sampling Procedure

The target population for this study consisted of all people with visual impairment in rehabilitation centers in Nigeria. This study was intended as a national study of people with visual impairment from all the states of the Federation.

A multi-stage sampling method was used along with purposive sampling techniques in selecting participants for the study. This is because multi-stage sampling methods consist of several stages of selection from the larger frame until an actual sample size for the study is obtained (Ayena, 2007). At stage one, purposive sampling method was used to select six geo-political zones of Nigeria. At stage two, purposive sampling method was also used to select six states, one from each of the six geo-political zones. At stage three, purposive sampling method was also used to select six rehabilitation centers, one from each state based on the availability of rehabilitation centers in these states. At stage four, stratified sampling technique was used to select participants for the study.

The questionnaire was taken to the rehabilitation centers by the two researchers and five research assistants. At the centers, the researchers and their assistants distributed, explained, interpreted and supervised the questionnaire administration. A total of 605 questionnaires were distributed and returned (100% return rate), while 600 (99.2%) which were properly completed were used for the study. The distribution of the 600 respondents by zones, states, and rehabilitation centers is presented in Table 1.

The research design adopted for this study is the descriptive survey. This is because descriptive surveys

enable researchers to seek the opinion of representative sample of population upon which conclusion, inferences and generalizations are made on a contemporary phenomenon. According to Hassan (1995) descriptive survey research involves direct contact with a population or sample that has characteristics, personality qualities or attributes, which are relevant to a specific investigation.

Instrumentation

An instrument developed by these researchers was used for this study. The instrument used is a battery of tests. The title of the questionnaire is Problems of People with visual impairment Questionnaire (POVIQ). The instrument was developed by the researcher using the information gathered from related literature and interviews with some rehabilitees during the on-the-spot assessment of institutionalized rehabilitation center at the preliminary visit to Farm Craft Rehabilitation Centre in Oshodi.

The instrument was divided into two sections, that is Sections A and B. Section A sought information on the demographics of the respondents such as gender and rehabilitation types (institutionalized and community). Section B contained 25 items that sought information on the problems faced by people with visual impairment in the rehabilitation centers in Nigeria.

Validity of the Instrument. To establish its validity, the questionnaire was given to five experts at Counseling, Psychology and Visual Impairment in the Department of Educational Guidance and Counseling and Special Education. These five experts, following detailed scrutiny like reframing and replacing some items, affirmed that the instrument covered the intended content and was therefore valid for use.

Reliability of the Instrument. In order to ensure reliability of the instrument, the test-re-test method was employed. The two sets of score obtained were correlated using the Pearson's Product Moment Correlation Co-efficient formula. The result showed a correlation of 0.84, the co-efficient value was considered high enough to affirm the instrument's reliability and thus its appropriateness for the study.

Procedure

The administration of the questionnaire was conducted by the researcher and five research assistants that were trained by the researchers. Three of the research assistants were experts in Braille reading and writing. The administration of the questionnaire was done without, intimidation, interference, and discomfort. However, the respondents were given an opportunity to ask for clarifications where necessary. They were also encouraged to respond to all items with honesty.

Data Analysis

In analyzing the data collected for this study, the researcher used descriptive statistics. The *t*-test statistics was suitable in analyzing the two hypotheses because they involve groups having two means.

Results

Hypotheses Testing

Hypothesis One. There is no significant difference in the problems experienced by people with visual impairment in rehabilitation centers in Nigeria on the basis of gender.

Table 2 shows that the calculated *t*-value of -1.79 is less than the critical *t*-value of 1.96. Hence, hypothesis one which states that "there is no significant difference in the problems experienced by people with visual impairment in rehabilitation centers in Nigeria" was accepted. This means there was no significant difference in the problems experienced by people with visual impairment in rehabilitation centers in Nigeria on the basis of gender.

Hypothesis Two. There was no significant difference in the problems faced by people with visual impairment in rehabilitation centers in Nigeria on the basis of type of rehabilitation services.

Table 3 shows that the calculated *t*-value of -7.74 was greater than the critical *t*-value of 1.96; hence, the null hypothesis which states that "there is no significant difference in the problems faced by the people with visual impairment in rehabilitation centers in Nigeria on the basis of types of rehabilitation services" was rejected. This means that there is a significant difference in the problem faced by people with visual impairment in rehabilitation centers in Nigeria on the basis of type of rehabilitation services.

Summary of findings

The interpretation of the analyses revealed that the problems of people with visual impairment in rehabilitation centers in Nigeria were many. These problems can be categorized into, health problems, psycho–social problems, financial/economic problems, communication problems and accommodation problems.

Interpretation of the analyses also revealed that of the two null hypotheses that were generated and tested at 0.05 alpha levels, one was accepted while the other was rejected. Hence, there were no significant differences in respondents' problems based on gender whereas there

Table 2

Means, Standard Deviation and t-Value of Problems Experienced by People with Visual Impairment in Rehabilitation Centers in Nigeria on the Basis of Gender

Gender	No.	X̄	SD	df	Cal. t-value	Critical t-value
Male	411	58.29	12.32	598	-1.79	1.96
Female	189	60.19	11.72			

Note. There is no significant difference

Table 3

Means, Standard Deviation and t-Value of Problems Experienced by People with Visual Impairment in Rehabilitation Centers in Nigeria on the Basis of Type of Rehabilitation Services

Type of Rehabilitation Services	No.	X̄	SD	df	Cal. t-value	Critical t-Value
Institutionalized Rehabilitation Model	411	56.40	9.03	598	-7.74*	1.96
Community Based Rehabilitation	189	64.29	15.81			

Note: There is significant difference

was significant differences in respondents' problems on the basis of type of rehabilitation services.

Discussion

Results from the analyzed data revealed that there were many problems faced by people with visual impairment in rehabilitation centers across the country. These problems included, health problems, communication problems, accommodation problems, financial/economic problems, and psycho-social problems. This finding is consistent with previous research (Abosi & Ozoji, 1985; Ezera, 1995; Gbegbin & Sokale, 1996) which agreed that vocational rehabilitation of people with visual impairment in Nigeria had failed to achieve the desired goals as a result of health, communication, accommodation financial/economic and psychosocial problems. Hence, counselors, governments and Non-Governmental

Organizations should focus their attention in solving these problems so that the aim of rehabilitation in Nigeria will be achieved.

Regarding the second hypothesis that was rejected when people with visual impairment rehabilitees were compared by type of rehabilitation services on problems faced by people with visual impairment in rehabilitation centers in Nigeria, findings of the results are not in line with previous research (Adedeji, 1997; Ojile, 2000; Ojoru, 1995; Okeke, 1998) which observed that the few rehabilitation centers in Nigeria were not functioning according to international standards. In their opinion, the centers were bedeviled by over-crowdedness, lack of qualified personnel, insufficient funds and mismanagement. This is an indication that the types of problems being faced by people with visual impairment in both the institutionalized rehabilitation centers and the community based rehabilitation centers in Nigeria were similar in nature. This result was not unexpected because, despite the fact that the institutionalized rehabilitation centers were not functioning according to international standards the few rehabilitees that were privileged to be there were better-off their counterparts in community based rehabilitation centers who were not receiving governmental assistance. This is important because governments, counselors and NGOs in Nigeria needed to work hard to remove the problems that were preventing rehabilitation centers (be it institution or community based) from functioning according to international standards.

The findings of the first hypotheses indicated no significant difference when people with visual impairment in rehabilitation centers were compared by gender on problem they experienced in rehabilitation centers in Nigeria. This finding is in consonance with previous research (Abosi & Ozoji, 1985, Ezera, 1995, Ojile, 2000, Gbegbin & Sokale, 1996) which agreed that vocational rehabilitation of people with visual impairment in Nigeria had failed to achieve the desired goals. They identified the basic factors responsible for the failure to include, poor funding, lack of employment after graduation, poor motivation of the clients and negative attitudes towards people with visual impairment. Hence, there is need for adequate funding, employment, motivation and change of attitudes towards clients of rehabilitation centers for rehabilitation programs in Nigeria to achieve the desired objectives.

Conclusion

People with visual impairment in rehabilitation centers in Nigeria unanimously agreed that their problems included health, psycho–social, financial/economic, communication and accommodation

problems. Significant mean difference were found among people with visual impairment when they were compared by types of rehabilitation services on problems experienced by people with visual impairment in rehabilitation centers in Nigeria. However, significant mean difference did not exist among people with visual impairment when they were compared by gender on problems experienced by people with visual impairment in rehabilitation centers in Nigeria.

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Hocus Focus: Evaluating the Academic and Functional Benefits of Integrating Magic Tricks in the Classroom

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Abstract

As a society, we are looking to schools to be or become settings where our children learn the skills for successful adulthood. We are asking educators to teach an increasingly heterogeneous population of students, some of which face additional learning challenges. Many of these students have – or will have – a significant need to develop not only academic skills but also functional and social skills. However, instruction that addresses these needs is often not a component of the school-wide curriculum. This project was implemented to determine if learning and performing magic tricks as a part of an educational activity could bring about improvements in specific areas for special learners. Teachers used the Hocus Focus^{tm} curriculum for this project. This is an activity-based, academic and functional curriculum that integrates simple magic tricks into classroom instruction in an organized, systematic manner. Results demonstrated that the learning and performing of magic tricks could impact all three domains of learning resulting in student improvement in on task behaviors, planning and sequencing, socialization and meaningful conversation, and fine motor skills/dexterity.

Introduction

It has become critical for teachers to have a continuum of interventions and specialized strategies they can effectively implement in their classrooms while modifying their lesson plans to meet the needs of their students (Schmidt, Rozendale, & Greenman, 2002).

Hocus Focus^{tm} is an activity-based, student-centered, academic and functional curriculum that integrates simple magic tricks into classroom instruction. Each lesson is developed to align with U.S. National and Common Core State Standards of Learning as well as achieve specific functional objectives. The focus of this paper will address the findings of how the organized integration of magic tricks in the classroom can empower teachers and students to achieve desired outcomes and improve important learning skills identified by such studies as Bloom's Taxonomy of Learning, Michael Levine's Constructs of Neurodevelopmental Function, and Robert Marzano's New Taxonomy of Learning. These skills include sequencing, organizing tasks and movements, creativity, problem-solving, critical thinking, observational techniques, concentration, fine and gross motor skills, communication and presentation, and social behaviors.

In order to put into perspective the value of the *Hocus Focus*^{tm} curriculum as an effective tool educators can use to teach all students in an inclusive classroom environment, one must have an understanding of the changes in student demographics, the impact of current laws regarding the public education of special needs students, and the power of the arts to engage learners.

Literature Review

Legislation and Inclusion

In 1975, the U.S. Congress passed Public Law 94-142 (Education of All Handicapped Children Act), now codified as the Individual with Disabilities Education Improvement Act (IDEIA). In order to receive federal funds, states must develop and implement policies that assure a free appropriate public education (FAPE) to all children with disabilities. The IDEIA became a major instrument of change in U.S. public schools in the later part of the 20th century. In the 21st century, the No Child Left Behind Act of 2001 (NCLB, Public Law 107-110) has become the instrument of change in U.S. education by mandating that all states establish academic content and achievement standards.

In 2006, the United Nations passed the Convention on the Rights of People with Disabilities (CRPD). It is the main international policy document addressing the rights of people with disabilities by making general human rights laws applicable to these individuals and by clarifying existing international disability laws. While it is critically important that all children have access to education, they must be able to participate in school life and achieve desired outcomes from their education experiences. "While subject-based academic performance is often used as an indicator of learning outcomes, 'learning achievement' needs to be conceived more broadly as the acquisition of the values, attitudes, knowledge, and skills required to meet the challenges of contemporary societies" (UNESCO, 2009, p.6).

laws regarding the public education of special needs students, and the power of the arts to engage learners.

The global demand for improved access and more effective teaching tools for students with a disability classification are not expected to diminish. A May 2011 study released by the U.S. Centers for Disease Control and Prevention (CDC) revealed that about one in seven children in the United States (15% of American children) have been diagnosed with some type of developmental disorder – an increase of almost 2% from 1997 to 2008 or almost 2 million children (Boyle, Boulet, Schieve, Cohen, Blumberg, Yeargin-Allsopp et al., 2011). The World Report on Disabilities released in June 2011 reveals the international statistic of children with a disability to be approximately 5.7%, or 106 million children, and rising (World Health Organization, 2011).

In fall 2007, almost 95% of 6- to 21-year-old students with learning disabilities in the U.S. were served in general schools (U.S. Dept. of Education, 2010). In addition to the population of students with learning disabilities, it is widely accepted that a considerable number of other students will need specialized instruction and accommodations in order to become academically and socially competent. These students are referred to as "at-risk." Today, it is estimated that 20% - 60% of the general education population in the U.S. may comprise these "at-risk" students. And, by most accounts, these students represent a challenge similar to that of students with disabilities. Effective strategies used to teach students with learning disabilities are equally applicable to at-risk students (Gable & Hendrickson, 2004).

In order to comply with the provisions of the IDEIA, U.S. schools are establishing procedures to provide for retaining students at-risk and those with learning disabilities in the general education classroom. This process is referred to as mainstreaming (or inclusion) and reflects the least restrictive environment (LRE) provision of the IDEIA. As previously acknowledged, much of the developed world is also moving toward an inclusion model. This has placed – and will continue to place - an increased pressure on public schools to improve student educational outcomes, including those of students with a learning disability classification.

The CRPD also recognizes the right of children with disabilities to be educated in the general education system. Globally, children with disabilities are less likely to be enrolled in or stay in school (World Health Organization, 2011). In poor, developing countries, this trend is even more dramatically pronounced. While much of the developed world has moved (or is currently moving) toward an inclusive education model, many are still challenged by the demands of inclusion (World Health Organization, 2011). Of the 45 countries participating in the Education for All Fast Track Initiative (a partnership between developing countries and The World Bank), only 10 had specific policy commitments for children with disabilities (World Health Organization, 2011).

knowledge, and skills required to meet the challenges of contemporary societies" (UNESCO, 2009, p.6).

UNESCO revised their guidelines to assist countries in the introduction and promotion of inclusive education, to strengthen policy development, and to bring about change in the education system to improve "all aspects of the quality of education, and [ensure] excellence of all so that recognized and measurable learning outcomes are achieved by all, especially in literacy, numeracy, and essential life skills" (UNESCO, 2009, p. 27).

The World Bank and World Health Organization's 2011 World Report on Disability (Levin Institute, 2011, p. 3) states, "when possible, students should be mainstreamed, schools should be flexible in their curriculum and assessments, classroom specialist should be provided, and education and rehabilitation services should be linked." There is a critical need for educators to work cooperatively with their colleagues in other disciplines, i.e. school psychologists, therapists, guidance counselors, and speech/language pathologists. When activities that are implemented to meet academic objectives also reinforce psychomotor and social objectives, the synergy between professionals can lead to greater achievement in academic and social skills with at-risk and students with learning disabilities.

The global situation demands that we evaluate our present practices and demonstrate a willingness to abandon those that are inefficient for those that have been proven effective (Gable & Hendrickson, 2004). In inclusive classroom environments, methods of instruction that best benefit all students must be implemented in order to serve the needs of every learner. This requires educators to find new methods and tools to support a creative inclusive approach to education.

The Arts in the Classroom

The New Oxford American Dictionary (2010) defines art as "works produced by human creative skill and imagination" and the arts as "subjects of study primarily concerned with the process and products of human creativity and social life."

Research has demonstrated that the arts ignite creativity (Burton, Horowitz, & Abeles, 1999; Fisk, 1999) and this can play an important role in supporting the diverse learning needs of students. Evidence indicates that learning through the arts can have a profound impact on learning in other domains including personal and social competencies (Fisk, 1999). Sir Ken Robinson, educator and creativity expert, has been challenging the way we teach our children for years. He contends that the modern education system is destroying creativity in our children through a hierarchy of subjects that

diminish the importance of the arts by ignoring their impact on learning. Robinson wrote:

> The fact is that given the challenges we face, education doesn't need to be reformed -- it needs to be transformed. The key to this transformation is not to standardize education, but to personalize it, to build achievement on discovering the individual talents of each child, to put students in an environment where they want to learn and where they can naturally discover their true passions. (2009, p. 238)

Robinson champions a radical rethinking of our school systems to cultivate creativity and acknowledge multiple types of intelligence.

A 1999 study of over 2,000 students attending public schools in grades 4-8 found a significant relationship between arts programs and creative, cognitive, and personal competencies needed for academic success (Burton et al., 1999). When academic or social objectives are taught through the arts, they provide children and young adults with authentic learning experiences that engage their minds, hearts, and bodies. These learning experiences are real and meaningful for them, bringing together multiple skills and abilities. Cote (2011) suggests that the movement toward accountability and standardization is not conducive to stimulating these creative learning experiences because it focuses on assessment, measurable outcomes, and external control. When schools prepare students only for academic success (e.g., getting the answer correct), it is "detrimental to creative growth because creative learning involves experimenting, taking risks, making mistakes, and correcting them" (Cote, 2011, p. 129). Eisner (2002) argued that more attention should be given to the cognitive aspects of the arts. Eisner's position is that arts integration into curriculum can teach students valuable skills that include how to make good judgments about qualitative relationships, problems can have more than one solution, questions can have more than one answer, small differences can have large effects, and there are many ways to see and interpret the world (perspective).

Magic in the Classroom

The art of magic has a story as old as recorded history. Almost every society has some recorded form of magic. It may be the oldest and most universal of the performing arts because it easily translates from one culture to another (Christopher & Christopher, 2005). The Westcar Papyrus, written approximately 3000 BC, records the performance of a magician in the Pharaoh's court. Cave paintings by prehistoric people in southern France and northern Spain contain images of magicians performing their tricks (Doerflinger, 1977). Magicians performed in the streets and marketplaces of ancient Greece and Rome. Magicians of the past were an important part of society and significant players in the world of theatre. Their problem-solving and creative abilities have made significant contributions to modern civilization including the parachute, vending machines, and the technology used to show movies.

The art of magic has the potential to capture and hold the attention of people of all ages. Children are especially intrigued by the seeming impossibility of a magic trick. Throughout the 1980s and 1990s, a small number of education researchers evaluated the effectiveness of using magic tricks with students with learning disabilities. Each researcher concluded that future research should be done based on their positive results, which include: (a) Magic tricks offer a creative means for stimulating the senses in special education students (Frith & Walker, 1983), (b) Magic tricks enhance the learning experience and encourage creative problem-solving skills, observational techniques, and critical thinking (McCormack, 1985), (c) Magic tricks provide a strategy for building teamwork and self-esteem in children with Emotional Behavior Disorders (Broome, 1989), and (d) Magic tricks in an educational setting can help students with learning differences attain higher self-esteem and self-confidence (Ezell & Ezell, 2003).

Dr. Aubrey Fine is a licensed psychologist who works with children with learning disabilities. Dr. Fine is also a Professor in the College of Education and Integrative Studies at California Polytechnic State University (Pomona, CA). Dr. Fine recognizes the value of magic as an intervention and wrote:

> The teaching of magic has many therapeutic benefits. Not only does it work on confidence and communication, but it also can be used to teach cognitive and motor skills. It is amazing that people will work hard to learn materials that are intrinsically motivating to them. So often people don't realize that they are enhancing these skills because their primary goal is self-satisfaction and developing the skills to perform the magic. I have been amazed to watch children with ADHD or learning disabilities work slowly and carefully, following the necessary steps, because they want to get the trick or illusion correct. (Personal communication, August 23, 2009)

Incorporating magic tricks into the learning process can be a powerful means of tapping into the creative

process and drawing on multiple learning modalities–visual, aural, and kinesthetic – allowing students to learn facts and concepts they can see, touch, manipulate, and talk about. Simple tricks can transform the learning process into a tangible and visible learning experience. It can also provide an appropriate means to build confidence, self-esteem, self-identity, and develop self-determination skills in students (Levin, 2007; Noll & Johnson, 2010).

Learning is deepest when students have the capacity to represent what they have learned to others. Helene Illeris, Professor of Arts Education at the University of Agder in Norway, suggests that, in the performative aesthetic learning process, knowledge can be communicated through symbolic forms (Illeris, 2011). The performance of a magic trick is a motivating, skillful, and appropriate way to provide a platform for demonstrating what students have learned.

Using magic tricks in the classroom can also impact student behavior (Levin, 2007). Inner Harbor Hospital (Atlanta, GA) is an intensive-level experiential residential psychiatric hospital for severely emotionally disturbed youth 6 to 18 years of age. Admission to the school program requires the diagnosis of at least one Axis 1 diagnosis and each student is prescribed psychotropic medication(s). The entire student population is classified as requiring special education. Within this setting, a population of pre-adolescent boys was used to evaluate the potential benefits of learning magic tricks for both academic and personal/social development in a variety of classroom settings or programs. Diagnoses of students in the study included: Depressive Disorder Not Otherwise Specified, Oppositional Defiant Disorder (ODD), Conduct Disorder, Intermittent Explosive Disorder, Attention Deficit Hyperactivity Disorder (ADHD) or Attention Deficit Disorder (ADD), Bipolar Disorder, Post-Traumatic Stress Disorder (PTSD), and Schizoaffective Disorder. Common psychosocial stressors included a history of physical and/or sexual abuse, poor family functioning and/or termination of parental rights, legal issues, and substance abuse. The six-week study was conducted under the supervision of therapist and teacher David Levin.

Final results showed an improvement on eight (8) of the ten (10) items on the Rosenberg Self-Esteem Scale in pre/post testing. Behavior tracking also indicated significant positive gains. There was a 65% decrease in interpersonal boundary violations and a 62% decrease in the requirement of staff to intervene with behavior disciplines. These results suggest that integrating simple magic tricks into classroom instruction can engage even the most difficult students in the learning process and have a positive impact on self-esteem, self-concept,

behavior, and social cognition.

The use of magic tricks with children to assist in the development of cognitive, motor, speech, and psychosocial skills in a therapeutic rehabilitation setting is well established (DeRoovere, 1997; Fisher, 2007; Green, 2010; Kwong & Cullen, 2007; Sui & Sui, 2007;). An organized program called Healing of Magic has been training therapists for more than 20 years in the therapeutic use of magic tricks. The American Occupational Therapy Association (AOTA) recognizes the benefits of learning magic tricks as "a therapeutic method that aids the patients by enhancing their attention, problem recognition, problem solving, perception, neuro-muscular and motivational skills (AOTA, 1985)." Rebecca Phillips, the Administrative Director of Rehabilitation for Martin Memorial Hospitals in South Florida, acknowledges that magic tricks can be used with clients to elicit motivation, coordination, range of motion, prehension, fine motor dexterity, and perceptual training (Personal Correspondence, February 18, 2011). Julie DeJean, the Administrative Director of Stormont-Vail West, a behavioral medicine hospital in Topeka, Kansas, agrees that magic tricks can engage and motivate clients to experience gains in motor skills, cognitive skills, and social skills (Falcon & Shoop, 2002).

The Hocus Focus[tm] Curriculum

Hocus Focus[tm] is an activity-based, student-centered educational curriculum that integrates the art of magic into 11 weeks of lesson plans (10 lessons and a bonus lesson) with the flexibility for teacher adaptation based on the abilities of the students and available classroom time. It was developed for two reasons: (1) to tap into the curiosity and intrinsic motivation of children in order to engage them in the learning process, and (2) to provide organized lesson plans that would allow for inter-disciplinary collaborations between educators, psychologists, and therapists to concentrate on and reinforce the desired outcomes (academically and functionally) identified in an Individual Education Plan (IEP).

The curriculum includes the Teacher's Manual, an Instructional DVD, Supplemental CD, and the magic supplies for each lesson. The Teacher's Manual is divided into five sections: Introduction to the Curriculum, Educational Factors, Guidelines for Implementation (assessment, instruction methods, etc.), Assessment Surveys, and Lesson Plans. Each lesson plan contains goals and objectives aligned with at least one National Standard of Learning and Common Core State Standard, activities to support those objectives, step-by-step illustrations for the trick being taught, and

assessment tools to evaluate the students' progress. In addition to the academic objective, each lesson also contains cognitive, motor, psychosocial, speech and functional objectives.

The Instructional DVD is for use as a part of the classroom instruction. The DVD menu lists each lesson as a separate chapter. Each lesson contains the demonstration of the trick followed by the step-by-step instructions for students. The step-by-step instructions on the DVD align with the step-by-step illustrations provided to each student by the teacher. The DVD is also English subtitled.

The Supplemental CD contains the illustrated instructions for all the magic tricks in each lesson, copies of the assessment and evaluation surveys to be used, a Certificate of Completion, the Magician's Code of Ethics, the "Wizard's Book of Secrets," and a letter to the parents introducing them to the concepts and benefits of the curriculum.

There were several specific questions on which the researchers focused regarding the efficacy of the *Hocus Focus*[tm] curriculum. This paper, however, will focus on only one of those questions: How does the use of the curriculum encourage student growth and development, i.e. does it achieve measurable outcomes in the improvement of the previously identified cognitive and psychomotor skills as well as student affect?

Method

Participants and Settings

Three settings were selected with varying demographics in order to assess the effects of the *Hocus Focus*[tm] curriculum on diverse populations. These settings comprised nine teachers and 76 students.

Setting one included four classrooms at a public school in north St. Louis County, Missouri. Each classroom contained between 8 and 11 students who had been placed within the school via the decision of an Individual Education Plan (IEP) team. The students' diagnoses included Autism, Emotional Behavior Disorder, Learning Disability, ADHD, Intellectual Disability and Communication Disorders (speech and language).

The first classroom was made up entirely of female students, ages 14-18, who had educational diagnoses of Emotional Disturbance and/or Learning Disabilities. The second classroom was made up of male and female students, ages 18-21, with educational diagnosis of Autism and/or Intellectual Disabilities. The third classroom was made up of all male students, ages 15-18, with educational diagnosis of Emotional Disturbance and/or Learning Disabilities. The final classroom was

made up of male and female students, ages 14-16, with a primary educational diagnosis of Learning Disability. There were 19 females and 15 males included in the study. The students were predominately African-American from lower socio-economic neighborhoods. One supervisor, working cooperatively with each teacher, was placed in charge of overseeing the evaluation of the curriculum in each classroom. The objective was to determine if the *Hocus Focus*[tm] curriculum would positively impact student growth by improving cognitive abilities and influencing behaviors (Walkenhorst, 2010).

Setting two included four separate level IV classrooms containing a total of twenty-seven students in the state of Minnesota (USA). All students were diagnosed as having an Emotional Behavior Disorder and Learning Disability. The students' ages ranged from 12-14 years old. The evaluation of the curriculum in each classroom was under the supervision of a teacher and one graduate student from the Department of Special Education at Saint Cloud State University (SCSU) in Saint Cloud, Minnesota. The objective was to improve on task behaviors, frustration tolerance, sequencing, and social behaviors (Noll & Johnson, 2010).

Setting three included one classroom containing fifteen students, ages 12-14 years, who were identified as having a learning disability under Minnesota law to receive special education services. The evaluation of the curriculum in this classroom was under the supervision of a teacher and a graduate student from the Department of Special Education at Saint Cloud State University (SCSU) in Saint Cloud, Minnesota. The teacher and graduate student adapted the curriculum by selecting three students who would learn, present, and teach the magic tricks to the remaining twelve students in the class. The objective was to decrease inappropriate behaviors in one student with Emotional Behavior Disorder and increase self-advocacy skills of one student with a Learning Disability and one student with Asperger's disorder (ASD) (Noll & Johnson, 2010).

Materials and Procedure

Data were systematically collected and evaluated utilizing both qualitative and quantitative data collection methods. These methods included observation checklists, pre/mid/post student surveys, pre/post teacher surveys, teacher observation data sheets, and anecdotal recording by teachers and students. Analyses were conducted across data collected from each of the three settings. In this manner, validity of the emergent themes was ensured.

In setting one, students were given two self-assessment tools to complete at three distinct times

throughout the 11-week curriculum. The first assessment tool used was the Rosenberg Self-Esteem Scale. The second assessment tool was the *Hocus Focus^{tm}* Self-Efficacy Scale. This scale was created specifically for this curriculum and is based on the self-efficacy theories of Albert Bandura (Pajares & Urdan, 2006). These were administered on the same timeline as the teachers' surveys, i.e. prior to start of curriculum, week six of curriculum, and after the final week. Students were also asked to keep a "Wizard's Book of Secrets" which contained their thoughts, ideas, and stories for each trick learned through the curriculum. Likewise teachers were asked to keep short anecdotal notes about the ease of use of the curriculum, noting what worked, what did not work and other thoughts about the curriculum. Both the "Wizard's Book of Secrets" and the teacher notes were collected and analyzed. Each of the data sets was initially coded by applying both deductive and inductive coding strategies.

The supervisor scheduled classroom observations on weeks 1, 3, 6, 9 as well as during the final performance. Each class was observed for either the entire lesson or a minimum of 20 minutes. Informal interviews were conducted with students and teacher participants following observations.

In settings two and three, students were given two self-assessment tools to complete at the beginning and end of the curriculum evaluation. The first assessment tool used was the Rosenberg Self-Esteem Scale. The second assessment tool was the *Hocus Focus^{tm}* Self-Efficacy Scale created specifically for this curriculum and based on the self-efficacy theories of Albert Bandura (Bandura, 2005). Informal student interviews were conducted throughout the evaluation period and students were asked to keep a "Wizard's Book of Secrets" or journal which contained their thoughts, ideas, and stories for each trick learned through the curriculum. Teachers were asked to observe student behaviors and make a careful review of the research process.

Findings

In this study, the majority of the students who participated achieved success and experienced improvements in all identified areas. Students who demonstrated the most significant improvements with little or no adaptations of the *Hocus Focus^{tm}* curriculum were those with a diagnosis of ADHD, Emotional Behavior Disorder, and Learning Disability. Students with Intellectual Disabilities and Communication Disorders required some adaptations to the curriculum (i.e. required more time for the lesson) but were also able to demonstrate improvements in measured areas (Walkenhorst, 2010). It is important to note that

students with Autism also experienced a level of success in learning and performing the tricks. These students were more persistent in learning the steps of each trick and were observed maintaining focus longer than in other classroom situations (Walkenhorst, 2010).

Teacher Themes

Based on teacher interviews and a review of their notes, each educator recognized the value in the sequencing, writing, and problem solving utilized in the *Hocus Focus^{tm}* curriculum. They also were able to see a connection between the skills taught in the "magic curriculum" and those in other core curriculums (Noll & Johnson, 2010; Walkenhorst, 2010). One teacher wrote, "This is one of the first pre-made curriculums that I have encountered that is accessible, engaging, and achievable in the classroom, even with all of the demands placed on us as educators" (Walkenhorst, 2010).

Several additional common themes emerged among the teachers when comparing the data from each of the three settings. All nine of the teachers involved with this study independently made these observations:

- The *Hocus Focus^{tm}* curriculum captures the students' attention immediately.
- Students spend their time learning instead of watching, actively engaging them in both physical and mental capacities.
- Students are introduced and taught the importance of sequential steps and following directions by the learning of simple magic tricks. The tricks included in the program offer enough 'wow' factors to keep the students engaged in the learning process.
- Students are encouraged to help each other and to provide constructive feedback to their peers as they learn together.

In setting one, the supervisor examined the results from the pre, mid, and post assessments. Teachers were asked to complete a brief survey on each student identifying their level of independence on each of these criteria: sequence 1-3 steps, sequence 3-7 steps, follow simple directions, follow complex directions, problem-solve, and on task behavior/focus. Rankings were identified as none, emergent, guided, and independent. Results were compiled and each ranking was assigned a numerical score, i.e. none at 0, emergent at 2, guided at 4, and independent at 6. The scores of each student were averaged together and the mean average was listed for each assessment. Figure 1 illustrates the results of these surveys.
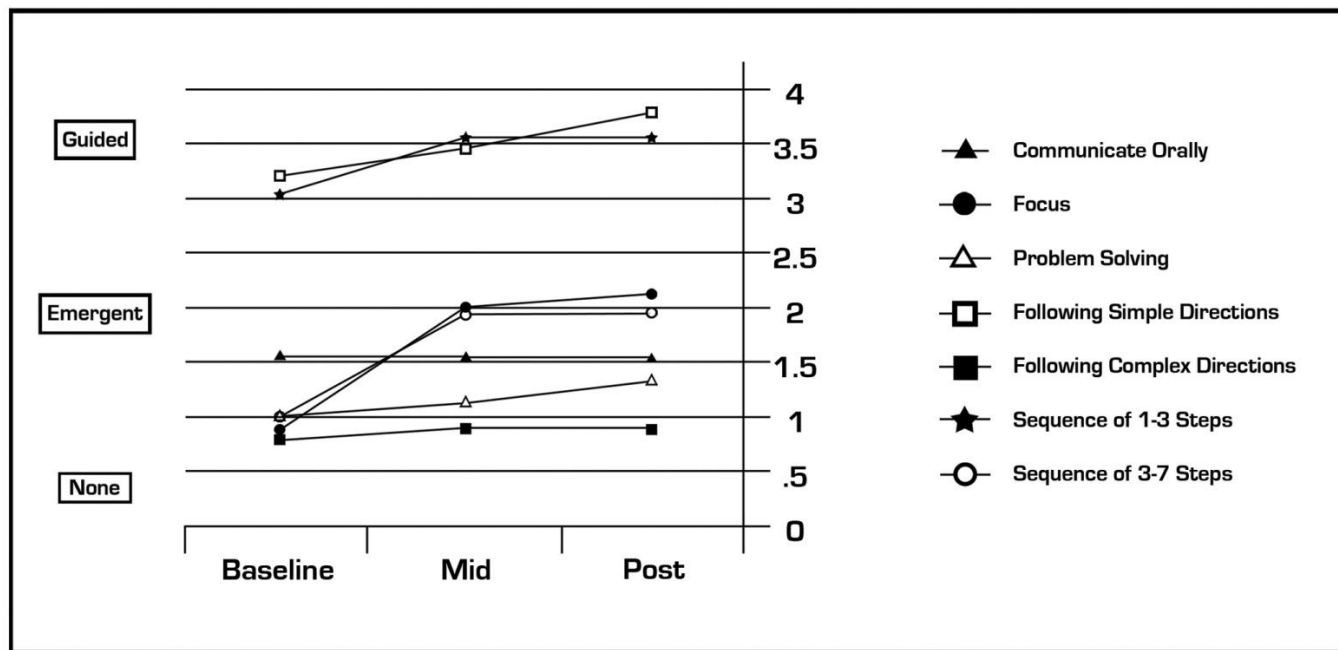
Figure 1. Results of these surveys. Informal interviews with the participating teachers suggest that the lack of growth in oral communication was because greater emphasis was on the areas of following directions and problem solving. While this evaluation did not show growth in oral communication, teachers agreed improvement would be expected in this area as students continue to learn and master the lessons in this curriculum and move into the performance aspects of the curriculum. Due to time constraints, students were not able to concentrate on the performance of the tricks.

Student Themes

The following student themes emerged from the qualitative data defined by teacher observation and assessment in settings one, two, and three (Noll & Johnson, 2010; Walkenhorst, 2010). Each theme has been identified and individual teacher statements are provided to support each theme.

Improvement in following multi-step directions, concentration, and memory skills. Teachers observed that students were more attentive during lessons and demonstrated an ability to follow complex, multi-step directions. There were noticeable improvements in each child's level of self-determination as well as their ability to memorize and sequence the complicated processes that some magic tricks incorporate. Importantly, many students were aware that they were achieving a difficult task and accepted both positive and negative feedback in order to improve their magical performance.

Setting One: "When probed, students were able to identify that the learning of the sequence of steps was important and useful in other classes."

Setting Two, Teacher 1 – "Students were able to follow multi-step directions, problem solve, show concentration, and memorize the tricks."

Setting Two, Teacher 2 – "The students were able to recognize themselves that they were following multi-

step directions, accepting feedback, and had an increased sense of determination."

Improvement in self-determination skills and self-esteem. After using a magic trick in a classroom lesson, the teacher proceeded to teach the students the method. The teacher not only taught them a new skill that they can repeat for peers or adults but, by learning to do something that others may not be able to accomplish, the student achieved self-efficacy, enhanced self-esteem, and built self-confidence. Teachers observed that students were motivated not simply to learn the trick in each lesson, but also to teach the trick to someone else. This argues the use of higher order cognition. In addition, this "teaching" skill enhanced the student's self-concept and self-esteem.

Setting Two, Teacher 4 – "Much of the day, these students are reminded of the difficulties they have in school but when they mastered a trick, they felt smart and proud of what they could do…The use of this curriculum showed me that if my students were given something that they felt good about being able to accomplish, they were much more willing to socialize and almost brag about what they had learned. To see some of the more reserved students trying to show and teach someone at lunch a magic trick was a great thing."

Setting Three – "The students were able to identify tricks they wanted to learn and teach to others. Each

student walked away with a higher self-esteem and greater self-advocacy skills."

Setting Two, Teacher 4 – "The two areas that I found to have the greatest growth in the Self-Efficacy assessment were 'I can work and play well with a group of other people' and 'I can get my parents to take part in my school activities.' With some of my students, they really enjoyed teaching anyone (and everyone) their tricks, but others did not want to share it with anyone but other special education teachers and friends. Overall, I am pleased that it gave them another way to interact."

Improvement in motivation as well as on-task and participation behaviors. Teachers observed that students were more interested and willing to participate in group-learning experiences. Once students understood the content of the lesson and were aware of the potential frustrations, they felt they were able to deal with those frustrations in a more appropriate manner. Teachers also became aware that the lessons in the curriculum provided learning experiences that focused on authentic outcomes. Students learned from one another and had incentives to work harder; but the most notable improvement seen by teachers and students was the increase in student motivation and the incentive to try harder. Teachers discovered that the magic tricks provided an excellent basis for problem solving, frustration tolerance, and task follow-through.

Setting Two, Teacher 1 – "All students felt they were able to work together and problem solve better after completing the magic lessons. They felt they could deal with frustrations in a more appropriate manner and learned that not everything is as easy and not to give up."

Setting Three Teacher: "Each student was willing to be involved and was enthusiastic about sharing his knowledge with the class along with performing the trick."

Setting Two, Teacher 1 – "The curriculum is engaging, a positive motivator for the student and improved their on-task behaviors.

Setting 3: "In the class where we incorporated the *Hocus Focus^{tm}* curriculum, I feel like I offered learning experiences that focused on authentic outcomes. Students learned communication skills and had a better picture of how they could function effectively in a setting in which they had previously had difficulty. They learned from each other and had great incentives to work harder. The increased motivation was perhaps the most notable improvement."

Setting Two, Teacher 1 – "I saw improvements particularly in several students' motivation level to complete homework. For one student, this was the first time he was putting effort into getting his homework done and asking for help with his homework."

Improvement in leadership and socialization skills. The teacher modeled appropriate social skills when teaching the magic trick to the class. This modeling allowed students to practice or perform an illusion with peers or adults in order to exercise appropriate interactions, practice giving and receiving feedback, and practice presentation or assertiveness skills versus aggression. In several instances, teachers commented that this proved to be an effective way for the student who enjoys excessive attention to receive it appropriately. Teachers observed that students were building relationships with other students that were not normally a part of their peer group. The team learning approach (social learning theory) discounted negative peer pressures, strengthened appropriate behaviors, and encouraged students to demonstrate leadership strengths by offering to assist their classmates.

Setting Two, Teacher 1, "I witnessed classmates getting along with one another who usually fought constantly and had a history of negative peer relationships. During the time I taught the magic lesson, I was amazed at the camaraderie between the kids and the friendship skills they showed. The students who caught on to the tricks faster would help the students who hadn't quite mastered the tricks. Students worked together and showed great leadership skills by taking the initiative to help their classmates."

Setting Three Teacher, "The students were attentive to task and appeared proud to be a leader."

Positive peer relationships, peer mentoring, and peer collaboration. Teachers observed that students of different academic and physical abilities worked cooperatively in the learning of each lesson. Students who were able to learn the trick more quickly voluntarily assisted those who needed more guidance. Teachers noted there were demonstrable changes in classroom behaviors and dynamics. As one teacher wrote, there was "a dramatic increase in their self-respect and the quantity and quality of their peer relationships." (Walkenhorst, 2010).

Setting Three: "In addition to increased motivation, other areas of improvement included self-advocacy, attention-to-task behavior, and collaboration with peers. It is difficult to find strategies that address both academically capable students and students who require more intensive instruction. The *Hocus Focus^{tm}* curriculum is one strategy that addresses this concern."

Setting Two, Teacher 4 – "They really had fun learning. They opened up and talked more, in a friendly tone, to each other when trying to learn and teach each other how to do each of the tricks."

Setting Two, Teacher 3 – "The *Hocus Focus^{tm}* curriculum was used during a social thinking class. Specifically it was used to improve self-esteem, positive

behavior, motor coordination, socialization, self-determination, attention to task, and willingness to be involved. Student growth was 100% in all of these areas with a dramatic increase in their self-respect and the quantity and quality of their peer relationships. One student who struggled with confidence increased his ability to be able to stand up and talk in front of a group of people."

Positive Impact on Behavior. Teachers stated that integrating magic tricks into their lessons allowed for many teachable moments in regards to frustration tolerance, appropriate social behaviors, and improved interactions in the classroom. Students who became frustrated during the learning process were able to focus on the task because of their strong desire to succeed and accomplish the goal of performing the trick. Students with different learning challenges were able to work together effectively and communicate well.

Setting Two, Teacher 2 – "Students would become frustrated if they could not perform the trick. However, those moments were great for learning because we talked about how to deal with frustrations and the meaning of determination."

Setting Three: "From the students' perspective, each one had something to offer to the group. The student with EBD was able to be a productive leader. The student identified with a Learning Disability was able to read and comprehend the material. The student with Asperger's was able to socially interact with two other peers with whom he normally would never communicate. The three students worked together remarkably well."

Rapport Building with Students. Teachers recognized that using magic tricks in the classroom could provide a simple means for the teacher to connect to the student and deliver a particular lesson, whether academic or social/developmental. Magic tricks can be an appropriate means of removing boundaries and providing "comfort zones" when teachers initially get to know the student and may help faculty appear more playful and approachable (Gilroy, 1998). Magic activities are highly engaging and tend to capture and hold the attention of children very quickly.

Setting Two, Teacher 4 – "During discussions with my students about the strengths and overall feelings of the curriculum, my students informed me that they thought learning the magic tricks was fun. They also stated they liked that it seemed like I was just having fun in class while we learned the tricks – that I seemed more relaxed."

Setting Two, Teacher 4 – "I struggled with using the curriculum in my math course and would have rather used it in a social skills course. However, I believe that the curriculum allowed me to connect with my students in a way that I would not have otherwise. To share something with my students helped them feel closer to me and, hopefully, allowed them to see me as someone they could talk to about issues in their lives."

Discussion

The findings from this study have profound implications for the education of students with special needs and those involved in their education. The results suggest that use of the *Hocus Focus*[tm] curriculum may provide a venue for equity in the educational experiences of traditionally disadvantaged students, a means to increase self-esteem among students, engage the students in their learning, offer opportunities for peer-to-peer collaboration, and address the "whole" student. Each of these areas will be discussed in depth.

Based on the pre and post assessments of the participants and the examination of the teachers, the following observations became evident when integrating magic tricks into the classroom experience by way of a structured lesson plan. These observations are:

1. *Help "level the playing field" for students from disadvantaged circumstances or those with learning differences.* All students, regardless of their abilities, start at the same place when learning magic. It makes no difference their socio-economic status, their language, or their skill levels. Some students with autism learned more quickly because of their increased focus and their ability to think in terms of patterns and sequences (the very heart of the art of magic). Students with varying degrees of ability were able to achieve some level of success in the learning and performing of a magic trick.

2. *Engage multiple skills and abilities that develop cognitive, social, and personal competencies.* Learning magic requires students to think sequentially, follow directions, and perform specific tasks. Performing the magic trick for an audience, no matter the size, requires confidence, the ability to communicate (tell a story with the trick), and some knowledge of social rules. Combined, they bolster self-esteem and move a child toward achieving self-actualization.

3. *Reach students who are not otherwise engaged in school and excite them about the learning process.* Frith and Walker (1983) found that magic has a special appeal for students because it gives them a chance to do something that cannot be equaled by their peers. Traditional instruction has focused on individual learning that isolates the student from social interaction. By

integrating magic tricks into the educational process, students can engage in authentic experiences, purposeful conversation, and depend on each other's thinking to enrich their own understanding and construct meaning.

4. *Provide an opportunity for students to teach or mentor other students in the classroom.* Marzano (2007) writes that many studies support the idea that learning is most effective when it is social and collaborative. This cooperative learning process is a valuable experience for children. Helping one another stirs creativity and builds positive relationships. It also increases a student's feeling of control over his environment and improves self-esteem. The concept of magic tricks may also be used to talk about perspective and how two individuals may perceive the same situation differently. In today's inclusive and diverse classrooms, collaboration is a way to learn to contribute to the common good, seek collegiality, and to draw on the knowledge and resources of others.

5. *Engage the 'whole person'- the student is invested in ways that are more meaningful than simply knowing the answer," or reciting facts from memory.* Unlike traditional learning experiences that look for right or wrong answers, being engaged in the learning and performance of a magic trick allows for multiple outcomes. When we allow students to learn creatively, we remove the stressors of "being right" and give them permission to take risks and make mistakes. And through those mistakes, they develop self-determination, critical thinking, observational techniques, and problem solving abilities. These are essential skills if young people are going to be productive in today's societies.

The validation of the results of this research project across four different educational settings suggests that similar results would be achieved in similar situations. Given the comparability between the challenges that are confronted by special education and at-risk students internationally, it could be generalized that this type of curriculum could also improve the learning skills of those students. Beyond the scope of this research, the author of this paper had the opportunity to work in several classrooms with Orphaned and Vulnerable Children (OVC and special education and at-risk classification) in Windhoek, Namibia during the summer of 2011. The principal and teachers were able to observe similar results with their students – engagement, participation, improved on-task behavior, and socialization. This suggests that future research should be conducted internationally to determine if the learning of magic tricks in varying educational settings would prove as effective in different societies and cultures.

Conclusion

The *Hocus Focus^tm* curriculum provides educators with access to specific, goal-oriented magic tricks for use in the classroom. Each of these tricks assists the student in the achievement a specific functional and/or academic objective aligned with a National Standard and/or Common Core State Standard of Learning. When teachers integrate these magic tricks into learning experiences, they can provide students with authentic opportunities for advancement in critical thinking, problem solving, creativity, and retention, as well as positively impact the metacognitive and self-system processes.

The conclusions of this study can be categorized into three primary areas.

Psychological Benefits for Students

Self-Esteem and Self-Efficacy. Students often developed greater confidence in their self-worth and abilities with each successful learning experience. In addition, students were also more confident in their abilities to produce the desired outcome, i.e. perform the magic trick. As they achieved mastery of each new objective, they demonstrated a stronger sense of efficacy. This assurance in their abilities provided a basis on which they attempted new and more difficult tasks and their "fear of failure" was replaced by a willingness to "take a risk."

Self-Determination and Self-Regulation. Students developed strategies by which they could control the outcome of each lesson, i.e. to learn the trick and corresponding objective. They were able to set challenging goals and maintain a strong commitment to accomplish those goals. They were able to exercise appropriate influence over their own motivation, thought processes, emotions, and behavior. And they were able to affirm their efforts – in the face of potential failure – because the "pay off" of performing the magic trick was worth the risk.

Self-Actualization/Self-Realization. Students were able to realize their potentialities through the mastery of each magic trick providing them with a more realistic perception of themselves, their classmates, and the realities in which they learn and live. When other students had difficulty with the trick, they were motivated to help them solve the problem.

Metacognition. Because each of the *Hocus Focus^tm* lessons build on knowledge from previous lessons,

students developed an understanding of the challenges that they may encounter when learning increasingly more difficult tricks. Based on this understanding, they were motivated to strategize, make choices, reflect on learning, and organize (aware of their own thought processes) the steps required to accomplish each goal.

Pedagogical Implications for Students

Student Engagement. The *Hocus Focus*[tm] lessons provided opportunities for stimulation that ignited student imaginations and provided them with creative learning outlets. The learning process became enjoyable for students providing for an atmosphere where success was more conducive. It allowed for partnerships within the classroom but also provided for partnerships that extended beyond the classroom (cafeterias, home, etc.). These opportunities encouraged both active and interactive learning that empowered students with new skills and the ability to access content in a different way. Students became energized by their learning and found fulfillment in solving problems and understanding concepts. This knowledge provided a foundation that allowed them to take the next step in their thinking by which they created variations of the trick they had learned.

Student Collaboration. Students demonstrated a preference for doing rather than listening. As previously noted, learning-by-doing is the most effective way for individuals to learn. Learning the magic tricks provided opportunities for students to value working with others (teamwork) and better develop the skills necessary to do interact effectively.

Development of 21st Century Skills. The intrinsic curiosity found in most students is one of the most compelling attributes that leads them to discover their full potential. This study demonstrated that integrating magic tricks could assist learners in developing skills that are essential in today's education and business environment. These skills include creativity and innovation; critical thinking and problem solving; communication and collaboration; flexibility and adaptability; initiation and self-direction.

Pedagogical Implications for Teachers

Teacher Efficacy. Teachers who reviewed the *Hocus Focus*[tm] curriculum prior to introducing it to their students demonstrated a greater confidence in their ability to assist students in reaching the performance and academic objectives. However, all of the teachers included in this study grew in their level of confidence in unison with their students. This allowed teachers to build a stronger rapport with their learners assisting them

in classroom instruction, classroom management, student engagement, and student motivation.

As educators, it is our job to provide an environment that is conducive to learning – one that is engaging, goal-specific, and challenging. But we must also not lose sight of the concept that learning can be fun. IEPs must describe strategies for providing the student with acceptable and understandable ways of communication, teaching situation-appropriate social behaviors, and providing experiences that satisfy sensory needs. *Hocus Focus*[tm] provides educators with another strategy to assist their students in meeting these IEP objectives. The *Hocus Focus*[tm] curriculum provides educators with proven strategies and tools to help their students reach their goals and better prepare for the future. Integrating simple magic tricks into the overall learning process can be a powerful and motivating way to engage students in their education – academically and functionally.

Teacher Proficiency. Knowledge of the subject to be taught, the skills to be developed, and the materials that embody the content of the curriculum provide the fundamentals for proficient teaching (NBPTS, 2002). As teachers became more familiar with the content of the *Hocus Focus*[tm] curriculum, they became more effective in teaching the lessons. One of the teachers stated that she had many "should've" moments after a class when she could identify when she could have made a connection between the *Hocus Focus*[tm] curriculum and the skills taught in the core curriculum. She described these as a light bulb going on after a particularly difficult lesson as she reflected back on what could have been done differently (Walkenhorst 2010).

Teacher Satisfaction. Studies have concluded, "teacher motivation is based in the freedom to try new ideas, achievement of appropriate responsibility levels, and intrinsic work elements" (Sylvia & Hutchinson, 1985). They explain that real job satisfaction comes from the gratification of higher-order needs. Teachers who implemented the *Hocus Focus*[tm] curriculum in this study found satisfaction in bringing new ideas and strategies to their students, observing student growth, and celebrating student successes.

Preliminary research demonstrates that *Hocus Focus*[tm] can provide educators and students an opportunity to experience growth and development in a fun, exciting, and engaging way. Future research should be explored to see what results could be achieved in specific student populations, especially Autism.

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