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## Editor's Message

Greetings to all members and friends of the **International Association of Special Education (IASE)**. It is a pleasure to introduce you to the 2020 issue of *Journal of the International Association of Special Education (JIASE)* with topics covering a wide range of aspects of inclusive and special education around the world. The year 2020 has been a difficult one for almost everyone, but especially for students, young adults and adults with disabilities, their family members, teachers, and other support persons regardless of where we live. As a result, more than ever, IASE is here to connect our members around the globe in sharing their knowledge, experience, and enthusiasm in teaching and working in this field.

The mission of *JIASE* is to serve as a professional, peer-reviewed journal for the worldwide dissemination of articles focused on research and models of practice to support professionals and volunteers in the fields of special and inclusive education to implement the most creative and effective strategies with their students and others with disabilities. The key to the mission of the journal is our commitment to working with international authors, reviewers, and readers to become skilled and innovative writers, critics, and consumers of international special and inclusive education research, and teaching practices.

In this 2020 issue of *JIASE*, articles represent research and practice from a variety of countries around the world, including Nigeria, Kenya, the Netherlands, Greece, Canada, and the United States. The articles cover topics of the difficulties with policy implementation, pre-school pre-referral screening, supporting braille readers in mathematics, decolonizing inclusion, and others.

We are always curious about the topics authors will research and write about next and what new developments are happening in this field on each continent. *JIASE* is a wonderful outlet to share your research findings, observations about policies, and practices you have tried that you want to share with others.

At *JIASE*, we are committed to working with first-time authors and contributors who may have not published in a peer-reviewed journal before. We also welcome contributions from seasoned and returning authors.

This publication would not be possible without the dedication, inspiration, and encouragement from IASE leadership, *JIASE* managing editor Thomas J. Donaghy, and our wonderful team of associate and consulting editors, who volunteer many hours to provide professional peer review services for the journal. We thank them all for all they do.

We are always seeking members who would like to serve as consulting editors for *JIASE*. If interested, please contact Dr. Tichá directly for more information. Also, please consider submitting your work for publication in future *JIASE* issues. Publication submission guidelines are located on the IASE website at <https://www.iase.org/jiase> as well as at the end of this journal issue.

On behalf of the *JIASE* team, we wish you a healthy and prosperous 2021 and hope to see you at the 17th Biennial IASE Conference in Ho Chi Minh City, Vietnam, July 10–14, 2022.

With warm regards,  
Renáta Tichá, PhD, Editor of *JIASE*

# Difficulties with Implementing Policy Provisions on Special and Inclusive Education in Nigerian Schools: Teachers' Views

Olaniyi Bojuwoye

Kwara State University, Nigeria

## Abstract

*Nigeria has policies on special and inclusive education. However, there is a disconnect between policy provisions and school practices. Difficulties with policy implementation in Nigerian schools were investigated by exploring teachers' perspectives on school system's knowledge capacities regarding pupils with special education needs and schools' resources for inclusive education. In-depth individual interviews were conducted with 80 high school teachers, in Ilorin, Nigeria. Results revealed teachers' limited knowledge of pupils with disabilities and their special education needs. Participants expressed limited capacities to assess pupils' special education needs. Schools were also reported to lack adequate resources to support pupils with special education needs and for inclusive education. The results support the assumption in the literature that difficulties with implementing special and inclusive education may be connected with school systems' capacities regarding pupils with special education needs and schools' limited resources for inclusive education.*

**Keywords:** *Policy provisions, special and inclusive education, education needs, pupil assessment, resources, teachers' views, Nigerian schools*

## INTRODUCTION

Nigeria certainly has adequate policy provisions on special and inclusive education. For instance, there is the “National Policy on Education” (Federal Ministry of Education, 2004). A section of this policy document titled “Special Education” has two broad objectives: “... giving concrete meaning to the idea of equalizing educational opportunities for all children irrespective of their disabilities...” and “...providing adequate education for all children and adults with special education needs so that they may fully play their roles in the development of the nation.” (Federal Ministry of Education, 2004: 27). There is also the “National Policy on Special Needs Education in Nigeria” (Federal Ministry of Education, 2015a) and the “Implementation Guidelines on the National Policy on Special Needs Education in Nigeria” (Federal Ministry of Education, 2015b). The Nigerian government published these policy documents with the sole purpose of providing education for all, irrespective of disabilities, as informed by the UNESCO Salamanca, Spain, conference of June 7–14, 1994. The highly-popular Salamanca Conference Statements, on Principles, Policies and Practices in Special Needs Education and Framework for Action, constitute an important contribution to the agenda for achieving education for all. The statements include the principle on inclusion and the recognition of the need to work towards schools for all, that is, schools where

everybody is included, differences are celebrated, and learning is supported, as well as schools where individual needs are responded to (UNESCO, 1994).

However, despite the efforts in the Nigerian policies to carefully articulate a conceptual framework for special and inclusive education, as well as to advance a sound rationale for access to education for all (including persons with special education needs), practices in Nigeria's schools have not been consistent with the guidelines for achieving access and equity as prescribed by UNESCO (2008) for inclusive education, including especially for persons with disabilities. For instance, a study by Brydges and Mkandawire (2020) on parents' perceptions and experiences of inclusive education in Lagos, Nigeria, concluded that the implementation of inclusive education may have been hindered due to the complexities arising from severe resource pressures and weak political will. Another study, by Torgbenu, Oginni, Opoku, Nketsia, and Agyei-Okyere (2018), on parents' attitudes to inclusive education in two states in Nigeria found that parents were not only ambivalent in their attitudes to inclusive education, but also had limited knowledge about inclusive education. A West African study by Opoku, Nketsia, Agyei-Okyere, Oginni, and Torgbenu (2019) that focused on Ghana and Nigeria also found that although the parent-participants accepted the need to implement inclusive education and acknowledged the efforts of governments and



schools to practice it, the parents indicated that schools have limited knowledge about implementing inclusive education.

The results of these studies on implementing inclusive education in Nigeria seem consistent with study findings by the National Disability Authority (2006). Research found that when there are difficulties with implementing special and inclusive education policies in schools, stakeholders generally blame the school system's lack of knowledge about their pupils' special education needs and the schools' limited resources for inclusive education (National Disability Authority, 2006). More specifically, problems with implementing special and inclusive education in schools are usually attributed to being unable to identify pupils with disabilities and assess their education or learning needs, as well as difficulties with access for pupils with disabilities and limited resources for inclusive education (National Disability Authority, 2006).

Knowing about pupils with disabilities and their special education needs is more than schools' capacities and resources to identify pupils' learning needs; identification should happen as early as possible. The success of inclusive education depends considerably on early identification, assessment, and stimulation of pupils with special education needs (UNESCO, 1994). Early identification ensures early intervention, which prevents secondary negative behaviors that could endanger academic progress (National Disability Authority, 2006). Early detection and access lead to early intervention and support, which stimulates early development of affected pupils' learning potentials and prevents the onset of severe secondary disabling conditions (UNESCO, 2005). Absence of early identification means that children with special education needs may enter school undetected and, therefore, not provided with appropriate support services. Stakeholders generally believe that children's special education needs should be identified before entering school and that children identified with special education or learning needs should have all necessary support from the start of their school careers (National Disability Authority, 2006).

Proper identification depends on adequate pupil data provided by an appropriate assessment process. Assessment requires adequate psychological services, especially on individual pupil's health, mental, social, and educational or learning needs (UNESCO, 2005). Quality assessment should yield data necessary to ascertain whether a pupil has a disability, the nature and extent of the disability, the health and education needs arising from the disability, and the appropriate

resources (Engelbrecht, 1999). Classroom teachers can be taught to recognize and/or identify special education needs by systematic pupil observation and interview. A good assessment report from pupil information should suggest curriculum adaptation and/or teaching strategies to support a child's particular learning needs (National Disability Authority, 2006).

A good assessment report should suggest intervention strategies for identified needs, but the intervention decision also depends on the school's human, financial, and material resources. Crucially, every school is expected to have is a psychological services unit with specialists in pupil assessment and interventions to address pupils' educational needs (National Disability Authority, 2006). Schools often use teaming and/or team approaches when supporting teachers for interventions to address problems (Nellis, 2012). With complex challenges in schools and education today, teams are commonly employed to make decisions and implement interventions to marshal resources so all pupils succeed (Bahr & Kovaleski, 2006). Teams are small groups of people established to accomplish specific tasks, hence the use of the term "problem-solving teams or committees" (Bahr & Kovaleski, 2006). Teams can solve education problems by working within the multi-tier model of service delivery that emphasizes response to intervention, with teams at state, local government, district, and school levels. However, within schools, teams are composed of multiple school professionals (e.g., teachers, administrators, school psychologists, counselors, other specialists) and are multi-purposed to address pupils' curricular, instructional, and behavioral challenges (Bahr & Kovaleski, 2006). As task or problem-solving groups, teams in schools go by a number of different titles, including Teacher Support Teams, Teacher Assistant Teams, Child-Study Teams, Pre-referral Intervention Teams, Mainstream Assistance Teams, Instructional Consultative Teams, or Instructional Support Teams (Nellis, 2012). Although problem-solving teams are historically linked with special education, many researchers recommend the teams model to support teachers in general education, with emphasis on identifying, implementing, and evaluating interventions. An important variant of problem-solving teams are the Teacher Support Teams adopted by schools in many countries to support teachers addressing pupils' special education needs (Department of Justice, Equality and Law Reform, 2005). Like all problem-solving teams, Teacher Support Teams are school-based and focus on preventative, strong-treatment, and promotive strategies (Creese, Norwich, & Daniels, 2010). When class teachers

request support, the teams draw up action plans that describe which interventions to use and who is responsible for implementing the plans (Bahr & Kovaleski, 2006). Thus, like all problem-solving teams in schools, Teacher Support Teams directly support class teachers and indirectly support pupils (Department of Justice, Equality and Law Reform, 2005), or the teams focus on teachers' needs instead of student variables (Bahr & Kovaleski, 2006). The Teacher Support Teams model is cost effective, avoids referrals to outside specialist services, and supports pupils in their ordinary schools and classrooms by their regular teachers (Engelbrecht, 1999; Department of Justice, Equality and Law Reform, 2005).

### **The Study**

The assumption that led to this study was that Nigerian schools struggle to implement special and inclusive education due to a lack of knowledge and resources. The goal of the study was to investigate this assumption. To identify difficulties with implementing special and inclusive education in schools in Nigeria, the study explored teachers' perspectives on their awareness of and experiences with pupils with disabilities in their classrooms, their knowledge of assessing special education needs that could have arisen from pupils' disabilities, their schools' resources for addressing pupils' special education needs and for supporting inclusive education. The research questions that guided the study were:

- Are the teacher-respondents aware of pupils with disabilities in their classrooms?
- Do the teacher-respondents have knowledge of and experiences with assessment of pupils' special education needs?
- Do the teacher-participants have knowledge of and or experiences with intervening to address their pupils' special education needs?
- Are the teacher-participants aware of their schools' resources for addressing pupils' special education needs and for supporting inclusive education?

## **METHODS**

### **Research Design**

The study used an exploratory study to gain insight into participants' comprehension of the phenomena being investigated (Babbie & Mouton, 2001). This qualitative approach helped researchers describe and

interpret participants' perceptions, attitudes, beliefs, and feelings about difficulties with implementing special and inclusive education possibly related to the school system's limited knowledge and resources. Data gathering involved interactions with participants permitting the qualification of ideas, values, and meanings through the eyes of the participants rather than quantification through the eyes of outside observers (Hitchcock & Hughes, 1989).

### **Location and Participants**

The location of the study was Ilorin, the capital of Kwara State, Nigeria. Kwara State was considered suitable for this study because of its confluence of Nigerian cultures as well as being the transitional zone between southern rainforest and the northern savannah regions of the country. This makes Kwara State fairly representative of Nigeria's different ethnic groupings, making it possible to generalize the study findings to the national population.

The study population were teachers in public secondary schools in Ilorin, Kwara State, Nigeria. Teachers are the most important school factor in teaching and learning so their views are vital to any educational enterprise (Bojuwoye, Moletsane, Stofile, Moolla, & Sylvester, 2014).

Eighty (80) teachers from twenty randomly-selected secondary schools in Ilorin, Kwara State, Nigeria, participated in the study. They comprised 42 females and 38 males with a mean age of 35 years; their teaching experience ranged from five years to more than twenty years.

Participants were selected through convenience sampling, a non-probability technique where subjects are selected based on their convenient accessibility and proximity to researchers. Many researchers prefer convenience sampling because it is quick, inexpensive, easy, and subjects are chosen because they are easy to recruit (Babbie & Mouton, 2001).

### **Data Collection**

Data collected for the study included qualitative information such as participants' perspectives on pupils with disabilities in their classrooms, their knowledge and experiences with assessing the pupils' special education needs and using resources to intervene in these needs, as well as their awareness of their schools' resources for addressing pupils' special education needs and for supporting inclusive education.

Semi-structured, one-on-one interviews were used to collect data for the study. The interviews provided opportunities for rapport and for communicating

directly with participants to comprehend their views. The interviews permitted the participants to define their world in their own ways. Being semi-structured with open-ended questions, the interviews allowed participants to elaborate on their answers and gave researchers the opportunity to interact (Hitchcock & Hughes, 1989; Babbie & Mouton, 2001). The interviews, which were conducted over a period of six months, took between 30 and 40 minutes per participant in a relaxed atmosphere, and were tape-recorded and transcribed for data analysis.

Permission to conduct the study in the selected schools was obtained from school authorities: first, from the Kwara State Ministry of Education, through a letter that included the study proposal and the roles expected of participants; and second, from the school principals, with a request to interview their classroom teachers. Participants were provided adequate information about the study and their roles in it. They were also apprised of their rights to voluntary participation, including their right to withdraw at any time and their right to not to respond to questions. Furthermore, participants were guaranteed absolute confidentiality regarding participation and the information they were to provide, as well as that the final report would ensure complete anonymity as nobody's name would be mentioned.

### **Data Analysis**

Data analysis involved multiple readings of interview transcriptions, coding, reviewing and refinement of data, as well as cross-checking to ensure that themes that emerged from the data analysis corresponded with study objectives. Data analysis was thematic and consistent with methods for identifying, analyzing, and reporting themes within data (Braun & Clarke, 2006). Data analysts identified emerging patterns in participants' responses to ensure responses corresponded with study objectives and hence the following categories of themes:

- teachers' awareness and knowledge of pupils with disabilities in their classrooms;
- teachers' knowledge and experiences regarding assessment of special education needs of pupils with disabilities;
- teachers' knowledge and experiences regarding interventions to address pupils' special education needs;

- teachers' awareness and knowledge of their schools' resources for intervening to address pupils' special education needs and for supporting inclusive education.

## **RESULTS**

This study investigated the assumption that Nigerian schools struggle to implement special and inclusive education due to a lack of knowledge and resources. The study sought teachers' views on this assumption, and specifically teachers' awareness of pupils with disabilities in their classrooms, such pupils' special education needs, their schools' intervention resources to address pupils' special education needs, and their schools' resources for supporting inclusive education. Study results are presented below.

### **Teachers' Awareness of Pupils with Disabilities in Their Classrooms**

The study's teacher-participants were asked about their awareness of the diversity of pupils in their classrooms. Participants were aware of their pupils' demographic diversity, noting differences in age, gender, family backgrounds, and general physical features. Following are some representative statements.

...yes, we are aware the pupils are not all the same in their gender, their ages, their family backgrounds, and generally in their physical statuses or appearances...

...our pupils are from different homes, religions, and ethnic groups...

The teacher-respondents were asked whether they were aware of pupils in their classrooms with behavior differences or difficulties with language, communication, locomotion, hearing or seeing, attention, making friends, or inappropriate responses in conversations, overactive, less active or withdrawn. Various respondents disagreed with describing children as different in behavior tendencies (sometimes described as "problem" or "abnormal" behaviors) because these are normal behaviors that all children exhibit at one time or another, and that teachers do not allow these behaviors to distract from their teaching. Following are some representative responses from teachers.

I don't really see any major differences in the behaviors of the pupils...., to me, it is normal for some pupils, especially boys, to be stubborn while some girls are quiet...



...yes, some of the pupils may exhibit such behaviors like being nutty, noisy or running around the class disturbing others, but these are to be expected of children by their nature; it's part of growing up and nothing to be bothered with...

What you consider as abnormal behaviors are generally normal behaviors of growing children, ... these they will outgrow over time, so there is no need for teachers to be concerned about them...

As a general class teacher, I don't pay attention to such pupils in order not to slow down or make my teaching not effective...

As a teacher, I think I should be more interested in the majority of pupils who are willing to learn...

The participants were asked if they realized these so-called "problem" or "abnormal" behaviors may indicate problems or difficulties with learning for the affected pupils. The participants' responses reflect lack of appreciation for the link between pupils' "problem" behaviors and learning abilities. Participants' responses suggest that teachers believe that some pupils don't want to learn because of attitude, not that their behaviors hinder their learning. Following are some participants' responses.

...not really; some of these pupils are just stubborn and strong-headed...

...those quiet pupils are just lazy and don't want to learn...

... a few of the pupils in my classroom are disrespectful to teachers and not well brought up from homes and behave as if forced to be in the school...

Although study participants acknowledged the diversity of pupils in their classrooms, they dismissed differences in pupils' behavior tendencies or personality characteristics. This is because teachers believe the so-called "abnormal" behaviors are, in fact, normal children's attitudinal tendencies that all children exhibit at one time or another. Thus, classroom teachers ignore these behaviors rather than recognizing them as possible symptoms of learning problems.

### **Teachers' Knowledge and Experiences Regarding Assessment of Pupils' Special Education or Learning Needs**

During the interviews, participants were asked to consider that some pupils' behavior or personality characteristics could hinder their learning. Based on this, the

participants were then asked how they could identify pupils with disabilities and assess their education or learning needs. All participants expressed a marked knowledge deficit in identifying pupils' behavior or personality characteristics that may hinder learning (or suggest their education or learning needs), except pupils with obvious sensory or locomotion problems. Study participants were regular or general classroom teachers and reported that pupils with disabilities, even those with obvious sensory or motor disorders, are few in their schools. When participants expressed their inability to assess pupils' education or learning needs, they were asked to explain it. Participants replied that their schools have no resources and they themselves were not trained to assess pupils or use basic assessment tools, such as pupil observation and interview, during their pre-service teacher education programs. While admitting that their school authorities informed them that inclusive education is now in operation and that they should expect pupils with disabilities in their classrooms, the teachers reported that they were not trained to assess pupils' special education or learning needs and how to implement inclusive education. Following are some representative responses.

Our College of Education program did not include training on how to handle children with abnormal characteristics or children with learning problems...

We were not taught how to teach pupils with behavior problems...neither were we taught how to instruct or include them in all learning activities in the classrooms

We are not trained to identify learning needs of children with behavior problems that hinder their learning...

We have some children with disabilities in our regular classrooms, but we are not given in-service training on how to teach them...

In my College of Education, our training is on how to cater for the needs of 'normal' children in regular classrooms...

### **Teachers' Knowledge and Experiences Regarding Interventions to Address Pupils' Special Education or Learning Needs**

The teachers were asked to report on their experiences working with pupils with different behavior or personality characteristics. In their responses, the participants told how they dealt with pupils

they considered as troublesome or having “abnormal” behaviors in their regular classrooms. Their intervention strategies were both aversive and non-aversive, including gentle persuasion, warning or talking to, asking for assistance from colleagues, and use of corporal punishment. Following are some representative responses.

I asked for help from colleagues on what to do with stubborn pupils in my classroom...

I sometime call stubborn pupils and talk to them to be serious with their work...

For pupils manifesting behavior problems while I’m teaching.... I shout them down or threaten them with punishment...

I use a stick...some pupils like to be beaten before listening to teachers...

There is no encouragement or material support that can make stubborn pupils behave and participate in classroom activities unless if they are forced...

You may pity and give attention to pupils with physical disabilities like those in wheelchairs or walking with crutches, but stubborn pupils should not be given special attention...

After I have shown interest in and pay close attention to a pupil and the pupil still refuses to participate in class activities, I have to change my attitude and be tough on the pupil...

### **Teachers’ Awareness of Their Schools’ Intervention Resources to Address Pupils’ Special Education Needs and for Inclusive Education**

The study sought teachers’ opinions about their schools’ resources for addressing pupils’ special education or learning needs and for supporting inclusive education. Although in Nigeria most public schools are expected to implement inclusive education in their general classrooms, there are also special schools for pupils with disabilities run by private individuals and organizations. Some state governments also maintain a few special education schools. For instance, the Kwara State School for Special Needs, in Ilorin, the state capital, is government-owned and admits pupils with disabilities from all over the country. Therefore, in this part of the study, participants were asked to report on their schools’ resources (human, material, and financial) for assessing pupils’ special education needs, resources for intervening and supporting pupils’ learning needs, and resources for supporting inclusive education

(including teaching and learning materials, schools’ admission policy regarding pupils with disabilities, and the schools’ structure and/or accommodations for pupils with disabilities).

Results of analysis of interview transcriptions revealed that participants’ schools generally lacked resources (human, material, and financial) for supporting pupils’ special education or learning needs and for inclusive education. No school was reported to have a psychological services unit. The general responses of participants about school human resources was that teachers were the only personnel in their schools, although a few participants said there were school counselors in their schools. The school counselors intervened in pupils’ academic and behavior problems, but participants could not ascertain if the counselors assess pupils. The report further indicated that some schools are even short of teachers, thus increasing teachers’ workload and increasing class sizes. Participants claimed that the government cannot afford to recruit enough teachers and or any other school personnel. Schools that are meant to admit pupils irrespective of disability and implement inclusive education have no teaching assistants, special education teachers, sign language interpreters for pupils with auditory impairments or Braille writers for visual impairments. Pupils with health needs are referred to a government hospital or health clinic as there are no school nurses, health workers or school social workers.

In terms of material resources, no participants reported their schools having psychological services units or resources rooms for pupil assessment, teaching, learning or other information or work materials. Moreover, participants said they were not aware of any inclusive education budget in their schools.

The only support reported for pupils with disabilities were what participants gave each other; these were generally casual and uncoordinated, and may be in the form of informational materials, advice, opinions or emotional support. Following are some representative responses.

...we don’t have a school counsellor or psychology unit in our school...

We don’t have learning materials to teach pupils with disabilities...

...our school is not designed to make allowance for pupils with disabilities—no ramps, escalator or lift for pupils with mobility difficulties to access the classrooms...

Teaching pupils with behavior characteristics that hinder their learning is a waste of time because they cannot catch up and learn like other pupils...

It is better to take them to special schools where they can get learning materials like a braille machine, or sign language interpreter, which our school doesn't have...

I don't see how I can change my teaching because of one or two pupils...

Participants blamed the government for failing to providing public schools with the human, material, and financial resources needed to support inclusive education. Schools generally are reported to be very poorly funded with infrastructural neglect and teacher shortages. Although there is no policy to exclude pupils with disabilities in public schools, participants reported that these schools were not structured or built to accommodate pupils with disabilities and there were no specialist teachers.

Thus, in general, these study results suggest that schools lack knowledge about their pupils and their education or learning needs. Teacher-respondents acknowledged their pupils' demographic diversity as well as sensory and orthopaedic impairments, but they expressed reservations about how pupils' behavior characteristics can hinder learning or indicate learning problems. The teacher-respondents also expressed a marked lack of knowledge and skills in identifying and assessing pupils' education or learning needs. Schools reportedly lacked resources to support pupils with special education or learning needs and for inclusive education. Teachers' knowledge deficit in pupil assessment was blamed on a lack of training in their pre-service teacher education training programs while the government was blamed for failing to adequately fund the schools' need for pupil assessment, intervention support for pupils' education or learning needs, and inclusive education.

## DISCUSSION

The classroom of today is diverse with each pupil different from the other (Pearson Education, 2010). Today's classrooms comprise pupils from virtually all walks of life and different cultural and/or religious backgrounds; some are gifted and talented, some are from different socio-economic backgrounds, and some have disabilities (Salend, 2005). Teachers today are responsible for educating all pupils in their classrooms despite pupils' varying knowledge, abilities, skills, emotions or behavior tendencies. To educate their

pupils appropriately, teachers must know the learning needs of each pupil very well (Salend, 2005). Moreover, education practices must be child-centered to achieve inclusion (UNESCO, 2005). Thus, teachers must know every factor that may affect a pupil in the classroom and adapt teaching methods to accommodate the pupil's needs.

Planning appropriate instruction begins with assessing which skills a child needs to acquire (Pearson Education, 2010). At the heart of best practices in educating pupils with disabilities is using assessment information to improve instruction and classroom procedures (Salend, 2005). This implies that to best facilitate learning, teachers must understand their pupils academically, mentally, socially, and culturally (Gildner, 2001). This requires teachers need to learn curriculum-based and pupil assessment, including assessing learning styles, cooperative learning strategies and facilitating peer tutoring, or social skills training (Gildner, 2001). Moreover, since all pupils have difficulty at one time or another or to one degree or another, teachers are likely to meet learners with some type of learning problems in their classrooms. Therefore, understanding pupils and their special education or learning needs is important for all teachers (Gildner, 2001). Where such understanding is lacking, the implication is that the teacher cannot facilitate pupils' effective learning. When teachers have no pertinent pupil information, as in this study, it is unlikely they would know their pupils' individual needs, or adapt their curriculum and teaching strategies to pupils' special education or learning needs.

Two major issues related to identification and assessment are early identification of pupils' special learning needs and access to assessment. Early identification ensures intervention at the earliest stage to prevent secondary behaviors that could endanger a pupil's progress (Gildner, 2001). Rubin (2015) also observes that the benefits of early intervention include academic achievement, delinquency, and crime reduction.

Restricted or no access to systematic psychological services or other assessment resources may mean that children may be assessed much later or not at all. Without school psychological services unit or private psychologists, as in this study, the implication is that children are not being assessed at all. This suggests the need for coordination or partnerships among different government departments (such as health and education ministries or departments) to access psychologists, psychiatrists, social workers, and other psychological or health workers. Partnerships are also suggested between public and private schools to leverage the

expertise among private schools' psychologists, counselors, speech therapists, learning support teachers, and so on. Reports from Nigeria reveal that many private schools have these professionals whereas many public schools are not even staffed with school counselors. The private and the public school systems in Nigeria could share these resources through local-government area or district-level teacher support teams, perhaps with government assistance. Nigeria can also adopt the practices of some Southern African countries. Chitiyo et al. (2019) report on ingenious models of inclusive education and support provisions for pupils with disabilities employed by three Southern African countries. The report indicates that Namibia educates pupils with special needs along a continuum of service-provision, which include special schools, integration/mainstreaming, partial inclusion, and full inclusion. Zimbabwe also operates a similar inclusive education model; however, in Zimbabwe, regular schools have resource rooms and self-contained special education classrooms where pupils with special education needs are placed for additional support, separated from their general education classrooms. Malawi implements inclusive education by educating all pupils in general education classrooms, but also maintains resource centers for additional support for pupils with special needs.

However, it should be emphasized that pupils with disabilities need high levels of support in their abilities to learn, to communicate, and to cope reasonably independently. Care delivery to people with disabilities has changed in recent decades from institutionalized care based on segregation and dependency, to care based on inclusion, rights of equal access to services, and the right to lead an "ordinary life" in the local community (Devine & Taggart, 2008). Edward (2015) reports growing evidence of social, academic, and even financial benefits for school systems and all children involved in inclusive education. However, without support services to pupils with disabilities, as found in this study, the results to the affected pupils may likely be additional pressures and stressors, such as exposure to negative attitudes, unmet social expectations, exposure to alcohol and illegal drugs, and social exclusion (Devereux, Hastings, Noone, Firth, & Totsika, 2009). In combining these risk factors with their learning difficulties, pupils with disabilities are likely to also be exposed to vulnerable situations such as to physical, verbal, and sexual abuse, as well as negative life events and experiences (Raghavan & Patel, 2005). To prevent these negative circumstances or to reduce their effects, schools have a duty to adopt different strategies of

support for inclusion. There is a need for appropriate government funding to provide human and material resources for inclusive education to succeed. Government needs to facilitate all forms of support to people with disabilities to help them live meaningful lives.

### Concluding Remarks

For people with disabilities, Nigerian public education and health services are still in their infancy. However, the country is moving towards government policy goals that envisage more attention and resources to ensure equal educational opportunities for all the citizens. Meanwhile, there is a need to improve teacher pre-service education programs and/or in-service training so teachers can assess and identify pupils with special education or learning needs. Teachers also need training to understand how disabilities hinder learning (hence the link between disabilities and pupils' learning potential), intervention strategies, and to provide resources to pupils with learning needs. Building schools' capacities for special and inclusive education also goes with improving leadership roles both at governmental and at schools' levels to deliver quality education. Principals can facilitate inclusive education by influencing school climate and resources. Government also needs to strengthen schools through adequate financial and human resources so schools can implement policy provisions on special and inclusive education. With adequate support from all relevant stakeholders, schools can help their diverse pupil populations reach their potential and contribute to their country's economy.

### REFERENCES

- Babbie, E., & Mouton, J. (2001). *The practice of social research*. Cape Town, South Africa: Oxford University Press.
- Bahr, M. W., & Kovaleski, J. F. (2006). The need for problem solving teams. *Remedial and Special Education, 27*(1), 2–5.
- Bojuwoye, O., Moletsane, M., Stofile, S., Moolla, M., & Sylvester, F. (2014). Learners' experiences of learning support in selected Western Cape schools. *South African Journal of Education, 34*(1), 1–15.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101.
- Brydges, C., & Mkandawire, P. (2020). Perceptions and experiences of inclusive education among parents of children with disabilities in Lagos, Nigeria. *International Journal of Inclusive Education, 24*(6), 645–659.



- Chitiyo, M., Hughes, E. M., Chitiyo, G., Changara, D. M., Itimu-Phiri, A., Haihambo, C., Taukeni, S. G., & Dzenga, C. G. (2019). Exploring teachers' special and inclusive education professional development needs in Malawi, Namibia and Zimbabwe. *International Journal of Whole Schooling*, 15(1), 28–49.
- Creese, A., Norwich, B., & Daniels, H. (2010). Evaluating Teacher Support Teams in secondary schools: Supporting teachers for SEN and other needs. *Research Papers in Education* 2000, 15(3), 307–324.
- Department of Justice, Equality and Law Reform. (2005). *Guide to Disability Act*. Dublin, Ireland: Author.
- Devereux, J. M., Hastings, R. P., Noone, S. I., Firth, A., & Totsika, V. (2009). Social support and coping as mediators or moderators of impact of work stressor on burnout in intellectual disability support staff. *Research in Developmental Disabilities*, 20(2), 367–377.
- Devine, J. M., & Taggart, L. (2008). Addressing the mental health needs of people with learning disabilities. *Nursing Standard*, 22(45), 40–48.
- Edward, G. (2015). Teachers' knowledge and perceived challenges of teaching children with autism in Tanzania regular primary schools. *International Journal of Academic Research and Reflection*, 3(5), 36–47.
- Engelbrecht, P. (1999). *Inclusive education in action in South Africa*. Pretoria, South Africa: van Schalk Uitgewers.
- Federal Ministry of Education. (2004). National Policy on Education: Section 7—Special Needs Education. Abuja, Nigeria: Federal Government Printers.
- Federal Ministry of Education. (2015a). National Policy on Special Needs Education in Nigeria. Abuja, Nigeria: Federal Government Printers.
- Federal Ministry of Education. (2015b). *Implementation Guidelines on National Policy on Special Needs Education in Nigeria*. Abuja, Nigeria: Federal Government Printers.
- Gildner, C. (2001). *Enjoy teaching: Helpful hints for the classroom*. Lanham, MD: Scarecrow Press.
- Hitchcock, H., & Hughes, D. (1989). *Research and the teacher: A qualitative introduction to school-based research*. New York, NY: Routledge.
- National Disability Authority. (2006). *Special education provision for children with disabilities in Irish primary schools: The views of stakeholders*. Dublin, Ireland: Author.
- Nellis, L. M. (2012). Maximizing the effectiveness of building teams in response to intervention implementation. *Psychology in Schools*, 49(3), 245–256.
- Opoku, M. P., Nketsia, W., Agyei-Okyere, E., Oginni, O. S., & Torgbenu, E. L. (2019). Inclusive education in West Africa: Predictors of parental attitudes, knowledge and perceived social norms influencing inclusive practices in Ghana and Nigeria. *International Journal of Inclusive Education*. doi: 10.1080/13603116.2019.1642397
- Pearson Education. (2010). *High incidence disabilities: Overview and general information*. Upper Saddle River, NJ: Author.
- Raghavan, R., & Patel, P. (2005). *Learning disabilities and mental health: A nursing perspective*. Oxford, England: Blackwell.
- Rubin, L. (2015, June). *Early screening and diagnosis: Learning the signs*. Paper presented at the International Conference on Disability, Lagos, Nigeria.
- Salend, S. J. (2005). *Creating inclusive classrooms: Effective and reflective practices for all students* (5th ed.). Upper Saddle River, NJ: Pearson.
- Torgbenu, E. L., Oginni, O. S., Opoku, M. P., Nketsia, W., & Agyei-Okyere, E. (2018). Inclusive education in Nigeria: Exploring parental attitude, knowledge and perceived social norms influencing implementation. *International Journal of Inclusive Education*. doi:10.1080/13603116.2018.1554715
- UNESCO (1994, June). *The Salamanca Statement and framework for action on special needs education*. World Conference on Special Needs Education: Access and Quality, Salamanca, Spain. United Nations Educational, Scientific and Cultural Organization; and Ministry of Education and Science, Spain.
- UNESCO (2008). *Learning counts: An overview of approaches and indicators for measuring and enhancing quality learning in EFA-FTI countries*. Paris.
- UNESCO (2005). *Guidelines for inclusion: Ensuring access to education for all*. unesdoc.unesco.org/images/0014/001402/140224e.pdf



# Inclusive Education in Kenya: Within School and in Life Cycle Transitions

Manson Sichari, Kennedy Bota, and Edward Okaya  
Masinde Muliro University of Science and Technology, Kenya

## Abstract

*In Africa, inclusive education has been demonstrated at the primary level and has been improving at the secondary level. However, inclusion is yet to be fully realized in employment and entrepreneurship. The few persons with special needs who have experienced inclusion have demonstrated success, yet some communities are not ready to give them opportunity and support their needs. The cases of Siminyo, Akinyi, and Bulimi are exceptional and serve as role models to persons with disabilities and society. The purpose of this study was to establish the impact of inclusion of persons with disabilities in mainstream society in Kenya in terms of employment and entrepreneurship. The objective was to demonstrate how inclusion practices enhance acceptance and improve the lifestyle of persons with disabilities. A case study methodology was implemented with people with three different types of disabilities. The study identified the importance of inclusion practices in society. The results established that if persons with disabilities are integrated early enough in life, they can live a fulfilling life in their communities without depending on other people.*

Keywords: *inclusive practices, persons with disabilities, empowering, equal opportunities, disability is not inability, entrepreneurship*

## INTRODUCTION

Meaningful inclusion may be one of the main ways to equip persons with disabilities with the necessary skills for future self-reliance. Being included in society empowers people with decision-making skills to deal with socio-economic issues and other areas of life. It enables them to enjoy equal opportunities in society. Inclusion enhances recognition of many forms of human diversity (Giangreco, Carter, Doyle, & Suter, 2010). Therefore, people with disabilities should not be denied access to education, social interactions, entrepreneurship, employment or other opportunities based on their disability. Article 10(2) of the constitution of Kenya (2010) stipulates that the national values and principles of governance that include social justice, human dignity, equity, inclusiveness, equality, human rights, non-discrimination and protection of the marginalized are a way of empowering every citizen to be self-reliant. Every community in Africa, including in Kenya, recognizes the importance of people with special needs through inclusive practices as seen through affirmative action in all sectors of society, government ministries, parastatal organizations, and so on.

Attitudinal and cultural influences that still run deep in local communities throughout Africa have meant limited educational opportunities—and thus, limited empowerment—for people with disabilities. However, the African Union's empowerment programs are

reducing these influences through various governments' structures and educational policies on the ground (Zimmerman, 1993).

There are 112 million persons with special needs globally (UNICEF, 2015). Statistics from the United Nations show that this number continues to rise due to wars, natural disasters, plagues, social chaos, economic problems, and crime.

Africa and Asia have the highest number of persons with special needs. Magampa (2014) reports that by 2013 there were 1.3 million persons with disabilities in Kenya. Persons with special needs experience stress, emotional problems, and physical as well as psychological trauma that tend to affect their general well-being (Magampa, 2014). Findings from the Ministry of Education (MoE) in 2014 confirm that the survival rate of persons with disabilities from class one to eight was slightly below 40%, while that of those moving from class one to university was 1.46% (Kiambi, 2017). Wamela (2019) emphasized that disability is a major hindrance to participating in educational and societal activities. However, these authors failed to examine the power of inclusion in shaping the lives of persons with disabilities at school and in adulthood.

This paper therefore focuses on the influence of inclusive education in Kenya within a school setting and during transitions to working life by studying three cases of people with different types of disabilities. The study is intended to contribute to societal perceptions of people with disabilities in terms of their capabilities,

humanity, and the role they can play if empowered through natural interactions in their respective communities.

### **Inclusive Practices in Africa**

The growth of inclusion in Africa is rooted in UNESCO's 2018 ratification of the Salamanca Statement and Framework for Action on Special Needs Education from 1994. This collective statement is a focal point for educating children with special needs in Africa. It is the keystone in the conceptual framework of many countries' policies on the continent. One influential extract from the statement is used repeatedly as a guiding principle in policymaking in most countries in Africa:

Regular schools with inclusive orientation are the most effective means of combating discriminatory attitudes, creating welcoming communities, building an inclusive society and achieving education for all; moreover, they provide an effective education to the majority of children and improve efficiency and ultimately the cost-effectiveness of the entire education system (Cameron, 2011, p. 87).

African countries agreed that the key principles encompassed in the Salamanca Statement that equal opportunity—genuine access to learning that respects individual differences and quality education for all—should underpin all education policies. This has remained the guideline for most African countries practicing inclusive education. These countries include Nigeria, Ghana, Senegal, Cameroon, South Africa, Malawi, Angola, Botswana, Tanzania, Uganda, Ethiopia, Egypt, Morocco, and Kenya. The Salamanca Statement motivated African countries to organize the Dakar Conference of 2000 in Senegal. The forum was attended by 1,100 participants. Most African countries sent their representatives. The purpose of the conference was to turn the vision of Education For All into a reality (Fish, 2015). According to the conference proceedings, everyone, child and adult alike, should command the basic literacy and numeral skills needed to function as citizens, employees, family members, and fulfilled individuals in the emerging global society. That conference opened the eyes of African countries towards inclusive education, one of them being South Africa.

### **Inclusion Practices in South Africa**

The introduction of inclusion practices in South Africa was reinforced by its history of an apartheid system of government that was replaced by a majority government led by Nelson Mandela in 1994.

Through inclusion, the silent voices of persons with disabilities were heard, articulating their rights, and hence, reducing negative attitudes. Parents also accepted students with disabilities being admitted into public schools. Today, inclusive education in South Africa is very successful in primary and secondary schools and tertiary institutions. Most institutions employ staff who are trained to manage students with special needs. People with special needs in South Africa have a very vibrant Special Needs Association with members from every level (Okonyiepo, 2016).

As in all developing countries, the poverty level in South Africa is very high. This makes inclusive education challenging. Many schools and parents cannot afford equipment and other support services. Yet despite these difficulties, South Africa is far ahead of other African countries.

### **Inclusion Practices in Kenya**

Inclusive education in Kenya has greatly improved in the last 12 years. The country has adapted a systematic approach to formulating policies and implementing inclusive education practices. It developed Special Education Policy 2009 (Government of Kenya, 2009). This policy has guided the implementation of inclusive education in some schools through integrated programs that are supported by Sight Savers International of the United Kingdom and Christofel blindenfen Mission of Germany.

Due to the urgent need for education for all, the government has since developed an Inclusive Education Policy 2018 (Government of Kenya, 2018). The policy has reorganized inclusive activities not only in schools, but also in tertiary institutions and in working environments, such as ministries, factories, industries, entrepreneurships, and self-employment ventures.

Professionals selected to enhance inclusive practices are trained at the Kenya Institute of Special Education (KISE), Kenyatta University, Maseno University, Moi University, and Masinde Muliro University of Science and Technology, among others.

The Inclusive Education Policy 2018 has empowered parents with a key role in the education of learners with special needs. Learners are encouraged to attend any local institution of their choice (Wamela, 2019).

However, there are still numerous issues that need to be addressed, including resources, culture, attitude, community involvement, support services, poverty, the high cost of equipment, and acquiring relevant skills through training.

Based on the inclusion policy, people with all types of disabilities, such as people with vision loss, hearing loss, mild developmental disability, physical disability, learning difficulties, emotional behavioral disorders, and so on are currently admitted into Technical Vocational Educational Institutions and trained in various skills that enable them to be employed, including self-employment (Figure 1). MoE (2014) confirms that professional training under qualified instructors leads to some form of recognized certification, which is essential to gainful employment or self-employment.

Similar to people without disabilities, persons with disabilities also need skills in order to engage in social-economic activities. People with disabilities have to overcome numerous social, physical, economic, and psychological barriers.

Families and communities believe people with disabilities cannot compete economically with non-disabled persons. ILO (2010) suggests that possessing vocational skills significantly increases the chances of earning a meaningful income for people with disabilities. The report also indicated that people with disabilities can acquire vocational skills through three avenues:

1. Informal sector employment
2. Formal sector apprenticeships
3. Formal vocational training in Technical Vocational Training Institutions

These avenues are supported by legal documents on disability in Kenya, such as the Disability Act of 2003 (Government of Kenya, 2003) and reinforced in the 2010 constitution of Kenya (Kenya constitution, 2010).

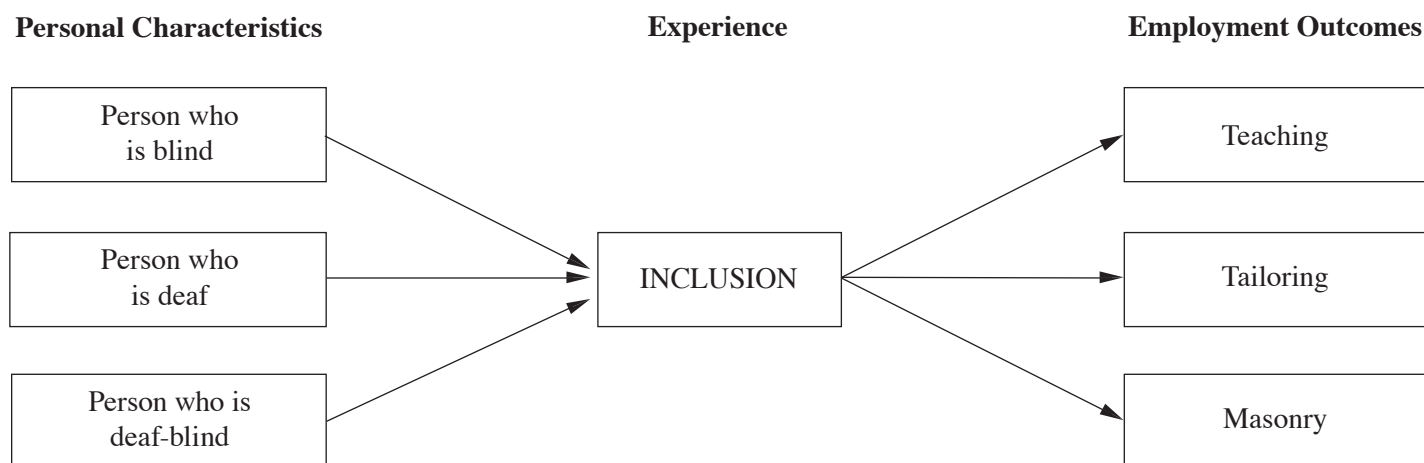
Article 27(4) of the constitution forbids discrimination, whether directly or indirectly, against any person on any ground, including those with a disability. Article 54(1) states that a person with any disability is entitled to access educational institutions and facilities to enhance inclusion practices in society. People with disabilities are entitled to access materials and devices that will enable them to overcome constraints associated with their disabilities. The Kenya constitution commits the state to ensuring progressive implementation of the principle that at least five percent of members of the public in elective and appointive bodies are persons with disabilities. The legal documents empowered and motivated persons with disabilities to do what they never believed they could achieve.

### Community Involvement in Kenya

The responsibility for providing inclusive education in Kenya is a shared responsibility between the government and the local community (Special Education Policy, 2009). The government pays salaries for service providers. The community provides the physical facilities (e.g., land, buildings, uniforms) and running costs (e.g., non-teaching staff salaries, water, electricity, stationery) of their local inclusive institutions (Inclusive Education Policy, 2018).

Through consistent building of awareness by the government and non-governmental agents, several communities are now seeing people with disabilities as part of the community. Thus, they now receive support from their communities and parents in the form of physical facilities, rehabilitative equipment, learning materials, school fees, and so on (Sichari, 2016).

Figure 1  
*Disability – Professionalism Conceptual Framework.*



The literature review justifies the inclusion of persons with disabilities in life on all continents of the world. Kenya is no exception. Inclusive education has been adopted well at the primary school level, whereby 52% of the schools are practicing inclusion. However, there are still barriers at the secondary and tertiary institutions, and in employment.

A few of the beneficiaries of inclusion are now self-employed in various sectors, such as carpentry, masonry, tailoring, and entrepreneurship.

### **Purpose**

The purpose of this paper is to establish the socio-economic impact of including persons with disabilities in Kenya's mainstream society. The objective of the study is to demonstrate how social inclusion of persons with disabilities can enhance their acceptance and improve their social and economic lifestyle.

### **Significance of This Paper**

The authors hope that this study shows what people with disabilities can achieve if given inclusive opportunities by the government and their communities. The authors also hope the paper shows the importance of nurturing the strengths of people with disabilities early in life.

## **METHOD**

The study adopted the case study method. This design was employed to establish the relationship between inclusion at school and in employment or self-employment of three individuals with different types of disabilities. The case study method is an approach in qualitative research that involves a careful and complete observation of a social unit, whether that unit is a person, a family, an institution, a cultural group or even the entire community (Kothari, 2012). This study adopted the person as the unit of analysis (Fish, 2015). This method was used to investigate whether or to what extent inclusion has influenced the lives of persons who are blind, deaf, and experience mild deaf-blindness (low vision/hard of hearing).

### **Setting**

The study participants were recruited from Siaya, Bungoma, and Busia Counties in Kenya. The three counties are part of Western Region of Kenya. Siaya County is inhabited by the Luo community, while Busia and Bungoma counties are inhabited by the Luhya, Teso, and Sabaoti communities.

### **Sampling Procedure**

The counties from which the participants were selected were identified through a random sampling procedure out of a total of 10 counties. The participants were purposively sampled within those counties. Purposive sampling is a non-probability method that involves deliberate selection of particular units of the study population to constitute a sample that represents the universe of participants (Kothari, 2012). For the purposes of this study, the persons with special needs were identified through snowball sampling procedure from their respective former schools. The schools assisted in identifying where they lived and enabled the researcher to visit their homes through relevant local administrators (chiefs).

### **Participants**

Study participants included a woman who is deaf from Siaya, a man who is blind from Bungoma, and a man with mild deaf-blindness from Busia. All participants studied in public primary inclusive schools up to grade 8. One went on to university. Their age range was 25 to 30 years.

### **Data Collection**

Data was collected by three assistant researchers from Masinde Muliro University of Science and Technology in Kenya.

The data collection approach adapted unstructured in-person interviews characterized by a flexible approach to questioning. The researchers therefore did not follow pre-determined questions and standardized techniques of recording information. They adapted their questions to the particular situation on the ground.

In all three cases, the interviewer initiated the interview and collected the information (data) through an in-person interview. Interviewees were also allowed to ask questions where they needed clarification.

### **Data Analysis**

Data analysis of the three individual case studies involved a descriptive approach (Kothari, 2012) with respect to the empowerment of persons with disabilities through inclusive practice. A qualitative data analysis followed a deductive framework; hence, findings were organized into themes that were earlier identified by the researcher to describe, interpret, and draw conclusions on inclusion as an appropriate strategy for empowering persons with disabilities (who are deaf, blind, or experience mild deaf-blindness).



## RESULTS

### **Case Study 1: Siminyo (teacher/tutor who is blind)**

Siminyo (not his real name) became blind at the age of three in Musikoma Village of Bungoma County. He started education in a local primary school with the support of the Kenya Integrated Educational Program (KIEP). The program provided materials and equipment, such as Brailers, white canes, Braille papers, and Braille textbooks.

After eight years in primary school, he enrolled in the Kenya certificate of primary education; he passed so well that he was invited to Bungoma High School. With the support of KIEP, an integrated program was started. A specialist teacher was summoned to the school. The school was equipped with the needed resources for inclusion. At the end of four years, Siminyo enrolled in the Kenya Certificate of Secondary Examination (KCSE) and qualified to join Kenyatta University, where he graduated with a Bachelor of Education degree in Kiswahili/Religious Education.

*Siminyo as a teacher.* Based on his narrative, he appreciated the inclusive education system that shaped his life. Initially, in primary school, it was a big challenge, but with help and constant counseling by the itinerant teacher, life turned out to be as normal as the other learners experienced. The parents of other students also accepted Siminyo and allowed him to be a day-scholar. He started to perform well while in grade four after he had mastered Braille, the school compound, and the route to school from home. He became the darling of the school and the community. This experience enabled him to enjoy learning at high school and at university.

He says as a teacher, he enjoys interacting with students and his colleagues. He does not describe himself as blind man, but rather sees himself as Siminyo, the teacher. The school principal has since appointed him as the head of Kiswahili department. He is also the teacher representative on the Parent Teacher Association in the school. He agrees that his interactional skills were acquired during the inclusion practices in primary, secondary, and university institutions. This is supported by Mwarogi (2013), who observed that when students with disabilities in inclusive programs interacted with others more often, they received more social support and developed more long-lasting independence as well as richer friendships with their general peers in regular schools.

### **Case Study 2: Akinyi (dressmaker who is deaf)**

Akinyi (not her real name) is from Siaya County. She became deaf while in grade 3 at Yenga Primary School.

Her parents decided not to place her in a Special School because they feared stigma. They visited a local education office and requested a specialist teacher who was immediately summoned to the school. After eight years in primary school, she sat for the Kenya Certificate of Primary Education (KCPE) and passed very well. Her parents lacked money for fees and decided to place her in the Aluor Vocational Integrated Center, where she was trained in dressmaking skills. She was further trained in Kenya sign language.

While at the vocational training center, she participated in dressmaking grade II exams and passed. Being keen on entrepreneurship, she asked her parents to help her acquire a space at Ukwala Market in Siaya County.

According to Akinyi, she developed the idea of self-employment while training as a dressmaker. Initially, she was not comfortable due to a communication barrier. However, she benefitted from her experience of inclusion in primary school and in the Integrated Vocational Training Center, where she learned the total communication strategies that she later used in her dressmaking shop at Ukwala Center. She agrees that total communication is an asset to a deaf person in the community and even at home, instead of using sign language only. Mitchell (2008) agrees that total communication is a very important communication tool in the life of a deaf person in a community.

According to Akinyi, the biggest challenge was to acquire dressmaking machines and initial materials. Through interactions with other business women at Ukwala, she was advised and encouraged to apply for a loan from the Local Kenya Women Finance Trust Bank. She received the loan. That was the beginning of her dream career.

Today, Akinyi has six employees who are all hearing. She supplies school uniforms to a local school. She relates very well with her customers. One customer said, "Akinyi is a very accommodating person. On meeting for the first time, you cannot know that she is hearing impaired. She always finishes her dress on the agreed-upon date. She loves everyone around this place. I envy her parents. She is educating her sibling by paying their school fees."

Akinyi, as a person who is deaf, embodies the saying that disability is not inability. She is very successful in her self-employed job. She is an asset to herself, her family, and the community. She attributes her success to early interactional activities during her primary school days and while in the integrated vocational training center. She praises her parents for allowing her to learn in a regular school and college.



### **Case Study 3: Bulumi (mason with mild deaf-blindness)**

Bulumi (not his real name) was born with mild deaf-blindness (low vision/hard of hearing). According to his father, the problem was discovered late when Bulumi was in grade five when the teacher realized the boy was struggling to read and write. The parents were invited and the boy was referred to Educational Assessment, a Resource Center at Butula. After the assessment, he was found to have mild deaf-blindness. The boy was then officially placed in Nangina Mixed Primary school. After eight years in school, he enrolled in the Kenya Certificate of Primary Education (KCPE), but did not qualify to join secondary school. His father decided to take him to Nangina Vocational Training Centre for Masonry. He took a trade test II and passed.

According to Bulumi, who is now 27 years old, he joined hands with three other students after the training and opened an office at Funyula Township. He says he uses hearing aids and glasses with magnifying lenses, enabling him to work very well with others.

Bulumi's background in regular classrooms has made him the darling of the group, as reported by one of the group members. Due to his hard work, customers often hired the group for local construction projects.

Bulumi's father praises him, observing that, "at home, when there is communal work, he organizes the rest of the family members." Deng (2010) notes that when students with disabilities are shown the right way, they apply the lesson in their daily lives, hence agreeing with the father's observation and comments about Bulumi.

Bulumi accepts that the nature of construction work is hard on his rehabilitative gadgets, i.e., spectacles and hearing aids. They become damaged while he works, hence disabling him at critical times. This implies that as much as Bulumi is able to meet his daily essential needs, such as food and shelter, he does not enjoy his work. From this experience, it is important to provide appropriate guidance and counseling of persons with special needs on careers that suit their disabilities. As opposed to Siminyo and Akinyi who are comfortable with their careers, Bulumi is quite disadvantaged in terms of his career choice.

The three case studies demonstrate that aspects of inclusive education have aided them in obtaining employment in adulthood. However, due to their disabilities, there emerged some differences and similarities in achieving their intended lifestyle.

#### **Differences**

Siminyo, who is blind, was more stable professionally due to achieving his university education with the support of Sight Savers International. He is currently

employed by the Teachers Service Commission and is teaching in a regular high school in his local county. He uses his talent; his music class is nationally-renowned and the principal has appointed Siminyo the head of the school's languages department. Siminyo is also very popular among his colleagues who have appointed him as their representative in the Parent Teacher Association. He is married to a sighted lady. They have two children. He is blind, but he lives and enjoys the life he has created.

Akinyi, who is deaf, is trained and qualified in dress-making. She applied for a loan and opened a dressmaking shop where her five employees have learned sign language so they can easily communicate with her at work. She opted for vocational training after qualifying very well at primary level because of her family background. She plans to marry very soon to a hearing man.

The difference between Siminyo and Akinyi is quite wide educationally. This may be due to the fact that Siminyo was lucky because he had a sponsor. But they both performed well in class, despite their disabilities. Siminyo became a professional teacher, while Akinyi is a dressmaker. Siminyo's engagement involves a professional group of people with a specific goal, whereas Akinyi's working environment involves a community with various needs, including dressing up. Her social status is therefore more demanding to meet her needs and those of her clients.

Bulumi experiences both low vision and hearing loss. He uses spectacle lenses and hearing aids to enhance his communication abilities. Because of poor vision and auditory status, he did not perform very well at the end of his primary education. The parents opted to take him to a local vocational training center where he qualified as a masonry artisan. He is a determined and committed worker. He does not see his disability as an inability within him. He is dating a girl without disabilities whom he intends to marry in the near future.

#### **Similarities**

All three case studies involved sensory-impaired persons. They all went through inclusion practice while at school, training institutions, and now in the work environment. They all work and interact naturally with non-disabled people and mainstream society has accepted them. This has empowered them to contribute positively to the local and national economy. They enjoy independent lives full of love and commitment to their families and careers.

## DISCUSSION

The aim of this study was to establish the impact of educational inclusion of persons with special needs on their socio-economic activities (employment) in the community. The case studies of persons with three different types of disabilities demonstrated that educational inclusion improved their development and lifestyle in adulthood. This was largely due to the fact that the three participants gained employment in the community. Based on the literature reviewed and the findings of this study, inclusion is critical in becoming a valued member of society.

Kiambi (2017) emphasizes the negative impact of the lack of inclusion that children with disabilities experience. Lack of inclusion interferes with the natural development of children educationally, socially, and psychologically. However, the case studies of Siminyo, Akinyi, and Bulumi show how inclusion can lead to positive outcomes in adulthood. The case study results suggest that early intervention can lead to an inclusive environment that supports the physical, social, and psychological wellbeing of people with disabilities. Adult outcomes are also influenced by the interactions and activities in the community where people with special needs live.

The three case studies show that the nature of disability may affect the choice of training or profession an individual pursues and how much he or she enjoys the experience. The participant with mild deaf-blindness is a competent mason, but he is frustrated because his construction work often damages his communication devices (spectacles and hearing aids). The two participants with blindness and deafness perform their work confidently. These two participants enjoy their professions and interact positively with their local communities. This may be because their work training was for a profession suited to their disability type.

The three case studies revealed that inclusive educational settings and inclusion practices in school and training institutions provided opportunities to develop and grow, raising the expectations of adults with disabilities. Inclusion empowered them to receive the education and training that helped them gain employment; it also reduced negative attitudes in the community and assured that their working environments were disability-friendly.

Despite all the achievements of Siminyo, Akinyi, and Bulumi, there still much to do to provide people with disabilities the opportunities and supports they need to succeed in school and in the community. Similarly,

people without disabilities need to learn more about people with disabilities and how to behave to make everyone feel welcome.

### People with Disabilities in Kenya

Most adults with disabilities who live with or without families in Kenya depend on the community for food, shelter, and other daily needs. The few who have gone to school struggle to be independent by either getting a job or being self-employed (Ajmal, 2001). However, many adults with disabilities in Kenya end up unsuccessful and retreat to the streets. These three case studies are role models to other people with disabilities in Kenya. Today, parents are motivated to take their children with disabilities to school. Those who finish their education try to use their skills to become part of society. The government uses affirmative action to give them the first chance whenever an employment opportunity that is relevant to their skills and disability is available.

Despite these efforts, many constraints remain. In Kenya, many regular and special institutions still have barriers to inclusion. This limits mobility and independence, and it compromises safety and the quality of learning. Morbidity and ill health are common among learners and trainees, including those with disabilities, especially in rural areas and informal urban settlements. Multiple infections, vitamin deficiencies, metabolic disorders, and chronic health impairments all contribute to the high morbidity rate. These factors are exacerbated by unsafe water, poor sanitation, and low standards of hygiene and environmental health. Negative attitudes and persistent myths about disability remain barriers to social environments in Kenyan schools and society.

### Conclusion

The study aimed to understand inclusion practices in Kenya and their influence on the training and employment of a person who is deaf, a person who is blind, and a person who experiences deaf-blindness.

Siminyo, who is blind, trained as a teacher. His journey to becoming a teacher was through an inclusion practice that shaped his life to how he is living and working today. He is a role model of how inclusion practices can benefit people with disabilities to gain employment.

Akinyi, who is deaf, is an entrepreneur who employs hearing persons. She is a competent contributor to the economy of her locality, county, and the nation.

Bulumi, a person who experiences mild deaf-blindness, no longer depends on his parents. He sustains himself independently, marketing his masonry skills to

customers. In the process, he is not only self-sufficient, but is also able to provide for immediate members of his family.

The findings revealed a strong positive link between inclusion practices and the development and valuable contributions of people with disabilities in a community.

### Recommendation

There is a need for a comparative study of the outcomes of persons with special needs who attended special institutions or schools and those who participated in inclusive education programs.

### REFERENCES

- Ajmal, Y., & Rees, I. (Eds.). (2001). *Solutions in schools: Applications of solution focused brief thinking with young people and adults*. London, England: BT Press
- Cameron, L., & Thorsborne, M. (2011). *Student wellbeing research document in inclusive education*. Melbourne, Australia: CEOM.
- Deng, M. (2010). Developing inclusive approaches to teaching and learning. In R. Rose (Ed.), *Confronting obstacles to inclusion: International responses to developing inclusive education* (pp. 203–212). London, England: Routledge.
- Education Policy. (2009). *Kenya Policy on Inclusive Education*. Nairobi, Kenya: Government Press.
- Fish, R. A. (2015). *The design of experiments in special needs research* (7th Rev. ed.). New York, NY: Hafner.
- Inclusive Education Policy. (2018). *Special Needs Education*. Government of Kenya. Nairobi, Kenya: Government Printer.
- Kenya Constitution. (2010). *Persons with Special Needs in Kenya*. Nairobi, Kenya: Government Press.
- Kenya Government. (2009). *Special Education Policy*. Nairobi, Kenya: Author.
- Kenya Government. (2018). *Inclusive Education Policy*. Nairobi, Kenya: Author.
- Kiambi, G. E. (2017). Factors influencing Performance of persons with disabilities in Meru-Kenya. *International Academy Journal of Information Science*, 2(1), 179–196.
- Kothari, C. R. (2012). *Research methodology: Methods and techniques* (Rev. 2nd ed.). Mumbai, India: New Age Int.
- Magampa, A. B. M. (2014). *The academic performance of special needs learners* (Unpublished master's thesis). University of Limpopo, Sovenga, South Africa.
- Mitchell, D. (2008). *What really works in special and inclusive education: Using evidence based teaching strategies*. New York, NY: Routledge.
- Mwarogi, L. (2013). *Special Needs Education (SNE) in Kenyan public primary schools: Exploring government policy and teachers' understanding* (Doctoral dissertation, University of Brunel, London, England). Retrieved from <https://bura.brunel.ac.uk/bitstream/2438/7767/1/FulltextThesis.pdf>
- Okonyiepo, R. D. (2016). *Inclusive Education in Nigeria*. Lagos, Nigeria: Kunte Press.
- Sichari, M. B. (2016). Parental influence on the education of their visually impaired learners of St. Francis School for the Blind, Kapenguria-Kenya. *ECON-SPEAK: A Journal of Advances in Management IT and Social Sciences*, 6(11). ISSN: 2231-4571
- Special Education Policy. (2009). *The growth of special education in Kenya*. Nairobi, Kenya: Government Press.
- Gianguco, M. F., Carter, E. W., Doyle, M. B., & Suter, J. C. (2010). Supporting students with disabilities in inclusive classrooms: Personnel and peers. In R. Rose (Ed.), *Confronting obstacles to inclusion: International responses to developing inclusive education*. London, England: Routledge.
- UNICEF. (2015). *International Classification of Functioning*. UNICEF's Division of Communication.
- UNESCO. (2018). *Education and Disability: Analysis of Data from 49 Countries. Information Paper No. 49*. UNESCO Institute for Statistics (UIS).
- Wamela, C. M. (2019). *Inclusive education at pre-school level*. Kampala, Uganda: Crane Press.
- Zimmerman, M. A. (1993). *Empowerment theory: Where do we go from here?* Paper presented at the annual meeting of the Midwest Psychological Association, Chicago, IL.

# Supporting Braille Readers in Mathematical Practices Using the Braille Display in Coordination with the Speech Synthesizer

**Annemiek van Leendert**  
Royal Visio, the Netherlands

**Michiel Doorman and Paul Drijvers**  
Utrecht University, the Netherlands

**Johan Pel and Hans van der Steen**  
Erasmus University Medical Center, the Netherlands

## Abstract

*It is difficult to read mathematical expressions in braille, whether or not in coordination with text to speech (TTS) synthesis. The researchers in this study investigated the effect of an intervention on the braille readers' performance in reading and comprehending mathematical expressions as well as the braille readers' ability to make well-founded choices for the use of the braille display or the TTS synthesizer. The intervention consisted of adjusted TTS settings in combination with a professional development (PD) course for mathematics teachers of braille readers. Nine experienced braille readers, aged 13–18 years, whose teachers participated in the course, underwent the intervention. A pre- and post-test and a pre- and post-interview were administered. For mathematical braille reading skills, the percentage of correct answers increased from 22% to 41%. For speech comprehension, the percentage of correct answers only slightly increased from 56% to 59%. The results indicated a small positive effect on the braille readers' performance in reading and comprehending mathematical expressions and an improvement in making well-founded choices for the use of braille and speech synthesis. The results suggest that improving mathematical braille reading skills is the key to better mathematical performance.*

Keywords: *mathematical expression, braille, braille display, braille reader, speech synthesizer*

## INTRODUCTION

Students who use braille as their primary reading medium (hereafter referred to as braille readers) have always had difficulty reading and understanding mathematical expressions and equations (e.g. van Leendert, Doorman, Drijvers, Pel, & van der Steen, 2019). This is also the case when they use braille in coordination with speech synthesis. This is due to how mathematical expressions are represented in braille and with speech synthesis. Inevitably, mathematical expressions and equations are represented in a linear notation, because braille and speech are both linear output modalities (Stöger & Miesenberger, 2015). In addition, braille readers read using their fingertips or listening to a voice, in a sequential pattern (Millar, 1994, 1997). This means that they have a small perceptual view. Consequently, braille readers cannot benefit from the layout of a mathematical expression that helps sighted students to understand the structure of a mathematical expression at a glance (Karshmer & Bledsoe, 2002).

Braille readers read braille on paper or on a braille display. A braille display is a device that is typically attached to a computer keyboard. A screen reader allows braille readers to read the text that appears on the braille screen display or with a text-to-speech (TTS) synthesizer. It is possible to adjust the TTS software, e.g., the speech dictionary can be expanded with a mathematical vocabulary.

The current study focused on reading and comprehending mathematical expressions on the braille display, either on its own or in coordination with the TTS synthesizer. Coordinating these assistive technologies is not straightforward. The issue at stake is how braille readers can be supported in improving their mathematical reading skills. Therefore, the researchers of this study investigated the effect of adjusted TTS settings—adjusted to mathematical text—of the screen reader software in combination with a teachers' professional development (PD) course on braille readers' mathematical practices. In this study, these practices involved



reading and comprehending mathematical expressions and equations in braille or in braille in coordination with speech synthesis.

## Theoretical Background

### What is Braille?

Braille is a tactile reading and writing system. Braille uses raised dots to represent the characters of the visual script. The braille characters are formed within units of spaces known as braille cells. A full braille cell consists of a pattern of raised dots in a  $2 \times 3$  configuration (⠠). The dots are numbered 1, 2, 3 (left column) and 4, 5 and 6 (right column). Using one or more of these six dots,  $63 (= 2^6 - 1)$  combinations are possible. Hence, not all signs and symbols from our script can be displayed with six dots. This is why announcement signs such as number, uppercase or letter signs are used. For example, the letter b is represented as ⠠⠠ (dot 12). The number two may be represented—depending on the mathematical braille notation used—as ⠠⠠⠠ (number sign plus letter b).

With the arrival of computer technology, there was a desire to drop announcement signs and allow more combinations. Thus, 8-dot braille was created. In 8-dot braille, a full braille cell consists of a pattern of raised dots in a  $2 \times 4$  configuration (⠠). The dots are numbered 1, 2, 3, 7 (left column) and 4, 5, 6, 8 (right column). 8-dot braille is mostly used in combination with a braille display. The number 2, for example, may be represented in 8-dot braille as ⠠ (dot 23), ⠠ (dot 128) or ⠠ (dot 126). Again, the representation depends on the braille notation used.

Braille characters differ from each other in the presence or absence of a raised dot in one of the possible locations. This implies that braille characters miss the redundancy of print characters which can be recognized by the salient features that different spatial combinations of straight lines and curves provide (Millar, 2003; Tobin & Hill, 2015). This low redundancy may lead to errors in decoding the braille characters. Most braille readers can overcome these problems through experience and adequate training (Radojichikj, 2015).

### Reading Mathematical Expressions with the Braille Display

Reading and comprehending a mathematical expression requires accuracy and insight into the structure of the expression. Accuracy is critical in reading and comprehending mathematical expressions because these expressions are context-poor and condensed. As mentioned above, it is difficult to read accurately in

braille because braille characters have low redundancy (Millar, 2003; Tobin & Hill, 2015). It is also challenging to comprehend the structure of an expression while using braille. This is due to the linear representation of expressions and the limited perceptual view that braille readers have. Every braille character must be read individually and sequentially which makes braille reading exhaustive rather than selective (Hughes, 2011; Hughes, McClelland, & Henare, 2014). It helps that braille is, to a certain extent, static (Archambault, Stöger, Batusic, Fahrengruber, & Miesenberger, 2007). The braille reader can inspect the expression in braille as long as he or she wants, which at least provides a limited spatial overview. A typical approach to create an overview in braille is to repeatedly read an expression in full, retain and then integrate the information. Specific finger movements, such as lingering with the left index finger on an open bracket while reading and understanding a nested expression, have been shown to support this complicated and time-consuming task (van Leendert et al., 2019).

As well as these behavioral aspects, the use of the braille display involves some technical issues. When braille readers use a braille display, expressions in the mathematical notation need to be entered into the computer in linear notation. In this study, this notation is called a linear-print notation because the characters to be entered are ASCII characters. There are many different linear-print notations. The mathematical expression  $2^{x+3}$  can be represented as, for example,  $2^{(x+3)}$  and  $2^x+3$ . The screen reader software converts the expression in the linear-print notation into braille. The notation in braille depends both on the used linear-print notation and on the braille table. To emphasize this, in this study the notation in braille is often named the linear-braille notation. There is a one-to-one correspondence between the ASCII characters in the linear-print notation and the braille characters in the linear-braille notation. Hence, the mathematical structure of an expression in a linear-print and linear-braille notation is the same. Table 1 shows how the expression  $(2x^2+1)/3$  is represented in a linear-print notation and in the corresponding linear-braille notation.

### Reading Mathematical Expressions with TTS Synthesizer

Many braille readers also listen to mathematical expressions and equations spoken aloud through speech synthesis. An advantage of speech over braille is the pace of reading, because spoken language can be comprehended much quicker than braille characters





Table 2  
*Participants' demographics.*

ID	Sex	Age (Years)	Grade	Visual Abilities	Age of Onset of Visual Impairment (Years)	Age of Starting Braille Reading (Years)
1	M	13	7 <sup>1</sup>	None	0	6
2	M	14	8 <sup>2</sup>	some form, light	0	6
3	F	14	8 <sup>2</sup>	some form, light	0	11
4	F	15	9 <sup>2</sup>	None	0	6
5	M	16	10 <sup>1</sup>	None	0	6
6	F	15	8 <sup>1</sup>	Light	0	6
7	F	17	10 <sup>1</sup>	some form, light	0	6
8	M	16	9 <sup>1</sup>	None	8	8
9	M	18	9 <sup>1</sup>	colors, light	0	16

Note: <sup>1</sup> Pre-vocational secondary education. <sup>2</sup> Senior general secondary education.

readers. Some of them used braille in almost all classes excepting mathematics. They had some residual vision and were able to read mathematical text in print. These braille readers were excluded from this study. The braille teachers taught the braille readers how to use the braille display and TTS synthesizer, but not how to use these assistive technologies in mathematics.

The braille readers who used braille in mathematics lessons and whose teachers enrolled in the PD course were recruited for this study. A condition was that the braille readers were, according to the braille teachers of the schools, proficient in reading non-mathematical text in braille. One braille reader was retroactively excluded because her screen reader software was not adjusted immediately after the pre-test. Finally, nine braille readers participated in the study. None of them had learning or cognitive limitations in addition to the visual impairment. Table 2 shows the participants' demographics.

### Intervention

#### Adjustments of setting of screen reader software.

The intervention consisted of a combination of adjustments of the settings of the screen reader software and a PD course for mathematics teachers. Hence, the intervention has a direct and an indirect component. The adjustments were made by the course conductor. First, the content of the verbosity levels was adjusted. Possible verbosity levels are none, some, most, and all. Table 3 shows the punctuation marks and symbols used in the linear-print notation in the Netherlands. When reading at a specific verbosity level, only the symbols and punctuations marks that are depicted at that level or at a lower level are spoken aloud. In the default

settings, for example, when reading at verbosity level *some*, “ $2(x + 3)$ ” will be spoken aloud as “two x plus three”. In this case, the meaning is lost because the brackets are missing. In the current study, the verbosity settings were adjusted so that all symbols and punctuation marks used in the linear-print notation were spoken aloud while reading at verbosity level *most*. Second, the speech dictionary was expanded with a mathematical vocabulary. Because of the adapted settings, the braille readers read all expressions and equations in a mathematical vocabulary, without missing elements, when reading at verbosity level *most*. Each braille reader can, at any time, select the verbosity level at which he or she wants to read.

**A PD course for mathematics teachers.** The intervention also included a PD course for the braille readers' mathematics teachers. The PD course was provided in four three-hour sessions spread over three months. The course focused on integrating the braille display and TTS synthesizer in mathematics lessons. Several studies have investigated the knowledge and skills teachers need to successfully integrate technology into their lessons (e.g., Graham et al., 2009; Mishra & Koehler, 2006). These studies do not explicitly relate to teaching mathematics to braille readers, but the researchers of the current study realized they could use their findings to design the PD course. The course's topics were: “Supporting braille readers to read and comprehend mathematical expressions on the braille display” (session 1), “Supporting braille readers to read and comprehend mathematical expressions on the braille display and with the TTS synthesizer” (session

Table 3  
Content of the verbosity levels in the default and adjusted settings.

Verbosity Level	Default Settings	Adjusted Settings
None		
Some	# \$ % * + / = ^ { } &	\$ % &
Most	“ ( ) - : ; < > \   ~	! “ ‘ ( ) * + , - . / : ; < > = ? [ ] \ ^ { }   ~
All	! ‘ , . ?	#

Note: This table shows the content of the verbosity levels for the default and adjusted settings for punctuation marks that are used in the linear-print notation in the Netherlands. When reading at a specific level of verbosity, only the symbols and punctuation marks that are displayed at that level or at a lower level are spoken aloud.

2), “Working with heterogeneous groups” (session 3), and “Sustaining daily practice” (session 4). The content of the course is further described in Appendix A (Table A1).

### Instruments

**Pre- and post-test about reading and comprehending mathematical expressions.** The pre- and post-tests investigated the development of the braille readers’ performances in reading and comprehending mathematical expressions. All pre- and post-tests were audio- and video-recorded and transcribed verbatim. The video camera pointed to the braille display to record the finger movements of the braille readers when reading a mathematical expression or equation. The pre- and post-test contained the same items. The researchers did not expect a testing effect, because the time interval between the two tests was more than four months. The tests included items on speech comprehension and on mathematical braille reading skills. The tasks were not too complex, from a mathematical point of view, but required careful reading skills due to the use of various operations and brackets.

The purpose of speech comprehension was to investigate whether braille readers were able to select and understand information from an expression or equation spoken aloud. The researchers did not want the braille readers to be distracted by technology or technological problems. Therefore, the instructor spoke the expression or equation aloud with the same mathematical vocabulary that the speech synthesizer would have used (in the adjusted settings). The instructor first spoke the expression aloud at a slow pace—slower than the braille readers were used to when reading with speech synthesis. The expressions and equations could be spoken aloud several times, at any pace, at the request of the braille reader. The items were:

- $1/7 + 7 - 2/5 + 8 = ..$  What are the fractions in this expression?
- $4 - (5 + -(6 + 3)) = ..$  Where do you start calculating?
- $4 * (.. - 5) = 8$  Solve this equation.

(The items are not in symbol font because they are represented in the linear-print notation). Data were collected and analyzed on the number of correct answers and on how much time on average the braille readers needed to give the correct answers.

The purpose of mathematical braille reading skills was to investigate whether braille readers were able to read the mathematical text accurately on the braille display, to recognize the structure of the expression, and to verbalize the expression in mathematical vocabulary. With item b, the researchers intended to investigate whether the braille readers were supported by context (“volume”). The items were:

- $y = 2 \frac{1}{2} * 3^1$
- The volume is  $12 \text{ m}^3$
- $y = \text{sqrt}(2/(x + 3)^2)$

For mathematical braille reading skills, data were collected on the number of correct answers and on the time needed to give a correct answer. An answer was correct when the braille reader could read each element of the expression without errors and verbalize the expression accurately using mathematical vocabulary. The average time needed to give a correct answer was calculated.

<sup>1</sup>  $2 \frac{1}{2}$  is a mixed number, a combination of a whole number and a proper fraction.

Errors were divided into three categories: E(1), E(2) and E(3). E(1) is an error due to malfunctioning of a technology device. E(2) is an error due to difficulties with decoding braille characters, e.g. with identifying the position of raised dots, or problems in connecting the pattern of raised dots to characters in the linear-print notation. For example, when decoding the character “:!:l”, the braille readers must *feel*, with their fingertips, that the dots in the first and third rows are up and they must *know* that this pattern matches the letter “x”. Finally, E(3) is an error due to difficulties in recognizing the structure of an expression or in verbalizing the expression in mathematical vocabulary. Only one category can be assigned to an error. If an E(1) error is assigned, no E(2) or E(3) error can be assigned. If an E(2) error is assigned, no E(3) error can be assigned.

**Pre- and post-interview about the use of braille display and TTS synthesizer.** The braille readers were interviewed about their visual impairment, the assistive technologies they use, and the support they receive in mathematics lessons. The interviews were used to interpret the results of the pre- and post-tests and to trace the development of braille readers in making substantiated choices for the braille display or TTS synthesizer when reading and comprehending mathematical expressions. The interviews (Appendix B) were semi-structured and open-ended (Whiting, 2008). The interviews were recorded and transcribed verbatim. In some cases, the order of the questions was changed to avoid interrupting the flow of the discussion.

To investigate the braille readers’ development in making solid choices for the use of the braille display or TTS synthesizer, a codebook was created. The codes were “WHY”, “WHEN”, and “HOW.” The code WHY was assigned when the braille reader *explained* for what purpose or reason he or she is *using* or *selecting* (or not using or selecting) the braille display or TTS synthesizer. The code WHEN was assigned when the braille reader *described* in which case he or she *selected* the braille display or TTS synthesizer. The code HOW was given when the braille reader *described* in what way or by what method he or she *used* the braille display or TTS synthesizer. The researchers selected examples of quotes within the data that illustrate each code (Table 4). With these examples, the researchers can communi-

Table 4  
Codebook.

Code	Description of the Code	Examples
WHY	An <i>explanation</i> for what purpose or reason the braille reader uses or selects (or does not use or select) the braille display or TTS synthesizer.	“I use braille because then you can read short pieces of an expression a little faster.”
WHEN	A <i>description</i> of a situation in which the braille reader selects the braille display or TTS synthesizer.	“I read non-mathematical text with speech.”
HOW	A <i>description</i> of in what way or by what method the braille reader uses the braille display or TTS synthesizer.	“I first read the expression thoroughly on the braille display before I start to solve the expression.”

cate the data clearly and concisely and ensure that the data is correctly understood and interpreted. To code the text properly, the researchers concentrated on text about the use and/or selection of the braille display or TTS synthesizer in mathematics. This text was segmented into units of analysis that focused on one explanation or description. These units ranged in length from a few words to a couple of lines and were coded with one of the three codes WHY, WHEN, and HOW if that type of explanation or description was involved. Two interviews—a pre- and post-interview—were also coded by a second coder. The researchers had 10% cases of disagreement. These cases were discussed until consensus was reached. This did not result in adaptations in the codebook. Finally, the codes were compared on frequency.

#### Procedure

The study’s procedure included a pre-interview, pre-test, intervention, post-interview, and post-test, all within five months. The interviews and the pre- and post-tests took place at the braille readers’ schools. All sessions, consisting of an interview and a pre- or post-test, were scheduled for 30 minutes but sometimes lasted longer due to technical problems with the braille readers’ laptops. Within two weeks of completing the pre-tests, the course conductor adjusted the settings of the screen reader software, and the PD course for the mathematics teachers started. Within a month after the end of the PD course, the braille readers were interviewed for a second time and took the post-test.



Table 5  
*Categorization of errors made in mathematical braille reading skills.*

Mathematical braille	Pre-test				Post-test			
	E(1)	E(2)	E(3)	C	E(1)	E(2)	E(3)	C
Reading skills	2	16	3	6	0	14	2	11

Note: E(1) is an error due to malfunctioning of a technology device. E(2) is an error due to difficulties with decoding the braille characters. E(3) is an error due to difficulties in recognizing the structure of an expression or in verbalizing the expression in mathematical vocabulary. C stands for “correct answers.”

## RESULTS

### Reading and Comprehending Mathematical Expressions

The research question addresses the effect of the intervention on braille readers’ mathematical practices. Therefore, the results of the pre- and post-tests for speech comprehension and mathematical braille reading skills are presented. For speech comprehension, the percentage of correct answers slightly increased from 56% to 59%. The average time needed to give the correct answers decreased from 48 seconds (SD = 28.5) to 34 seconds (SD = 16.5). During the speech comprehension test, braille readers often asked to read the expression again at a slower pace because the initial pace was too fast to select and understand information from the expression spoken aloud.

For mathematical braille reading skills, the percentage of correct answers increased from 22% to 41%. The average time needed to give the correct answers decreased from 18 seconds (SD = 26.8) to 15 seconds (SD = 8.7). Almost all errors, in the pre-test as well as in the post-test, were E(2) errors (Table 5). E(2) errors occurred because braille readers had difficulty with identifying the position of the raised dots or with connecting the braille characters to ASCII characters. In the pre-test, 6 out of 27 answers were correct, in the post-test, 11 out of 27.

The reading practice of braille reader K. is an illustrative example of how braille readers tried to read and comprehend “The volume is 12 m<sup>3</sup>” on the braille display (Table 6). K. was a senior general secondary education student (ID 2, Table 2). He used a 6-dot braille notation at home and an 8-dot braille notation at school. The representation of 12 m<sup>3</sup> in the 8-dot braille notation that K. used is  $\cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot$ .

K., as well as other braille readers, spent a lot of time reading “12 m<sup>3</sup>” compared to, “The volume is.” He made many errors when reading “12 m<sup>3</sup>”. He missed the number 1 and read “3” instead of “m”. He also read “9” instead of “^”. He could not decode the braille character for “^” and stopped. It was not clear whether he could not identify the position of raised dots or whether he was unable to connect this pattern to the “^”-symbol.

### Use of Braille Display and TTS Synthesizer

The research question also addresses the effect of the intervention on making solid choices for the use of the braille display or TTS synthesizer. Therefore, the researchers/authors present the results of the coding of the interviews. Table 7 shows that the total number of codes assigned to the answers in the pre-interview was 47, and 109 in the post-interview. Hence, the number of codes assigned had more than doubled. Most of the codes assigned were related to the braille display. The

Table 6  
*Reading, “The volume is 12 m<sup>3</sup>,” on the braille display.*

Time (in seconds)	Utterances of braille reader K. when reading, “The volume is 12 m <sup>3</sup> ”	Remarks on the braille reader’s utterances
00–04	The volume is	He needs 4 seconds to read this part of the sentence.
04–17	Two thousand three hundred ninety-three. Wait, two thousand. What should this be?	He missed the number “1” and the space after “12”. He read “3” instead of “m” and “9” instead of “^”.
22–40	The volume is ... one, two, three; no wait, two, m, s, three. I do not know if that is an s. It looks a bit strange. {stop}	He could not decode the “^” properly and stopped.

Table 7

*Braille readers' absolute and relative scores in the pre- and post-interviews.*

	Braille display				TTS synthesizer				Overall Total
	Codes				Codes				
	WHY	WHEN	HOW	Total	WHY	WHEN	HOW	Total	
Pre-interview	13 (28%)	8 (17%)	6 (13%)	27 (57%)	8 (17%)	9 (19%)	3 (6%)	20 (43%)	47 (100%)
Post-interview	24 (22%)	14 (13%)	20 (18%)	58 (53%)	16 (15%)	15 (14%)	20 (18%)	51 (47%)	109 (100%)

absolute number of assigned codes in all categories increased. Only the percentage of assigned codes in the HOW category increased, both for the braille display and for the TTS synthesizer.

In the pre- and post-interviews, the braille readers said they did not get help from their teachers on how to use and select the braille display or TTS synthesizer. They also said they did not feel that the teachers changed their teaching practice in the period between the pre- and post-test. In the pre- and post-interviews, the braille readers mentioned that they need to use braille when an expression is complicated. However, they also remarked that they often avoided using braille because reading with speech synthesis is faster and less tiring. All braille readers provided more detailed explanations and descriptions for the selection and use of the braille display or TTS synthesizer. After the adjustments of the screen reader software, two braille readers used a new strategy. Depending on the type of text they had to read, they used a different level of verbosity. They read on a lower verbosity level in, for example, history lessons and on a high verbosity level in mathematics lessons. Five braille readers mentioned that they liked the mathematical speech dictionary because the mathematical vocabulary helped them to understand mathematics better.

Some technical issues related to the braille display also emerged during the interviews. In each interview, the instructor asked the braille reader to type a few symbols in Microsoft Word. Based on the representation on the braille display, the instructor determined the braille notation used. It appeared that five out of nine braille readers changed braille notation in the period between the pre- and post-test. Two braille readers had accidentally changed the braille notation, probably by hitting key combinations that triggered this change. One braille reader switched consciously from 8-dot to 6-dot braille when reading mathematical expressions. The number signs, in 6-dot braille, helped him to distinguish

between numbers and letters. In the other cases, a teacher advised the braille readers to switch from the 6-dot to an 8-dot braille notation, probably a consequence of what the teacher learned during the PD course. According to the braille readers, this switch was advised but not guided by the teachers.

## CONCLUSIONS AND DISCUSSION

### Reading and Comprehending Mathematical Expressions

In this study, the researchers/authors addressed the effect of the adjusted settings of the screen reader software in combination with a PD course for mathematics teachers on braille readers' mathematical practices. The researchers/authors first discuss the effect of the intervention on the braille readers' performance in reading and comprehending mathematical expressions. For speech comprehension, the test results show that the initial level was low. The percentage of correct answers only increased slightly, from 56% to 59%. The intervention had a positive effect on the average time needed to give a correct answer. The standard deviation is high for all items, which means that there were large individual differences in the time needed to give correct answers. A positive effect was that the braille readers felt it was easier to select and understand information from an expression or equation spoken aloud when the rate of speech was slow—much slower than they were used to. Five braille readers said they liked the expanded speech dictionary because the mathematical vocabulary helped them to better understand mathematics.

For mathematical braille reading skills, the initial level was also low. Almost 80% of the items could not be read correctly in braille. The researchers/authors did not expect this because seven of the nine participating braille readers had more than six years of experience with braille reading. The researchers/authors also expected a greater effect of the intervention. Still, even after being supported, almost 60% of the items could

not be read correctly in braille. The number of E(2) errors was large. The braille readers had difficulties with decoding the braille characters. This means that they had difficulties with identifying the position of raised dots or with connecting the pattern of raised dots to ASCII characters. Five of the nine braille readers changed braille notation during the intervention. This is critical because numbers and symbols can look very different in another braille notation. The switch from one braille notation to another was, according to the braille readers, not guided by the teachers. This may help explain the large number of E(2) errors.

The reading practice of braille reader K. demonstrated that he encountered many difficulties. For example, he mixed up the letter *m* (⠇⠗) and the number 3 (⠇⠒). This could be due to the fact that these characters are symmetrical in the braille notation used (Tobin & Hill, 2015). Additionally, he was not able to decode the braille character for “^”. This may be due to the fact that he used a different braille notation at home than at school. Like the other braille readers except one, he was not supported by the context (“The volume is”) when reading “12 m<sup>3</sup>”.

### **Use of Braille Display and TTS Synthesizer**

The interviews investigated the effect of the intervention on the braille readers’ substantiated choices for using the braille display or the TTS synthesizer. In the post-interviews, the braille readers could explain and describe their use and selection of the braille display and TTS synthesizer, as expected. The researchers/authors also expected that more insight into the use and selection of the braille display and TTS synthesizer would result in better performances in reading and comprehending mathematical expressions. This was the case, but the researchers/authors expected a greater effect.

The responses in the pre- and post-interviews showed that the braille readers did not feel that the teachers supported them in the use and selection of the braille display or TTS synthesizer. They also did not feel that the teachers changed their daily practice during the intervention. In the pre- and post-interviews, all braille readers mentioned that they should use braille when they need to read and comprehend a complex expression. However, the test results show that they had difficulties with reading and comprehending mathematical expressions in braille. This may indicate that the braille readers needed and wanted more support from their teachers.

The results suggest that improving mathematical braille reading skills is the key to better mathematical performance. Both assistive technologies, the braille display as well as the TTS synthesizer, have the potential to support braille readers in mathematics. To use these technologies to their full potential, the TTS settings of the screen reader software must be adjusted, and braille readers must be taught how to use the braille display in coordination with the TTS synthesizer when reading and understanding mathematical expressions. An adequate strategy seems to be, based on the previously discussed literature (e.g., Archambault et al., 2007; Tobin & Hill, 2015; Freitas & Kouroupetroglou, 2008; Kellman et al., 2010), that braille readers use speech synthesis at the beginning of the reading process to get a global structure of the expression within a few seconds. They then switch to braille to be able to read and understand the expression (or parts of it) more accurately. Uncertainties in braille can be checked or verified with spelling aloud. To use this strategy successfully, braille readers need to know what information to select with speech synthesis and they need to be able to read mathematical expressions in braille at an appropriate level. Another strategy is to read the expression in braille without using speech synthesis. In that case, the braille reader probably needs more time to calculate the expression.

This study has some limitations. The first is the small number of participants offers little basis to generalize findings. However, the results are transferable to similar situations because the researchers gave a detailed description of the research setting. A second limitation is that the researchers did not distinguish between E(2) errors due to difficulties with identifying the position of raised dots or with connecting the pattern of raised dots to ASCII characters. This would give more insight into the difficulties that braille readers encounter when reading mathematical expressions in braille.

Overall, this study adds to the small number of studies into ways to support braille readers in mathematics (e.g., Figueiras & Arcavi, 2014; Healy & Fernandes, 2011; van Leendert et al., 2019). Findings from this type of research should enable mathematics teachers to better support braille readers in improving braille readers’ mathematical practices and successfully finishing their educational path.

## REFERENCES

- Archambault, D., Stöger, B., Batusic, M., Fahrengruber, C., & Miesenberger, K. (2007). A software model to support collaborative mathematical work between braille and sighted users. In E. Pontelli, & S. Trewin (Eds.), *Proceedings of ASSETS 2007 9th International ACM SIGACCESS Conference on Computers and Accessibility* (pp. 115–122). Tempe, AZ: ACM. doi:10.1145/1296843.1296864.
- Figueiras, L., & Arcavi, A. (2014). A touch of mathematics: Coming to our senses by observing the visually impaired. *ZDM - Mathematics Education*, 46(1), 123–133.
- Freitas, D., & Kouroupetroglou, G. (2008). Speech technologies for blind and low vision persons. *Technology and Disability*, 20(2), 135–156.
- Graham, R. C., Burgoyne, N., Cantrell, P., Smith, L., St. Clair, L., & Harris, R. (2009). Measuring the TPACK confidence of in-service science teachers. *TechTrends*, 53(5), 70–79.
- Healy, L., & Fernandes, S. H. A. A. (2011). The role of gestures in the mathematical practices of those who do not see with their eyes. *Educational Studies in Mathematics*, 77(2–3), 157–174.
- Hughes, B. (2011). Movement kinematics of the braille-reading finger. *Journal of Visual Impairment & Blindness*, 105(6), 370–381.
- Hughes, B., McClelland, A., & Henare, D. (2014). On the nonsmooth, nonconstant velocity of braille reading and reversals. *Scientific Studies of Reading*, 18(2), 94–113.
- Jackson, R. M., & Presley, I. (2012). *Audio-supported reading for students who are blind or visually impaired*. Wakefield, MA: National Center on Accessing the General Curriculum. Retrieved [2019-10-28] from <http://aem.cast.org/about/publications/2012/audio-supported-reading-blind-visually-impaired-asr.html>
- Karshmer, A. I., & Bledsoe, C. (2002). Access to mathematics by blind students. In K. Miesenberger, J. Klaus, & W. Zagler (Eds.), *Computers Helping People with Special Needs. ICCHP 2002* (pp. 471–476). Berlin, Heidelberg, Germany: Springer.
- Kellman, P. J., Massey, C. M., & Son, J. Y. (2010). Perceptual learning modules in mathematics: Enhancing students' pattern recognition, structure extraction, and fluency. *Topics in Cognitive Science*, 2(2), 285–305.
- Millar, S. (1994). *Understanding and representing space: Theory and evidence from studies with blind and sighted children*. Oxford, England: Clarendon Press/Oxford University Press.
- Millar, S. (1997). Theory, experiment and practical application in research on visual impairment. *European Journal of Psychology of Education*, 12(4), 415–430.
- Millar, S. (2003). *Reading by touch*. London, England: Routledge.
- Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record*, 108(6), 1017–1054.
- Radojichikj, D. B. D. (2015). Students with visual impairments: Braille reading rate. *International Journal of Cognitive Research in Science, Engineering and Education*, 3(1), 1–5.
- Riccomini, P. J., Smith, G. W., Hughes, E. M., & Fries, K. M. (2015). The language of mathematics: The importance of teaching and learning mathematical vocabulary. *Reading & Writing Quarterly*, 31(3), 235–252.
- Stöger, B., & Miesenberger, K. (2015). Accessing and dealing with mathematics as a blind individual: State of the art and challenges. In G. Kouroupetroglou (Ed.), *Proceedings of the International Conference on Enabling Access for Persons with Visual Impairment. ICEAPVI 2015* (pp. 199–203). Athens, Greece: National and Kapodistrian University of Athens.
- Tobin, M. J., & Hill, E. W. (2015). Is literacy for blind people under threat? Does braille have a future? *British Journal of Visual Impairment*, 33(3), 239–250.
- van Leendert, A., Doorman, M., Drijvers, P., Pel, J., & van der Steen, J. (2019). An exploratory study of reading mathematical expressions by braille readers. *Journal of Visual Impairment & Blindness*, 113(1), 68–80. doi:10.1177/0145482X18822024
- Whiting, L. S. (2008). Semi-structured interviews: Guidance for novice researchers. *Nursing Standard*, 22(23), 35–40. doi:10.7748/ns2008.02.22.23.35.c6420



## Appendix A

Table A1  
*Design of the PD course.*

Learning goals	Corresponding tasks and activities
<b>Session 1: Supporting braille readers to read and comprehend mathematical expressions on the braille display</b>	
1. Knowledge of the problems that braille readers encounter when reading mathematical expressions and equations on the braille display. 2. Knowledge of braille notation.	Braille experience. Instructor provides vignettes on students struggling with mathematics and lets the participants actively connect to their practices and pose possible explanations. Participants make analyses of errors committed by braille readers when simplifying an expression or solving an equation. Homework assignment: Develop a plan for supporting a braille reader, in your own practice, to understand the structure of an expression. Make a short report or video clip of the interaction.
<b>Session 2: Supporting braille readers to read and comprehend mathematical expressions on the braille display and with the TTS synthesizer</b>	
3. Knowledge of mathematical vocabulary. 4. Knowledge of and skills in reading mathematical expressions and equations with speech synthesis. 5. Understanding of how the use of braille and speech synthesis complement and reinforce each other while doing mathematics.	Instructor helps teachers to use mathematical vocabulary when talking about expressions and equations and explains why this is important. Instructor models how to adapt the verbosity settings of the Screen Reader Software. Discussion, related to the participants' experiences, on the advantages, limitations and challenges of reading in braille or with speech synthesis in mathematics lessons. Homework assignment: Record your findings with speech synthesis during the next three weeks. Discuss your findings with a braille reader. Write a report of the discussion.
<b>Session 3: Working with heterogeneous groups</b>	
6. Knowledge of cooperative learning.	Information on the importance of inquiry and communication while learning mathematics. Teachers participate in and reflect on Inquiry Based Learning-activities. Homework assignment: Support a braille reader with exploring a tactile graph. Write a report of the intervention.
<b>Session 4: Sustaining daily practice</b>	
7. Knowledge about new perspectives. 8. Ideas for sustaining daily practices. 9. Evaluation of the PD course.	E.g., 3D printer to create tangible models, different software to create audible graphs. E.g., possibilities to share practice and experiences in follow-up meetings, Microsoft Teams for online collaboration. Reflection on and evaluation of the PD course.

## Appendix B

### Interview form

#### Personal details

- Number
- Name
- Sex
- Date of birth
- Class
- Achieved results in mathematics
- School career (special, regular education)
- Visual abilities
- Age of onset of visual impairment
- Start braille reading
- Comorbidities

#### Questions

- Which screen reader do you use at school/home?
- Which assistive devices do you use in mathematics lessons? Do you use the same devices in other lessons? Explain your answer.
- Do you get any help from your mathematics teacher on how to use braille or speech synthesis in mathematics? Explain your answer.
- Do you use a specific strategy when reading and comprehending mathematical expressions? Explain your answer.
- What are the advantages and disadvantages of the use of the braille display or TTS synthesizer in mathematics? Explain your answer.

#### Additional question for the post-interview:

- Did you feel that your mathematics teacher had changed his or her teaching practice in the last few weeks? Explain your answer.

# A Sampling of International Schools' Special Education Practices and Experiences

Julie M. Lane

Fresno Pacific University, USA

## Abstract

*There is a dearth of literature about special education practices in international schools. However, literature reflecting case study data on a school or regional practice does exist. Two quantitative global studies on special education practices also exist (Gaskell, 2017; International School Collaborate [ISC], 2017). The current study compared its findings with Gaskell (2017) and ISC (2017). Forty participants representing 33 host countries and 10 different affiliated countries participated. The study found similar findings as the Gaskell (2017) and ISC (2017) studies. However, statistical data could not be correlated due to inconsistency in disability language. A unique aspect of this study includes the personal experiences of international school educators as they work with children with disabilities. This study found recurring themes of belonging, support systems, and admission limitations in international schools. Personal experiences show how children with disabilities change educators' perspectives and/or how perseverance and open mindedness create successful pathways for children with disabilities in international schools.*

Keywords: *international schools, special education, disabilities, inclusion, school culture*

## INTRODUCTION

For the purposes of this articles, three terms need to be clarified. First, the term *international school* is defined as a school serving children whose parents work for international organizations or multinational companies and are required to work outside of their native country and/or schools serving children of the diplomatic corps (Hayden & Thompson, 2016). Second, without a universal definition for inclusion now about where and how special education services are delivered throughout the world, the terms *special education* and *inclusion* have become interchangeable in common usage and in the given literature. The author of this paper found studies using either term to describe how children with disabilities are supported. What may be perceived as inclusion in the U.S., others relate to as special education. In this article, inclusion is the “inclusive and responsive learning environments that recognize the value of diversity and provide equity of access, opportunity and outcome for all students including students with disabilities and diverse abilities” (British Columbia Ministry of Education, 2020).

Inclusion prevents isolation and exclusion and provides a community where a quality education and social skills development reach beyond the classroom. Yet, most school systems around the world struggle to effectively adapt settings for those with disabilities (United Nations Educational, Scientific, and Cultural Organization [UNESCO], 2019, p. 17). As reported by Lane and Jones (2016), international schools can create a global

acceptance by including children with disabilities in international schools while serving various cultures, races, and religions. Shaklee (2007) states the word *international*, in and of itself, may denote world peace and the global acceptance of all children regardless of their learning ability. Article 24 of the United Nation Convention on the Right of Persons with Disabilities states that all countries must provide individuals with disabilities “an inclusive, quality and free primary and secondary education on an equal basis with others in the communities in which they live;” granted, not all countries have ratified article 24 (UNESCO, 2018).

Children with disabilities are served in international schools (Bunnell, 2016; Haldimann, 1998, 2004 as cited in Shaklee, 2007; Shaklee, 2007; Sperandio & Klerks, 2007). No record describes the number of enrolled children, types of disabilities represented, nor the method of service provisions. Only two statistical reports appear to have been published. Gaskell (2017) and the International School Collaborative Survey (ISC, 2017) reflect current data on special education practice in international schools. The research reflects on types of disabilities served, where services are provided and by whom, and how children with disabilities are accepted within the schools. This study sought to gain further insights by inquiring about the engagement and learning that occurs in international schools around special education enrollment and practices. The study also garnered qualitative data about personal experiences of working with children with disabilities within international schools.

## Literature Review

Most international schools are not obligated to provide special education programming (Shaklee, 2007). Since international schools are privately-owned, government agencies are neither obligated nor able to regulate special education services, regardless of the UNESCO directive. Yet ISC (2017) found that host country governments regulated the special education practices of 24.39% of participants. The remaining participants indicated host countries may have some to no influences over special education practices (p. 9). Growing interest benefits special education programming and a desire to serve families as a whole (Haight, 2018). Anati and Ain (2012) indicated that international schools in the United Arab Emirates must provide special education, yet the breath of disability warrants the location of a starting point. International school educators are discussing the growing awareness about including children of diverse learning needs (Brown & Bell, 2014) with Danzot and Evans (2016) reporting that 1,400 U.S. foreign service children with special needs were currently being educated abroad.

Enlightenment stands as the ideology of western societies and as the foundation of the international education movement (Tate, 2016). International school educators typically receive western-educated students (e.g., U.S., United Kingdom), and teach western curricula (Hobson & Silova, 2016; Stobie, 2016; Walker, 2016). Stobie (2016) argues international schools serving expatriates have their own unique culture. Recruiting and retaining staff members is a challenge (Caffyn, 2011; Hayden & Thompson, 2016; Shaklee, 2007). The attrition rate of staffing—an average of two to three years—also reflects the length of contracts (Hayden & Thompson, 2016). Hayden and Thompson (2016) explain that educators often become international school administrators and teachers to travel the world; others become tenured teachers and stay at one school for most of their careers. With similar attrition rates as teachers, school administrators plant their own culture and vision for a school and quickly move on. This leaves international schools re-envisioning themselves every three to five years. If one administrator brings a cultural shift towards inclusive practices, the next administrator may not want to continue in that light. Administrators must demonstrate a culture of inclusion (Cobb, 2015; Lane & Jones, 2016; Hansuvadha & Slater, 2012; Whitby, Marx, McIntire, & Wienke, 2013), which requires years of consistent leadership, if an inclusive culture is to exist.

Special education law in the U.S. does not define inclusion. The author of this paper did not find a universal definition for inclusion in her research. Yet educators often define inclusion as children with disabilities receiving special education services in the regular education classroom. Lindsey, Jew, Thousand, and Piowski (2018) stated that inclusion is not mainstreaming, integration for physical and social access, or grouping marginalized students with typical. Rather, inclusion is a concept and vision that is supported by research. Yet cultures and religions perceive disability very differently and out of respect for cultural norms and traditions, international schools may not support the ideal of special education services, including inclusion (Shaklee, 2007, p. 273). Tarry and Cox (2014) indicated that sensitive and effective inclusion practices are not seen as a “plus point” for international schools—meaning providing special education services within an international school, whether in a general education (inclusion) classroom or elsewhere, is not attractive to potential applicants. Parents of typically developing children may consider children with disabilities in their typical child’s school as a detraction from their own child’s education. Yet Gallagher and Curtain (2018) emphasize that equality and inclusion do right by all by supporting all learners. Chan and Yuen (2015) found success in developing an inclusive school setting with international school educators, whole school culture, parents as partners, and individual teachers working together. International students do not just want inclusion; they want to belong. Inclusion of students with disabilities means that children with disabilities participate alongside peers without disabilities throughout the school day and in extra-curricular activities. However, when children with disabilities belong, they are integrated members of the school community; for example, they are missed when absent (Swinton, 2012). Bagnall (2014) stated all children struggle with “identify formation” and a sense of belonging. Children in international schools find it difficult to develop a sense of belonging as they lose touch with their origin and culture.

The *Next Frontier Inclusion* (n.d.) and the ISC (Gaskell; 2017; ISC, 2017) are the first two global reports on special education services in international schools. Both studies used an e-survey to collect data. Neither study noted their methodology, nor the ages of students the schools serve. Gaskell’s publication (2017) reflected upon a study done in 2016 by the Next Frontier Inclusion in partnership with the ISC. This initial study collected data from 584 international schools “about their approaches to inclusion and their provision for children



with learning differences” (p. 35). Gaskell (2017) states 80% of international schools are serving children with mild/moderate disabilities and 75.5% of children with high-functioning autism. Thirty-five percent of international schools follow an inclusive model and 25% have hired learning specialist consultants. Children receive services in the general education classroom (44%) and 5% receive services in a separate classroom (Gaskell, 2017). The ISC (2017) collected data from 415 international schools located in 88 countries. ICS (2017) indicated (a) “international schools are well on their way to inclusion” (p. 5), (b) more students with “learning needs” are being accepted (p. 6), and (c) “several schools are training locally-hired staff for sensory integration and occupational therapy services” (p. 8).

## METHODS

The first purpose of this study was to determine current practices in international schools as they relate to (a) the number of children with disabilities receiving services, (b) the types of disabilities represented, (c) the types of services, accommodations, and modifications provided, and (d) the special education training of those providing such supports. The first three research questions were:

1. What areas of disability do international schools serve?
2. What types of services, accommodations, and modifications do international schools provide to children with disabilities?
3. What training, if any, do international school special education teachers have?

The second purpose sought to learn how children with disabilities shape the lives of children without disabilities and to provide school educators a forum to share personal experiences about serving children with disabilities. The research questions were:

1. What do international school educators observe when children with disabilities and those without interact?
2. What stories do international teachers share about serving children with disabilities?

## Research Design

The researcher created an email database through an Internet search for international school organizations. Using Google®, she used search words such as *international schools*, *schools abroad*, and *expatriate schools*. From those searches, she searched for membership lists. The lists linked directly to school websites. From the website, she first searched for a director of an inclusion or special education program to ascertain an email address. If no director was found, she sought the *headmaster's*, *head of school*, or other lead administrator's email.

The researcher used a survey from a previous study focused on special education practices in Christian schools in the U.S. (Lane, 2017). At the beginning of the e-survey was a consent form and the definition of an international school as applied to this study. For potential participants who indicated their school did not meet the definition, the survey was closed. For those who indicated their school did meet the definition, participants were asked to identify disabilities served and service types using prepopulated (multiple choice) lists. To capture information about types of services provided and qualifications of special education staff, the survey included open-ended questions. To collect data for the second purpose of this study, participants were provided with open-ended questions regarding an experience with a child with disabilities and an experience with parents of a child with disabilities. Participants were asked to use pseudonyms when sharing their experiences. Using a list of 1000 emails, the researcher distributed one e-survey via SurveyMonkey™. She selected SurveyMonkey™ as it allows participants to translate the survey into their native languages and allowed her to translate responses.

Table 1  
*Participant Roles.*

Role	Number of Participants
Administration (e.g. superintendent, director, admissions director, counselor)	22
Special education (e.g. instructional support, learning support, resource teacher)	14
Regular education teacher	1
Office staff	1

Table 2  
*Country of Affiliation.*

<b>Affiliation</b>	<b>Participants</b>	<b>Affiliation</b>	<b>Participants</b>	<b>Affiliation</b>	<b>Participants</b>
America	14	England	10	Mission School	1
Australia	1	India	1	No Response	7
Canada	1	Japan	1	Turkey	1
Canada/UK/USA	1	Kuwait	1		

A critical research approach facilitated a discovery of the current mode of services provided. A critical research focus seeks to “query the context where learning takes place...the culture and institutions that shape educational practice” (Merriam, 2009, p. 35). Creswell (2013) stated critical research sheds light on the effects of current cultural views in education (p. 31). Data collected regarding disabilities served, service types, qualifications of special education staff was descriptive in nature which allowed the researcher to determine the current mode of services.

The second purpose of this study was to gather experiences from international school educators on how serving children with disabilities informs practice, and, in turn, shapes the lives of children without disabilities. A qualitative methodology with a narrative approach suited the second purpose. Qualitative research inherently changes or shapes current theory by allowing researchers to discuss the data collected to expand upon current knowledge (Merriam & Tisdell, 2016, pp. 88–89). A narrative approach allows individuals to express their experiences while researchers look for the

meaning it has for the participant (Creswell, 2013; Merriam & Tisdell, 2016). Using a narrative approach, the research in this study collected firsthand experiences in working with children with disabilities. The experiences were manually analyzed first, and then data was moved from codes, to categories, to themes (Saldana, 2016, pp. 14, 28).

## RESULTS

### Participants

A purposeful sampling procedure was used. There were 48 responses to the survey. All responses were provided in English. The first question asked if the participant’s school met the international school definition used in this study. Of the 48 participants, 81.25% or 39 met the definition. The survey closed for those whose school did not meet the definition. Of the 39 remaining participants, 79.48% or 31 served in non-faith-based international schools. Eight or 20.51% serve in faith-based schools. Table 1 reflects the 39 participants’ role within their school.

Table 3  
*Host Countries.*

<b>Host Country</b>	<b>Number</b>	<b>Host Country</b>	<b>Number</b>	<b>Host Country</b>	<b>Number</b>
Bahrain	1	Kazakhstan	1	Slovakia	1
Brazil	1	Kenya	1	Spain	1
China	4	Kuwait	1	Switzerland	1
Columbia	1	Malaysia	1	Tanzania	1
Dominican Republic	1	Nigeria	1	Thailand	1
France	1	Philippines	1	The Netherlands	1
Greece	2	Romania	1	Tunisia	1
India	1	Russia	1	Turkey	1
Indonesia	1	Serbia	1	UAE	3
Israel	1	Singapore	1	USA	1
Japan	3	South Korea	1		

Table 4  
*Areas of Disability Served.*

Area of Disability	Percent	Responses
Attention Deficit/Hyperactivity Disorder	94.12	32
Autism, including Asperger's syndrome	88.24	30
Hearing Impaired, including deafness	35.29	12
Vision Impaired, including blindness	11.76	4
Intellectually Disabled, including mental retardation	32.35	11
Physically Disabled	32.35	11
Learning Disability, including dyslexia, dysgraphia, dyscalculia	91.18	31
Speech and Language Disorder	88.24	30
Traumatic Brain Injury	2.94	1
Emotionally Disabled (e.g., depression, anxiety)	73.53	25
Other: Children with multiple disabilities	17.64	6

The survey provided a textbox for participants to report their country of affiliation. Participants reported 10 different countries of affiliation. Table 2 reflects the international schools' country of affiliation as noted in the textbox. Country of affiliation reflects the curriculum and/or culture of the school.

Participants reported 33 different host countries. The host country is the country in which the school is located. Table 3 reflects the host country of the international school participants. China, the United Arab Emirates (UAE), Japan, and Greece were the most common.

Participants were asked if their schools knowingly accepted children with disabilities. Ninety-two percent (92.31% or 36) of participants said their school knowingly accepted children with disabilities. Almost eight percent (7.69% or 3) said they do not knowingly accept children with disabilities. Yet all 39 participants responded to areas of disability served, as shown in Table 4.

Table 4 categories were selected based on the author's previous research in private schools. She found private educators often unfamiliar with or confused by disability categories. Therefore, she selected categories often identified by private educators (Lane, 2017; Lane & Jones, 2015a, 2015b). In addition, not all countries recognize the same areas of disabilities as the U.S. Special education research in international schools is sparse, however, and the categories selected are reflected in the only international school special education reports found (Gaskell, 2017; ISC, 2017). Participants received a list and selected all that apply. Participants were also provided with an "other" textbox. "Other" responses

that align with one of the categories listed were added to the total number of the given category. All "other" responses reflected children who have multiple disabilities. Thirty-four participants responded.

Table 5  
*Valuing children with disabilities.*

Rating	Percent	Responses
Not at all	0.00	0
A little bit	3.33	1
Some	23.33	7
Quite a bit	43.33	13
A tremendous amount	30.00	9

Participants were asked, "Does your school value having children with disabilities as students." A Likert scale was used. Table 5 reflects the 30 responses.

Table 6  
*Qualified special education teaching staff.*

Status	Percent	Responses
Full-time	76.47	26
Part-time	11.76	4
No one on staff	11.76	4

Table 7  
*Special Education Setting.*

Setting	Percent	Responses
Regular education classroom ONLY by regular education teacher	44.12	15
Regular education classroom by a special education teacher	64.00	23
A separate classroom for a portion of the school day	82.35	28
A separate classroom for the entire school day	5.88	2

Thirty-four of the participants responded to questions concerning special education staff qualifications. Participants were asked if they employ “formally trained special education teachers.” Data regarding special education staff training is reflected in Table 6.

Table 7 reflects in what educational setting special education services are provided and by whom. Participants were asked, “Where and by whom are special education services provided? Check all that apply.”

Using a Likert scale, participants rated how prepared staff felt to serve children with disabilities. Table 8 reflects 34 participants’ perspective on staff preparedness.

Table 8  
*School Staff Preparedness.*

Criteria	Percent	Responses
Prepared	11.76	4
Somewhat prepared	73.53	25
Not prepared	14.71	5

Educators often use the terms *accommodation* and *modification* interchangeably. However, the definition of each distinguishes them. To ensure responses reflected the distinction, the researcher asked participants “what types of accommodations and modification are provided to children with disabilities” and provided a list of examples. Participants were asked to check all that apply. There were 34 participants who completed the question. Table 9 reflects modification and Table 10 reflects accommodations.

Table 9  
*Modifications Provided.*

Modifications	Percent	Responses
Shorten assignments	85.29	29
Use a different grading rubric	52.94	18

Ten participants added modifications and accommodations in the “other” textbox. Two replied “many more,” one indicated “differentiation,” one participant indicated “1:1,” and two stated “modification of work.” Four indicated that special education services include occupational therapy, physical therapy, and speech and language services. Lastly, two participants indicated they use a formal evaluation by a school psychologist to guide their support services. One participant indicated that providing accommodations or modifications does not meet the criteria for graduation.

The last two questions asked about professional development of staff. Table 11 demonstrates whether professional development has been provided to support children with disabilities. Seven of the 34 respondents indicated no special education professional development occurred in their school, even though they serve children with disabilities. Of the remaining 27 respondents, special education professional development had occurred within the previous 12 months.

Participants were asked, “what type of special education training would you like to have at your school?” Many respondents indicated more than one area. Responses were first sorted and then five themes were identified. By far, respondents indicated the desire to have training in strategies for working with children with disabilities. Table 12 reflect the five themes and number of responses for each.

### Second Purpose

The second purpose of this study was to gather experiences from international school educators. These experiences help to inform practice and reveal how the lives of children are shaped and influenced by international school settings while providing insights into best practices. To inform the second purpose of this study, the survey invited participants to share their observations of how children with and without disabilities interact throughout the school day. The observations demonstrate how children with disabilities fit within the



Table 10  
*Accommodations Provided.*

Accommodations	Percent	Responses
Small group instruction	100.00	34
Extra time on tests	94.12	32
Preferential seating in the classroom or for tests	94.12	32
Use of technology (e.g., providing student with a computer)	91.18	31
Use of a calculator	88.24	30
Sensory tools (e.g., exercise band, ability to stand while working)	85.29	29
Providing lecture outline or PowerPoint slides	76.47	26
Sharing of class notes	73.53	25
Audio books	67.65	23
Dictate responses	61.76	21
Enlarged text	52.94	18

school culture and inform how teachers influence acceptance. The researcher coded the 30 responses about interactions between children with and without disabili-

ties. Once coded, she identified three themes: (a) culture of belonging, (b) support systems, and (c) admissions limitations.

to this earth to open up to others, to serve them and receive the gifts they bring to us, as well as to all of humanity (p. 36).

Table 11  
*Professional Development.*

Professional Development	Percent	Responses
Within the last three months	26.47	9
Within the last six months	14.71	5
Within the last 12 months	14.71	5
More than one year ago	23.53	8
None	20.59	7

Nine participants observed a culture of belonging as defined above. Thick descriptions from participants included, “We have such a high percentage (27%) [of children with disabilities] that other kids think it [children who learn differently] is normal.” “The students are just part and parcel of the school.” “As a small yet highly diverse school, we are fortunate to have a very welcoming and hospitable culture.” “All children are fully included in the school program...great stress is given to treating all as equal and accepting each other’s differences.” Others shared, “children with learning differences interact with others without stigma nor special attention,” “students are included in all that they do,” and “in the elementary school the children interact seamlessly.”

**Culture of Belonging**  
 Belonging is defined by Vanier (1998):

...belonging should be at the heart of a fundamental discovery: that we all belong to a common humanity, the human race. We may be rooted in a specific family and culture but we come

Table 12  
*In-Service Topics.*

In-Service Topic	Responses
Strategies for working with children with disabilities	23
Differentiation	12
Specific area of need (e.g., SLD, autism, gifted and talented)	7
Assessment tools	4
None needed	4

### ***Social Emotional Support Systems***

Fourteen participants described social emotional support systems. “Socio-emotional support is also provided,” and “small group activities, in the classroom, guided playtime during breaks, guided social and communications sessions” are part of the school day. Students are “supported in and out of the regular classroom according to their needs,” “encouraged and supported to engage meaningfully in and out of class,” and “[We] also serve a small number of children who will never be able to mainstream, [and we] involve them in every way possible whether in regular classes or in after-school activities.”

### ***Admission Limitations***

Only two participants reported limitations in the students they can serve. “We don’t have the facilities for accepting those with physical disabilities—no lifts on several floors.” “We do not accept students with severe disabilities [because] we lack the infrastructure to provide them services.”

### ***Experiences***

The survey asked participants to share at least one experience about a child with disabilities and then another experience about their relationship with parents of a child with disabilities. Most participants reflected on the same child for each experience. Participants were asked how children with disabilities and their parents (a) challenge their thinking and their approach, (b) caused them to change their pedagogy, and (c) changed their views about including children with disabilities. Twenty-eight participants responded.

Five experiences reflected on the need to remove a child from school or described how a child’s experience moved the school to amend support for future students.

1. “We have a student who faces severe emotional difficulties. She has meltdowns, tantrums, and uses inappropriate language often. Peers are weary of interacting with her, [other] parents are often frustrated with the language their children have heard. She often refuses to leave the room during a meltdown, instruction stops, and peers are affected. There are instances of her running out of class and the 1:1 shadow teacher struggles to locate her... We have reached a dead-end with interventions... As a school we strive to support students with mild to moderate disabilities, but at this point she exceeds the level of support we can offer.”

2. “We extended our program to accept a student who was severely disabled, cognitively. It was his first time in a mainstream environment. It was a trial basis and he had a one-to-one teacher (paid for by the family), but his family was inconsistent with his medication, and as a result, he tried to sexually assault another student and his enrollment at our school was terminated.”

Twenty-three participants stated how a student changed their perspective and/or how perseverance and open-mindedness created a pathway for success.

1. “Peter joined the school in 2016, when I also began my role as head of department in the school. Peter has Down syndrome....when we joined our school he was placed in the year below....as it was thought he couldn’t access the IB curriculum...this being my first role as head of department and with working with students with severe needs, I was not a good advocate for Peter. I learnt that schools need to have well-qualified and experienced teachers and an open mind to inclusion. I wish I could do it all over again...” [Due to Peter’s visual disability, the head of the department treated Peter differently than those with hidden disabilities (e.g., learning disabilities)].
2. “Short version of a very long experience. Grade 5 student on autistic spectrum was being counseled out of the school before entry to Grade 6. School director felt this was the wrong thing for the school to do. Within 18 months the student was flourishing in grade 7 and the school completely changed mission. Leadership, including board chair, attended professional workshops on inclusion. Increased staffing of specialists, changed profile of core teachers, so they were all learning support aware and then trained. School director took sabbatical and studied MCs [assumed acronym aligns with special education] in inclusive education.”
3. “Sam had extreme ADHD and anger/issues. He also entered school with English language learning issues. He was violent and his mother was afraid of him...Sam hit students and teachers and was regularly restrained...father was quickly apprised that Sam must have adaptive behavior approach therapy (ABA) and a diagnosis of any underlying issues... in the second half of grade 2 he was diagnosed... he began ABA therapy...could not take medication due to his small size...spent much of his learning

time in in-school suspensions...we chose to keep him in grade 3 hoping he would be able to begin medication...he started medication along with counseling and ABA therapy and he is thriving!! He is extremely intelligent and is nearing the top of every chart in the classwork and [his social work is improving too]. The Grade 3 parents cannot believe the change and have embraced the boy they thought should be expelled.”

4. “Tom is a Romanian 16 year old boy with Asperger’s syndrome who came to our school when he was 7. He was placed in year 2 due to his social and communication low skills...we were worried that we would not be able to support his inclusion on a long term due to the level of stress induced on staff and peers. We customized our interventions and we trained the staff as Tom was the first child with special needs in our school. In time, through consistency and teamwork with his parents, Tom’s behavior was steadily improving and now he is in year 10. His successful experience gave us confidence to expand our department and to be able to offer support to our children with special needs.”
5. “Our learning department was created 3 years ago. Within that time, we are now serving the needs of 34 students with diagnosed special education needs and another 12 who are at risk. Although we are a small school, we are the only school who offers extensive learning support to special education students in the region, [including] public, private or international.”

## DISCUSSION

### Disabilities Served

Children with high-incidence disabilities as categorized within the U.S. as having (a) learning disabilities, (b) speech and language impairments, and (c) other health impairments (e.g., attention deficit/hyperactivity disorder (AD/HD)), and (d) high-functioning autism, are most represented in international schools, as reflected in Gaskell (2017) and ISC (2017). Gaskell (2017) stated that 80% of international schools serve children with mild to moderate disabilities, and 75.7% of participants serve children with high-functioning autism spectrum disorder. The ISC (2017) stated 415 schools reported serving children with (a) reading, writing, and math challenges (94.20%), (b) speech and language challenges (86.23%), (c) AD/HD and/or executive functioning (89.37%), and (d) high-functioning autism

(81.64%). Children with AD/HD and other educational disabilities, including learning disabilities, often have executive functioning delays. Therefore, duplication may appear across areas of disability described in the ISC (2017). In the current study, disabilities served appears to align with Gaskell (2017) and ISC (2017). However, due to varying categorical word choices in each of the studies, a statistical correlation cannot be drawn.

### Service Delivery Models

The survey used in this study examined four service delivery models to participants. The findings reflect that 82.35% of participants use a pull-out model (e.g., children leave the regular education classroom to go to a special education resource room to receive services). However, participants reported that 44.12% of regular education teachers serve children with disabilities in their regular education classrooms. The finding raises the question of whether regular education teachers have training to serve children with disability.

The ISC (2017) supports this study’s findings. A combination of (a) collaboration, (b) co-teaching, (c) push-in (e.g., children with disabilities being instructed in the regular education classroom with special education services coming to the classroom), and (d) the use of a multitiered system of supports comprised services for 82.85% of students with special needs based upon participant responses. In the current study, 5.88% of the international schools placed children in a separate classroom for the entire school day. In contrast, the ISC (2017) indicated that 0% of participants used a special day class.

### Qualified Staffing

The responsibility for supporting children with disabilities belongs with all school staff. In this study, participants described their school staff as (a) prepared (11.75%), (b) somewhat prepared (73.53%), and (c) not prepared (14.71%) to support children with disabilities. Participants also reported on staff members who are professionally trained in special education. Participants reported that 88.23% of their schools’ special educators were professionally trained; 76.47% of them were full-time and 11.76% were part-time. This contradicts the ISC (2017) findings that only 36.32% of special education staff are trained.

### Professional Development

The current study inquired into professional development practices of international schools. Fabian (2016) determined that teachers need a wider variety of

pedagogical strategies to equip students to participate more in planning and executing their own learning. Meanwhile, Chen and Yuen (2015) concluded that a “committed and knowledgeable support team” is needed to support students with special needs (p. 94). Since there is no preexisting data for comparison, findings from the current study were compared to that for U.S. Christian schools (Lane, 2017). Like international schools, many U.S. private schools are not obligated—or publicly-funded—to provide special education services. Per Lane and Jones (2015a), professional development in U.S. Christian schools occurs on average in K–12 schools far more often than that in international schools during a six- or 12-month period. Less than 15% of international schools offered professional development in the previous six months, compared to 22.3% of U.S. Christian school participants. In the preceding 12 months, 14.71% of international school participants indicated professional development around special education had occurred, compared to 23.18% of U.S. Christian schools. However, relative comparisons appear when considering the previous three months, whether training occurred more than once a year, and in the proportions of those who provided no professional development. Table 13 reflects the comparisons between this study and the study completed by Lane and Jones (2015b).

International school studies that reflect upon special education express concerns about the ability to serve children with disabilities. Sperandio and Klerks (2007) found that 79% of teachers do not feel children with disabilities can succeed in international schools. Gabor (2010) and Shaklee (2007) concur there is a lack of resources to support children with disabilities in international schools that reinforce Sperandio’s and Klerks’ (2007) findings. Rose and Forlin (2010) found international school professional development training demonstrates greater understating, satisfaction, knowledge, and overview of disability. The ISC (2017), along with the current study, considered the types of professional development training desired by international school

educators. In the current study, 35 (92.1%) participants requested pedagogical trainings while 70.07% of participants in the ISC (2017) requested the same. The other areas identified in the current study—(a) specific disability training, (b) assessment tool training, and (c) no training needed—are unique to this study.

### Valuing Children with Disabilities

Previous literature omits how international school educators value children with disabilities. However, Skelton (2016) states, “Many of the repeated experiences students have in school occur in the disposition, attitudes, and behaviors of teachers and others towards students’ own daily struggles to learn” (p. 75). Anati and Ain (2012) concluded to effectively include children with disabilities, teachers must understand the value of serving children with disabilities. In the current study, 73.33% of participants indicated that children with disabilities are valued “quite a bit” or “tremendously.”

Similarly, the ISC (2017) found that 61.11% of participants identified inclusion as an ethos in their schools (p. 12). To validate the value of children with disabilities, the current study asked educators to share experiences on how children with disabilities have informed practice in international schools. Twenty-three (76.66%) of the 30 responding participants reflected upon children and families that have positively impacted their schools and changed practice. One may conclude, schools that self-identify as valuing children with disabilities reflect that value in daily practice.

### CONCLUSION AND RECOMMENDATIONS

International schools serve children with special needs (Anati & Ain, 2012; Brown & Bell, 2014; Fabian, 2016; Gabor, 2010; Gaskell, 2017; ISC, 2017; Lane & Jones, 2016; Next Frontier Inclusion, n.d.; Shaklee 2007; Skelton, 2016; Sperandio & Klerks, 2007). Yet, no research reflects special education practices applied in these schools. Gaskell (2017), the ISC (2017) and this study represent the only three global studies that

reflect on student enrollment, areas of disabilities served, professional staffing, and professional development in international schools.

Gaskell (2017) and the ISC (2017) have reported the largest participant pool regarding disability in international schools. Most international school special education literature reflects upon small participant pools and

Table 13  
*Professional Development Comparison.*

Professional Development	International	U.S. Christian Schools
Last three months	26.47%	20%
More than one year	23.53%	26.3%
None	20.59%	18.8%



a single country, region, or school site. Although the current study has a small participant pool, it provides a global perspective on current practices in special education in international schools and provides comparisons with Gaskell (2017) and the ISC (2017).

This study expands on the understanding of how children belong and are valued, moving beyond a simple measurement of whether or not they are simply included in the school. Experiences shared by participants indicate international school representatives find value in children with disabilities. Participants reflected upon their own learning and how their students interact with one another without passing judgement. Participants reflected on their schools' culture and the systems in which they work to create a community of belonging and academic success for all. Participants realize there is still much to learn, but they are moving forward. "Small international schools like ours walk a fine line between believing in including and actually being able to properly serve the needs of children with special learning needs. We operate with optimism, hope, good will, and the collective professionalism of staff. We still have a long way."

Future research should strive to understand international schools' special education and inclusive practices on a global, country, regional, and school-site level. Research should include (a) special education practices compared to the country's cultural view of disability, (b) the value the host country places on disability and how families enrolled in the school view disability, (c) special education services within the host country's national education system compared to the international school's practices, (d) international school staff members' understanding of cultural reciprocity around disability compared to their student population, and (e) partnerships with local specialists who provide disability services to international schools.

With the growing awareness and need for special education services in international schools, educators must make strategic steps to create effective and sustainable programs. These strategic steps must include the cultural shift towards the goal of fostering belonging and valuing of children with disabilities while acknowledging potential challenges in serving children with disabilities. International school boards, administrators, staff members, and parents of children attending international schools must realize that ethnicity and country of origin are only one aspect of diversity. All children learn differently, and all children can be taught with expertise, understanding, compassion, and patience.

## REFERENCES

- Anati, M. M., & Ain, A. (2012). Including students with disabilities in UAE schools: A descriptive study. *International Journal of Special Education, 27*(2), 75–85. <https://eric.ed.gov/?id=EJ982862>
- Bagnall, N. (2014). A member of that team: International school students and their need to belong. In D. P. Hobson, & I. Silova (Eds.), *Globalizing minds: Rhetoric and realities in international schools* (pp. 99–114). Charlotte, NC: Information Age.
- British Columbia Ministry of Education. (2020). *Inclusive education resources*. <https://www2.gov.bc.ca/gov/content/education-training/k-12/teach/teaching-tools/inclusive-education>
- Brown, J., & Bell, S. (2014). Supporting young people with dyslexia in international schools: A case study example of current provision in Southeast Asia. *International Schools and Dyslexia, 29*(2), 154–166. doi:10.1111/1467-9604.12054
- Bunnell, T. (2016). Managing the role stress of public relations practitioners in international schools. *Educational Management, Administration, & Leadership, 34*(3), 385–409. doi:10.1177/174114320606527
- Caffyn, R. (2011). International schools and micropolitics: Fear, vulnerability, and identity in fragmented space. In R. Bates (Ed.), *Schooling internationally: Globalisation, internationalisation and the future for international schools* (pp. 59–82). Abingdon, England: Routledge.
- Chan, T., & Yuen, M. (2015). Inclusive education in an international school: A case study from Hong Kong. *International Journal of Special Education, 30*(3), 87–97. <https://eric.ed.gov/?id=EJ1094933>
- Cobb, C. (2015). Principals play many parts: A review of the research on school principals as special education leaders (2001–2011). *International Journal of Inclusive Education, 19*(3). doi:10.1080/13603116.2014.91634
- Creswell, J. W. (2013). *Qualitative inquiry and research design: Choosing among five approaches*. Thousand Oaks, CA: SAGE.
- Danzot, M. M., & Evans, M. R. (2016, June). Speaking out. *The Foreign Service Journal*. <https://www.afsa.org/supporting-fs-families-special-needs-children>

- Fabian, J. (2016). A pedagogy for international education. In M. Hayden, & J. Thompson, (Eds.), *International schools: Current issues and future prospects* (pp. 85–103). Oxford, England: Symposium Books.
- Gabor, G. (2010). Can students with dyslexia be effectively supported in the diversity of an international school setting? *Journal of Research in Special Education, 10*(1), 31–41. doi:10.1111/j.1471-3802.2009.01141.x
- Gallagher, S., & Curtain, T. (2018). *Serve the need, not the label: Highly able learners in international schools*. The Next Frontier Inclusion.
- Gaskell, R. (2017, Spring/Autumn). International schools “moving towards inclusion.” *Curriculum, Learning, and Teaching, 37*–38. <https://www.john-cattbookshop.com/>
- Haight, B. (2018). Inclusion sooner said than done: Improving special education support in international schools. *The International Educator, 38*. <https://www.tieonline.com/article/2450/inclusion-sooner-said-than-done-improving-special-ed-support-in-international-schools>
- Hansuvadha, N., & Slater, C. L. (2012). Culturally competent school leaders: The individual and the system. *The Educational Forum, 76*(2), 174–189. doi:10.1080/00131725.2011.653094
- Hayden, M., & Thompson, J. (2016). *International schools: Current issues and future prospects*. Oxford, England: Symposium Books.
- Hobson, D. P., & Silova, I. (2016). The pedagogy and politics of global citizenship in international schools: Setting the context. In D. P. Hobson, & I. Silova (Eds.), *Globalizing minds: Rhetoric and realities in international schools* (pp. 3–14). Charlotte, NC: Information Age.
- International School Collaborative. (2017). *Inclusion in International Schools Global Survey 2017*.
- Lane, J. M. (2017). Special education staffing and service models in Christian schools. *Journal of Research in Christian Education, 26*(3), 225–236.
- Lane, J. M., & Jones, D. R. (2016). Inclusion in international schools: A study of theoretical principles, ethical practices, and consequentialist theories in school administrators. *Journal of Psychology Research, 5*(6). doi:10.17265/2159-5542/2016.05.004
- Lane, J. M., & Jones, D. R. (2015a). Special education professional development in Christian schools. *Journal of the Christian Institute on Disability, 3*(2), 45–68. doi:10.1080/10656219.2015.1100566
- Lane, J. M., & Jones, D. R. (2015b). Child find practices in Christian schools. *Journal of Research on Christian Education, 24*(3), 212–223. doi:10.1080/10656219.2015.1100566
- Lindsey, D. B., Jew, C. L., Thousand, J. S., & Piowski, L. R. (2018). *Culturally proficient inclusive schools: All means all*. Thousand Oaks, CA: Corwin.
- Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation* (2nd ed.). San Francisco, CA: Wiley.
- Merriam, S. B., & Tisdell, E. J. (2016). *Qualitative research: A guide to design and implementation* (4th ed.). San Francisco, CA: Jossey Bass.
- Next Frontier Inclusion. (n.d.). *Next Frontier Inclusion*. <http://www.nextfrontierinclusion.org/>
- Rose, R., & Forlin, C. (2010). Impact of training on change in practice for education assistants in a group of international private schools in Hong Kong. *International Journal of Inclusive Education, 14*(3), 309–323. doi:10.1080/13603110802504895
- Saldana, J. (2016). *The coding manual for qualitative researchers*. Thousand Oaks, CA: SAGE.
- Shaklee, B. D. (2007). Focus on international schools: Serving students with learning disabilities. In T. E. Scruggs, & M. A. Mastropieri (Eds.), *International perspectives* (pp. 265–283). Amsterdam, the Netherlands: Elsevier.
- Skelton, N. (2016). What are international schools for? In M. Hayden, & J. Thompson, (Eds.), *International schools: Current issues and future prospects* (pp. 71–83). Oxford, England: Symposium Books.
- Sperandio, J., & Klerks, J. (2007). Leadership challenge: Blending inclusive special needs provision and reform of teaching methodology in a Dutch international school. *International Journal of Special Education, 22*(2), 140–149. <https://www.learntechlib.org/p/60827/>

Stobie, T. (2016). The curriculum battleground. In M. Hayden, & J. Thompson, (Eds.), *International schools: Current issues and future prospects* (pp. 53–70). Oxford, England: Symposium Books.

Swinton, J. (2012). From inclusion to belonging: A practical theology of community, disability and humanness. *Journal of Religion, Disability & Health*, 16(2), 172–190. doi:10.1080/15228967.2012.676243

Tarry, E., & Cox, A. (2014). Professional development in international schools: Issues of inclusion identified by group of international school teaching assistants. *Journal of Research in Special Educational Needs*, 14(4), 248–254. doi:10.1111/1471-3802.12024

Tate, N. (2016). What are international schools for? In M. Hayden, & J. Thompson, (Eds.), *International schools: Current issues and future prospects* (pp. 17–36). Oxford, England: Symposium Books.

United Nations Educational, Scientific, and Cultural Organization. (2019). *On the road to inclusion: Highlights from the UNICEF and IIEP Technical Round Tables on Disability-inclusive Education Sector Planning*. UNESCO Digital Library. <http://www.iiep.unesco.org/en/road-inclusion-13270>

United Nations Educational, Scientific, and Cultural Organization. (2018). *Education and disability: Analysis of data from 49 countries*. UNESCO Digital Library. [http://uis.unesco.org/sites/default/files/documents/ip49\\_education-disability-2018-en.pdf](http://uis.unesco.org/sites/default/files/documents/ip49_education-disability-2018-en.pdf)

Vanier, J. (1998). *Becoming human*. Mahwah, NJ: Paulist Press.

Walker, G. (2016). International schools and international curricula. In M. Hayden, & J. Thompson, (Eds.), *International schools: Current issues and future prospects* (pp. 37–51). Oxford, England: Symposium Books.

Whitby, P. J. S., Marx, T., McIntire, J., & Wienke, W. (2013). Advocating for students with disabilities at the school level: Tips for special education. *TEACHING Exceptional Children*, 45(5), 32–39. <https://journals.sagepub.com/home/tcx>

# A Preschool Curriculum-based Pre-referral Screening: The Role of Body and Movement

Panagiotis Varsamis

University of Macedonia, Greece

Anastasia Gkouvatzis, Andromachi Nanou, Ioanna Ntarilli, and Magdalini Simeonidou

A' Center of Differential Assessment, Diagnosis and Support, Thessaloniki, Greece

## Abstract

*The purpose of the present study is to examine the properties of a curriculum-based pre-referral screening tool. According to the current Greek preschool curriculum, preschoolers' participation is evaluated across five core axes, namely Play, Routines, Daily Activities, Explorations, and Organized Activities. Teacher evaluations sorted 201 preschoolers into one of three groups: (1) referred to a pre-referral intervention program, (2) referred to an educational diagnosis process, or (3) not referred at all. Classification And Regression Tree (CART) analyses revealed that teachers' ratings on the tool can correctly predict the pupils' membership to both of the pre-referral and not referral groups. In fact, depending on the targeted group, prediction accuracy ranged as high as 85% to 100%. The inclusion of participation in activities requiring fine motor skills and body relaxation increased the prediction rates to 97.5% for both groups.*

Keywords: *early childhood education, motor skills, screening tool, prediction, teachers*

## INTRODUCTION

The modern sense of the term *early screening* describes all those systematic assessment processes based on predefined criteria used to identify preschool and elementary pupils who merit support before their special education needs referral (Hayes, Dombrowski, Shefcyk, & Bulat, 2018). Referring school-aged children for a formal diagnosis is only the final step of a multi-staged process. An official diagnosis then specifies any underlying disability, identifies the related Special Education Needs (SEN), and determines the eligibility for and/or provision of special education services. At the same time, SEN definitions and referral processes may vary across countries and states (Boh & Johnson, 2018; Küpper & Kohanek, 2000; Smeets & Roeleveld, 2016; Wallace, 2018). The illustrated approach, despite focusing on determining the difficulties in the development and functioning of pupils, is clearly influenced by the notion of Responsiveness to Intervention (RTI; Fox, Carta, Strain, Dunlap, & Hemmeter, 2010). RTI, among other premises, requires pre-existing detrimental teaching practices and other negative environmental influences to be minimized before referring a pupil for diagnosis (Hayes et al., 2018). Such actions fall into theory-driven decision flowcharts, which may vary in accordance with the current trends and needs of each country (Bagnato, Neisworth, & Pretti-Frontczak, 2010).

Early screening is a school-based process. Recent decades fostered alternative forms for the evaluation of pupils' difficulties, such as the Authentic Assessment (Andrade, 2005), Curriculum-Based Measurements (Bagnato, 2005), the Ecosystemic Needs Assessment (Jasmin, Tétreault, & Joly, 2014), the Individual Growth and Development Indicators (Carta, Greenwood, Walker, & Buzhardt, 2010), the Phonological Awareness Literacy Screening-Kindergarten (Invernizzi, Juel, Swank, & Meier, 2003), and assessments drawing on the World Health Organization's (WHO) biopsychosocial model (Guichard & Grande, 2018; WHO, 2007). Concretely, curriculum-based approaches for educational assessment and pre-referral support are increasingly attracting attention as they are more meaningful to school communities than classic psychometric approaches. Their advantage is that they are equally comprehensive to students, teachers, parents, counselors, and specialists (e.g., therapists), and that they create a common ground for educational and instructional decisions. Unlike classic measurement techniques, curriculum-based approaches allow pupils' strengths and weaknesses to be evaluated within the classroom's educational, social, cultural, and other contexts while attributing high ecological validity to evidence-based estimations. Consequently, early screening largely uses observation and recording data of the children's behavior and interaction. These data are then systematized and communicated to parents and/or school counselors to decide on early interventions.



The contemporary Greek preschool curriculum is oriented in this direction. The curriculum focuses on preschoolers' daily activities and routines, thus facilitating authentic assessment. It includes five basic competence axes: Play, Routines, Daily Activities, Explorations, and Organized Activities in five learning areas (Language, Mathematics, Natural Sciences, Arts, and Physical Education). In this way, a wide range of learning, emotional, and social competences is covered in preschool. Body awareness and image, physical movement, expression, and so on are included in the Greek preschool curriculum, endorsing the role perceptual-motor skills play in child development (Hauf & Libertus, 2017; Lindt & Miller, 2017).

Although the significance of motor skills and physical performance for the preschoolers' entire developmental progress is well-documented, the integration of body awareness and motor functions in brief preschool screening is still scarce (Cools, Martelaer, Samaey, & Andries, 2009; Rehtik, 2018; Zeng et al., 2017). Actually, many contemporary school-based screening approaches do not assess preschoolers' participation in exploring the environment through movement and motor skills (Adolfsson, Sjöman, & Björck-Åkesson, 2018; Compton et al., 2010). Of course, gross and fine motor skills measures can be found in exhaustive early childhood screening tools and/or standardized assessment batteries (Hwang et al., 2015). However, only recently have scientists suggested universal screening tools, which contained aspects of body and motor development (Boh & Johnson, 2018; Wallace, 2018).

In Greece, some standardized early detection tools (Toki, & Pange, 2012) are used by the Centers of Differential Assessment, Diagnosis, and Support of special education needs (CDADS) and other certified assessment centers (Eurydice, 2020). However, the few available screening tools for preschool education, either (a) come in the form of long, time-consuming questionnaires, or (b) require individual tests that cannot detect large numbers of pupils. Moreover, all the standardized screening tools demand teacher training. This is very difficult due to the economic crisis that has afflicted Greece for the past decade, which has resulted in drastic cuts in funding for more user-friendly detection tools and teacher training on these tools (e.g., Vergeti & Giouroglou, 2018).

In Greece, preschool education is part of primary education. Attendance in this pre-primary school, i.e., kindergarten, is compulsory and lasts two years (Eurydice, 2020). Most kindergartens in Greece are public schools. The national preschool curriculum is the Early Child-

hood Curriculum, also known as the Cross-Thematic Curriculum Framework for pre-primary school. This curriculum promotes project-based learning, thematic learning, and participation in activities. It includes objectives, which are organized in five major learning areas. Teachers are guided to use formative assessment and student portfolios (Birbili & Myrovali, 2019).

The first (henceforth stated as A') CDADS of Thessaloniki is a public authority that provides services for the screening, diagnosis, and support of pupils in the eastern region of Thessaloniki; it has built a screening tool for preschool teachers. This tool was developed in cooperation with teachers and addressed the assessment difficulties they face. The main purpose was to design and implement a pilot screening tool that would assess preschoolers' participation across the five main curriculum axes. The tool was directly related to curriculum content on the grounds that the latter provide preschool teachers, school counselors, and parents alike with a common basis for the education, evaluation, and support of preschoolers. Furthermore, the relatively low use of standardized detection tools by the preschool teachers was taken into account.

For the purpose of this study, an authentic assessment rubric was developed in cooperation with preschool teachers. In its final form, the tool should be fully understood by preschool teachers and it should classify preschoolers according to their participation level in the required activities. Accordingly, the main research question is whether this curriculum-based tool can accurately identify preschoolers who merit pre-referral support or not. Moreover, the researchers assume that participation forms rooted in body and movement will significantly contribute to preschoolers' classification. More specifically, preschool teachers are expected to consider aspects of body and movement as they express their intentions for pre-referral support.

## METHODS

### Sample

For the purpose of the present study a convenience sampling method was used. Thus, a non-probability sample is taken from the schools served by A' CDADS of Thessaloniki (Patton, 2015). Consequently, a relatively small sample of preschoolers was chosen to serve the pilot purpose of the study. The sample consisted of preschoolers who were evaluated by the A' CDADS of Thessaloniki within the annual early screening framework. To gain data of pupils with different participation levels, the researchers gathered teachers' ratings for preschoolers who had already been diagnosed as

well. These preschoolers had a formal diagnosis from the A' CDADS of Thessaloniki, which uses standardized individual tests for diagnosis purposes. In total, 201 preschoolers were examined, namely 128 boys and 73 girls aged between 5 and 6, who attended state preschools in Eastern Thessaloniki. According to the preschool teachers, 116 (58%) of the pupils had already been diagnosed by an official special education or medical authority. Forty-seven (23%) preschoolers merited support before their final referral (high-risk group), while the rest of them ( $n = 38$ , 19%) did not (low-risk group). Boys represented the largest percentage of the diagnosed preschoolers (72%), as well as in the high-risk group (68%), while at the same time they were the minority in the low-risk group (34%,  $\chi^2(2) = 17.77$ ,  $p < .001$ ). According to the teachers, diagnosed preschoolers belong to the following categories: "Other Difficulties" category (35%, meaning other mild or other non-classifiable special education needs), "Pervasive Developmental Disorders /Autism Spectrum Disorders" (27%), "Speech disorders" (18%), "Attention-Deficit/Hyperactivity Disorder" (8%), "Physical and/or Neurological Disabilities" (6%), and other disabilities, such as chronic illnesses and emotional disturbances (6%).

### Materials

A group of four expert SEN preschool teachers working at A' CDADS of Thessaloniki was set up to develop the screening tool. These CDADS members have much teaching and assessing experience and a master's degree in special education. The group drew on the contemporary preschool curriculum to: (a) define the contents of the detection tool, and (b) determine the answer-scoring rubric. In this endeavor, the team collaborated with an equal number of teachers working in collaborating preschools. The contents of the detection tool include all the key curriculum axes, while the response rubric covers six combinations of preschoolers' participation and preschool teachers' mediation. Each one of these combinations, i.e., levels, contains a comprehensive description. For example, Level 2 requires qualitative and/or quantitative participation only after the teacher mediates/ facilitates and the preschooler participates. The tool was named Pupils' Participation Assessment Protocol (hereafter mentioned as PPAP) in preschool and was developed in Greek.

Each of the 37 items stemmed from the five curriculum's axes, i.e., Play (15 items; e.g., compliance with rules, gross/fine motor skills), Routines (seven items; e.g., group plenary sessions, relaxation time), Daily Activities (five items; e.g., educational visits, instrumental

writing and reading), Explorations (five items; e.g., asking questions, experimenting), and Organized Activities (five items, namely language, arts, math, science, and physical education). These five axes are abbreviated as A1 to A5 respectively (cf. tables and figures). Each of the 37 variables represents a typical activity proposed by the preschool curriculum. Furthermore, four factors derived by an exploratory factor analysis of the 37 items were calculated, as well as the total average of the preschoolers' participation (see Results section). Finally, the researchers calculated the Intra-Individual Standard Deviation (IISD) of every pupil both between the main axes, and between the factorial analysis factors. Actually, IISD is an integration measure of the pupils' forms of participation (Varsamis, Staikopoulos, & Kartasidou, 2012). A large deviation between the values, especially among low-functionality preschoolers, may imply disintegration or fragmentation of participation forms (Milyavskaya et al., 2009).

### Procedure

According to the legislative framework determining the operation of A' CDADS of Thessaloniki (Law 3699/2008, cf. O.G.G. 199/A', Art. 4, Par. 2A,) as a public authority for the screening, diagnosis, and support of pupils, the researchers collected the preschool teachers' assessments for (a) preschoolers who were already referred for evaluation and for (b) preschoolers who participated in the present screening action. The preschools were located in central and suburban Eastern Thessaloniki. The preschool teachers were informed about the purpose of the screening action and the utility of the screening tool. Accordingly, teachers had to rate each of their preschoolers on each of the PPAP's 37 items. When teachers became familiar with the scoring key, they needed about five minutes to complete the tool for each of their preschoolers. Participating teachers were given time to ask questions and were encouraged to ask for further clarification about completing the tool at any point in the procedure.

### Data Analysis

For the basic statistical analysis of the data, simple descriptive statistics, including frequencies, averages, and cross-tabulations were used. In particular, the Multiple Response Set was used to assess SEN percentages because some preschoolers belonged to more than one SEN category. This is an advanced frequency analysis; it is used when more than one response to an item is possible. For the comparison of the means, the Multivariate Analysis of Variance was implemented. This test can examine the extent to which one or more independent

Table 1  
*Factor analysis and descriptive statistics on a 6-point-scale.*

<b>Items</b>	<b>Factor 1</b>	<b>Factor 2</b>	<b>Factor 3</b>	<b>Factor 4</b>	<b>Communalities</b>
A1_1	.74				.79
A1_5	.73				.81
A1_2	.65				.78
A1_11	.64				.81
A1_3	.64				.81
A1_6	.64				.80
A2_1	.63				.81
A1_10	.62				.74
A3_2	.62				.77
A3_3	.62				.75
A3_1	.61				.76
A3_4	.61				.79
A1_9	.61				.78
A1_8	.59				.65
A1_12	.58				.80
A1_4	.56				.69
A1_7	.56				.71
A5_2		.72			.88
A5_1		.72			.85
A4_2		.70			.92
A4_5		.68			.90
A4_1		.68			.87
A3_5		.68			.84
A4_3		.67			.88
A4_4		.66			.91
A5_4		.66			.86
A5_3		.55			.78
A2_5			.76		.77
A2_4			.73		.77
A2_6			.72		.80
A2_3			.67		.83
A2_7			.62		.81
A2_2			.61		.80
A1_13				.74	.78
A1_14				.66	.79
A5_5				.61	.76
A1_15				.54	.66
Exp. Variance	26.43	21.75	17.22	14.25	
Eigen value	9.78	8.05	6.37	5.27	
Mean	3.19	2.78	3.85	3.52	
SD	1.31	1.42	1.37	1.30	

grouping variables can produce mean differences in a set of dependent variables. Apart from the significance level, the researchers recorded the effect size, in particular the partial Eta-Squared ( $\eta_p^2$ ). In the same way, the results from the multiple average comparisons of the groups (Bonferroni correction) were taken into account.

The extraction of the factors from the detection tool was done with the aid of an Exploratory Factor Analysis (EFA) by implementing the principal component analysis and the Varimax rotation of the factors (SPSS; cf. IBM Corp., 2012). EFA is a statistical procedure used to investigate if a compilation of interrelated items constitutes a single factor or a structure of two or more factors. It offers then a solution, which stems from the user-selected statistical criteria. The item values were later normalized using the Linear Structural Relations program (LISREL; cf. Jöreskog & Sörbom, 2017). The same software was used to check the factor structures through Confirmatory Factor Analyses (CFA; see Brown, 2006).

In order to determine the variables that would accurately predict the classification of preschoolers in the different groups, the researchers used the Classification and Regression Tree (CART) analysis technique of the SPSS program. CART analyses perform mean comparisons between different groups, choose the variables necessary for group classifications, and allow for the establishment of rules for a more reliable classification of future cases. In the present study, the CART analysis technique was used to construct homogeneous subgroups, and its statistical criteria were adjusted to the researchers' purposes. CART analysis presents some key advantages over other regression methods. Most importantly, it can handle many variables without requiring normally-distributed data. Furthermore, it depicts complex interactions among variables, thus helping in comprehensive decision making (Lewis, 2000).

## RESULTS

Analyses showed that the discrimination ability of the PPAP's items were high (Corrected Item-Total Correlations varied between .70 and .96), indicating an ideal item difficulty. The internal consistency of the axes of the screening tool was found to be high; the values of Cronbach's Alpha ranged from .93 to .98. Equally high was the reliability of other additionally extracted factors, which ranged from .92 to .97. The results of the exploratory factor analysis are in Table 1.

The extracted factors explain nearly 80% of the total variance. The items of these factors come from different axes, composing transversal areas of preschool devel-

opment related to (a) playful and daily activities (e.g., accepting diversity, creative use of objects), (b) learning through explorations and organized activities (e.g., exhibiting coping strategies, making inferences), (c) classroom routines (e.g., organizing classroom objects, participating in class discussions), and (d) psychomotor skills (e.g., exploring through senses and movements, participating in physical education). These four factors are abbreviated as F1, F2, F3, and F4 respectively (cf. tables and figures). These factors, as well as those based on the axes of the curriculum, were confirmed by the corresponding CFAs carried out by the LISREL program. In the majority of the analyses, the indicators were good (e.g., Comparative Fit Indices ranged from .97 to 1.00).

Table 2 shows the mean values and the standard deviations of the total sample and the research groups for each variable. Multivariate analyses of variance showed that the low-risk group had higher averages across the tool's main axes, as well as when compared to the overall average (Wilks' lambda  $F(10, 388) = 9.582, p < .001, \eta_p^2 = .20$ ). The above differences were mitigated to some extent in the IISDs (Wilks' lambda  $F(10, 394) = 3.389, p < .01, \eta_p^2 = .03$ ; the univariate tests yielded effect sizes of .05). In this case, the high-risk group did not differ significantly from the other two groups. By the same token, the low-risk group was significantly better than the other two, as regards the transverse factors (Wilks' lambda  $F(10, 388) = 9.542, p < .001; \eta_p^2 = .20$ ). In all the corresponding univariate tests, the partial Eta-Squared was high (.24 - .33). It should be noted that the gender and the modal age of the preschoolers did not play a statistically-significant role in the above differences, i.e., they did not produce main effects.

CART analysis aimed to predict the high-risk group (preschoolers to be referred for early support), which was, in fact, selected as the target group. The group of diagnosed preschoolers was excluded from the analysis, not only because they had already been diagnosed, but also because one cannot thoroughly assess the effectiveness of the support they are receiving. Figure 1 shows the results of the first analysis. The first separation variable represents the axis of daily activities, which the software used to identify 89% of high-risk preschoolers (values below 3.5). The remaining high-risk preschoolers of the group were identified using classroom's "Routines" axis and the IISDs. The combination of two or more separation variables reveals the interactions between those variables. Although the rest of the variables were not chosen as separation variables, they are part of the prediction model. However, even when these



Table 2  
Descriptive statistics of subgroups and group comparisons.

Groups	All		Diagnosed (1)		Pre-referred (2)		No/low risk (3)		Differences
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
A1	3.29	1.27	2.93	1.14	2.97	.85	4.77	1.02	1, 2 < 3
A2	3.78	1.36	3.51	1.23	3.31	1.03	5.21	1.19	1, 2 < 3
A3	3.04	1.39	2.67	1.25	2.64	.83	4.67	1.15	1, 2 < 3
A4	2.45	1.50	2.03	1.29	2.09	1.16	4.19	1.22	1, 2 < 3
A5	3.22	1.41	2.90	1.33	2.84	.95	4.69	1.17	1, 2 < 3
Average	3.16	1.31	2.81	1.16	2.77	.83	4.70	1.09	1, 2 < 3
IISD_A	.64	.30	.69	.31	.66	.31	.51	.24	3 < 1
F1	3.19	1.31	2.81	1.16	2.87	.87	4.75	1.05	1, 2 < 3
F2	2.78	1.42	2.41	1.25	2.38	1.00	4.41	1.20	1, 2 < 3
F3	3.85	1.38	3.59	1.25	3.36	1.06	5.25	1.21	1, 2 < 3
F4	3.52	1.30	3.23	1.24	3.17	.95	4.82	1.03	1, 2 < 3
IISD_F	.64	.31	.67	.30	.69	.33	.50	.26	3 < 1, 2

Key: *M* = Mean. *SD* = Standard Deviation. A = Curriculum's axes. Average = PPAP's average.  
F = Factors confirmed. IISD = Intra-Individual Standard Deviation.

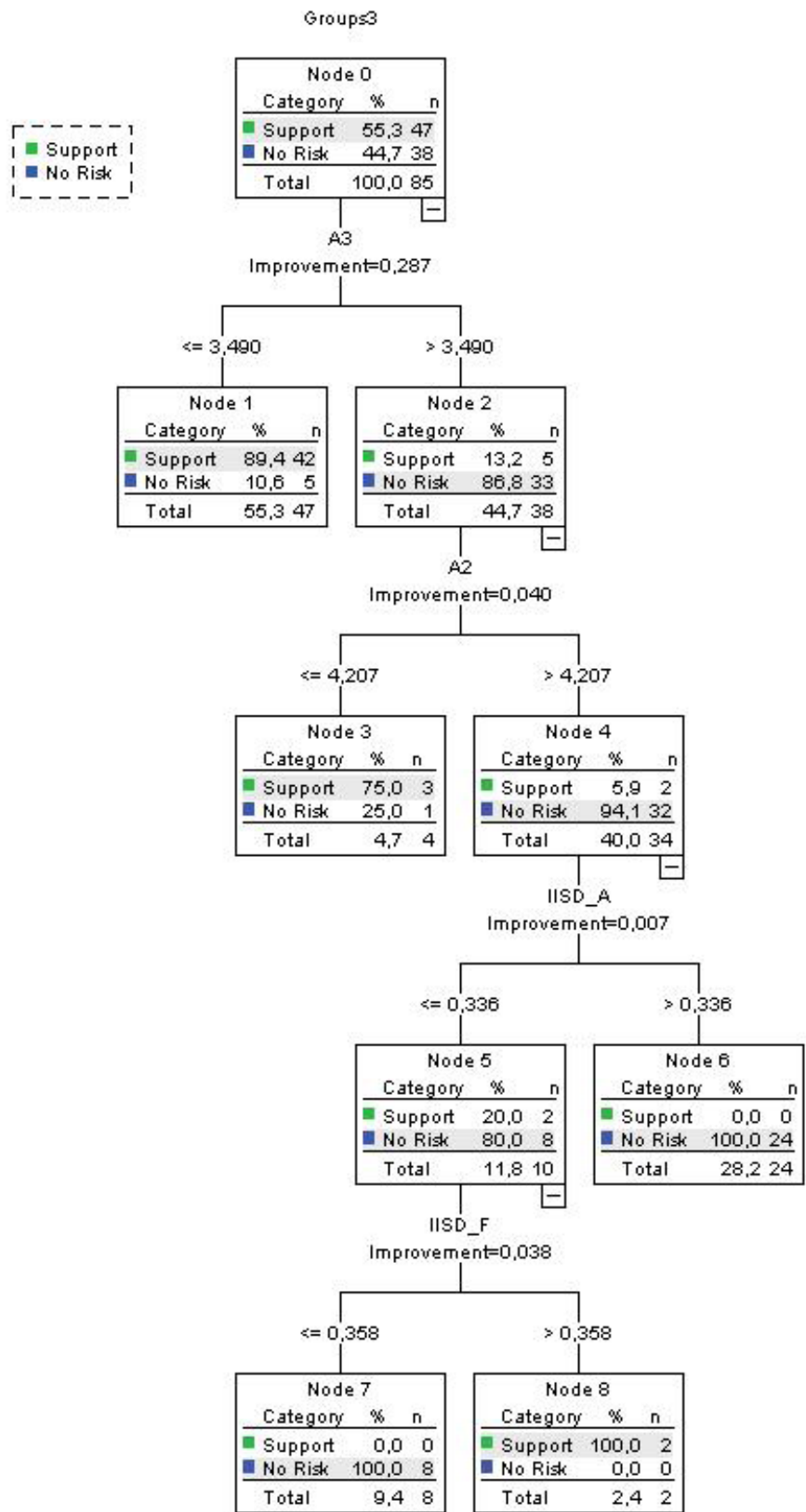
were excluded, the model remained equally effective: It accurately predicted 100% of high-risk preschoolers and 84% of the low-risk group. By excluding the two IISD variables, the prediction rate was reduced to 96% for the high-risk group, while it remained steady for the low-risk group. When the transversal factor “Psychomotor Skills” was forced as the first separation variable, the prediction percentages raised to 100% and 87% respectively.

Using the same method, the researchers performed a further analysis in which single items were let into the statistical model too (see Figure 2). This time, the factor “Daily activities” and three single items, namely A2\_5 (Participation in cleaning /decluttering tasks), A1\_11 (Invention of new game rules), and A1\_12 (Investigation of the physical environment, objects, and their properties) were foregrounded. The combination of these variables could accurately predict 98% of high-risk preschoolers and 87% of low-risk preschoolers. In this analysis, prediction percentages did not improve with the integration of any of the items or factors that

explicitly include psychomotor competences in the first separation variable. It is worth noting that in the previous CART analyses the addition of preschoolers' gender and modal age did not impact the effectiveness of the model.

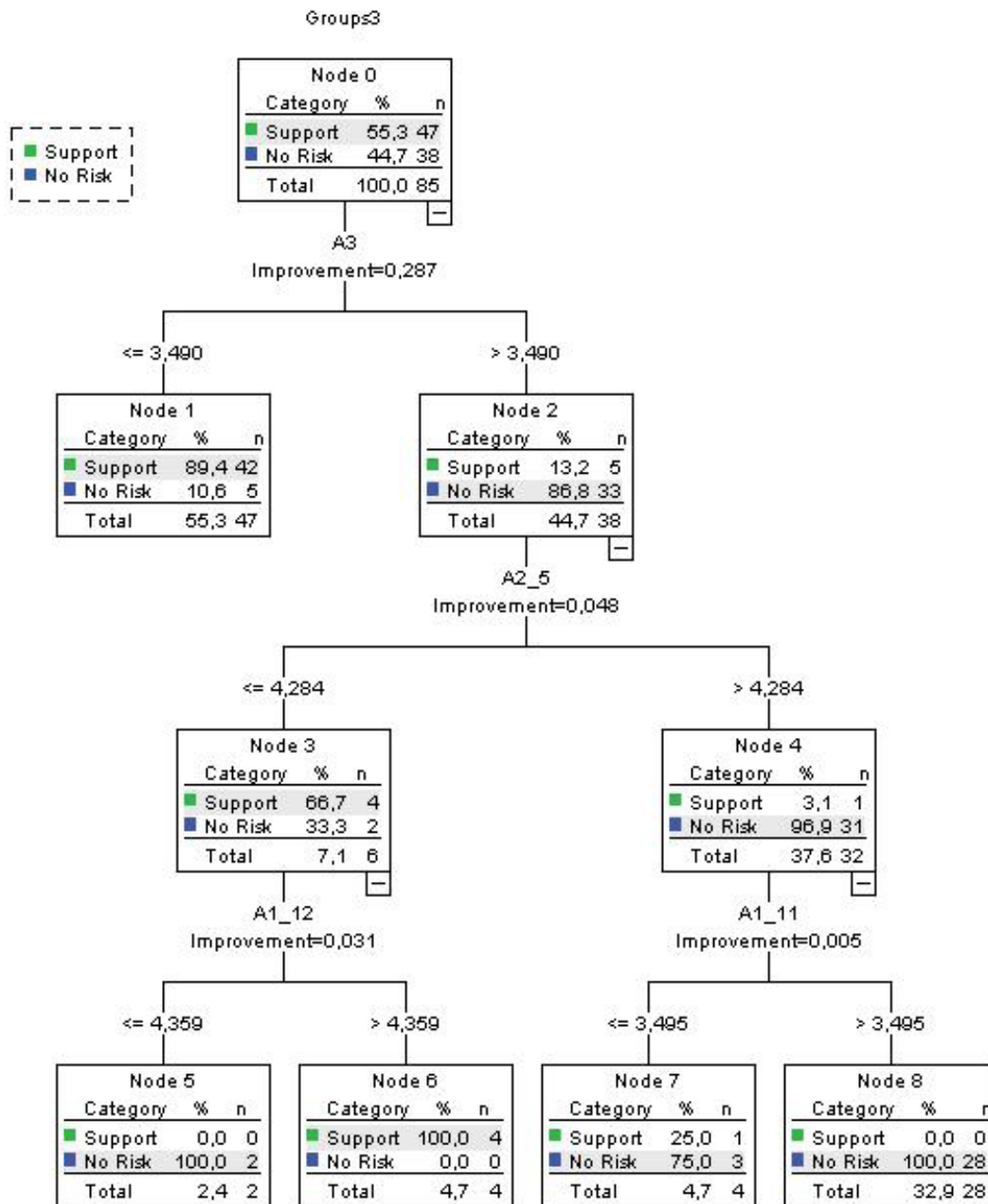
In a third type of analysis, the researchers only allowed single items into the CART statistical procedure. At the same time, item A1\_14 (Explorations through fine motor handling) was forced as the first separation variable. Although fine motor explorations could hardly approach statistical significance, they did contribute to an initial group separation, which led to a final high prediction percentage for pupils who need pre-referral support (98%) and for low-risk pupils (97%). The resulting tree diagram appears in Figure 3. In this case, some new areas of pupil participation became significant, namely playing with peers (A1\_1), play completion (A1\_6), playing by the rules (A1\_3), and relaxation time (A2\_6). In addition, the second school year, i.e., the modal age of six years, was predictive for pre-referral support.

Figure 1  
 Tree diagram based on main factors and IISDs.



Key: The pre-referral group is labeled as “Support.” The low risk group is labeled as “No Risk.”

Figure 2  
Tree diagram based on main factors and single variables.



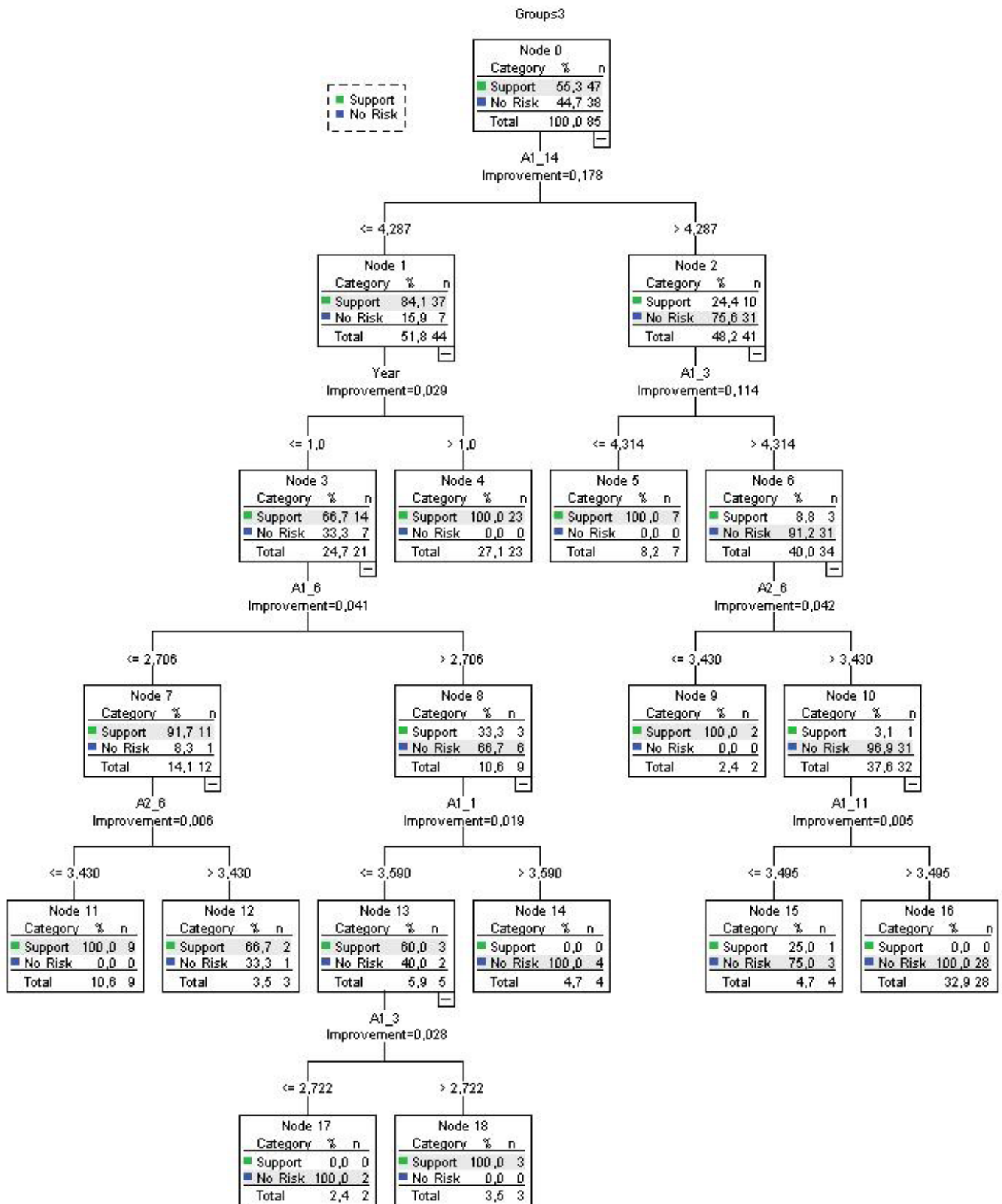
Key: The pre-referral group is labeled as “Support.” The low risk group is labeled as “No Risk.”

## DISCUSSION

In the present study a tool for the early screening of preschoolers (PPAP) for pre-referral support was developed and tested. Thus, drawing on the current Greek curriculum, teachers’ ratings of children’s participation in preschool activities were collected. In addition, the researchers examined the PPAP’s properties, especially its potential as a cost-effective tool for identifying

preschoolers who merit support before their referral for diagnosis. However, one of the main limitations of the study is the relatively small and not representative sample of preschoolers. Accordingly, all schools came from the region served by the A’ CDADS of Thessaloniki. In addition, the external validity of the PPAP is limited, since the values are only cross-checked against the assessment provided by preschool teachers and official

Figure 3  
 Tree diagram based on forced fine motor skills as the first separating variable.



Key: The pre-referral group is labeled as “Support.” The low risk group is labeled as “No Risk.”



special education authorities. Thus, the present study is predominantly descriptive in nature. Despite the limitations, the results suggest that even in its present form, the PPAP can be optimally used as an assessment instrument for the restriction of the number of students going through official screening tests in assessment centers. Moreover, the incorporation of aspects of the curriculum makes the PPAP more reliable and easily-understood by preschool teachers.

Furthermore, the results suggest that the present school-based screening tool is efficient in separating high-risk from low-risk preschoolers regarding their cognitive, socio-emotional, and psychomotor development. The values of the diagnosed preschoolers were used to better understand and evaluate the results, but were not used in the CART analyses since the present study does not evaluate the effectiveness of the support that these preschoolers receive in the family and/or school environment once they are diagnosed. Incorporating factors such as the daily activities and routines in the statistical analysis underlines the importance of the preschoolers' participation in the organizational, operational, and social life of the classroom. These factors encompass elements of cognitive and learning development such as problem-solving and reading/writing activities. Moreover, factors such as the invention of new game rules, the exploration of the physical environment, and the participation in organizing/decluttering tasks have also played a significant role in diagnosing the high-risk group. All this suggests that preschool teachers do not rely solely on the preschoolers' academic performance before referring them to a support program, but also on how well they explore—and adapt to—the physical and social environment.

In terms of the interactions between the predictor variables, one may observe that the variables following the branching effect caused by the pupils' participation in daily activities have the potential to further classify preschoolers into the target groups. For example, the classification of preschoolers based on the 4.21 value across the Routines axis is only important for preschoolers who score high across the Daily Activities axis ( $M > 3.49$ , see Figure 1). In this case, measures of IISD obtain a predictive value only for relatively high-functioning preschoolers in daily routines. Still, this particular prediction was theory-conform, meaning that high-functioning though disorganized and to be supported preschoolers could be correctly identified. Although the predictions of the researchers on the role of IISD were also confirmed by the differences between

the groups, there emerges a need for further research into how fragmented levels of preschoolers' participation reflect on their self-organization.

In the first CART analysis, IISDs were incorporated, the calculation of which requires the use of the whole tool by preschool teachers. When however, the researchers excluded these calculations from the model or when they used the single items, they created a reliable prediction model that can reduce the number of items from 37 down to seven (Figure 3). This means that the PPAP can be condensed and used as a hierarchical model of decision making, even in the form of software. Moreover, since CART analyses allow for the establishment of rules for a more reliable classification of future cases, it is now possible for preschool teachers to use the PPAP as a guide for future decisions regarding the support and referral of preschoolers.

Unlike many screening approaches (e.g., Adolfsson et al., 2018), the researchers included parts of the current curriculum, which describe the preschoolers' participation in physical and fine motor activities. As expected, variables based on body, movement, and physical explorations contributed meaningfully to the prediction of both high- and low-risk preschoolers. Besides participation in play activities, which denotes the implication of social and cognitive assets (Calero et al., 2013), numerous variables underscoring psychomotor skills, object play, exploring the physical world, and body relaxation have demonstrated their significance in the CART analyses. Consequently, preschool teachers include observations of physical and motor development when they judge pre-referral support. However, further research is needed to verify the role that body-anchored and movement-related variables play in early universal screening. More specifically, researchers should consider that CART produces interactions among variables. Such interactions refer to moderation effects and imply the need for complex path analyses (MacKinnon, 2011). This topic was particularly evident in the present research, when psychomotor skills were forced as a first separation variable. In this context, gross and fine motor skills may strengthen the relationship between participation variables, such as Play, and pre-referral decisions.

The issue, of whether the PPAP can (a) be used to identify individualized intervention goals (e.g., in the sense of a zone of proximal development), and/or (b) prove sensitive enough to measure intervention results remains to be determined in future longitudinal studies. The erroneous classification of some preschoolers, especially those of low-risk, may be due to the fact that

the present study evaluates only the participation of preschoolers. The additional assessment of activity performance aspects, such as imitation, attention focus, and task completion (Adolfsson et al., 2018; WHO, 2007) might reduce the few classification mistakes. With the future improvement of the PPAP, preschool teachers will be able to cooperate closely in early screening with official assessment services. Finally, parental reports could add ecological and contextual validity to the screening process (Lange & Thomson, 2006; Neisworth & Bagnato, 2004).

This study demonstrated how a screening tool, which was directly derived from the preschool curriculum, can be highly predictive. Moreover, such a screening tool has minimal training requirements for teachers. Likewise, the screening tool tested here could adequately perform with only a few items. Additionally, results confirmed the significant role body-anchored and movement-related aspects play in early universal screening (Grissmer, Grimm, Aiyer, Murrah, & Steele, 2010). Thus, the present study extends the literature by suggesting the inclusion of embodied mindfulness, cognition, learning, and participation in early screening, and in related interventions as well (Wood, Roach, Kearney, & Zabek, 2018).

## REFERENCES

- Adolfsson, M., Sjöman, M., & Björck-Åkesson, E. (2018). ICF-CY as a framework for understanding child engagement in preschool. *Frontiers in Education, 3*. doi:10.3389/educ.2018.00036
- Andrade, H. G. (2005). Teaching with rubrics: The good, the bad, and the ugly. *College Teaching, 53*(1), 27–31. doi:10.3200/ctch.53.1.27-31
- Bagnato, S. J. (2005). The authentic alternative for assessment in early intervention: An emerging evidence-based practice. *Journal of Early Intervention, 28*(1), 17–22. doi:10.1177/105381510502800102
- Bagnato, S. J., Neisworth, J. T., & Pretti-Frontczak, K. (2010). *LINKing authentic assessment and early childhood intervention: Best measures for best practices*. Baltimore, MD: Brookes.
- Birbili, M., & Myrovali, A. (2019). Early childhood teachers' relationship with the official curriculum: The mediating role of professional and policy contexts. *Education Inquiry, 11*(2), 110–125. doi:10.1080/20004508.2019.1687080
- Boh, A., & Johnson, L. (2018). Universal screening to promote early identification of developmental delays: Exploring childcare providers' beliefs and practices. *Early Child Development and Care, 188*(12), 1696–1710. doi:10.1080/03004430.2016.1278369
- Brown, T. A. (2006). *Confirmatory factor analysis for applied research*. New York, NY: Guilford.
- Calero, M. D., Fernández-Parra, A., López-Rubio, S., Carles, R., Mata, S., del Carmen Vives, M., Navarro, E., & Márquez, J. (2013). Variables involved in personal, social and school adjustment in a sample of preschool-aged children from different cultural backgrounds. *European Journal of Psychology of Education, 28*(1), 133–155. doi:10.1007/s10212-012-0107-8
- Carta, J. J., Greenwood, C. R., Walker, D., & Buzhardt, J. (2010). *Using IGDIs: Monitoring progress and improving intervention results for infants and young children*. Baltimore, MD: Brookes.
- Compton, D. L., Fuchs, D., Fuchs, L. S., Bouton, B., Gilbert, J. K., Barquero, L. A., Cho, E., & Crouch, R. C. (2010). Selecting at-risk first-grade readers for early intervention: Eliminating false positives and exploring the promise of a two-stage gated screening process. *Journal of Educational Psychology, 102*(2), 327–340. doi:10.1037/a0018448
- Cools, W., Martelaer, K. D., Samaey, C., & Andries, C. (2009). Movement skill assessment of typically developing preschool children: A review of seven movement skill assessment tools. *Journal of Sports Science & Medicine, 8*(2), 154–168.
- Eurydice. (2020, January 20). *National Education Systems: Greece*. European Commission. Retrieved from [https://eacea.ec.europa.eu/national-policies/eurydice/content/primary-education-20\\_en](https://eacea.ec.europa.eu/national-policies/eurydice/content/primary-education-20_en)
- Fox, L., Carta, J., Strain, P. S., Dunlap, G., & Hemmeter, M. L. (2010). Response to intervention and the pyramid model. *Infants & Young Children, 23*(1), 3–13. doi:10.1097/iyc.0b013e3181c816e2
- Grissmer, D., Grimm, K. J., Aiyer, S. M., Murrah, W. M., & Steele, J. S. (2010). Fine motor skills and early comprehension of the world: Two new school readiness indicators. *Developmental Psychology, 46*(5), 1008–1017. doi:10.1037/a0020104

- Guichard, S., & Grande, C. (2018). Differences between pre-school children with and without special educational needs functioning, participation, and environmental barriers at home and in community settings: An international classification of functioning, disability, and health for children and youth approach. *Frontiers in Education, 3*. doi:10.3389/feduc.2018.00007
- Hauf, P., & Libertus, K., (Eds.) (2017). *Motor skills and their foundational role for perceptual, social, and cognitive development*. Lausanne, Switzerland: Frontiers Media.
- Hayes, A. M., Dombrowski, E., Shefcyk, A. H., & Bulat, J. (2018). *Learning disabilities screening and evaluation guide for low- and middle-income countries*. Research Triangle Park, NC: RTI Press. <https://doi.org/10.3768/rtipress.2018.op.0052.1804>
- Hwang, A., Chou, Y., Hsieh, C., Hsieh, W., Liao, H., & Wong, A. M. (2015). A developmental screening tool for toddlers with multiple domains based on Rasch analysis. *Journal of the Formosan Medical Association, 114*(1), 23–34. doi:10.1016/j.jfma.2014.07.001
- IBM Corp. Released 2011. *IBM SPSS Statistics for Windows, Version 20.0*. Armonk, NY: IBM.
- Invernizzi, M., Juel, C., Swank, L., & Meier, J. (2003). *Phonological Awareness Literacy Screening-Kindergarten (PALS-Kindergarten)*. Charlottesville, VA: University of Virginia.
- Jasmin, E., Tétrault, S., & Joly, J. (2014). Ecosystemic needs assessment for children with developmental coordination disorder in elementary school: Multiple case studies. *Physical & Occupational Therapy in Pediatrics, 34*(4), 424–442. doi:10.3109/01942638.2014.899284
- Jöreskog, K. G., & Sörbom, D. (2017). *LISREL 9.30: User's reference guide*. Lincolnwood, IL: Scientific Software International.
- Küpper, L. (Ed.) & Kohanek, J. (Production) (2000). *A guide to the Individualized Education Program*. Office of Special Education and Rehabilitation Services, Office of Special Education Programs: U.S. Department of Education. Retrieved from: <https://www2.ed.gov/parents/needs/speced/iepguide/index.html>
- Lange, S., & Thomson, B. (2006). Early identification and interventions for children at risk for learning disabilities. *International Journal of Special Education, 21*(3), 108–119.
- Law 3699/2008. Government Gazette Number 199/A', 02.10.2008. Greek Government.
- Lewis, R. J. (2000). *An introduction to classification and regression tree (CART) analysis*. Presented at the 2000 Annual Meeting of the Society for Academic Emergency Medicine in San Francisco, California. Retrieved from <https://www.semanticscholar.org/paper/An-Introduction-to-Classification-and-Regression-Lewis/6d4a347b99d056b7b1f28218728f1b73e64cbbac>
- Lindt, S. F., & Miller, S. C. (2017). Movement and learning in elementary school. *Phi Delta Kappan, 98*(7), 34–37. doi:10.1177/0031721717702629
- MacKinnon, D. P. (2011). Integrating mediators and moderators in research design. *Research on Social Work Practice, 21*(6), 675–681. doi:10.1177/1049731511414148
- Milyavskaya, M., Gingras, I., Mageau, G. A., Koestner, R., Gagnon, H., Fang, J., & Boiché, J. (2009). Balance across contexts: Importance of balanced need satisfaction across various life domains. *Personality and Social Psychology Bulletin, 35*(8), 1031–1045. doi:10.1177/0146167209337036
- Neisworth, J. T., & Bagnato, S. J. (2004). The mismeasure of young children. *Infants & Young Children, 17*(3), 198–212. doi:10.1097/00001163-200407000-00002
- Patton, M. Q. (2015). *Qualitative research & evaluation methods: Integrating theory and practice* (4th ed.). Thousand Oaks, CA: Sage.
- Rechtik, Z. (2018). Assessment of gross motor skills as a part of child's physical readiness for compulsory school attendance. *Journal of Education and Training Studies, 6*(11a), 127–132. doi:10.11114/jets.v6i11a.3809
- Smeets, E., & Roeleveld, J. (2016). The identification by teachers of special educational needs in primary school pupils and factors associated with referral to special education. *European Journal of Special Needs Education, 31*(4), 423–439. doi:10.1080/08856257.2016.1187879

- Toki, E. I., & Pange, J., (2012). Traditional and computer-based evaluation of preschoolers' oral language in Greek: A review of the literature. *Sino-US English Teaching*, 9(1), 840–845.
- Varsamis, P., Staikopoulos, K., & Kartasidou, L. (2012). Effect of rhythmic auditory stimulation on controlling stepping cadence of individuals with mental retardation and cerebral palsy. *International Journal of Special Education*, 27(3), 68–75.
- Vergeti, M., & Giourolou, C. (2018). Education and financial crisis: The case of Greece. *Open Journal for Sociological Studies*, 2(1), 1–12. doi:10.32591/coas.ojss.0201.01001v
- Wallace, I. F. (2018). *Universal screening of young children for developmental disorders: Unpacking the controversies*. Research Triangle Park, NC: RTI Press. <https://doi.org/10.3768/rtipress.2018.op.0048.1802>
- World Health Organization. (2007). *International Classification of Functioning, Disability and Health for Children and Youth (ICF-CY)*. Geneva, Switzerland: Author.
- Wood, L., Roach, A. T., Kearney, M. A., & Zabek, F. (2018). Enhancing executive function skills in preschoolers through a mindfulness-based intervention: A randomized, controlled pilot study. *Psychology in the Schools*, 55(6), 644–660. doi:10.1002/pits.22136
- Zeng, N., Ayyub, M., Sun, H., Wen, X., Xiang, P., & Gao, Z. (2017). Effects of physical activity on motor skills and cognitive development in early childhood: A systematic review. *BioMed Research International*, 2017, 1–13. doi:10.1155/2017/2760716



# General and Special Education Teachers' Attitudes Towards Including Students with Intellectual Disabilities in Saudi Arabia

Shoroq Alkhattabi, Kristin Burnette, Diane Lea Ryndak, and Christene Botini

University of North Carolina Greensboro, USA

## Abstract

*In Saudi Arabia, the education of students with disabilities has historically followed a segregated medical model. New research is emerging, however, about educating students with disabilities in general education classrooms (i.e., inclusive education). The purpose of this survey study was to examine the level of preparedness of general education teachers, and further investigate if there were significant differences in the beliefs of general and special education teachers based on educational background, roles and responsibilities, teachers' need for professional development, and where students with intellectual disabilities should be placed. Results indicate differences in attitudes between general and special education teachers overall. Though there were differences in teacher attitudes, the results for both sets of teachers indicated a strong preference for students with disabilities receiving services in segregated settings, particularly for students with more significant disabilities. Recommendations were made about the corresponding findings and overall implications for teacher preparation.*

Keywords: *teachers' attitudes, intellectual disabilities, Saudi Arabia, inclusive education*

## INTRODUCTION

International policies and legislation have supported the inclusion of students with disabilities, including those with intellectual disabilities (ID), in general education classrooms. For instance, the international seminal pieces Convention on the Rights of the Child (United Nations, 1989); as well as The Right to Education for Persons with Disabilities (UNESCO, 2015); and The Right of Children with Disabilities to Education: A Rights-Based Approach to Inclusive Education (UNICEF, 2012) collectively agree that access to education for students with disabilities is not sufficient. Salary increases are meant to incentivize special education teachers. "In Saudi Arabia, teachers in government schools who work with students with disabilities receive an increase in their monthly salary of 30% for specialists in special education and 20% for non-specialists" (Alnahdi, Saloviita, & Elhadi, 2019, p. 73). Alharbi & Madhesh (2018) posit that children must be educated to reach their full potential. In 1970, the General Education Policy in Saudi Arabia was first developed and aligned the goals of education and Islamic faith. This policy was reauthorized in 1995. In 2000, the Law of Disability was passed and mandated services for social, educational, and work opportunities for persons with disabilities. Then in 2015, the Ministry of Education created an Organizational Guide for Special Education. This guide defined the 11 disability categories recognized in Saudi Arabia (e.g., visual impairment,

learning disability, autism) and explained the regulation and placement of students with disabilities in different settings (Ministry of Education, 2015).

In his discussion of educational services for students with ID in Saudi Arabia, Alnahdi (2014) describes the beginning of special education in the 1960s with the opening of the first school for students with visual impairments. In the 1970s, the first special education school for students with ID was opened (Bin Battal, 2016). In 2008, placement of students with ID had expanded so that 1,244 students with ID were assigned to 170 classrooms in different institutes, and 11,805 students with ID were assigned to 2,307 self-contained classrooms within general education schools (i.e., schools serving general education students who do not have disabilities; Alnahdi, 2014). In the late 1990s, the Ministry of Education integrated students with mild ID in self-contained classrooms in general education schools. As of 2011, the Ministry of Education reports indicate there are twice as many institutes and self-contained classrooms for males (704 institutes; 2,311 classrooms) as for females (286 institutes; 999 classrooms) with ID (Alnahdi, 2014). It is hypothesized that this discrepancy might be a result of the government developing these new services first for males to determine the effectiveness of services, and then for females (Alnahdi, 2014).

In Saudi Arabia, laws have just begun to be developed related to educational services for students with ID, including the provision of a free education (Alharbi

& Madhesh, 2018). When discussing inclusive education for students with disabilities, Alharbi and Madhesh state that, "Inclusion aims to educate all children within mainstream schooling..." (p. 946). Despite recent initiatives for including students with ID in general education classrooms, the Ministry of Education continues to support educating students with ID in segregated settings, such as self-contained schools, self-contained classrooms, and institutes that serve only students with disabilities. Concurrently, parents in Saudi Arabia are beginning to advocate for inclusive educational services in general education schools and classrooms, which is beginning to shape a different type of services and future for students with ID (Alharbi & Madhesh, 2018). Currently, however, only two types of placements for students with mild to moderate ID are predominantly used in Saudi Arabia. These are self-contained schools and self-contained classrooms located within general education schools serving students without disabilities (Aldabas, 2015; Alnahdi, 2014). In contrast, students with severe ID are served in two types of placements: self-contained schools and self-contained residential institutes (Aldabas, 2015; Alnahdi, 2014). According to Alnahdi et al. (2019), "Since 2001, students with disabilities have been integrated into nearby schools in neighborhoods (but not all schools) and placed in classrooms based on their type of disability (self-contained classrooms), with the exception of students with a learning disability, who are included in regular classrooms. Students with severe disabilities and autism are placed in special institutions" (p. 72). Due to all these recent changes, exploring the attitudes of general and special teachers about these changes is timely and pertinent to the field.

According to the Merriam-Webster dictionary (2018), attitudes are characterized by a fixed mental state or "a feeling or emotion toward a fact." Attitudes often vary from person to person and attitudes impact how a person acts. Understanding the attitudes of general and special education teachers about education for students with ID will advance research by gaining insight into the mindset of teachers in Saudi Arabia. By understanding these attitudes, recommendations can be made for improving laws, placements, and teacher preparation programs for students with ID. The literature review for this paper revealed that teachers have attitudes and opinions about inclusion and the authors/researchers wanted to capture these opinions (Forlin, 2010). To date, there is minimal research in Saudi Arabia about teachers' attitudes about inclusion (Alamri, 2015; Alquraini, 2012; Aseery, 2016). In this study, the re-

searchers sought to understand the attitudes of general and special education teachers about including students with ID in general education classrooms. Specifically, the researchers studied the attitudes of teachers in general education schools serving only female students that have self-contained classrooms for students with ID in urban and rural districts in a western, midsized (290 square miles) region in Saudi Arabia. A survey questionnaire sought to examine the level of preparedness among general education teachers, and further investigate if there were significant differences in the attitudes of general and special education teachers, based on educational background, roles and responsibilities, teachers' need for professional development, and where students with ID should be placed. For the purposes of this study, the authors use the term inclusion and inclusive education to refer to the concept of teaching a student with ID in general education classrooms among peers who do not have ID.

### Research Questions

1. What is the level of preparedness of general education teachers to teach students with ID in their classrooms?
2. Are there significant differences in the attitudes of general and special education teachers, based on educational background and roles and responsibilities?
3. Do the teachers believe that they need professional development?
4. What are the teachers' beliefs about the placements of students with ID?

### METHODS

To meet the purpose of this study the researchers used survey methodologies with general and special education teachers in a western region of Saudi Arabia. In this section, the researchers describe the survey content and development, identification of survey recipients, dissemination of the survey, gathering of information from respondents, and completion of quantitative analyses of relevant variables (Blair, Czaja, & Blair, 2014).

### Survey Content and Development

The survey was developed by the first three authors and had 24 items. The questions were related to demographic and background information, and beliefs about appropriate placements for students with ID. The survey also contained an agreement scale of statements

related to background education, roles and responsibilities, and professional development. The content of the survey was reviewed by an inclusive education expert in the United States, with over 2,400 scholarly citations. A statistician checked the survey format to make sure these questions were accurate and valid.

The first author translated the survey into Arabic and validated the content with two Saudi general education teachers by asking them to answer the survey and then interviewed them in Arabic to ensure the clarity of the questions. For this step, the researchers used a closed response agreement scale (Saris & Gallhofer, 2014), requiring Saudi teachers to either agree or disagree with the provided statements; that is, respondents were not given a middle option of “neither agree nor disagree.”

### **Survey Recipients and Survey Dissemination**

The first author obtained approval to conduct this study from the Institutional Review Board at the University of North Carolina at Greensboro, and the Ministry of Education in Saudi Arabia. Specifically, the Ministry of Education gave permission to conduct this study in a western region of Saudi Arabia which has a population of nearly eight million people (General Authority for Statistics, 2018). In this region, teachers do not have access to a Ministry-assigned email address. Therefore, it was necessary for the first author to deliver the survey to each school in-person, select the participants through convenience sampling.

The authors asked 12 schools in the region to participate in this study. At each school, the researcher met first with the principal to explain and, when the principal agreed to participate in the study, the first author handed consent forms and surveys to the principal, who then delivered the surveys to their teachers. All teachers at these schools received the survey and, therefore, were potential participants in the study.

The first author then left the school, allowing the teachers two to seven days to answer the survey. The teachers participated voluntarily and anonymously. At the end of the allotted time to complete the survey, the researcher returned to collect the surveys.

### **Quantitative Analysis of Relevant Survey Variables**

After the surveys were collected, only completed surveys were used. Data from the completed surveys were entered into Qualtrics manually for analysis via SPSS. The researchers first completed a descriptive analysis of the teachers' attitudes in each category (Blair et al., 2014). A chi-squared test was used to assess response differences between general and special education teachers with a .01 *p*-value for significance.

An analysis was conducted for differences in attitude toward inclusion between general education and special education teachers using a two-sample independent *t*-test. The dependent variable was a scaled variable of attitudes and the independent variable was the type of teacher (i.e., general or special education). Descriptive statistics were used to summarize the survey data, and inferential data analysis was used to examine the effect of the independent variables (e.g., preparedness of general education teachers, educational background, roles and responsibilities, and desire for ongoing professional development) on the attitudes of general and special education teachers. For example, to determine whether educational background contributed to differences in attitude between general and special education teachers, a chi-squared test was used. Descriptive statistics were also used to describe general and special education teachers' attitudes about the type of educational setting in which students with ID should be placed.

## **FINDINGS**

Findings are discussed in five areas. First, demographic information is provided to describe the teachers who participated in the study. Second, information is provided on the general education teachers' attitudes about their own willingness and preparedness to teach students with ID. Third, information is provided regarding significant differences between the attitudes of general education teachers and special education teachers based on educational background, roles, and responsibilities. Fourth, information is provided about the teachers' attitudes about their own need for additional professional development related to meeting the needs of students with ID. Finally, information is provided about the general and special education teachers' attitudes about the settings in which students with ID should be placed for instruction.

### **Participants**

Of the surveys distributed to 240 general and special education teachers, 186 surveys were returned. Of these, seven surveys had more than four incomplete responses and, therefore, excluded, resulting in 179 completed surveys that were included in the analysis. This yielded a response rate of 74.58%.

Of the 179 completed surveys, 136 were from general education teachers and 43 were from special education teachers. Teachers' educational backgrounds included the highest level of education achieved as a high school diploma (24; 13.4%), an undergraduate degree (148; 82.7%), and a master's degree (7; 3.9%). The number

Table 1  
Demographic data of the participants.

	Teachers	
	n	%
<b>Type</b>		
General Education teachers	136	76.0%
Special Education teachers	43	24.0%
<b>Districts</b>		
Urban	109	60.9%
Rural	70	39.1%
<b>Education</b>		
Diploma (or below undergraduate)	24	13.4%
Undergraduate	148	82.7%
Master	7	3.9%
<b>Years of Teaching Experiences</b>		
1–5	19	10.7%
6–10	79	44.6%
11–15	18	10.2%
16–20	33	18.6%
20+	28	15.8%
<b>Total</b>	179	

of years the teachers had been in a teaching position ranged from one to five years (19; 10.7%), six to ten years (79; 44.6%), eleven to fifteen years (18; 10.2%), sixteen to twenty years (33; 18.6%), and more than twenty years (28; 15.8%). See Table 1.

### General Education Teachers' Attitudes about Their Willingness and Preparedness

The authors examined the willingness and preparedness of general education teachers to include students with ID in their classrooms. First, eighty-one percent of general education teachers who were not teaching students with ID reported that they were not willing to teach students with ID in their general education classroom.

Second, when describing their attitudes about their own level of preparedness to teach students with ID in their classrooms, 106 (77.9%) of the participating general education teachers reported not being prepared (see Table 2.)

In order to further investigate if there were significant differences between the attitudes of the participating general and special education teachers, further analysis was completed related to the educational background, and the roles and responsibilities of the participating general and special education teachers.

### Differences Based on Educational Background, Roles, and Responsibilities

When considering differences in attitudes demonstrated by either between general and special education teachers based on their education, teachers with a special education degree felt more equipped to educate students with ID in general education classrooms. Similarly, the teachers' attitudes about their university preparation to teach students with ID also was statistically significant between general and special education teachers ( $p$ -value < .0001).

General education teachers' attitudes about the college or university program they attended indicated they were not provided effective instructional strategies for teaching students with ID. In contrast, the majority of special education teachers' attitudes indicated that their college or university program had prepared them to teach students with ID (see Table 3).

Table 2  
The preparedness of general education teachers to include students with ID in their classrooms.

Level of Preparedness	Respondents	
	n	%
Very Prepared	2	1.5%
Prepared	9	6.6%
Somewhat Prepared	19	14.0%
Not Prepared	106	77.2%
Total	135	

Note: One teacher did not answer this question; therefore, her response is not included in the table.



Table 3  
*Teachers' attitudes toward including students with ID in general education classrooms.*

Statement	General Education Teachers		Special Education Teachers	
	Disagree	Agree	Disagree	Agree
The college/university program I attended provided me instructional strategies that are effective for students with intellectual disabilities (ID).	84.8%	15.2%	36.6%	63.4%
General education teachers should not be required to participate in teaching students with ID.	28.1%	71.9%	58.1%	41.9%
I would like to attend workshops or courses to learn how to teach students with ID in general education classrooms.	35.8%	64.2%	7.1%	92.9%

Descriptive statistics were used to describe the differences in attitudes between general and special education teachers about their professional responsibilities and roles. Among the general education teachers, 71.9% did not believe they should be required to instruct students with ID. In contrast, special education teachers were split on this issue, with 58% indicating that general education teachers should be required to teach students with ID, and 41.9% indicating general education teachers should not be required to do so. Chi-squared analysis was used to determine whether responses from the two types of teachers were significantly different, with a statistically significant difference found with  $p$ -value = 0.003185.

**Need for Additional Professional Development**

There were no differences in attitudes demonstrated by general and special education teachers based on their need for additional professional development activities. Both general education teachers (64.2%) and special education teachers (92.9%) reported needing additional professional development related to teaching students with ID in general education classrooms.

**Settings for Instruction of Students with ID**

When asked about the settings where students with different levels of ID should receive instruction, teachers indicated different attitudes. Specifically, for students with mild ID, 40% of general and special education teachers responded that students should be placed

Figure 1  
*Teachers' attitudes about where students with mild ID should be placed for instruction.*

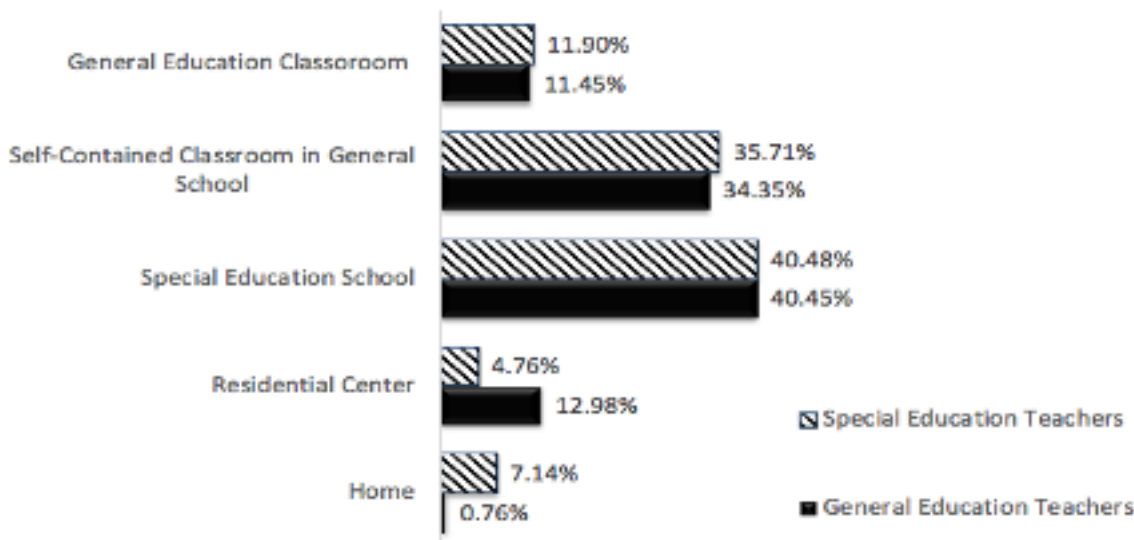
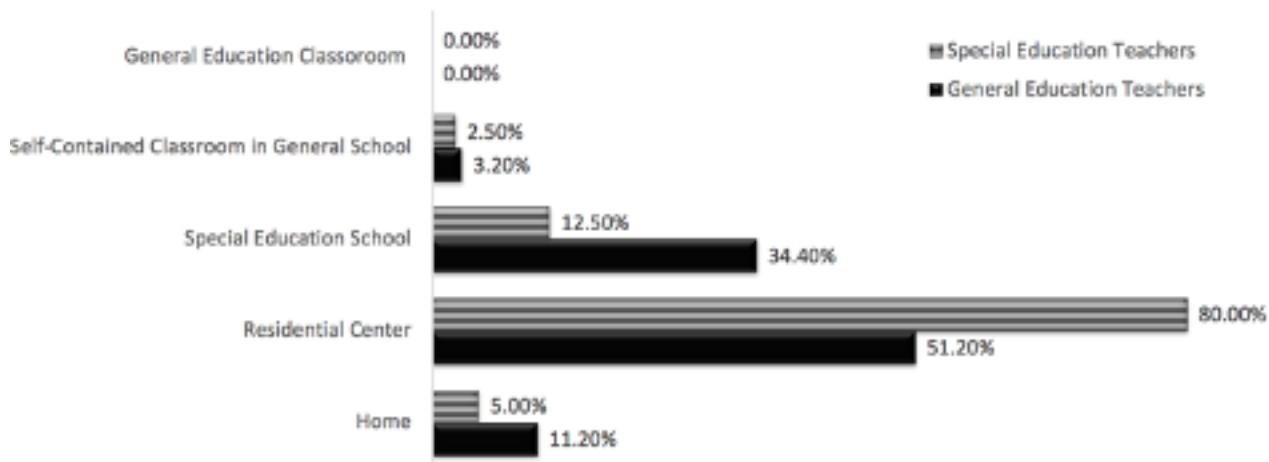


Figure 2

*Teachers' attitudes about where students with severe ID should be placed for instruction.*



in segregated special education schools, and an additional 12.98% of general education teachers and 4.76% of special education teachers supported placement in a residential center for students with mild ID; and 0.76% of general education teachers and 7.14% of special education teachers indicated they should receive instruction at home (see Figure 1 for additional data.)

In relation to students with severe ID, most special education teachers (80%) and 51.2% of general education teachers responded that they should be placed in a segregated residential center. An additional 12.5% of special education teachers and 34.4% of general education teachers responded that students with severe ID should be placed in segregated special education schools to receive instruction. Finally, none of the general or special education teachers responded that students with severe ID should be placed in general education classrooms to receive instruction.

## DISCUSSION

The first important finding of this study is the extent to which general education teachers did not feel prepared to teach students with ID in their classrooms. If Saudi Arabia's Ministry of Education is serious about encouraging services for students with ID in general education classrooms, then the general education teachers who teach in those classrooms must feel confident that they have the skills and expertise to provide effective instruction for all of their students, including students with ID. Unfortunately, Aldabas (2015) stated that, as of 2015, "no general teacher preparation programs

in Saudi Arabia offer any courses that address special education. As a result, Saudi teachers in public schools are often unprepared for inclusive education and how to address the needs of students with diverse characteristics" (p. 1164). To address this feeling of unpreparedness, Saudi universities must incorporate existing research and information from the international movement toward inclusion, and improve their preparation of all teachers by adding courses related to inclusive education for students with ID (Alruwaili, 2016).

A second major finding from this study is the reported difference between general and special education teachers: Special education teachers felt satisfied with their university preparation to teach students with ID, while general education teachers did not. This is an important finding because it indicates that general education teacher preparation programs do not include these essential skills, resulting in an ongoing need for professional development for currently practicing teachers, as well as for current pre-service teachers (Aldabas, 2015). In Saudi Arabia, every general and special education teacher has an assigned supervisor, based on the subject she/he teaches and with whom each teacher meets regularly to assess and assist with improving instruction. Because of this, there is also a need for supervisors to be knowledgeable about effective instructional practices for students with ID. Only then will they be able to assist teachers in developing and implementing effective services for students with ID. The finding that special education teachers are satisfied with their university programs is not surprising; it is consistent with Alquraini and Rao (2018), who found

a strong agreement among professors in Saudi Arabia that special education programs include the competencies of inclusive education. This finding suggests, however, that the preparation programs for general education teachers should include knowledge and skills related to teaching students with ID in inclusive general education classrooms.

A third important finding was the attitude among most of the general education teachers that they should not be responsible for teaching students with ID. Rather, the general education teachers reported that the responsibility to teach students with ID belongs to special education teachers. Alruwaili (2016) suggested that this perception might be a reaction to special education teachers receiving salaries that are 30% higher than those of general education teachers. In contrast, most special education teachers reported that general education teachers share the responsibility for teaching students with ID. This finding is consistent with Alnahdi's (2014) description of special education teachers feeling separated from general education settings, even when in general education schools with self-contained special education classrooms, and that there was no collaboration between general and special education teachers. This finding is important because of the current research on the effectiveness of teachers working collaboratively to better understand and meet the needs of each student with ID (Alnahdi, 2014). Westling, Fox, and Carter (2015) stated, "Collaboration is the process by which people with different areas of expertise work together to identify needs and problems and then find ways to meet the needs and solve the problems" (p. 48). To address this need in Saudi Arabia, Alnahdi (2014) indicated that, "...the Ministry of Education must make it clear that students with intellectual disability are the responsibility of all teachers in the school and that general education teachers must help make the school environment a supportive place for inclusion" (p. 90). Not only should the Ministry of Education mandate collaboration between general and special education teachers (Aldabas, 2015), they also should value the collaboration with other ministries in Saudi Arabia to improve education (Alruwaili, 2016).

The fourth significant finding is the need for increased professional development for current general and special education teachers. The results indicate that while their beliefs, values, and educational backgrounds might differ, general and special education teachers shared similar desires for increased professional development. Even though special education teachers felt satisfied with their preparation programs, they needed

more knowledge and skills. One reason that general education teachers felt unprepared and not responsible for teaching students with ID, could be a lack of knowledge and skills included in their college or university preparation programs. One way to assist teachers would be providing workshops by experts on special education and inclusive education. Professional development is essential if general and special education teachers are to develop the knowledge and skills needed to support students with ID in general education classrooms and to increase awareness of the ability of students with ID. Additionally, general and special education teachers need opportunities to learn about effective instruction by focusing on evidence-based inclusive education practices throughout the school year (Aldabas, 2015). For this reason, the Ministry of Education should have clear guidelines, implementation plans, and resources for both teachers and supervisors (Alharbi & Madhesh, 2018).

Finally, the majority of general and special education teachers responded that students with mild ID should be placed in a self-contained special education school, and that students with severe ID should be placed in residential centers. Surprisingly, however, the percentage of general education teachers (51.2%) who held this belief was much lower than the percentage of special education teachers (80%) who had more knowledge about meeting the instructional needs of students with ID. This finding also is surprising because of the extensive research over the past 40 years in the United States and other countries demonstrating the effectiveness of inclusive education to improve outcomes for students with significant disabilities (Kurth, Lyon, & Shogren, 2015). Moreover, inclusive education has academic benefits for students both with and without disabilities (Westling, 2018). Unfortunately, our study indicates this research has not eliminated many teachers' beliefs that students with ID should remain in segregated classrooms and schools, suggesting that the learning ability of students with ID is still stigmatized. Information about the effectiveness of inclusive education for students with ID needs to be shared widely to increase awareness and shift to a presumption of competence (Jorgensen & Lambert, 2012).

In conclusion, in Saudi Arabia, there are many issues impacting decisions related to the placement of students with ID in various types of classrooms. The Ministry of Education needs to work hard to develop and implement inclusive education practices in general education classes for all students, as well as make strides towards moving students and adults with ID out of segregated

educational and living facilities. This would require efforts related to legislation, laws, guidelines, and protections for students with disabilities (Alharbi & Madhesh, 2018; Alruwaili, 2016).

### Limitations and Considerations for Future Research

The sample from this study came from one western region in Saudi Arabia; therefore, it is not representative of other regions in the country. Additionally, the use of convenience sampling limits the extent to which the findings can be considered representative of all teachers in the region in which the study was conducted. However, a significant percentage of responses provided a good starting point for understanding the attitudes of general and special education teachers about educational services for individuals with ID. These findings can help inform practice for the preparation of pre-service teachers at colleges and universities, the development and implementation of ongoing professional development for current teachers, and the development of educational services in inclusive general education classrooms.

The findings in this study indicate a need to know more about the attitudes of teachers in Saudi Arabia about students with ID. Given more time and resources, it would be interesting to continue this study in other regions of Saudi Arabia to gain greater understanding about teachers' attitudes based on location.

### REFERENCES

- Alamri, A. (2015). Teachers' attitudes towards children with autism: A comparative study of the United States and Saudi Arabia. *The Journal of the International Association of Special Education*, 16(1), 14–25.
- Aldabas, R. A. (2015). Special education in Saudi Arabia: History and areas for reform. *Creative Education*, 6(11), 1158–1167.
- Alharbi, A., & Madhesh, A. (2018). Inclusive education and policy in Saudi Arabia. *International Journal of Education Research and Reviews*, 6(1), 946–956.
- Alnahdi, G. (2014). Special education programs for students with intellectual disability in Saudi Arabia: Issues and recommendations. *Journal of the International Association of Special Education*, 15(1), 83–91.
- Alnahdi, G. (2019). Are we ready for inclusion? Teachers' perceived self-efficacy for inclusive education in Saudi Arabia. *International Journal of Disability, Development and Education*, 67(2), 182–193. doi:10.1080/1034912X.2019.1634795
- Alnahdi, G., Saloviita, T., & Elhadi, A. (2019). Inclusive education in Saudi Arabia and Finland: Pre-service teachers' attitudes. *Support for Learning*, 34(1), 71–85. doi:10.1111/1467-9604.12239
- Alquraini, T. A. (2012). Factors related to teachers' attitudes towards the inclusive education of students with severe intellectual disabilities in Riyadh, Saudi. *Journal of Research in Special Educational Needs*, 12(3), 170–182. doi:10.1111/j.1471-3802.2012.01248.x
- Alquraini, T., & Rao, S. (2018). A study examining the extent of including competencies of inclusive education in the preparation of special education teachers in Saudi universities. *International Journal of Disability, Development and Education*, 65(1), 108–122. doi:10.1080/1034912X.2017.1327651
- Alruwaili, H. R. (2016). Obstacles of special education services for students with intellectual disabilities in Saudi Arabia: Future directions. *American Research Journal of Humanities and Social Sciences*, 2(1), 1–5.
- Aseery, F. A. (2016). *Teachers' attitudes toward the inclusion of deaf and hard of hearing students in regular education classrooms in Saudi Arabia* (Doctoral dissertation, Ball State University). Retrieved from ProQuest Dissertations and Theses.
- Attitude. (2018). In Merriam-Webster.com. Retrieved November 10, 2018, from <https://www.merriam-webster.com/dictionary/attitude>
- Bin Battal, Z. (2016). Special education in Saudi Arabia. *International Journal of Technology and Inclusive Education*, 5(2), 880–886. doi:10.20533/ijtie.2047.0533.2016.0113
- Blair, J., Czaja, R., & Blair, E. (2014). *Designing surveys: A guide to decisions and procedures* (3rd ed.). SAGE Publications.
- Forlin, C. (2010). Re-framing teacher education for inclusion. In C. Forlin (Ed.), *Teacher education for inclusion: Changing paradigms and innovative approaches* (pp. 3–10). Abingdon, England: Routledge.



General Authority for Statistics, Kingdom of Saudi Arabia. (2018). Retrieved October 11, 2018 from <https://www.stats.gov.sa/en/43>

Jorgensen, C. M., & Lambert, L. (2012). Inclusion means more than just being “in:” Planning full participation of students with intellectual and other developmental disabilities in the general education classroom. *International Journal of Whole Schooling*, 8(2), 21–36.

Kurth, J. A., Lyon, K. J., & Shogren, K. A. (2015). Supporting students with severe disabilities in inclusive schools: A descriptive account from schools implementing inclusive practices. *Research and Practice for Persons with Severe Disabilities*, 40(4), 261–274.

Ministry of Education, Kingdom of Saudi Arabia. (2015). *Organizational guide for special education* (p.1–157). Riyadh, Saudi Arabia: Author.

Saris, W. E., & Gallhofer, I. N. (2014). *Design, evaluation, and analysis of questionnaires for survey research* (2nd ed.). Hoboken, NJ: Wiley.

United Nations. (1989). *Convention on the rights of the child*. [https://treaties.un.org/Pages/ViewDetails.aspx?s-rc=TREATY&mtdsg\\_no=IV-11&chapter=4&lang=en](https://treaties.un.org/Pages/ViewDetails.aspx?s-rc=TREATY&mtdsg_no=IV-11&chapter=4&lang=en)

UNESCO. (2015). *The right to education for persons with disabilities*. <https://unesdoc.unesco.org/ark:/48223/pf0000232592>

UNICEF. (2012) *The right of children with disabilities to education: A rights-based approach to inclusive education*. [https://www.unicef.org/disabilities/files/UNICEF\\_Right\\_to\\_Education\\_Children\\_Disabilities\\_En\\_Web.pdf](https://www.unicef.org/disabilities/files/UNICEF_Right_to_Education_Children_Disabilities_En_Web.pdf)

Westling, D. (2018). Inclusion in the United States: Correlations between key state variables. *International Journal of Inclusive Education*, 23(6), 575–593. doi:10.1080/13603116.2018.1441340

Westling, D. L., Fox, L., & Carter, E., (2015). *Teaching students with severe disabilities* (5th ed.). Upper Saddle River, NJ: Pearson.

# Level of Autism Awareness among Preservice and Practicing Teachers in Saudi Arabia

Maram M. Alnahari, Vicki A. McGinley, and David L. Bolton  
West Chester University, USA

## Abstract

*Identifying autism early is important if children are to receive the services they need to allow them to function in society. It has only been relatively recently that the Saudi Arabian educational system has acknowledged children with autism's learning challenges as a significant problem. Many practicing and preservice teachers may have misconceptions about autism. These misconceptions could significantly impact the educational system's ability to identify children with autism as well as the services that children with autism receive. The purpose of this study was to explore preservice and practicing teachers' awareness of autism in Saudi Arabia, focusing on common misconceptions that teachers may have about autism. The results of this research showed that overall, teachers in Saudi Arabia have limited knowledge of the nature of autism and its impacts on children's education. Only a very small portion of teachers, 11%, reported receiving special training on autism and 74.3% reported having little knowledge of how to teach students with autism. Recommendations to improve the current situation are included.*

Keywords: Saudi Arabia, autism, special education, awareness, school, teachers

## INTRODUCTION

In 1932, the Kingdom of Saudi Arabia was established. It occupies about four-fifths of the Arabian Peninsula. Saudi Arabia is bordered on the west by the Red Sea, Iraq, Jordan, and Kuwait; on the north by East Bahrain, Qatar, the Arabian Gulf, and the United Arab Emirates; and on the south by Yemen. The capital city in Saudi Arabia is Riyadh. The kingdom's population speaks Arabic. The current population of Saudi Arabia is 33,554,000 based on the latest United Nations estimates (UNdata, 2019). Saudi Arabia is an Islamic state, and thus the educational system follows the Koran and Sunnah, the sacred teachings of Islam (Royal Embassy of Saudi Arabia in Washington, DC, 2016). The Ministry of Education in Saudi Arabia was established in 1952 and governs all the affairs of students preparing to be teachers (preservice teachers), as well as practicing teachers. The Ministry's main goals are to provide suitable environments and learning opportunities for all children, increase the effectiveness of scientifically-based research in education, and encourage creativity and innovation. Currently, there are more than 27,000 schools in all regions of Saudi Arabia. Upgrading skills and collaboration across the education system is encouraged (Royal Embassy of Saudi Arabia in Washington, DC, 2016).

### Education System in Saudi Arabia

Education in Saudi Arabia has evolved significantly since its inception. Education was limited by socio-economic class and location to some central cities, such as

Riyadh and Jeddah, the largest cities. Presently, education is a right for all classes of society and is free of charge. All university students receive their education free while receiving a monthly stipend of \$300 (Ministry of Education of Saudi Arabia, 2012).

In addition to its traditional Islamic religious curriculum, Saudi Arabia has a uniform curriculum for all students that is similar to the curriculum offered in the United States and the United Kingdom. Despite a uniform curriculum for all grades, the education system separates males and females in schools for all children, including those with disabilities (Ministry of Education of Saudi Arabia, 2008).

### Special Education in Saudi Arabia

In the past, parents provided all the services needed for children with disabilities through homeschooling. However, in 1958, Saudi Arabia began to provide free education for children with disabilities. In addition, Saudi Arabia provided related services, equipment, and technical assistance to accommodate those students in need (Ministry of Education of Saudi Arabia, 2008). The Ministry of Education established the Department of Special Learning in 1962. The main goal of this department was to improve learning and rehabilitation services for all categories of students with disabilities. However, in the beginning, services were provided for only three categories of disability: intellectual disabilities, deafness, and blindness (Alquraini, 2011) and students were taught in schools called Scientific Institutes. In 1960, Al-Noor Institute, in Riyadh, was the first

special school opened by the Saudi Arabian government for students who were blind (Aldabas, 2015). This institution trained all students in Braille, and for those in need, Orientation and Mobility, starting from the elementary school level through high school. The curriculum was the same as the general education curriculum except that Braille was used to teach students (Aldabas, 2015). In 1964, the Ministry of Education established the first school in Riyadh, the Al-Amal Institute, to educate students with hearing impairments and deafness. Just like the Al-Noor Institute, Al-Amal trained all students, starting from elementary school level through high school. The curriculum was the same as the general education curriculum except sign language was used to teach students with hearing impairments, specifically, deafness. The Intellectual Education Institute, the first school to educate students with intellectual disabilities, was opened by the Ministry of Education in 1971. The main objective of this institution was to educate and provide residential services for students with intellectual disabilities, to ensure their needs were being met. The curriculum focused on improving the social, behavioral, and communication skills of students. In 2000, the total number of segregated special education schools for children with intellectual disabilities was 54 public schools (Aldabas, 2015).

The Department of Special Learning later began serving other categories of children with disabilities (Al-Mousa, 2010). For 11 years, from 1971 to 1982, Saudi Arabia expanded the services from those categories identified above to include children identified with learning disabilities. In 1990, Saudi Arabia incorporated services for students with learning disabilities into public schools. The services were provided through a learning resource model, which is a pull-out program from the general education class. However, implementing the education of children with learning disabilities was delayed due to the lack of awareness and resources of this category by educators (Al-Mousa, 2010).

From 1990 to 2000, the Department of Special Education focused upon integrating children with special needs into public schools and opened special education classes within public schools for students with mild-to-moderate intellectual disabilities, mild-to-moderate autism, and hearing impairments (Al-Mousa, 2010). Currently, approximately 746 public schools have special education classrooms for students with mild-to-moderate disabilities, including intellectual disabilities and multiple disabilities, as well as 47 programs for students with mild-to-moderate autism. In addition, there are 71 programs for students with

blindness and visual impairments and approximately 316 programs for students with deafness and hearing impairments. However, students with severe disabilities are served in private schools (Ministry of Education of Saudi Arabia, 2012).

### **The State of Autism in Saudi Arabia**

There has been minimal research in the field of autism from the Middle East in general and from Saudi Arabia in particular (Al-Salehi, Al-Hifthy, & Ghaziuddin, 2009). In the beginning, Saudi Arabia focused on certain categories of people with special needs, and as in other countries, autism was added as a later category (Al-Salehi et al., 2009). Saudi Arabia's interest in the field of autism increased as the number of children with autism rose. In 2002, it was estimated that there were 42,500 confirmed cases of autism in Saudi Arabia and that many more remained undiagnosed (Yazbak, 2004). A more recent statistic, using governmental data and proportions based on comparisons of the growing number of children with autism in other countries, the number of children in Saudi Arabia estimated to have autism in 2013 was approximately 400,000 (Alamari & Tyler-Wood, 2016). Even though autism has gained much attention in the media, there is a lot of misinformation about the disability in the general population (Tipton & Blacher, 2014).

Several studies have addressed the preparation of teachers to work with students with ASD in Saudi Arabia (Zeina, Al-Ayadhi, & Bashir, 2014) and only a few researchers have studied the knowledge of autism among schoolteachers. In 2013, Al-Sharbati et al. examined the awareness and knowledge of autism among 164 teachers and found that there were common misconceptions of children with autism. Additionally, a study by Haimour and Obaidat (2013) attempted to determine the level of knowledge educators in Saudi Arabia possessed about autism. A total of 391 general and special education teachers from different segregated and comprehensive schools in Jeddah were assessed to ascertain their level of autism awareness. Descriptive statistics showed that schoolteachers had a low level of knowledge of autism spectrum disorder (ASD). The findings also showed significant variations in teacher awareness of autism depending on the teacher's background (i.e., position, level of education, teaching experience, and interaction with students with ASD). The results of this study reported that overall, schoolteachers had a limited understanding of autism spectrum disorder (Haimour & Obaidat, 2013).

A study by Alharbi et al. (2019) evaluated school-teachers' awareness of and attitude toward autism spectrum disorder in the Al-Qassim district of Badaya, Kingdom of Saudi Arabia, and to determine any gaps in the teachers' knowledge. Two hundred forty-eight schoolteachers participated in the research study. The study found that teachers had little understanding or awareness of autism spectrum disorder (Alharbi et al., 2019).

### **Autism in Saudi Arabia in Comparison to Other Countries**

When comparing Saudi Arabia to other countries that have explored the knowledge, skills, and attitudes towards children with ASD among preservice and practicing teachers, results are mostly comparable. For example, a study of 300 preschool teachers in Yemen (Taresh, Ahmad, Roslan, & Ma'rof, 2019) found a lower level of knowledge of ASD, with variability dependent upon the education level and teaching experience of those surveyed. Similarly, a study done by Liu et al. (2016) of preschool teachers in China demonstrated that 83% of the teachers provided inaccurate responses to more than 50% of the survey questions that assessed their knowledge of ASD. In Pakistan, 100 questionnaires, with 73 teachers responding, showed less than half (44.2%) understood autism as a neurological/mental disorder, only 30.7% had encountered a child with autism, and almost half had no idea as to who they would refer a child for evaluation (Ayub et al., 2017). Similarly, a study done in Tanzania by Geraldina in 2015 sampled 16 teachers from three regular primary schools. This study revealed that teachers had low knowledge about children with autism due to many factors, some of them being lack of in-service training and seminars offered to support professional development. A study done in India by Shetty and Rai (2014) reported that of 326 teachers surveyed, 95.7% of the teachers had an awareness of ASD, but only 21% indicated that they had "adequate knowledge." Finally, in studying 504 senior preservice teachers in Turkey (Rakap, Balıkcı, Parlak-Rakap, & Kalkan, 2016) found that there was limited knowledge of autism and its characteristics.

### **The Purpose of the Study**

Because Saudi Arabia is a large country with a growing population, the number of children with autism is also growing (Al-Salehi et al., 2009). However, due to a lack of awareness and research in Saudi Arabia about autism and lack of early identification, many children do not receive needed early intervention services (Al-Salehi et al., 2009).

Because of the growing population of students with autism, and their need for intervention, it is vitally important to assess the awareness and knowledge of schoolteachers in Saudi Arabia (Al-Salehi et al., 2009). If teachers are not aware, more teacher education will be needed because early intervention services increase the success of students with autism (Al-Salehi et al., 2009). The purpose of the current study is to explore Saudi Arabian preservice and practicing teachers' knowledge of autism. Specifically, the purpose is to measure preservice and practicing teachers' awareness of causes, signs, symptoms, and social and environmental factors that impact autism. Finally, this study assesses teachers' knowledge of the educational needs of children with autism.

### **Identification of Student Misconceptions**

One method of determining areas in which students lack knowledge is to ask students to identify misconceptions. Gurel, Eryilmaz, and McDermott (2015) provide an overview of the different methods or instruments that have been used for identifying misconceptions within the realm of science. Misconceptions were defined as conceptions that contradict accepted scientific theories. From 1980 to 2014, 273 articles were published that described methods of identifying misconceptions. The authors determined that 53% of the articles used interviews, 34% used open-ended tests, 32% used multiple-choice tests, and 13% used multiple-tier tests. These instruments identify the differences between what the teachers want the students to understand and what they have learned. Identifying these discrepancies is important since misconceptions can have a detrimental impact on students' lives and on national health (Gurel, Eryilmaz, & McDermott, 2015).

An example of an instrument to identify misconceptions was developed by Peterson, Treagust, and Garnett (1986). They used a tiered, multiple-choice format since it is less time-consuming than using interviews. This was important since they wanted to develop something that teachers could use in their classrooms to identify student misconceptions about autism. The validity of the instrument was established by basing the content of the tests upon misconceptions that were identified previously through interviews. The focus of the instrument was upon covalent bonding and structure in chemistry. The instrument presented students with multiple-choice questions, requiring them first to answer a content question, followed by a question asking them to identify their reasons for choosing their answer. The distractors



in the questions were based on the identified misconceptions. If the student either got the question incorrect or provided an incorrect reason, it indicated that the student had a misconception.

## METHODS

### Research Question

The primary focus of this study was to determine the extent to which public schoolteachers and preservice teachers in Saudi Arabia know autism, because an adequate level of awareness will support proper evaluation, placement, and intervention of children with autism in early intervention and school programs. Public schoolteachers in this study included both regular and special education teachers. The study examined the extent of teachers' and pre-service teachers' training in special education, their overall self-perceptions of their knowledge of autism, as well as their overall self-perceptions of their understanding of how to teach students with autism. In addition to their overall perceptions of their knowledge of autism, the study looked at whether teachers have specific knowledge about autism and can recognize the myths surrounding this condition. And finally, the study examined the perceptions of teachers and pre-service teachers regarding the resources available in Saudi Arabia to support teachers who teach students with autism.

### Research Design

The study used a quantitative approach in which the researchers used a survey to assess the background and knowledge of teachers and education majors regarding autism. The instrument used pre-specified response options to gather background information, rating scales to report overall perceptions, as well as a knowledge test with an agree/disagree/I don't know response format to assess their knowledge of autism and their perception of the support for autism in Saudi Arabia. Thus, the researchers used a structured survey methodology to collect the data.

A written questionnaire was chosen because it was more convenient to collect data by sending out questionnaires than to interview teachers. The close-ended format is also easier to complete than using an open-ended format and therefore provides higher response rates than other methods. The close-ended format also provides a standardized format, which makes it easier to analyze (Farrell, 2016).

This research study attempted to answer the question about the level of autism awareness among preservice and practicing teachers, with a special focus on common misperceptions about children with ASD.

### Procedure and Design

A snowball technique sampling procedure was used to generate respondents (Biernacki & Waldorf, 1981). The main advantage of the snowball procedure is the ease of assembling the sample. However, the technique has a significant drawback in that it is a non-probability sampling technique, meaning it is not clear whether the resulting sample is representative of the population as a whole. Bias can be introduced through the initial choice of those being sampled, as well as how those individuals forward the survey to others. In particular, the sample may over-represent individuals with numerous social connections (Atkinson & Flint, 2001).

As Atkinson and Flint (2001) point out, a large sample size may reduce bias and result in a more representative sample. The reason that this method was chosen was because it was believed that the interconnection and size of the social networks was a more effective way of generating a large sample than if one had used a more traditional approach. Indeed, that was the case in this study. The larger sample size was a trade-off for a less-traditional approach.

Initially, ten elementary schoolteachers in Saudi Arabia were asked to participate in the research study through an email describing the study and its importance to the educational community. The email contained a link to the survey instrument that was located on Google Survey. These teachers were asked not only to complete the survey, but they were encouraged to forward the survey to colleagues who they knew. These teachers then forwarded the survey link throughout their network. Because of the nature of the sampling method and the lack of frame, it was not possible to send a follow-up reminder. After two months, the data gathered was downloaded and analyzed using Statistical Package for the Social Sciences (SPSS).

### Participants

To understand the final sample, it is important to describe the ten teachers who were contacted first. This group consisted of female elementary schoolteachers who one of the researchers knew from her work and life in Saudi Arabia. These teachers worked in schools in Taif, a city in the western region of Saudi Arabia. Taif has a population of 689,000 inhabitants and is the seventh-largest city in Saudi Arabia (Macrotrends, n.d.). Those who were contacted were between 25 and

35 years of age and had at least a bachelor's degree, which is the minimum degree required to teach in Saudi Arabia. Because these individuals are most likely to have forwarded the survey to similar individuals, it is most likely that the final sample consisted mainly of young, educated, female elementary teachers teaching in an urban setting in western Saudi Arabia. The 716 respondents consisted of both working teachers and pre-service teachers. The teachers taught in both special and general education, and worked both in segregated special schools and inclusive schools.

### Instrument

The Autism Awareness Survey was developed by the researcher for the study to identify misconceptions about students on the autism spectrum. The instrument had two main sections. The first section consisted of demographic variables. They included questions about the type of teacher, whether general or special and pre-service or practicing; the level of autism awareness; and the level of the participant's experience of children with autism.

The second section contained a list of statements about autism. The statements consist of established facts and common misconceptions about autism. The researchers generated the common misconceptions based upon knowledge gained through taking courses in special education, as well as teaching special education courses over a 25-year period. These statements were not tied to a particular article or instrument published previously. Participants in the study were asked to agree

if they thought the statement was correct, disagree if they considered the statement incorrect, or to indicate that they did not know if they weren't sure.

### Analysis

Descriptive statistics were used to analyze the data. Data were entered into SPSS. Because the survey was anonymous, no identifying information was entered. As the data were categorical, frequencies were calculated for each of the responses.

## RESULTS

The background information the respondents provided was analyzed using SPSS to identify the frequency of responses to the pre-defined categories. In the first section, the findings of the study showed that 59.2% of the teachers who participated in the study were general education teachers, 14.5% of the respondents were special education teachers, and 26.3% were students who were pre-service teachers. Participants were also asked how much training they had in special education. A large majority, 70.9%, had not taken university classes in special education and had never participated in workshops. Only 20.9% had taken one or more university classes in special education, while 8.1% had participated in workshops.

To analyze their respondents' overall self-perception of their knowledge of autism and of their knowledge of teaching students who have autism, the researchers again calculated response frequencies in the six response options using SPSS. Approximately 61% of the participants had fairly low, low, or very low knowledge of autism. Only 11% responded that they had a very high knowledge of autism. The information about participants' level of knowledge of autism can be found in Figure 1.

Of those who responded to the question about their overall knowledge of how to teach students with autism, 48.9% percent indicated that they had very low knowledge regarding teaching a child with autism. Only 14% reported they had very high knowledge. Figure 2 shows the percentages responding at different levels.

To examine the question of their actual knowledge of autism, as well as their perceptions of support in Saudi Arabia for teaching students with autism, frequencies were calculated for each

Figure 1  
*Participants' levels of knowledge about autism.*

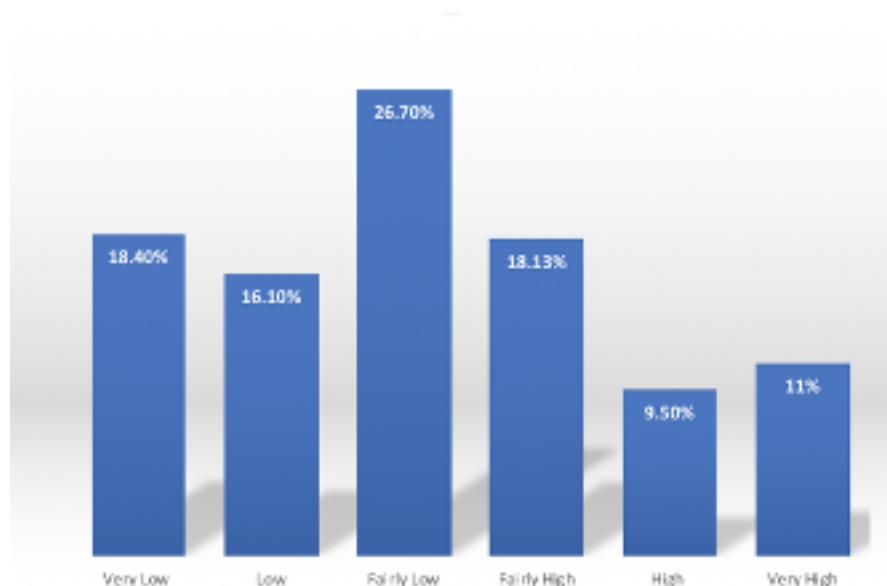
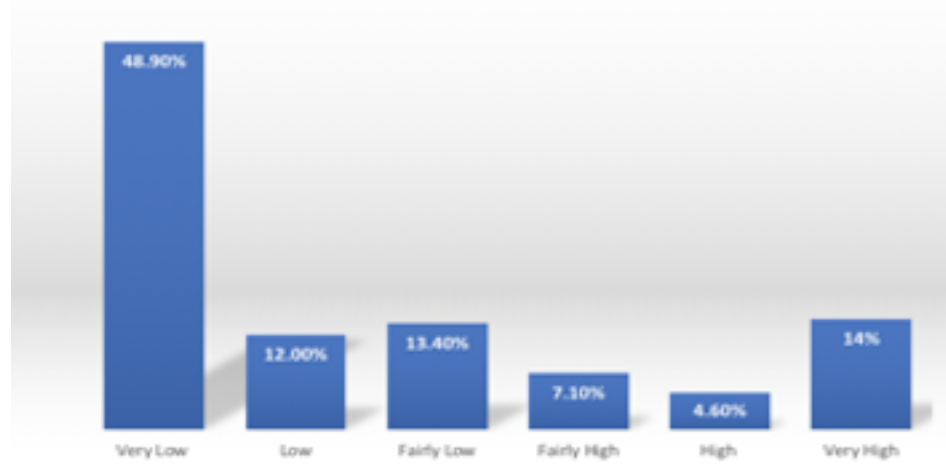


Figure 2  
 Participants' levels of knowledge regarding teaching children with autism.



of the response options to the individual knowledge statements and myths and to the statement about the level of support for teaching students with autism. Table 1 shows the percentages of agree/disagree/I don't know responses for the 16 items.

The last item in this section of the survey was a statement addressing respondents' perceptions regarding the level of support in Saudi Arabia for teaching students with autism. The wording of this statement was, *There are adequate services available for the child with autism in Saudi Arabia*. The majority of the respondents, 56%, disagree with this statement. Only 22.3% said that the statement was true, while 21.6% did not know.

The first 15 of the 16 items in this section of the questionnaire addressed the extent of respondents' specific knowledge of autism. These were knowledge or myth statements. Eleven of them were considered documented truths, while four of them are myths. Table 2 shows the percentages of the responses to the items that were considered truths. Agreement ranged from 15.9% to 79.6%. However, the percentages seem negatively skewed. The mean and median were calculated for these items and were found to be 57.4% and 66.2% respectively. The large difference between the mean and the median shows that the percentages are skewed, with the skew being negative. Thus, the true items with the lowest agreement appear to impact the distribution negatively. These include the items, *Autism runs in families* and *Autism is a developmental disorder*, which had percentages agreeing of 15.9% and 30.9%, respectively. In addition, only 52.2% of the participants agreed with the item, *Autism is a learning and mental disorder*.

A higher percentage of participants agreed with the rest of the items. More than 70% of participants agreed with the items, *A child with autism shows frequent movements of the hands and probably the body*, *A child with autism is not social*, *Signs of autism show between 0 and 3 years*, and *There is limited speech development in a child with autism*. For the item, *The child with autism likes the routine of eating, clothing, and playing*, 61.6% of the participants agreed with this statement.

Looking at the other two responses for the lowest three items, more participants agreed with these statements than responded, *Do not know*. The lowest true item,

*Autism runs in families*, had 52.2% of the participants disagreeing with it, with only 31.8% not knowing; this is a difference of 20.4%. For the next-lowest true item, *Autism is a developmental disorder*, 41.3% of participants disagreed with it, while 27.8% did not know—a difference of 13.5%. For the third-lowest item, *Autism is a learning and mental disorder*, the percentages were roughly equal: 25% disagreeing and 22.5% not knowing. Thus, for the two true items with which the fewest participants agreed, *Autism runs in families* and *Autism is a developmental disorder*, there appears to be more certainty among the participants that the items were false rather than that they simply did not know.

The fourth lowest item, *The child with autism likes the routine of eating, clothing, and playing*, had the largest difference between *Disagree* and *Do not know* responses. Only 8.2% disagree with this statement, while 30.2% did not know, a difference of 22%. Thus, the large majority of the participants either knew this was true or did not know. The only true item with which a lower percentage disagreed was the true item, *A child with autism shows frequent movements of the hands and probably the body*. This item had the highest agreement percentage, 79.6%, and the lowest disagreement percentage, 2.8%.

Table 3 shows the percentages of the responses for the four myth items. The percentages of disagreement for all four items fell below 50%, ranging from 48.6% to 24.3%. The mean and median percentages disagreeing was 36.4% for both. The lowest disagreement percentage was for the item, *There is a cure for autism*.

Table 1  
*Frequencies of responses for the survey items for the total instrument.*

Item Number	Item	Agreed	Disagreed	Did not know	Type of Question
1	Autism is an emotional disorder.	31.8%	31.6%	36.6%	Myth
2	Autism is a developmental disorder.	30.9%	41.3%	27.8%	True
3	Autism is a learning and mental disorder.	52.5%	25%	22.5%	True
4	Signs of autism show between 0 and 3 years.	71.5%	11.2%	17.3%	True
5	Autism runs in families.	15.9%	52.2%	31.8%	True
6	A child with autism is not social.	76.1%	13.4%	10.5%	True
7	There is limited speech development in a child with autism.	70.8%	11.2%	18%	True
8	A child with autism shows frequent movements of the hands and probably the body.	79.6%	2.8%	17.6%	True
9	The child with autism likes the routine of eating, clothing, and playing.	61.6%	8.2%	30.2%	True
10	Vaccines are causing an increase in autism.	10.5%	41.2%	48.3%	Myth
11	Autism is diagnosed more frequently in boys than in girls.	32%	17.5	50.5%	True
12	There is a cure for autism.	44.1%	24.3%	31.6%	Myth
13	There is one intervention that works for all children with autism.	16.1 %	48.6%	35.3%	Myth
14	The majority of children with autism are genius.	50%	20.9%	29.1%	Fact
15	Children with autism can grow up to live independently.	35.1%	38.3%	26.7%	Fact
16	There are adequate services available for the child with autism in Saudi Arabia.	22.3%	56%	21.6%	Opinion

A substantial percentage of respondents, 44.1%, agreed with this item with 31.6% not knowing. The myth that seems most obvious to the participants, *There is one intervention that works for all children with autism*, only had 16.1% of participants agreeing with it. However, more than a third, 35.3%, did not know. Overall, a large percentage of participants responded with *Do not know* for the myth items, ranging from 31.6% to 48.3%, with an average of 38%.

## DISCUSSION

This study addressed the knowledge and awareness of autism among schoolteachers and those preparing to be schoolteachers in Saudi Arabia. In addition, this study aimed to establish any differences in pre- and practicing teachers' knowledge about autism, depending on the variables: (a) type of teacher, (b) experience in special

education, and (c) the level of autism awareness. As indicated, this study was completed to gather information so that proper resources can be directed to needed professional development for screening, evaluation, diagnosis, and intervention, with emphasis on helping teachers to properly support and educate children with ASD. Teachers spend the most time educating children with ASD and need to be equipped to do so.

The findings established that the overall level of knowledge about children with autism is challenged among the schoolteachers and is in agreement with Haimour and Obaidat (2013), who established that the level of autism knowledge among teachers in Saudi Arabia is far below expected standards. This concurs with the findings of Al-Sharbati et al. (2013) in their cross-sectional study on autism awareness among schoolteachers in Saudi Arabia.



Table 2  
Percentages of responses to true items.

Items	Agreed	Disagreed	Did not know
A child with autism shows frequent movements of the hands and probably the body.	79.6%	2.8%	17.6%
A child with autism is not social.	76.1%	13.4%	10.5%
Signs of autism show between 0 and 3 years.	71.5%	11.2%	17.3%
There is limited speech development in a child with autism.	70.8%	11.2%	18.0%
The child with autism likes the routine of eating, clothing, and playing.	61.6%	8.2%	30.2%
Autism is a learning and mental disorder.	52.5%	25.0%	22.5%
Autism is a developmental disorder.	30.9%	41.3%	27.8%
Autism runs in families.	15.9%	52.2%	31.8%
Mean	57.4%	20.7%	22.0%
Median	66.2%	12.3%	20.3%

Saudi Arabia was keen to assist students with disabilities in obtaining a free, valued, and appropriate education. Throughout its history, Saudi Arabia has made significant progress in providing special education programs to ensure that students with disabilities receive a free and appropriate education, and the special education field is always evolving. Therefore, special education must adapt to the unique needs presented by each student's disabilities. The findings of this study added to the literature suggesting that most schoolteachers in Saudi Arabia have limited awareness and knowledge concerning autism, and of teaching children with autism. Yet Saudi Arabia continues to improve dramatically; therefore, the country's special education services will change rapidly.

### RECOMMENDATION

At present, Saudi Arabia does not offer any special education courses for general education teachers. As a result, general education teachers and teachers in public school settings are unprepared to teach students with disabilities. It is recommended that all schoolteachers take at least one special education course. When general education teachers take at least one foundational course in special education, they will be more effective teachers of special needs students.

Additionally, the research noted that the education of children with more severe levels of autism is provided in more-segregated, less-inclusive settings. Further, children with less severe levels of autism may go undiagnosed. Thus, confirming a lack of awareness and teaching strategies may impact the placement of children (Zeina, Al-Ayadhi, & Bashir, 2014) and demonstrating that greater awareness and support for teachers would support the education of children with autism in multiple ways in multiple settings (Alamri & Tyler-Wood, 2016).

Presently, there appears to be little collaboration between general and special education systems in Saudi Arabia, which hinders the inclusion of students with special needs. It is recommended that the Saudi Arabian government promote collaboration between special education and general education systems to increase the success of special education students in the classroom. Teachers will be better able to address students' problems if they work together and share their techniques. Having two sets of eyes provides more information to help a student be successful and proactively address problems. Collaboration would also make inclusive education systems more successful. All schoolteachers, regardless of specific qualifications,

Table 3  
Percentages of responses to myth items.

Items	Agreed	Disagreed	Did not know
There is one intervention that works for all children with autism.	16.1%	48.6%	35.3%
Vaccines are causing an increase in autism.	10.5%	41.2%	48.3%
Autism is an emotional disorder.	31.8%	31.6%	36.6%
There is a cure for autism.	44.1%	24.3%	31.6%
Mean	25.6%	36.4%	38.0%
Median	24.0%	36.4%	36.0%

should receive training in educational practices needed to serve this group of students effectively. General education teacher programs are sorely in need of special education classes that focus on children with exceptionalities.

The current study has provided a first step in understanding general education teachers' awareness and knowledge level of teaching students with special needs. However, this study only focuses on autism knowledge. More research is needed to assess Saudi Arabian teachers' attitudes toward special education students, as well as teachers' attitudes toward the inclusion of special education students in general education classes. Understanding Saudi Arabian teachers' attitudes toward inclusion will help develop effective mainstreaming practices.

### LIMITATIONS

One of the limitations of this study was the sampling method. While convenient, the use of the snowball method may mean that the sample does not represent the population as a whole. However, since the sample size is relatively large, this may have mitigated sample bias (Atkinson & Flint, 2001). If anything, the resulting sample may contain a larger percentage of teachers with a good knowledge of autism. One would expect that young elementary teachers teaching in an urban setting would be some of the most informed teachers about autism since they had recently attended university and, because they live in a city, they have access to more resources than teachers in rural areas. As a result, one should interpret the results cautiously in that they may overestimate teachers' knowledge of autism.

Another concern might be regional bias in that there may be an overrepresentation of teachers from Taif. While it is not clear that these teachers are different than any other teachers teaching in cities in Saudi Arabia, future research might show differences among regions. Given the conservative Muslim influence prevalent in Saudi Arabia, this would not be surprising.

And finally, one of the ways that bias can be addressed is by replication of the study results (Atkinson & Flint, 2001). Further research is needed to see if the results can be replicated. Future research would use a probability sample to see if the results will be similar in the general population, as well as among different types of teachers, such as secondary schoolteachers and male teachers.

### CONCLUSION

This study addressed the awareness among preservice and practicing teachers of causes, signs, symptoms, and social and environmental factors that impact autism, as well as teachers' knowledge of the educational needs of children with autism. It reinforces work done by other researchers. Recommendations emphasize increased training of all teachers—both general and special education—so that Saudi Arabia may support teachers in addressing the needs of children with autism in all settings and have a diverse repertoire of research-based best practices to support all students with autism in their classes.

### REFERENCES

- Alamri, A., & Tyler-Wood, T. (2016). Teachers' attitudes toward children with autism: A comparative study of the United States and Saudi Arabia. *The Journal of the International Association of Special Education, 16*, 14–25.
- Aldabas, R. A. (2015). Special education in Saudi Arabia: History and areas for reform. *Creative Education, 6*, 1158–1167.
- Alquraini, T. (2011). Special education in Saudi Arabia: Challenges, perspectives, future possibilities. *International Journal of Special Education, 26*, 149–159.
- Alharbi, K., Alharbi, A., Thunayyan, F., Alsuhaibani, K., Alsalameh, N., Alhomid, M., Albahouth, I., & Hamid, P. (2019). School teachers' knowledge about autism in Al-Badaya city, Al-Qassim Region, Kingdom of Saudi Arabia. *Materia Socio Medica, 31*(1), 4–9. doi: 10.5455/msm.2019.31.4–9
- Al-Mousa, N. A. (2010). *The experience of the Kingdom of Saudi Arabia in mainstreaming students with special educational needs in public schools*. Riyadh, Saudi Arabia: The Arab Bureau of Education for the Gulf States. Retrieved from <http://unesdoc.unesco.org/images/0019/001916/191663e.pdf>
- Al-Salehi, S. M., Al-Hifthy, E. H., & Ghaziuddin, M. (2009). Autism in Saudi Arabia: Presentation, clinical correlates, and comorbidity. *Transcultural Psychiatry, 46*, 340–347.

- Al-Sharbati, M. M., Al-Farsi, Y. M., Ouhtit, A., Waly, M. I., Al-Shafae, M., Al-Farsi, O., Al-Khaduri, M., Al-Said, M. F., & Al-Adawi, S. (2013). Awareness about autism among school teachers in Oman: A cross-sectional study. *Autism, 19*(1), 6–13.
- Atkinson, R., & Flint, J. (2001). Accessing hidden and hard-to-reach populations: Snowball research strategies. *Social Research Update, 33*(1), 1–4.
- Ayub, A., Naeem, B., Ahmed, W. N., Srichand, S., Aziz, K., Abro, B., Najam, S., Murtaza, D., Janjua, A. A., Ali, S., & Jehan, I. (2017). Knowledge and perception regarding autism among primary school teachers: A cross-sectional survey from Pakistan, South Asia. *Indian Journal of Community Medicine, 42*(3), 177–179.
- Biernacki, P., & Waldorf, D. (1981). Snowball sampling: Problems and techniques of chain referral sampling. *Sociological Methods & Research, 10*, 141–163.
- Farrell, S. (2016). *Open-ended vs. closed-ended questions in user research*. Retrieved from <https://www.nngroup.com/articles/open-ended-questions>.
- Geraldina, E. (2015). Teachers' knowledge and perceived challenges of teaching children with autism in Tanzanian regular primary schools. *International Journal of Academic Research and Reflection, 3*(5), 36–47.
- Gurel, D. K., Eryilmaz, A., & McDermott, L. C. (2015). A review and comparison of diagnostic instruments to identify students' misconceptions in science. *Eurasia Journal of Mathematics, Science & Technology Education, 11*, 989–1008.
- Haimour, A. I., & Obaidat, Y. F. (2013). School teachers' knowledge about autism in Saudi Arabia. *World Journal of Education, 3*(5), 45–56.
- Liu, Y., Li, J., Zheng, Q., Zaroff, C. M., Hall, B. J., Li, X., & Hao, Y. (2016). Knowledge, attitudes, and perceptions of autism spectrum disorder in a stratified sampling of preschool teachers in China. *BMC Psychiatry, 16*(1). doi: 10.1186/s12888-016-0845-2
- Macrotrends. (n.d.). Retrieved from <https://www.macrotrends.net/cities/22434/taif/population>.
- Ministry of Education of Saudi Arabia. (2008). *Development of education in the Kingdom of Saudi Arabia*. Retrieved from <http://www.moe.gov.sa/ar/Pages/default.aspx>
- Ministry of Education of Saudi Arabia. (2012). *Statistical manual of institutes and special education programs for the academic year 2012/2013*. Retrieved from <http://www.moe.gov.sa/ar/about/Institutions/Pages/Center-for-Higher-Education-Statistics.aspx>
- Peterson, R., Treagust, D., & Garnett, P. (1986). Identification of secondary students' misconceptions of covalent bonding and structure concepts using a diagnostic instrument. *Research in Science Education, 16*, 40–48.
- Rakap, S., Balikci, S., Parlak-Rakap, A., & Kalkan, S. (2016). *An analysis of Turkish pre-service teachers' knowledge of autism spectrum disorder: Implications for teacher preparation programs*. *SAGE Open, 6*(3), 215824401666885. doi: 10.1177/2158244016668853
- Royal Embassy of Saudi Arabia in Washington, DC. (2016). *About Saudi Arabia*. Retrieved from <http://embassies.mofa.gov.sa/Pages/default.aspx>
- Shetty, A., & Rai, B. S. (2014). Awareness and knowledge of autism spectrum disorders among primary school teachers in India. *International Journal of Health Sciences and Research, 4*(4), 80–85.
- Taresh, S. M., Ahmad, N. A., Roslan, S., & Ma'rof, A. M. (2019, December). Knowledge in autism spectrum disorder (ASD) among pre-school teachers in Yemen. *Proceedings of the 3rd International Conference on Special Education (ICSE 2019)*. Retrieved from <https://www.atlantis-press.com/proceedings/icse-19/125928883>
- Tipton, L. A., & Blacher, J. (2014). Brief report: Autism awareness: Views from a campus community. *Journal of Autism and Developmental Disorders, 44*, 477–483.
- UN Data. (2019). Retrieved from <http://www.dataworldbank.org>
- Vincent, J., & Ralston, K. (2019). Trainee teachers' knowledge of autism: Implications for understanding and inclusive practice. *Oxford Review of Education, 46*(2), 202–221. doi: 10.1080/03054985.2019.1645651
- Yazbak, F. E. (2004). Autism seems to be increasing worldwide, if not in London. *British Medical Journal, 328*, 226–227.
- Zeina, R. M., Al-Ayadhi, L., & Bashir, S. (2014). Autism spectrum disorder: Main problem waiting for solution in Kingdom of Saudi Arabia. *Autism, 8*(8), 487–490.

# Decolonizing Inclusion: Partnership, Pedagogy, and Possibility in Canadian Teacher Education

Nadine Bartlett and Joel Boyce  
University of Manitoba, Canada

## Abstract

*At the University of Manitoba, Canada a team comprised of four faculty members from the Faculty of Education, an Indigenous Education Consultant, and a graduate student embarked on a change initiative entitled: Indigenizing Curriculum, Pedagogy and Spaces in Teacher Education. In the spirit of reconciliation, the initiative involved collaborating with Indigenous stakeholders and knowledge-keepers in determining educational priorities and structures for teacher education in an Indigenous Community-Based Cohort in inclusive/special education, and in the area of inclusive/special education more broadly. The initiative sought to challenge existing norms within the academy that were maintaining institutional power and control over teacher education. In addition to building collaborative partnerships with Indigenous stakeholders, the change initiative involved conjointly deconstructing curricula and pedagogy, and infusing Indigenous content, perspectives, and worldviews. Special education is a logical place to begin this process because of the systemic structures and practices within this paradigm that employ deficit-based views of diversity. Based on Eurocentric standards of teaching and learning, special education has been particularly detrimental to Indigenous students, as it has been used to diagnose and label difference as disability, and disproportionately segregate Indigenous students in special education classrooms and programs. The authors of this paper describe this change initiative and provide recommendations for decolonizing the academy and teacher education, with a focus on inclusive/special education.*

## INTRODUCTION

According to Justice Murray Sinclair, Chair of the Truth and Reconciliation Commission of Canada (TRC), “It is precisely because education was the primary tool of oppression of Aboriginal people, and mis-education of all Canadians, that we have concluded that education holds the key to reconciliation” (Sinclair, 2014, p. 7). The role of teacher education in the process of reconciliation must be underscored, and a commitment to addressing the TRC’s *Calls to Action* (2015) must be a priority of the academy. Specifically, Call 10 addresses the need to develop culturally appropriate curricula, and to respect and honor the treaty relationships. Call 63 advocates building capacity for intercultural understanding, empathy, and mutual respect, and identifying teacher-training needs related to Indigenous education issues. Given colonial and racist practices in the Canadian educational system, including forced assimilation of Indigenous children in residential schools, it is the ethical responsibility of faculties of education to play a central role in answering these Calls. As the largest educator of teachers in the province of Manitoba, the Faculty of Education at the University of Manitoba is uniquely positioned to engage in the process of reconciliation along many fronts including, but not limited to: (a) acknowledging the need to transform existing hierarchical structures within the academy, (b) collaborating with Indigenous peoples to engage in the process of

decolonial change, and (c) infusing Indigenous content, pedagogy, and worldviews in curricula and pedagogy as determined by Indigenous stakeholders.

### Why Inclusive Education?

It is important to align the philosophical underpinnings of the curricula in teacher education with Indigenous worldviews. Special education is a logical place to begin this process because the systemic structures and practices within this paradigm that employ deficit-based views of diversity (Slee, 2011) contradict many Indigenous cultures where there is a greater acceptance of difference (Minerva Rivas, 2018). Based on Eurocentric standards of teaching and learning, special education has been particularly detrimental to Indigenous students, as it has been used to diagnose and label difference as disability, and disproportionately segregate Indigenous students in special education classrooms and programs (Bartlett & Freeze, 2019; Mushquash & Bova, 2007).

Faculty members in inclusive/special education at the University of Manitoba have consciously shifted curricula and pedagogy away from the traditional special education paradigm to incorporate inclusive, strength-based, holistic conceptions of diversity (Slee, 2011). This shift aligns with Indigenous worldviews of difference, as in some Indigenous cultures disabilities are regarded as special gifts from the creator (United Nations,



2013). In the Manitoba context, Shackel (2008) cites a traditional Cree woman who explained how differences were conceived in her community. She states,

There is no word in our language for disability, impairment or abnormality, but again this is only what I know for my community. The Creator put these people here for a purpose so that we will learn from them; they are our teachers. No one is considered abnormal in our culture. (p. 37)

While the paradigm of special education has largely been replaced with the ideology of inclusion at the University of Manitoba, there is an opportunity to deepen the pedagogies of inclusive education by incorporating Indigenous ways of knowing that are consistent with inclusion. Indigenous stakeholders including Elders, teachers, and community members must play a central role in leading the identification of more inclusive, holistic approaches that honor the unique histories and perspectives of Indigenous peoples in Manitoba in order for teacher education to be truly inclusive of all (Kanu, 2014).

## Background

Faculty members in inclusive education at the University of Manitoba provide coursework and training for Bachelor of Education students working toward provincial teacher certification, as well as for certified teachers enrolled at the Post-Baccalaureate Diploma in Education (PBDE) and graduate (Master's and PhD) levels, which for many students includes obtaining provincial Special Education Certification<sup>1</sup>. Teacher training coursework that leads to provincial Special Education Certification has been highly sought after by Indigenous community partners, including the Manitoba First Nation Education Resource Centre (MFNERC). Established in 1998, MFNERC is the leading provider of educational services (e.g., administration, itinerant clinicians, curriculum specialists, technology, language, cultural supports) to First Nations schools in Manitoba. In 2017, with funding from the federal government, MFNERC developed the Manitoba First Nations School System (MFNSS). MFNSS is a first-of-its-kind pilot project designed to expand individual school funding and access to divisional level services for First Nations schools, and to ameliorate the gross disparity between

First Nations and K-12 public schools. MFNSS currently provides administrative support and education in 11 schools from nursery through grade 12 in First Nations communities in Manitoba. MFNERC is committed to ensuring that teachers in First Nations schools have the opportunity to earn advanced degrees to enhance instruction, and improve student learning and engagement. To that end, MFNERC has actively sought to: a) achieve self-determination in meeting community education needs, b) determine educational priorities and structures, c) ensure that Indigenous knowledge, pedagogy, and worldviews are foundational in teacher education (Manitoba First Nations Education Resource Centre, n.d.).

## Indigenous Community-Based Cohorts in Inclusive/Special Education

In order to increase the opportunity for Indigenous peoples in First Nations communities in Manitoba to access post-secondary education in inclusive/special education, MFNERC and the Faculty of Education at the University of Manitoba agreed to provide teacher education in community-based cohorts for teachers in First Nations communities. The program is called Resource/Inclusive Special Education (RISE) and it has been taught by a combination of University of Manitoba faculty members and MFNERC staff (e.g., teachers and clinicians with graduate-level degrees). RISE was formed in response to the need for trained and certified resource teachers who could support students with diverse needs in First Nations communities in culturally responsive ways. Students in the RISE cohorts have typically been First Nations teachers who are teachers in First Nations schools, and who plan to obtain resource teacher/learning support teacher positions in their respective communities. In some instances, teachers in RISE are already working as resource teachers/learning support teachers in First Nations schools, and are seeking further qualifications to support them in their role. The use of community-based instruction or cohorts aligns with Indigenous epistemologies (Donald, 2009), and the value of “place-based” or contextualized education (Gruenewald, 2003). Nurturing the cultural identity of teachers and strengthening their connections with students, communities, and their history are possible when the learning is in a culturally appropriate

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<sup>1</sup> All course and program names offered by the University of Manitoba's Inclusive Education group are in the process of being changed to remove the word “special” from their names. In collaboration with other Manitoba university faculties of education, the University of Manitoba has also formally appealed to the province to have the name of the Special Education Certificate changed to the Inclusion Education Certificate (Bartlett et al., 2019).

setting (Burgess, 2016). Community-based cohorts also enable the expression of traditional knowledge, including the “way[s] of life, language, and customs” (Patterson, 2014, p. 33). The expansion of RISE has led MFNERC to develop similar cohort-based educational programs for Indigenous teachers in other areas such as language and literacy, and for clinical staff (e.g., school psychology, speech and language pathology).

Since 2016, six RISE cohorts with an average class size of 35 students have graduated from the Faculty of Education at the University of Manitoba. This means that more than 200 Indigenous teachers in First Nations communities in the province of Manitoba have earned a Post-Baccalaureate Diploma in Inclusive/Special Education through a RISE cohort, a number that does not include the increasing number of Indigenous teachers who also have received on-campus and distance education coursework in inclusive/special education, as well as graduate level degrees (i.e., MEd and PhD in Inclusive Education).

### Reflection and Reconstruction

While the expansion of RISE community-based cohorts has been positive in that it has increased the number of Indigenous teachers with advanced training, it has not advanced broad-based structural changes within the academy. The academy has largely maintained control over academic structures and processes, and continues to provide curriculum that is largely rooted in traditional, Eurocentric traditions (Heleta, 2016). The curricular content and pedagogical approaches used in RISE largely have been drawn from existing on-campus courses, and were not comprehensively reviewed by the Faculty of Education in partnership with MFNERC and other Indigenous stakeholders to determine their cultural relevance for First Nations communities in Manitoba. From a critical pedagogy perspective (Giroux, 2011), the use of university-developed curricula for First Nations teacher training in RISE represents a hierarchy of knowledge that must be changed in partnership with Indigenous stakeholders. In order to support this change, the current initiative sought leadership and guidance from Indigenous stakeholders (i.e., MFNERC, educators from First Nations Communities, and a Council of Elders) to determine the educational priorities for the RISE program, and to re-envision pedagogy and infuse Indigenous perspectives in RISE courses and, importantly, in on-campus inclusive/special education curricula more broadly.

### Foundational Change in the Academy

Despite the need for transformative change within the academy, it is not uncommon for reconciliation efforts to be superficial or merely bureaucratic in nature. In an anonymous Canada-wide survey of Indigenous faculty, Gaudry and Lorenz (2018) sought to measure reconciliation efforts within the academy. In this study, Indigenous faculty members' perspectives regarding Indigenization efforts were divided into three categories: (a) Indigenous inclusion, (b) reconciliation, and (c) decolonization. Indigenous inclusion was defined as simply increasing the number of Indigenous students, faculty, and staff in universities, while leaving the traditional power structures intact. In other words, Indigenous inclusion employed an assimilative logic, whereby Indigenous peoples were expected to conform to the university's systems and structures. Reconciliation involved finding common ground between Indigenous and Western Academic worldviews represented by, “Attempts to alter the university's structure, including educating Canadian faculty, staff, and students to change how they think about and act toward Indigenous people” (Gaudry & Lorenz, 2018, p. 222), which often manifested in an Indigenous course requirement. Finally, decolonization, as defined by Smith (2007) was described as the most significant change, which included a shift in structures, as well as a ceding of power, by those who determine what is defined knowledge. Decolonization included actively seeking to, “decenter hierarchical educational structures and empower Indigenous communities to regain educational sovereignty while also working with universities” (Gaudry & Lorenz, 2018, p. 223). The results of this research indicated that most universities used the language of reconciliation, but were actually practicing Indigenous inclusion. Decolonization was characterized as a *dream* of many of the Indigenous academics surveyed, but as being “off the radar of most university administrators” (p. 223). Smith (2007) affirms this point, describing decolonization as a long-term process that requires a “major change of worldview that forces a society to confront its past and address it at a structural and institutional level that challenges the systems of power” (p. 91). Decolonization is not simply a refinement of methods, but rather it is a shift in axiology (what is valued), ontology (what exists), and epistemology (what is believed).

Elson (2019) provides an alternative framework to assess decolonization that is based on the relationships between the academy and Indigenous communities. The framework uses four relational dimensions including: (a) internal relations with Indigenous staff and students,

(b) external relations with Indigenous communities, (c) land and space relations, and (d) governance. This framework emphasizes that relationships must be reciprocal and include several stakeholder groups across multiple contexts. The frameworks provided by both Gaudry and Lorenz (2018) and Elson (2019) provide useful constructs to not only assess reconciliation efforts, but also to assist with setting aspirational targets within organizations.

### **Infusing Indigenous Worldviews into Curricula and Pedagogy**

Given the colonial history of Canada and the legacy of residential schools, the relationship between Indigenous peoples and the educational system remains strained, and Indigenous students continue to experience discriminatory educational practices (Battiste, 2013). Systemic and structural inequities pervade and are evidenced by gross disparities in graduation rates when comparing Indigenous students to non-Indigenous students (Office of the Auditor General of Manitoba, 2016), and the disproportionate identification and placement of Indigenous students in special education (British Columbia Ministry of Education, 2019). The disproportionately of Indigenous students in special education, in particular behavior disordered categories, is not limited to the Canadian context, as other countries with similar colonial histories, including New Zealand and Australia, report similar disproportionately for Indigenous students in special education (Graham, 2012). Bartlett and Freeze (2019) emphasize that in addition to cultural discontinuity, the paradigm of special education including deficit-based attitudes and the use of categorical labels has contributed to “the misunderstanding, mislabeling, and misdiagnosing of Indigenous students, and to the social construction of disability in ways that are unfair or disadvantageous” (p. 92). They recommend a multi-faceted approach to address this issue that includes embracing a strength-based, inclusive educational approach, and reconceptualizing teacher training to include a focus on teacher agency in problematizing unequal power relations and employing culturally relevant pedagogy that aligns with Indigenous worldviews.

The need for culturally relevant pedagogy that validates and integrates the unique lived experiences of an increasingly diverse student population is well established (Gay 2000; 2010; 2013; Ladson-Billings, 2001; 2009). Research has shown that unless cultural representation is explicitly considered from the start, many curricula, by default, either exclude minorities or represent them in stereotypical or limited ways (Gardiner,

2017, Spring). According to Deer et al. (2015), “Indigenous knowledges, rights, and racialized experiences [are largely excluded] from pedagogical approaches” (p. 29), and “research infers an absence of core courses with explicit focus on Indigenous education and its implementation” (p. 30). As a result, culturally diverse students often experience cultural discontinuity in school-based settings because Western, Eurocentric traditions may be prioritized and teachers may have limited intercultural understanding (Causey, Thomas, & Armento, 2000). A study conducted by Silver and Mallett (2002) that involved obtaining the perspectives of Indigenous students associated with Central Winnipeg high schools found that the lack of understanding of Indigenous perspectives, values, and life contexts among teachers negatively impacted Indigenous students’ school experiences and graduation rates. While empirical evidence regarding the benefits of culturally relevant pedagogy may be limited (Sleeter, 2011), and the benefits of culturally relevant pedagogy for Indigenous students is even more thin, there is some evidence to indicate that a co-constructed model of teacher professional development grounded in Indigenous worldviews can lead to increased culturally responsive practice, enhanced teacher-student relationships, and improvements in student retention (Hynds et al., 2016). In order to achieve these kinds of positive outcomes, Indigenous scholars suggest that change must begin in universities, and note that many faculties have taken positive steps, citing programs similar to RISE, which are Indigenous-led, and incorporate Indigenous ways of knowing in training Indigenous cohorts of teachers, and in teacher training more broadly (Deer et al., 2015).

### **The Change Initiative**

In reviewing transformational approaches to reconciliation in the academy that are both decolonizing (Gaudry & Lorenz, 2018) and relational (Elson, 2019), a change project at the University College of the North (UCN) in Manitoba described by Smith (2017) provided a model. UCN established a Council of Elders to provide leadership and direction for the academy regarding the process of reconciliation. The process was characterized as disruptive to the hierarchical power structures, given that decision-making power in academia has traditionally been maintained by individuals with doctoral degrees.

Guided by Indigenous community leaders, UCN identified its Bachelor of Education program as a starting point for reconciliation in the academy. The initiative, called *Kenanow*, models the relevant Indigenous



content, pedagogy, and supports teacher candidates should aim to provide for students. Critically, UCN also utilized a short survey to gather students' perspectives about how the goals of the initiative were being met, which provided a level of accountability, and important feedback for instructors and university leadership. The surveys were administered at the end of each course, and asked whether the course integrated Indigenous content and expanded students' knowledge of Indigenous cultures. Although faculty at UCN were not required to integrate Indigenous content and pedagogies into their courses, if they did not integrate these perspectives, they were required to provide a rationale to the administration. Student feedback, combined with increased faculty accountability, demonstrates how UCN has prioritized this issue in teacher education (Smith, 2017).

The University of Manitoba's change initiative is similar in many respects to that of UCN. Both initiatives were guided by Indigenous community leadership and focused on the need for transformative changes in teacher education in the province of Manitoba. Like UCN, the current initiative had leadership from an Indigenous community partner (i.e., MFNERC) from its inception, and involved an Elders Council to set the strategic direction of Indigenous-focused curricular change. In alignment with Elson's (2019) assessment framework, the initiative had a significant focus on both the development of external relationships with Indigenous communities and on internal relations specifically related to the need for changes in governance within the academy.

### **The Partnership**

An assistant professor of inclusive education was identified as the primary representative of the Inclusive Education Area Group to support this initiative. An Indigenous Education Consultant from MFNERC was identified as the primary representative from MFNERC, and was seconded to provide continuous input within the Faculty of Education over a one-year period. The consultant is a First Nations curriculum developer/writer for MFNERC who has been recognized by the Manitoba Aboriginal (Indigenous) Inclusion Directorate as an Indigenous educational leader in *Profiles of Aboriginal Educators: Footprints for the Future* (n.d.), and was present from the beginning of the initiative. A graduate research assistant from the Faculty of Education was also hired. The graduate student is a Métis educational leader, who was serving at the time as the administrator of a small Indigenous-focused school and had just been

recognized by the Aboriginal Circle of Educators for scholarship related to improving educational outcomes for Indigenous students.

### **The Process**

***Convening a Council of Elders.*** Call 10 of the Truth and Reconciliation Commission of Canada speaks to the need to bring Indigenous communities into the decision-making process of educational change initiatives (Truth and Reconciliation Commission of Canada, 2015). MFNERC not only served as an Indigenous community representative, it led the way in fostering the leadership of additional Indigenous stakeholders and knowledge-keepers. To illustrate, MFNERC played a critical role in identifying Indigenous Elders who were retired teachers, school administrators, and directors of education from five different communities, representing the Anishinaabe, Cree, Oji-Cree, and Métis cultures. The Elders were all Indigenous language speakers. According to Phillips (2010), "Aboriginal Elders are viewed as the repository of traditional knowledge and spirituality, a change to an Aboriginal approach to education should be guided by the thoughts of Elders" (p. 65). Battiste (2002) affirms this point and states, "Elders are...living educational treasures" (p. 21) and "masters of traditional knowledge" (p. 37).

***The Role of the Elders Council.*** Seven Elders attended an information luncheon hosted at MFNERC to discuss reconciliation and the need for their guidance and leadership in transforming teacher education beginning with the area of inclusive/special education at the University of Manitoba. The Elders agreed to participate and throughout the course of their participation on the Council, they were presented with overviews of curricula in inclusive/special education and provided feedback about key concepts that they felt should be included, to align with Indigenous perspectives, traditions, knowledges, as well as beliefs regarding inclusion.

***Treaty Education.*** Treaty education underpinned much of the Elders' recommendations for curricular transformation. The importance of understanding the history of Indigenous peoples in Canada and Manitoba was made clear, and this mandate strongly influenced curricular changes moving forward. It also underscored the value of consulting with Indigenous knowledge-keepers early on, without directing or anticipating the priorities that might be revealed, aligning with both the *Calls to Action* (Truth and Reconciliation Commission of Canada, 2015) and the definition of reconciliation provided by Gaudry and Lorenz (2018).



***Strength-Based Conceptions of Diversity.*** Another key issue that the Elders raised in reviewing the course materials in inclusive/special education was the distinction between Western and Indigenous notions of disability and difference. They pointed out that categorical labels, used throughout the course materials, were not used in their own educational traditions. Concepts like “intervention” and “remediation,” which were themes throughout the course materials, were described as contrary to cultural norms in their communities. Instead, individuals who represented differences were valued for their uniqueness and individual contributions to the local community. This discussion identified the need to create a resource to support ongoing learning for teachers related to these notions of inclusivity.

In order to share their knowledge and perceptions of disability and difference with pre-service and in-service teachers, representatives of the Council of Elders created an instructional resource video in collaboration with MFNERC and the research team. In the video, the Elders described how foreign the concept of “disability” was in their communities. Through storytelling, they described the holistic and community-centered approaches that were the most typical ways of responding to the diverse needs of children and adults. This video will be shared in RISE courses and on-campus courses in inclusive/special education in the coming year. Producing this video was the culmination of six months’ collaboration between the University of Manitoba, MFNERC, and the Elders Council. The completed video has become part of the library of resources at MFNERC (Manitoba First Nations Education Resource Centre, 2020, March 10).

***Consultation and Collaboration with First Nations Teachers.*** Subsequently, the research team had the opportunity to present the emerging goals of the change initiative with a cohort of RISE teachers during a summer institute. The RISE students were all First Nations teachers currently working in First Nations communities who were taking courses in inclusive/special education. The teachers provided their perspectives regarding the cultural relevance of their current and past RISE coursework. They spoke positively about the use of land-based learning and the Medicine Wheel as a framework for understanding students’ strengths and needs. They also shared what they felt non-Indigenous teachers should learn about Indigenous perspectives as a part of their teacher training in inclusive/special education, and like the Council of Elders, they too shared the importance of Treaty Education, knowledge of intergenerational trauma, and familiarity with Indigenous ways of knowing.

### ***Consultation and Collaboration with MFNERC.***

In addition to consultation and collaboration with a Council of Elders and teachers in the RISE cohort, there was regular, ongoing collaboration with MFNERC, as an essential partner on the change initiative. Under the direction of the Curriculum Consultant at MFNERC, the initiative was presented at the annual Special Education Department Staff Meeting in Winnipeg to approximately 100 instructional and clinical staff serving First Nations communities across the province. Participants were invited to ask questions and identify priorities regarding the needs of their First Nations communities, their clinical units, and their schools with respect to teacher training. This opportunity expanded the collaboration with MFNERC to include a broad range of its educational stakeholders from across the province. Through these interactions, the need for local First Nations voices in education was prioritized. The participants at the meeting thought teachers needed to be knowledgeable about First Nations world views and to become familiar with culturally responsive pedagogy and curricula.

This interaction led to a further leadership role on the part of MFNERC; that being to identify and provide a broad range of curricular and pedagogical resources to be incorporated into re-envisioned courses in Inclusive/Special Education at the university. As a resource hub for Manitoba First Nations schools, communities, and educators, MFNERC hosts an extensive repository of uniquely Manitoban First Nations knowledge, one which has been largely untapped by the academy. One part of this collection includes MFNERC-produced videos on Manitoba First Nations history, traditional knowledge, and local community initiatives. Another component includes a catalogue of print materials that are both locally produced, and distributed on behalf of other publishers. Perhaps the most invaluable resource was the living knowledge of MFNERC staff (e.g. educational training and consultation, clinical services, and resource departments including publishing, print, and media) who provided detailed guidance in regard to the instructional materials to be incorporated into university curricula.

### ***Re-envisioning Pedagogy and Infusing Indigenous Perspectives***

Guidance from the Elders Council, RISE students, and MFNERC provided a solid foundation from which to build and pilot the reimagined Inclusive/Special Education curricula and pedagogy. This collaborative process demonstrated that the academy does not have

the ultimate authority in the production or curation of knowledge (Gaudry & Lorenz, 2018; Elson, 2019), which may set the tone for further power sharing going forward.

***Changes to Curricula and Pedagogy.*** Manitoba teachers seeking their provincial Special Education Certification through University of Manitoba coursework, whether as part of a RISE cohort or on campus, have to complete several required courses along with a selection of elective course options. The project team prioritized core inclusive education courses that are mandatory to Special Education Certification for transformation. In total, ten courses were revised, one required a three-credit hour B.Ed. course along with nine PBDE courses. Of the PBDE courses, one was a six-credit hour course, typically taught over two school terms, and eight were three-credit hour courses.

Curricular transformation occurred in two stages: The graduate research assistant produced a written summary of the proposed curricular and pedagogical changes that were recommended through the stakeholder consultations. Drawing on feedback from stakeholder consultations and the Elders Council recommendations to make courses more inclusive of Indigenous perspectives, pedagogies, and educational and community contexts, participating instructors reviewed the summary of recommendations and implemented the revised curricula as appropriate. During the pilot of the revised curricula, the research assistant provided support with implementing the curricular changes (e.g., inviting specific speakers or coordinating field-based learning experiences) throughout the term.

During the academic year, revised curricula were piloted in two courses on campus. A third pilot was started but not completed due to an unplanned campus closure in response to the COVID-19 pandemic. One of the revised courses that was piloted will undergo a second pilot with a RISE cohort in the upcoming fall term, and feedback will be sought at that time. Several courses which have not yet been taught will also be piloted with the curricular revisions in future terms. Co-teaching played a significant role in the transformed courses, and provided new learning experiences, not only for the students, but also for the instructors. The

MFNERC consultant, who is a member of the research team, and a RISE instructor co-taught with the inclusive education faculty member at the University of Manitoba. The co-teaching included using the Medicine Wheel as a method to engage in strength-based, holistic planning. While there are many representations and applications of the Medicine Wheel in Indigenous cultures, it is based on the concept of holism. The Medicine Wheel includes a circle that is divided into four parts signifying the interrelationships and interconnections of all things (Bopp et al., 2004; LaFever, 2020). As a pedagogical tool, the teachers were invited to explore the holistic needs of students represented by the four parts of the Medicine Wheel that included their spiritual, physical, emotional, and intellectual needs.

Connections were also drawn between the Medicine Wheel and Universal Design (UDL) (Centre for Applied Special Technology, 2001; Rose & Meyer, 2002), as they are both strength-based and foster the social and academic inclusion of all.

The opportunity for faculty from the University of Manitoba and MFNERC to learn from each other by teaching together was valuable, and led to the introduction of the Medicine Wheel lesson in the Bachelor of Education introductory course in inclusive education during the winter term of 2020. Co-teaching extended beyond members of the project team. For example, a lesson on restorative practices was co-taught by a First Nations/Métis educational leader in a PBDE course focused on inclusive approaches to supporting behavior. In addition, a Jordan's Principle<sup>2</sup> expert also co-taught in a winter term course. The Jordan's Principle ensures that First Nations children are not prevented from receiving services by jurisdictional disputes between governments. The government of first contact pays for the service and disputes are resolved later. Under Jordan's Principle, services provided to First Nations children must be timely and take into account the historical disadvantages, linked to colonization, that affect them.

One of the most transformative experiences was the opportunity for PBDE students to spend a half of a day at the University of Manitoba's Migizii Agamik, or Bald Eagle Lodge. They met with the university's Elder-in-residence, participated in a smudge, and learned

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<sup>2</sup> Jordan's Principle is child-first and needs-based and holds that, in the event different levels of government are unclear about who is responsible for paying for needed services for First Nations people, whether on-reserve or off, the service that is first contacted is responsible for providing support until jurisdictional matters are resolved. It is named after Jordan River Anderson, a five-year-old Cree boy from Norway House First Nation in Manitoba, who died in hospital even though his doctors had recommended home care. He was prevented from leaving the hospital while the federal and provincial governments were involved in a dispute about which level of government should pay for his home care. See MacDonald & Attaran (2007) for more information.

protocols for smudges and inviting Elders' participation in schools. This was one of several planned field experiences.

## RESULTS

There were two significant outcomes from this change initiative. First, there was an emergent shift in power relations between the academy and Indigenous peoples in the production and legitimization of knowledge. It is hoped that this initial shift will lead to more far-reaching changes as outlined in Call 10 "v. Enabling parental and community responsibility, control, and accountability" for educational decisions (Truth and Reconciliation Commission of Canada, 2015, p. 2). The establishment of an Elders Council and the deepening of the University of Manitoba and MFNERC partnership has set the stage for future work in reconciliation in the academy. Second, there was tangible transformation of curricula and pedagogy. In response to Call 10, "iii. Developing culturally appropriate curricula" (Truth and Reconciliation Commission of Canada, 2015, p. 2), community consultations, guidance from the Elders Council, collaboration and co-teaching with the MFNERC led to the revision of curricula in ten inclusive/special education courses. Indigenous perspectives were central to the re-envisioning of each course, and simultaneously, served to make inclusive education curricula more truly inclusive of all.

## CHALLENGES AND LIMITATIONS

Smith (2017) described some of the challenges associated with implementing reconciliation efforts within a university bureaucracy, including conflicts between academic freedom, reconciliation, and conceptions of knowledge. The traditions and worldview of a Western university and the academic staff inculcated in that model—for example, the privileging of voices with a Ph.D., and the ideal of academic freedom with respect to how university staff might teach a course—can lead to some tensions. In the case of this change initiative, joint work was facilitated by a strong commitment on the part of the inclusive education faculty to enact change, a respectful and reciprocal relationship between the faculty and MFNERC, that had developed over years of past collaborations, as well as a philosophical kinship between inclusive education and Indigenous philosophies.

However, a limitation of this change initiative was that it involved only one area group within the Faculty of Education. Although the argument for why inclusive

education was a natural starting point for this type of initiative has been highlighted, it is still only a starting point. A small group of faculty made a non-binding commitment to change, but the change is best characterized as grassroots and bottom-up. One of Elson's (2019) four dimensions of university-Indigenous relations is governance, which he defines as the sharing of legal and jurisdictional authority. This change initiative may provide evidence that real progress can be made when decision-making power is shared with Indigenous stakeholders. However, power sharing still needs to be enshrined in policy, and in the absence of broad-based policy change, the scope of this initiative was limited.

## IMPLICATIONS AND RECOMMENDATIONS

The successes and challenges of this change initiative have been described as contributions to the reconciliation discourse at Canadian universities. Faculties of Education in other regions in Canada will have potential partners and sources of knowledge and leadership from other local Indigenous organizations and/or communities. Collaborating with Indigenous stakeholders to improve Indigenous education and education generally requires, as a first step, the humility to recognize that the academy's past practice is not the only way or always the best way.

A next step at the University of Manitoba is to advocate for concrete ways of ceding institutional power to Indigenous stakeholders, and to formalize in university policy the rights of Indigenous community members to have a voice in their children's education through consultation in the programming provided by the Faculty of Education. While First Nations' educational authorities have the ability to hire from the teachers who graduate each year, to date they have no formal say in teacher training. To this end, Elson (2019) has suggested either that Indigenous community members hold seats on university boards or that universities negotiate with and become accountable to Indigenous Nations in the same way that public universities now report to provincial and federal governments. Either of these practices would indicate concrete changes toward true decolonization of the academy.

The establishment of a Council of Elders in this change initiative has been ground-breaking. A concrete next step is to plan to continue to seek guidance from this Council on future initiatives. The authors expect that if they continue to work with the local Elders, they will identify needs more effectively and pursue goals more decisively. Moreover, the Faculty of Education at the University of Manitoba needs to continue to build

upon its partnership with MFNERC. The collective knowledge, broad scope of education-related services, and connections to existing First Nations communities are an invaluable resource for the university. The Manitoba First Nations School System pilot that MFNERC has been leading since 2017, still one-of-its-kind in Canada, shows that this organization is a tremendous regional leader in education, and that the pilot should help set the strategic direction of the Faculty of Education.

## CONCLUSION

This initiative has aimed to respond to several of the *Calls to Action* from the Truth and Reconciliation Commission of Canada (2015). Gaudry and Lorenz (2018) argue that small changes can lead to bigger ones, with the inclusion of Indigenous voices and perspectives leading to reconciliation, and reconciliation to decolonization. It is the shared goal of all stakeholders that this initiative follow a similar trajectory. The authors expect to build upon this collaboration's frameworks and capacities, including gratefully accepting the continued guidance of the Council of Elders, extending the Faculty of Education's partnership with MFNERC, and supporting more broad-based change within the Faculty of Education and the University as they continue to respond to the *Calls to Action*. This initiative has revealed that when respectful and reciprocal relationships are established that honor Indigenous voices, Eurocentric colonial practices can be deconstructed, and inclusive, decolonial change may begin.

### Acknowledgement

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## REFERENCES

Bartlett, N. A., & Freeze, T. B. (2019). Assess, sort, classify: "Othering" of Indigenous students in Manitoba's schools. *Exceptionality Education International*, 29(2), 99–109.

Bartlett, N. A., Wells-Dyck, A., Freeze, D. R. & the Inclusive Education Professors Roundtable (2019). *A Submission to the Manitoba Commission on K-12 Education*. Report. <https://www.mbschoolboards.ca/documents/Advocacy/Repository/InclusiveEd.pdf>

Battiste, M. (2002). *Indigenous knowledge and pedagogy in First Nations education: A literature review with recommendations*. Ottawa, Canada: National Working Group on Education and the Minister of Indian and Northern Affairs Canada.

Battiste, M. (2013). *Decolonizing education: Nourishing the learning spirit*. Saskatoon, Canada: Purich.

Bopp, J., Bopp, M., Brown, L., & Lane, P. (2004). *The sacred tree*. Twin Lakes, WI: Lotus Press.

British Columbia Ministry of Education. (2019). *Aboriginal report, 2014/15–2018/19: How are we doing?* <https://www2.gov.bc.ca/assets/gov/education/administration/kindergarten-to-grade-12/reports/ab-hawd/ab-hawd-school-district-public.pdf>

Burgess, C. (2016). Conceptualising a pedagogical cultural identity through the narrative construction of early career Aboriginal teachers' professional identities. *Teaching and Teacher Education*, 58, 109–118. doi: <https://doi.org/10.1016/j.tate.2016.04.007>

Causey, V. E., Thomas, C. D., & Armento, B. J. (2000). Cultural diversity is basically a foreign term to me: The challenges of diversity for preservice teacher education. *Teaching and Teacher Education*, 28(1), 25–30. doi:10.1016/S0742-051X(99)00039-6

Centre for Applied Special Technology. (2001). *Universal Design for Learning*. Retrieved from <http://www.cast.org/udl>

Deer, F., Preston, J., Favaro, B., L'Allier, A., Hovington, A., Lavoie, C.,... Aquash, M. (2015). Issues in Indigenous initial teacher education: Canadian perspectives. In T. Falkenberg (Ed.), *Handbook of Canadian research in initial teacher education* (pp. 19–37). Ottawa, Canada: Canadian Association for Teacher Education.

Donald, D. (2009). Forts, curriculum, and Indigenous Métissage: Imagining decolonization of Aboriginal-Canadian relations in educational contexts. *First Nations Perspectives*, 2(1), 1–24.

Elson, P. (2019). *University-Indigenous relations: A policy assessment framework in four dimensions* (graduate certificate capstone project). University of Victoria, Victoria, Canada. Retrieved from <https://www.uvic.ca/hsd/publicadmin/assets/docs/PapersOfInterest/in-697-policy-paper-final-pe.pdf>



- Gardiner, A. (2017, Spring). *Creating opportunities for inclusive education: Collaboration among the Kenanow bachelor of education program and educational partners in northern Manitoba* (Report Series II, No. 3). Manitoba Education and Research Network (MERN) Monograph. Retrieved from <http://www.mern.ca/monographs/Creating%20Opportunities%20for%20Inclusive%20Education.pdf>
- Gaudry, A., & Lorenz, D. (2018). Indigenization as inclusion, reconciliation, and decolonization: Navigating the different visions for indigenizing the Canadian Academy. *AlterNative: An International Journal of Indigenous Peoples*, 14(3), 218–227. doi: <https://doi.org/10.1177/1177180118785>
- Gay, G. (2000). *Culturally responsive teaching: Theory, research, and practice*. New York, NY: Teachers College Press.
- Gay, G. (2010). Acting on beliefs in teacher education for cultural diversity. *Journal of Teacher Education*, 61(1–2), 143–152.
- Gay, G. (2013). Teaching to and through cultural diversity. *Curriculum Inquiry*, 43(1), 48–70. doi: 10.1111/curi.12002
- Giroux, H. (2011). *On critical pedagogy*. New York, NY: Continuum Intl.
- Graham, L. J. (2012). Disproportionate overrepresentation of Indigenous students in New South Wales government special schools. *Cambridge Journal of Education*, 41, 163–176.
- Gruenewald, D. A. (2003). The best of both worlds: A critical pedagogy of place. *Educational researcher*, 32(4), 3–12.
- Heleta, S. (2016). Decolonisation of higher education: Dismantling epistemic violence and Eurocentrism in South Africa. *Transformation in Higher Education*, 1(1), a9. doi:10.4102/the.v1i1.9
- Hynds, A. S., Hindle, R., Savage, C., Meyer, L. H., Penetito, W., & Sleeter, C. (2016). The impact of teacher professional development to reposition pedagogy for Indigenous students in mainstream schools. *The Teacher Educator*, 51(3), 230–249.
- Kanu, Y. (2014). *Integrating Aboriginal perspectives into the school curriculum*. Toronto, Canada: University of Toronto Press.
- Ladson-Billings, G. (2001). *Crossing over to Canaan: The journey of new teachers in diverse classrooms*. San Francisco, CA: Jossey-Bass.
- Ladson-Billings, G. (2009). *The dreamkeepers: Successful teachers of African American children* (2nd ed.). San Francisco, CA: Jossey-Bass.
- LaFever, M. (2020). Using the Medicine Wheel for curriculum design in intercultural communication: Rethinking learning outcomes. In *Multicultural Instructional Design: Concepts, Methodologies, Tools, and Applications* (pp. 686–711). Hershey, PA: IGI Global. doi:10.4018/978-1-5225-9279-2.ch03
- MacDonald, N., & Attaran, A. (2007). Jordan's Principle, governments' paralysis. *Canadian Medical Association Journal*, 177(4), 321. doi: <https://doi.org/10.1503/cmaj.070950>
- Manitoba Aboriginal Inclusion Directorate. (n.d.) *Profiles of Aboriginal educators: Footprints for the future*. Retrieved from <https://www.edu.gov.mb.ca/iid/publications/profiles.html>
- Manitoba First Nations Education Resource Centre. (n.d.). *Mission & vision*. Winnipeg, Canada: Author. Retrieved August 18, 2020, from <https://mfnerc.org/about/mission-vision/>
- Manitoba First Nations Education Resource Centre. (2020, March 10). *Honouring the voices of Elders: Indigenous perspectives of disability in education*. Retrieved from <https://youtu.be/88-jr9Sypmk>
- Minerva Rivas, V. (2018). Indigenous perspectives of disability. *Disability Studies Quarterly*, 38(4). doi:10.18061/dsq.v38i4.6114
- Mushquash, C. J., & Bova, D. L. (2007). Cross-cultural assessment and measurement issues. *Journal on Developmental Disabilities*, 13(1), 53–66. Retrieved from [https://oadd.org/wp-content/uploads/2007/01/mushquash\\_bova.pdf](https://oadd.org/wp-content/uploads/2007/01/mushquash_bova.pdf)
- Office of the Auditor General of Manitoba. (2016). *Improving educational outcomes for kindergarten to Grade 12 Aboriginal students*. Winnipeg, Canada: Author. [http://www.oag.mb.ca/wpcontent/uploads/2016/01/AB\\_ED\\_K\\_to\\_12\\_OAG\\_2016\\_WEB.pdf](http://www.oag.mb.ca/wpcontent/uploads/2016/01/AB_ED_K_to_12_OAG_2016_WEB.pdf)

- Patterson, D. (2014). *Architecture as weaving: How can architecture contribute to the learning of Mi'kmaq knowledge at Dalhousie University?* (Master's thesis). Dalhousie University, Halifax, Canada.
- Phillips, R. (2010). "Try to understand us": Aboriginal Elders' views on exceptionality. *Brock Education: A Journal of Educational Research and Practice*, 20(1). doi: [HTTPS://DOI.ORG/10.26522/BROCKED.V20I1.146](https://doi.org/10.26522/BROCKED.V20I1.146)
- Rose, D. H., & Meyer, A. (2002). *Teaching every student in the digital age: Universal Design for Learning*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Shackel, D. W. (2008). *The experience of First Nations people with disabilities and their families in receiving services and supports in First Nations communities in Manitoba: Honouring the stories* (Unpublished master's thesis). University of Manitoba, Winnipeg, Canada.
- Silver, J., & Mallett, K. (2002). *Aboriginal education in Winnipeg inner city high schools*. Ottawa, Canada: The Canadian Centre for Policy Alternatives.
- Sinclair, M. (2014). Overcoming history. *The Manitoba Teacher*, 93(3), 7–10. Winnipeg, Canada: Manitoba Teachers' Society.
- Slee, R. (2011). *The irregular school: Exclusion, schooling, and inclusive education*. New York, NY: Routledge.
- Sleeter, C. (2011). An agenda to strengthen culturally responsive pedagogy. *English Teaching*, 10(2), 7–23.
- Smith, D. (2017). Reconciliation and the academy: Experience at a small institution in northern Manitoba. *Canadian Journal of Educational Administration and Policy*, 183, 61–81.
- Smith, L. T. (2007). On tricky ground. *The Landscape of Qualitative Research*, 1, 85–113.
- Truth and Reconciliation Commission of Canada. (2015). *Truth and Reconciliation Commission of Canada: Calls to Action*. Ottawa, Canada: Author.
- United Nations. (2013). *Study on the situation of Indigenous persons with disabilities, with a particular focus on challenges faced with respect to the full enjoyment of human rights and inclusion in development*. Twelfth Session, item, 7. New York, NY: Author.

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