

**THE CONVERGENCE OF ASPERGER'S SYNDROME AND NONVERBAL  
LEARNING DISABILITY IN THE CONTEXT OF INCLUSIVE EDUCATION.**

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## **ABSTRACT**

This research is an exploratory investigation into the convergence of Asperger's syndrome and Nonverbal learning disability and the inclusion of these learners into mainstream schools. Conceptual research has been used based on questions asked around Asperger's syndrome, Nonverbal learning disability, convergences and differences between the disabilities based on the history, etiology, assessment and diagnosis of each disorder as well as alternative forms of assessment and diagnosis. Due to the wide body of literature available in this area of research and the nature of conceptual research, this study is largely literature based.

The aim of the research is to look at the literature that supports the convergence between Asperger's syndrome and Nonverbal learning disability and to study the assessment tools that are being used to diagnose Asperger's syndrome and Nonverbal learning disability to see if various tools can be taken from both batteries of tests and used as one. An important part of this research is its placement in the educational context of inclusion.

The results from this research will add to the literature already available on this topic, emphasising the importance of accurate and thorough investigation and assessment towards reaching a diagnosis and the implementation of a valid support plan. The research also offers a discourse concerning learners who are not in a position to be assessed for diagnosis and the benefits of using the SIAS strategy for these learners.

The research confirms that there is a convergence between Asperger's syndrome and Nonverbal learning disability. It also confirms that, despite the convergence, the assessment and intervention for each disorder is mostly different and a misdiagnosis would not be beneficial to the learner. The findings of the research are also largely confirmatory of literature and other research studies in this area.

Finally, the research takes a critical look at the purpose, benefits and possible downfalls of labelling a learner with a specific disability, and how labelling could either help or hinder a learner in their educational pursuits. Possible directions for future research into Asperger's syndrome, Nonverbal learning disability, assessment tools and support structures are discussed.

## Table of contents

Abstract.....	2
Declaration.....	6
Acronyms.....	6
<b>Chapter 1.....</b>	<b>7</b>
1. Orientation to the research.....	7
1.1. Introduction.....	7
1.2. Background to the problem.....	8
1.3. Context of the research - Inclusion.....	12
1.4. Rationale and motivation for the research.....	13
1.5. Aims of the research.....	16
1.6. Questions.....	16
1.6.1. Main question.....	16
The extent of convergence between Asperger’s syndrome and Nonverbal learning disability?.....	16
1.6.2. Sub questions.....	16
1.6.2.1 Tools of identification.....	16
1.6.2.2. AS and NLD in an inclusive education system.....	16
1.6.2.3. Inclusion of Asperger’s syndrome and Nonverbal learning disability in schools.....	16
1.6.2.4. Standard forms of assessment.....	16
1.7. Key concepts.....	17
1.7.1. Asperger’s syndrome.....	17
1.7.2. Nonverbal learning disability.....	17
1.7.3. Convergence.....	17
1.7.4. Methods of Identification.....	18
1.7.5. Treatment.....	18
1.7.6. Intervention.....	18
1.7.7. Inclusion.....	18
1.7.8. Disability - a Medical Model.....	18
1.7.9. Disability - a Social Model.....	19
1.7.10. Barriers to learning.....	19
1.7.11. Conceptual research.....	19
1.8. Outline to the study.....	19

<b>Chapter 2</b> .....	<b>21</b>
2. Research.....	21
2.1. Research method.....	21
2.2. Literature selection.....	22
<b>Chapter 3</b> .....	<b>23</b>
3. Asperger’s syndrome and Nonverbal learning disability in an inclusive education system.....	23
3.1. The historical development of inclusion internationally and in South Africa.....	23
3.1.1. The development of early inclusion frameworks.....	23
3.1.2. Inclusion in the United States and Great Britain.....	24
3.1.3. UNESCO’s contribution to inclusion.....	25
3.1.3.1. The Salamanca Statement.....	26
3.1.3.2. The Convention on the Rights of Persons with Disabilities.....	27
3.1.4. Inclusion in developing countries.....	27
3.1.5. Inclusion in South Africa.....	29
3.1.6. The impact of White Paper 3.....	30
3.1.7. White paper 6.....	32
3.1.8. The SIAS document.....	33
3.2. Asperger’s syndrome - diagnosis.....	34
3.2.1. History.....	34
3.2.2. Etiology.....	34
3.2.3. Assessment and diagnosis.....	35
3.2.4. Alternative forms of assessment and diagnosis.....	38
3.3. Nonverbal learning disability - diagnosis.....	41
3.3.1. History.....	41
3.3.2. Etiology.....	41
3.3.3. Assessment and diagnosis.....	44
3.3.4. Alternative forms of assessment and diagnosis.....	48
3.4. Analysis of the deficit model of disability.....	49

<b>Chapter 4</b> .....	<b>52</b>
4. Asperger’s syndrome and Nonverbal learning disability. Findings .....	52
4.1. The convergence between Asperger syndrome and Nonverbal learning disability .....	52
4.2. Assessment methods.....	56
4.3. Does the convergence between Asperger’s syndrome and Nonverbal learning disability affect the treatment and intervention given?.....	59
4.3.1. Asperger’s syndrome. Intervention/ treatment .....	59
4.3.2. Nonverbal learning disability. Intervention/ treatment.....	62
4.4. The inclusion of learners with Asperger’s syndrome and Nonverbal learning disability in the classroom .....	63
4.5. An alternative form of assessment.....	67
<b>Chapter 5</b> .....	<b>72</b>
5.1. Summary .....	72
5.2. Conclusion.....	73
<b>Chapter 6</b> .....	<b>76</b>
References .....	76

## Declaration

I, Bronwyn Geraldine Peake declare that this research report is my own unaided work. It is submitted for the degree of Masters of Education in the University of the Witwatersrand. It has not been submitted before for any other degree or examination in any other university.

Bronwyn Geraldine Peake

## ACRONYMS

AS	Asperger Syndrome
NLD	Nonverbal Learning Disability
ISP	Individual Support Plan
UDHR	Universal Declaration of Human Rights
EHA	Education for all Handicapped Learners Act
UNESCO	United Nations Education, Scientific and Cultural Organisation
SAFCD	South African Federal Council on Disability
LSEN	Learners with Special Educational Needs
NEPA	National Education Policy Act
NCSNET	The National Commission on Special Needs in Education and Training
NCESS	The National Committee for Educational Support Services
NQF	National Qualifications Framework
SAQA	The South African Qualifications Authority
NCS	National Curriculum Statement
SIAS	National Strategy on Screening, Identification, Assessment and Support
SBST	School Based Support Team
DBST	District Based Support Team
LLD	Language Based Learning Disability
WISC	The Wechsler Intelligence Scale for Children

## **Chapter 1**

### **1. Orientation to the research**

#### **1.1. Introduction**

The purpose of this research is to look at the findings of a conceptual literature-based study into inclusion of learners in mainstream schools. The South African Education White Paper 6 (Department of Education, 2001) was written with the central objective of extending policy frameworks within existing policies for all bands of education and training so that the South African training and education system recognizes and accommodates the diverse range of learning needs. Learners who have disabilities experience barriers to gaining access to education. Every person living in South Africa, whether disabled or not, has the right to basic education within which accommodations have been made for the full range of learning needs.

This research takes a closer look at the development of inclusion in developed countries, developing countries and South Africa. It moves through policy formulation to the practical implementation of inclusion in the classroom. Access to supportive and appropriate education has historically been based on an individual person's disability. The individual has often been defined by the assessment and diagnosis of their impairment. (Croft, 2010).

Inclusion is therefore the contextual base from which specific learning disabilities will be discussed under the headings: history, etiology, assessment and diagnosis and alternative forms of assessment and diagnosis. This research looks at two disabilities - Asperger's syndrome and Nonverbal learning disability that share similar tendencies. It explores the convergence between Asperger's syndrome and Nonverbal learning disability, looking at the degree of convergence as supported by the literature investigated. Regardless of the disability, be it Asperger's syndrome or Nonverbal learning disability, these learners are to be accommodated within the mainstream classroom or referred to special schools according to their specific support needs. Classroom intervention will differ according to the specific needs of the learners either based on their assessment diagnosis or the presenting features of their difficulty. Not all learners will be in a position to obtain a diagnosis of their difficulty. An intervention strategy therefore needs to be planned according to the difficulty they experience. The strategy informs the classroom teacher as to the nature and frequency of intervention that should be provided.

Diagnosis is integral to the type of support needed by the learner and if a misdiagnosis should occur, this would have an adverse effect on the intervention strategy. Implementation of this strategy would not be wholly beneficial to the learner as their specific needs would not be appropriately addressed in the classroom. Assessment and diagnosis therefore have a direct correlation to intervention and implementation.

I have also looked at the various tools used for the assessment of Asperger's syndrome and Nonverbal learning disability. There is a vast difference between the batteries of tests used in diagnosing these two disabilities. The similarities in the profiles of the two disabilities would suggest that there be one assessment battery used in identification and diagnosis. This research will suggest an alternative form of assessment that identifies both Asperger's syndrome and Nonverbal learning disability using one tool. This would ensure that learners are correctly diagnosed from the outset. With the surety of having an accurate diagnosis, appropriate intervention in an inclusive setting can be provided. I will look at the specific inclusion of learners with Asperger's syndrome and Nonverbal learning disability in the classroom.

## **1.2. Background to the problem**

Learners who have Asperger's syndrome and Nonverbal learning disability present with a similar cluster of behaviours. The behaviours that are apparent are advanced verbal abilities and difficulties with social interactions. The profiles of Asperger's syndrome and Nonverbal learning disability are so similar that there is a convergence between the two, resulting in the diagnosis, treatment and interventions for both Asperger's syndrome and Nonverbal learning disability being almost identical. (Stein, 2004). To better understand the convergence of the two disorders, one needs to first look at Asperger's syndrome and Nonverbal learning disability separately. What follows is a very brief description of each disorder. More information will be provided in Chapter 3.

The essential features of Asperger's syndrome are severe and sustained impairment in social interactions and the development of restrictive, repetitive patterns of behaviour, interests and activities. The disturbance must cause clinically significant impairment in social, occupational or other important areas of functioning.

In contrast to Autistic Disorder, there are no clinically significant delays in cognitive development or in the development in age-appropriate self-help skills, adaptive behaviour (other than in social interaction), and curiosity about the environment in childhood. The diagnosis is not given if the criteria are met for any other specific Pervasive Developmental Disorder for Schizophrenia. (Diagnostic and Statistical Manual of Mental Disorders-IV-TR. 2007).

Asperger's syndrome appears to have a somewhat later onset than Autistic Disorder, or at least to be recognised later. Motor delays or motor clumsiness may be noted in the preschool period. Difficulties in social interactions may become more apparent in the context of the school. It is during this time that particular idiosyncratic or circumscribed interests may appear or be recognised as such. As adults, learners with the condition may have problems with empathy and modulation of social interaction. This syndrome apparently follows a continuous course and, in the vast majority of cases, the duration is life-long. (DSM-IV-TR. 2007).

Nonverbal learning disability is a neurological disability. It is characterised by an impaired ability to organise the visual-spatial field, adapt to new or unique situations and accurately read Nonverbal signs or cues. Although some academic progress is made, learners will have difficulty achieving in situations where speed and adaptability are required. The disability shows disturbances in the performance processes. It is therefore an imbalance in thinking skills which involves detail oriented, automatic processing with impaired appreciation for the bigger picture or underlying theme. Nonverbal learning disability has a very specific neuropsychological profile. (Burger, 2008, p16). Learners with Nonverbal learning disability tend to have difficulty recognising their own feelings and other people's emotions. They tend to not know how to deal with emotions and keep them under control and their capacity to feel a certain emotion in a certain situation is underdeveloped in most individuals. Physical contact is also difficult. In younger learners discomfort is expressed through tantrums, hyperactivity and destructive tendencies. In an older individual these behaviours tend to turn towards fear, depression and being more withdrawn and inhibited. Nonverbal learning disabled learners do not seem to feel the need to understand social situations or the need to adapt their emotions to suit the moment. Their lack of social behaviour could lead to an inactive social life and a complete lack of insight into social situations.

Learners with Nonverbal learning disability tend to not understand the Nonverbal reactions such as facial expressions, body language or the pitch of a person's voice. They could also struggle to estimate the space between themselves and others which results in the standing in other people's "space". The interpretation of subtle aspects of communication is therefore missing. The frustration for learners with Nonverbal learning disability is their inability to fully understand the world around them as they lack the basic comprehension of the signals that are used to communicate on a Nonverbal level within society.

In the average individual with Nonverbal learning disability there is a difficulty with psychomotor co-ordination. These learners develop slowly and often lag behind in basic co-ordination and finer co-ordination. The Nonverbal learning disabled individual experiences a lot of difficulty with movement patterns where co-ordination is required, such as tying shoelaces, eating and climbing. The combination of several actions poses problems for this learner as they have difficulty maintaining good posture while trying to do gross and fine motor actions. (Marti, 2006, pp830-836).

With regards to the identification of Asperger's syndrome and Nonverbal learning disability, the methods of investigation used are different. In order for Asperger's syndrome to be identified in an individual, the doctor who has been consulted for this purpose would have to turn to the DSM-IV-TR (2007). The individual would have to meet certain criteria as laid out in the manual in order for an identification to be made. With regards to the identification of a Nonverbal learning disability, there is not one test or battery of tests that are able to fully assess a learner for having a Nonverbal learning disability. Rather, there are multiple tests that are all designed to test different aspects of a learner's development, aspects which can then be tied to Nonverbal learning disability. A large portion of the diagnosis of Nonverbal learning disability is based on an IQ test rather than a set of standards. The most common intellectual assessment of Nonverbal learning disability is therefore the WISC (Wechsler, 2004). Results for this IQ test are broken into two groups. The verbal scale and the performance scale. A statistically significant difference between these two scales would mean the verbal result is 15 points (one standard deviation) higher than the performance result.

The assessment methods used to identify either Asperger's syndrome or Nonverbal learning disability are different as the disorders are seen to originate from different areas within the body. Asperger's syndrome is a psychiatric or behavioural disorder whilst Nonverbal learning disability is a neuropsychological disorder. (DSM-IV-TR, 2007; Molenaar-Klumper, 2002). There is a possibility that the same assessment tools could be used for the diagnosis of Asperger's syndrome and Nonverbal learning disability. This is a fairly new avenue of research and much is still unknown. Following recent research, attempts have been made to study the convergence between Asperger's syndrome and Nonverbal learning disability, and ascertain if the convergence of the assessment tools used for the diagnosis of Asperger's syndrome and Nonverbal learning disability could result in a misidentification of an individual. Once we have a better understanding of which tools are used for the identification of an individual with either Asperger's syndrome or Nonverbal learning disability, we will be better able to correctly identify these learners in order to ensure that all treatment and interventions that learners receive are to their absolute benefit.

There is some consensus among academics (Myles & Southwick, 2005; Martin, 2007) as to the literature regarding the similarities in the profiles of learners with Asperger's syndrome and Nonverbal learning disability. Findings suggest that a large proportion of learners presenting with Asperger's syndrome and Nonverbal learning disability share the following features: a higher verbal score than performance score on the WISC (2004), a nonverbal learning disability as well as impairments in some areas of their executive functioning. (Ambery, 2006). Koegel and Koegel (2006) make the same claim as Ambery, adding that Asperger's syndrome and Nonverbal learning disability are in fact one disorder and should be treated as such. Boucher (2009) backs up these claims by saying that Asperger's syndrome and Nonverbal learning disability are virtually the same disorder.

The problem with Asperger's syndrome and Nonverbal learning disability presenting with similar profiles and being assessed according to different batteries of tests is that the accuracy of the diagnosis rests largely within the discipline and knowledge base of the person who is doing the assessing. This in itself would not be a problem if a diagnosis was the end point. Diagnosis is, however, the starting point for teachers and therapists to build intervention strategies for the learner. Some of these learners would likely be placed in special needs schools that are well equipped to cater for any type of learning disability.

Learners may also be placed in a mainstream inclusive state school. Teachers within these classrooms rely on accurate diagnosis so that they can better prepare and educate themselves to enable them to meet the needs of the pupils in their classroom. Diagnosis therefore has a direct impact on the intervention the learner will receive.

### **1.3. Context of the research - inclusion**

There are difficulties experienced in placing learners in inclusive settings. The goal of inclusion is not to leave anybody out. (Barton, 2005). The inclusive experience forms a part of learning to live with one another. Inclusive education therefore needs to be a component of a whole-school's equal opportunity policy that includes a well-thought-out plan that is appropriately and adequately resourced and carefully monitored.

Resources would include the development of appropriate methods and procedures for conducting assessments. This is an urgent task, according to Hart and Travers (2005), to facilitate accurate identification of learning difficulties. Besides pursuing an accurate identification, it is also important for teachers in inclusive classrooms to have an interactive understanding of learning difficulties. This approach safeguards the learner's interest by ensuring that whatever can be done is done to help learners to overcome barriers to learning and to enhance their participation and inclusion in the mainstream classroom.

Even when a learner has been through the process of assessment and identification and has been placed in an inclusive classroom, there is still no guarantee that support structures have been put in place or that intervention is being adhered to for that learner. Simply being in an inclusive classroom does not necessarily mean that inclusion is happening. (Slee, 2011).

Knowles (2011) has formulated a set of indicators that demonstrate what it would take to make a school truly inclusive. These indicators are: learners helping each other, adults supporting each other and working together towards a common goal, all adults and learners treating each other with respect, parents are welcome within the school environment and are part of a mutually supportive partnership between the parents and the school and, lastly, the school has close ties to the local community and vice versa.

Lazarus, Daniels and Engelbrecht (2003) have formulated a similar set of indicators for inclusive schools in the South African context. These indicators look at the school environment with the focus on the psychosocial environment and the physical environment, the development of a curriculum that reflects inclusive principles, learning support in the schools, the school support team, the district support team and the relationship between the community and the school.

Lomofsky (2003) supports the assertions made by Knowles and Engelbrecht, and further explores the challenges faced by teachers in ordinary classrooms when accommodating diversity and preventing and addressing learners with special educational needs. Teaching is likely to become more demanding as learners with special educational needs enter into a mainstream inclusive education setting. Previously the teaching of these learners was considered to be the domain of remedial therapists. Now mainstream teachers are expected to have the knowledge and expertise to accommodate these learners in his/her classroom. In summary, the challenges of placing a learner in mainstream education do not imply the physical placement of the learner. The challenge is in the correct assessment and identification of the barrier to learning being experienced, the possible lack of support structures available, poor planning and intervention strategies and poor administration and communication within the inclusive school. Due to the nature of Asperger's syndrome and Nonverbal learning disability, placement in an inclusive environment must be well thought out with regards to researching schools that run a well-informed and supported inclusion environment in which educators are knowledgeable about barriers to learning and how these can be addressed in the inclusive classroom.

#### **1.4. Rationale and motivation for the research**

Having worked as a teacher in mainstream schools and in a special needs school, I have had the opportunity to observe learners who have been formally diagnosed with various disorders through a series of assessment strategies. I have also taught those learners who have not been formally diagnosed, although there is a learning difficulty present. Learners who have been formally diagnosed with a disability have usually been placed in a special needs school where every class teacher is a remedial therapist and a wide variety of interventions are offered to help the learner.

Special needs schools, especially in the independent education sector, require a full team assessment consisting of a Psychological assessment - including an IQ assessment, an academic assessment, a speech and language assessment and an Occupational Therapy assessment. Acceptance into a special needs school is based on the outcomes of the assessment and the learner's potential to learn regardless of their learning disability. These learners receive specialised intervention, often at a high cost to their parents or guardians. In communities where parents or guardians do not have the financial resources to send their child for a full assessment, formal assessment and diagnosis are often foregone and intervention is offered based on the characteristics displayed by the learner. The responsibility of providing adequate and appropriate intervention for the learner then lies with the teacher. Even though teachers in South African classrooms are educated in inclusive practice when doing their education degrees, they may not have an intrinsic and exhaustive knowledge of a range of learning disabilities and the implications of educating learners with one or other disability in their classroom.

In order to address the difficulties faced by teachers and learners in state schools, the SIAS (Screening, Identification, Assessment and Support) strategy was introduced. This strategy was compiled by the department of education as part of the implementation plan of white paper 6. The aim of the SIAS document is to provide clear guidelines for the enrolling of learners in special and state schools upon screening, identification and assessment of their barriers to learning in order to facilitate implementation of support needed. Different approaches to assessment and diagnosis are used by different schools. The decision as to which path to follow is taken by each school according to their policies and the support teams represented within the school. Valid diagnosis is required for learners presenting with either Asperger's syndrome or Nonverbal learning disability whether they are in an independent school or in a state school. (Slee, 2011). While this may prove to be problematic in some cases or beyond the scope of individual schools, District Based Support Teams (DBST) are available to provide support and advice.

One of the main reasons for this research is to broaden our understanding of the implications to the teachers within inclusive mainstream classrooms and the adaptations that are made within inclusive classrooms for learners who have Asperger's syndrome or Nonverbal learning disability.

A second reason for this research is that the assessment methods used to identify either Asperger's syndrome or Nonverbal learning disability are different as the disorders are seen to originate from different areas within the body. Asperger's syndrome is a psychiatric or behavioural disorder whilst Nonverbal learning disability is a neuropsychological disorder. (DSM-IV-TR, 2007; Molenaar-Klumper, 2002). There is a possibility that the same assessment tools could be used for the diagnosis of Asperger's syndrome and Nonverbal learning disability. If there is a range of assessment tools that can be used for the diagnosis of both disorders, the assessment process could be more streamlined and the possibility of a learner being misdiagnosed could possibly be negated.

Diagnosis affects the treatment, intervention for and inclusion of these learners. Correct diagnosis from the outset would ensure that intervention strategies are appropriate and beneficial to the learner.

The third reason for this research is that I have spent an immense amount of time working with and teaching learners who have been identified as having either Asperger's syndrome or Nonverbal learning disability. Interaction with these learners has been rewarding for me and has sparked an interest in the field of research in order to help me to better understand these learners. If one does not have an understanding of learners with Asperger's syndrome and Nonverbal learning disability, the inclusion of these learners in the classroom can be daunting as they display a distinct lack of social skills. Social interactions are stilted and the learner can come across as being rude or uninterested. These learners need to be taught strategies and skills to enable them to interact with others in a more acceptable manner. If I did not possess the knowledge I have about these disorders, I would not have known how to devise intervention strategies and these learners would not have benefitted from their time spent in my classroom.

Through this report I would like to provide teachers with a working document on the identification and intervention strategies available for teachers of learners who have Asperger's syndrome or Nonverbal learning disability so that they are better equipped to help these learners to reach their potential.

## **1.5. Aims of the research**

The main aim of this research is to look at the literature that supports the convergence between Asperger's syndrome and Nonverbal learning disability.

The second aim of this research is to look at the assessment tools that are being used to diagnose Asperger's syndrome and Nonverbal learning disability to see if tools could be taken from both batteries of tests and used as one.

## **1.6. Questions**

### **1.6.1. Main question**

To what extent is there a convergence between the profiles of Asperger's syndrome and Nonverbal learning disability?

### **1.6.2. Sub-questions**

**1.6.2.1.** How different are the tools of identification that are being used by educational practitioners to make a diagnosis of Asperger's syndrome or Nonverbal learning disability?

**1.6.2.2.** How do Asperger's syndrome and Nonverbal learning disability feature in an inclusive education system?

**1.6.2.3.** What are the subsequent difficulties that may arise for learners with Asperger's syndrome and Nonverbal learning on inclusion in mainstream schools if the learner has been diagnosed incorrectly?

**1.6.2.4.** Are we able to develop a standard test that acknowledges the convergence between Asperger's syndrome and Nonverbal learning disability, and yet is still able to identify the differences between the two?

It is only through the correct implementation of inclusion that we will be able to overcome the stigmatisation and exclusion of learners who have disabilities. As educators we need to learn as much as possible about the various learning disabilities to be able to address these deficits in the mainstream classroom. Many teachers do not have the knowledge and experience to cope with the variety of disabilities that are present in the inclusive classroom. It is the responsibility of these teachers to do research to gain a working knowledge of these disabilities and how they can be addressed practically in the classroom to benefit the learning and socialisation of all learners so that these learners are no longer considered to be anomalies, but are considered to be integral and important members of the class.

## **1.7. KEY CONCEPTS**

### **1.7.1. Asperger's syndrome**

Asperger's syndrome is a heritable condition that entails empathy deficits and psychomotor difficulties along with unusually narrow and restricting fields of interest in learners who present with normal or above average intelligence. (Gomez, 2005). Asperger's syndrome will be referred to as AS.

### **1.7.2. Nonverbal learning disability**

The most widely accepted definition of Nonverbal learning disability relies on deficits in social-emotional, visual-spatial-organisational, tactile-perceptual, psychomotor and Nonverbal problem solving skills. These deficits co-exist with strengths in rote verbal learning, phoneme-grapheme matching, verbal output and verbal classification. (Davis & Broitman, 2011). Nonverbal learning disability will be referred to as NLD.

### **1.7.3. Convergence**

Convergence, according to the Oxford English Dictionary (2004), means to meet in, or one point of value. For the purpose of this research, the term 'convergence' shall be taken to mean the point at which a feature of Asperger's syndrome shares the same value as the same feature found with Nonverbal learning disability.

#### **1.7.4. Methods of identification**

Through the course of this research, the term ‘methods of investigation’ shall refer to those methods and tools of assessment that have been discussed relevant to the diagnosis of either Asperger’s syndrome or Nonverbal learning disability.

#### **1.7.5. Treatment**

As delineated within the Oxford English Dictionary (2004), the term treatment refers to the act or manner of treating behaviour. For the purpose of this research, the term ‘treatment’ refers to the medical intervention imposed by a doctor for learners who have been identified as having Asperger’s syndrome or Nonverbal learning disability. Even though this research is grounded in education, for the purpose of clarification the medical treatment of Asperger’s syndrome and Nonverbal learning disability needs to be investigated.

#### **1.7.6. Intervention**

Intervention means ‘to happen so as to interrupt or interpose’. (Oxford English Dictionary, 2004). When the term ‘intervention’ is used by the researcher in this research, the term refers to the interruption of a set of behaviours by a therapist in order to interpose new ways of learning and behaving so as to benefit the individual being treated. In terms of the use of ‘intervention’ from an educational perspective, it is the programme of therapy and specialised teaching practice that has been planned and implemented within an educational setting with the aim of providing the learners with appropriate, good quality education.

#### **1.7.7. Inclusion**

For the purposes of this research, ‘inclusion’ means that all learners have the right to access good quality education despite any form of disability they may have. Equal education opportunities are provided for all learners.

#### **1.7.8. Disability - a Medical Model**

The most commonly cited medical model definition of the term ‘disability’ is any restriction or lack (resulting from any impairment) of ability to perform an activity in the manner, or within the range, considered normal for a human being. (World Health Organisation).

### **1.7.9. Disability - a Social Model**

The social model of the term ‘disability’ is that society disables people by unnecessarily isolating and excluding them from full participation in society. Disabled people are an oppressed social group. Their disability is therefore the social oppression they experience rather than their physical impairments, excluding them from the mainstream of social activities. (Finkelstein, 2005).

### **1.7.10. Barriers to learning**

Barriers to learning include any physical, social or cognitive ability that would prevent a learner from fully participating in a mainstream educational environment. A different form of barriers to learning is the structural barriers created by inadequate school premises as well as educational administration barriers that include poor educational leadership structures and the implementation of unsatisfactory curriculum adaptations.

### **1.7.11. Conceptual research**

Conceptual research is used when a researcher works within a framework of concepts that are unpacked through, in this case, a literature study, in order to ascertain relationships between the concepts that have been identified.

## **1.8. Outline to the study**

This section has been included to provide the reader with an outline of the research that has been conducted. Chapter 1 provides the reader with an orientation to the research. Chapter 1 contains an introduction to the research and an understanding of what the reader can expect from the research. The background to the research problem is discussed and the research is placed within an educational context. It is inclusion- based research. The rationale and motivation for the research is discussed and clear aims for the research have been stated. This chapter includes the questions that form the backbone of the research. There is one main question to be answered. This question is ‘To what extent is there a convergence between the profiles of Asperger’s syndrome and Nonverbal learning disability?’ The rest of the questions are sub questions that have been formulated to support and verify the findings of question one. The key concepts used throughout the research are explained in detail, including my view on the context in which the words should be placed.

Chapter 2 focuses on the research. The research method used is investigated and discussed. The problem statement has been clearly stated. There are three distinct problems that have been identified. These problems are intended to drive and focus the research towards a particular goal. Also included in chapter 2 is a discourse on the selection of literature used in this research. There is no separate section for the literature study as the literature has formed the basis for the research and is integrated throughout the paper.

Chapter 3 places Asperger's syndrome and Nonverbal learning disability in an inclusive education system. Before this can be properly achieved, the reader is taken through the development of inclusion from an international perspective with regards to the development of early inclusion frameworks and the implementation of these frameworks in developed countries. UNESCO's contribution to inclusion is investigated with specific focus on the Salamanca Statement and The Convention on the Rights of Persons with Disabilities. I then look at the development of inclusion in developing countries and in South Africa. The impact of White Paper 3 is discussed with reference to how this paper influenced the eventual implementation of White Paper 6. The practical implementation of this paper is outlined in the SIAS document of 2008 as well as the benefits of SIAS to learners in state schools. Chapter 3 disseminates Asperger's syndrome and Nonverbal learning disability under the headings of history, etiology, assessment and diagnosis and alternative forms of assessment and diagnosis. Rounding off this chapter is an analysis of the deficit model of disability and a discussion around the labelling of children.

Chapter 4 reports on the findings of the research on Asperger's syndrome and Nonverbal learning disability in answer to the questions posed in chapter 1. Chapter 4 also contains information on the intervention and treatment for Asperger's syndrome and Nonverbal learning disability. It talks about the inclusion of these learners in the classroom and offers an alternative form of assessment that could be used to circumvent the possibility of misdiagnosis being made and inappropriate support and intervention being recommended.

The research is brought to its conclusion in chapter 5. Chapter 6 contains references used.

## **Chapter 2**

### **2. Research**

#### **2.1. Research method**

For the purpose of this research I have chosen to use conceptual research. In conceptual research the theory informs the practice. A conceptual framework as outlined by Badenhorst (2007) is particular to academic contexts. It is a tool used by the researcher to show which interpretations he/ she deems to have the most validity and which are supported by the evidence presented. Within the conceptual framework key concepts that are to be used throughout the research are unpacked and relationships between the concepts are identified. Conceptualisation is a form of categorising and labelling thoughts and thought processes as we gather perceptions and impressions about the topic being researched. (De Vos, Strydom, Fouche and Delport, 2003). Similarities and differences in the perceptions are researched and labelled, thus forming concepts. In this study a thorough literature study has been conducted into the development of inclusion in education from an international and national perspective. The paradigm of inclusive education has been unpacked and the validity of the paradigm has been supported by the literature presented. The relationship between inclusion and two learning disabilities, Asperger's syndrome and Nonverbal learning disability, has been identified. A link between the inclusion of learners with these disabilities, and the intervention offered within a mainstream classroom has been investigated. AS and NLD have been researched using a literature-based study that is imbedded in a conceptual framework. The literature that has the most validity and evidential support has been included and interpreted with a view to answering the key questions. The findings of the literature study have been categorised and labelled under headings for ease of reading and easy reference.

A conceptual framework is evidenced by a literature study. The literature study in this research is not isolated to one specific section of the research. It runs throughout the research and is used to answer the key questions posed. Conceptual research offers an immediate theory that connects all the aspects of the enquiry together - aspects such as problem definition, purpose of the research, the literature review and analysis of data collected. Conceptual research collates a set of ideas and concepts and organises them in a way that makes them easily communicable to others.

As a remedial therapist and remedial class teacher my use of conceptual research is intrinsic to the understanding of - and intervention for - each learner as each individual presents with a different academic and emotional profile. Their overall disability or difficulty needs to be researched through a literature-based study at the start of their therapy, curriculum adaptations then need to be made. It is imperative that I have a valid set of ideas and a good understanding of concepts around their disability to aid the drawing up of an Individual Support Plan (ISP) that can be used by me, and others involved, in the intervention offered for that learner.

## **2.2. Literature selection**

The research method used for this research is conceptual. The literature study that was initially conducted at the outset of this research was based on Asperger's syndrome and Nonverbal learning disability. It became clear that the research could not be based solely on the two disorders and these would have to be placed within the context of inclusion. To gain a clear and comprehensive understanding of inclusion one needs to explore the origins of inclusion up to and including the present day implementation of inclusion in the mainstream classroom. This aspect was then explored further by looking at the inclusion of learners with AS and NLD in the classroom.

As the research progressed, the literature that formed part of the literature study was deemed adequate to answer all the questions posed. It was decided to expand the literature study to incorporate it within - and make it the basis for - the research, therefore reverting to a literature-based research paper, using the literature study to answer the questions. The information included within this research is based on information researched in books, journal articles, educational documents and papers and government documents.

The study of literature was based on a time factor that influenced the literature selected. I decided to limit the selection of literature from 1994 to the present day. The articles from before the year 2000 are a bit older than those that would usually be included in research, however these articles and books are of a high quality and are very informative. It is important for a literature study to focus on the latest literature available in any discipline. The bulk of the literature researched is from the year 2000 to the present day. It is during this time frame that evidence became available supporting the convergence between AS and NLD.

## **Chapter 3**

### **3. Asperger's syndrome and Nonverbal learning disability in an inclusive education system**

#### **3.1. The historical development of inclusion internationally and in South Africa**

Within the South African context of inclusive classrooms there are learners with both Asperger's syndrome and Nonverbal learning disability. Historically, learners who experienced barriers to learning were accommodated in special schools that catered for their specific needs in special classrooms. Learners who experienced barriers to learning in South Africa were, until very recently, accommodated in special needs schools or in "Aid classes" within mainstream schools. To understand the history of inclusion and the progress that is being made in inclusive education in South Africa, we must first look at the literature available on the history of inclusion from an international perspective. As a whole, inclusion should be viewed as the product of a social movement which is connected to social reforms and policies that have been set in place as a reaction against the inequalities of excluding anybody from attending mainstream education on the basis of religion, race, sex, economic status and the presence of barriers to learning.

##### **3.1.1. The development of early inclusion frameworks**

The idea of inclusion first appeared in the form of human rights. (Forsythe, 2009). The idea of human rights is that everyone and anyone has a set of rights which is inviolable based simply on the grounds of being human, regardless of any differences which would set them apart from other humans. The human rights movement formally emerged in the 1970s - especially in Eastern and Western Europe, the United States and Latin America. The human rights movements gained the label of social activism and political rhetoric that put it high on the agenda of many governments across the world.

As early as 1919, human rights were top of the agenda when the League of Nations was established over the Treaty of Versailles at the end of World War I. Contained within the charter was a mandate to promote human rights which were later included as part of the Universal Declaration of Human Rights. Before World War II, the Geneva Convention was drafted. The convention was later revised as a result of World War II in order to safeguard the human rights of learners in conflict.

In 1948 the Universal Declaration of Human Rights (UDHR) was adopted by the United Nations General Assembly in response to the appalling conditions and unethical behaviour in World War II. Members of the UDHR were urged to promote the human, civil, economic and social rights of their citizens. The Universal Declaration of Human Rights was the first international declaration that legally sought to limit irregular and unethical behaviour of states. Included in the Universal Declaration of Human Rights are civil and political rights, economic rights, social rights and cultural rights. The Universal Declaration of Human Rights was predicated on the assumption that different types of rights are inextricably linked to basic human rights. This declaration was not adopted by South Africa at this time. In defense of the argument for inclusion, the preamble to the Universal Declaration of Human Rights (1948) states that “...recognition of the inherent dignity and of the equal and inalienable rights of all members of the human family is the foundation of freedom, justice and peace in the world”.

### **3.1.2. Inclusion in the United States and Great Britain**

Following the Universal Declaration of Human Rights in 1948, the United Nations continued to urge developed and developing nations to take heed of human rights especially with regards to education. According to research compiled by Booth, Ainscow, Black-Hawkins, Vaughan and Shaw (2000), in the United States policy reform towards inclusion began in the mid-1950s. Two of the events leading up to this policy reform were the 1954 Supreme Court decision on the racial disintegration of schools as well as the 1975 passage of the Education for All Handicapped Learners Act (EHA). More recently in the mid-1980s there was a call for further reform of the EHA act, and in the early 1990s the passing of the Americans with Disabilities Act was restructured in an effort to overhaul American schools and their exclusion policies. From the late 1970s and throughout the 1980s, the premise of the mainstream school was based on the belief that students who experienced barriers to learning must be separated from regular classes and receive special instruction in a special environment. In the 1990s the Americans embraced inclusion in which a learner is presumed to belong in a mainstream education environments that he/ she would be attending had there been no barriers to learning. (Booth et al., 2000). Farrell and Ainscow (2002) state that the field of inclusion is one that has been developing fairly recently across the world. This development is unevenly staged across the different governments and has involved a process of stages through which each government has experimented with various ways in which the needs of learners with barriers to learning can be addressed.

Great Britain has embraced the framework of inclusive education and has been actively working towards a fully integrated and inclusive education system for the past twenty years. (Farrell & Ainscow, 2002). There is, however, a continued debate amongst academics in Great Britain over policies that have been put in place for those learners who, traditionally, have fallen within the realm of having barriers to learning, and who now would be defined as having either a special educational need, or those who have a disability.

### **3.1.3. UNESCO's contribution to inclusion**

At the World Conference in 1994 on Special Needs Education, UNESCO (United Nations Educational, Scientific and Cultural Organization) urged all governments across the globe to make inclusive education their highest priority as well as budgetary priority. This was in order to improve the state of their education system so that all learners would be included within the parameters of their education system regardless of their difficulties or individual differences. The motivation behind the inclusive orientation within education was that it was deemed to be the most effective way to combat discriminatory attitudes, creating opportunities, build an inclusive society and achieving the goal of education for all (UNESCO, 1994). Within this international framework, the United Nations Educational, Scientific and Cultural Organization (UNESCO) spoke to the well-developed countries and those that are still in the process of developing a sound education system. With a specific focus on education, developing countries were encouraged to concentrate their efforts on developing inclusive schools and specialised services that were needed to enable them to serve learners and youth, focusing on teacher training in special needs education. (UNESCO, 1994). The definition of inclusion as provided by UNESCO is- "Those with special educational needs must have access to regular schools which should accommodate them within a child-centred pedagogy capable of meeting these needs". (UNESCO, 1994, viii). Farrell and Ainscow (2002) define inclusion in the context of an educationally inclusive school in Great Britain as being a school in which the teaching, learning, attitudes and achievements of every young person is important. I find this definition of inclusion to be the most useful for the purposes of this research and for my daily education practice as all learners are important and should be treated with equality. Learners should have access to education regardless of their differences, needs and barriers to learning.

### **3.1.3.1. The Salamanca Statement**

The UNESCO document - known as the Salamanca Statement is used widely as a tool for informing educators on inclusion and how inclusion should be adopted within the education system and the school environment. The Salamanca Statement called for new thinking in special needs education, specifically focusing on the promotion of inclusion through the development of teaching and learning strategies to bring about an equalization of opportunity so that those with special educational needs could achieve educational progress and optimal social integration. The Salamanca Statement brings the focus even closer to the school environment, stating that the most fundamental principle of the inclusive school is that 'all learners should learn together, wherever possible, regardless of any difficulties or differences they may have'. Inclusive schools are tasked with the responsibility of recognizing and responding to the diverse needs of the learners. Accommodations must be made for different styles of learning and rates of learning whilst making use of appropriate curricula, teaching strategies, organizational arrangements, use of resources and community partnerships.

Learners with special educational needs should therefore receive any extra support they require to ensure the effectiveness of their education. The Salamanca Statement also takes into account that the situation in terms of special needs education varies drastically from one country to another. This is based on how well established the education system is in each country, how geared the education system is towards special needs and inclusive education, resources available and availability of suitably trained educators. Countries that have few or no special needs schools were advised to concentrate on developing inclusive schools and specialized services that would be needed to serve and support learners with special needs.

Furthermore, within an inclusive school environment the curricula must allow for flexibility to incorporate appropriate assessment and intervention procedures as well as the implementation of valid teaching material. School management must be enhanced by training and investing school heads and local administrators with the authority needed to develop management procedures that are flexible, to redeploy resources to diversify learning options in the curriculum and to mobilize support to all learners who are experiencing difficulty. It would be the responsibility of these community leaders to disseminate examples of good practice in order to help other schools to achieve improved teaching and learning practice.

### **3.1.3.2. The Convention on the Rights of Persons with Disabilities**

The Convention on the Rights of Persons with Disabilities put forward that State parties recognise the rights of persons with disabilities in education with a view to realising this right without discrimination and on the basis of equal opportunities, shall ensure an inclusive education system at all levels. (*The Convention on the Rights of Persons with Disabilities.*, 2007). The Convention on the Rights of Persons with Disabilities is a comprehensive document that has five general obligations. The first of the general obligations is of the most importance to this paper. It urges state parties to ensure and promote human rights and fundamental freedoms for all persons who have disabilities without discrimination in any form on the basis of their disability. To this end the document explains how this objective can be achieved. The Convention ensures that people with disabilities are included in all aspects of society and that they share equal opportunities with citizens who are not disabled.

### **3.1.4. Inclusion in developing countries**

As has already been discussed in the Salamanca Statement (UNESCO, 1994), not all countries have the resources or experience available to implement inclusion as effectively as in more developed countries. However, according to Landsberg, Kruger and Nel (2005) inclusion has been adopted by many developing countries. These countries have faced many challenges through this process. There is a dedication amongst the various governments in developed and developing nations to build societies that are more democratic, education systems that are equitable and of a higher quality, and to foster the belief that it is the responsibility of all schools to extend their services towards accommodating the needs of all learners, no matter how diverse those needs may be.

In her research monograph ‘Creating pathways for access’, Croft (2010) explores the challenges faced in including disabled learners in learning in developing countries. There is a drive to achieve education for all (EFA) by 2015. This has led to the focus of governments being on the barriers that marginalized groups experience in participation in basic education. (UNESCO, 2010). Croft’s research monograph is based on the premise that many learners, and the young people who are disabled, are denied sustained access to basic education. Some of these learners never have the opportunity to go to school. Others may enter school, but make poor progress and eventually drop out. There also seems to be a small proportion of the population who is educated in special needs schools.

Taking a more political stance as to the nature of inclusive education, Armstrong et al. (2010) make the point that inclusive education in developing countries is sometimes framed with regards to social justice wherein it is directly linked to UNESCO's Education For All policy. In the developing world inclusive education means different things. It could be a policy option that requires less intensive resourcing for the provision of services for disabled children.

UNESCO's global monitoring report, *Reaching the Marginalised* (2010), highlights another challenge facing developing countries. The challenge of financial crisis that threatens a worldwide set back in education. Many poor and developing countries do not have the resources available to nurture economic recovery to avoid the prospect of education reversals. The global monitoring report has charted excellent advances in education over the past decade. These advances have, however, fallen short of the targets set out in 2000. Croft (2010) states that the United Nations Convention on the Rights of Persons with Disabilities (2009) required states to make provision for a quality education in primary and secondary education that was inclusive. The education must also be equal to that offered to other members within the community in which they live.

Regardless of this requirement, there are still millions of learners in poor and developing countries who do not attend school. Furthermore, there are difficulties in defining disabilities and the classification of impairments (Florian & McLaughlin, 2008). There are also challenges in tracking the progress of learners who are disabled and are attending school as these learners are often not receiving any support for their disability.

Slee (2011) agrees with Croft. The immense challenge of including learners with disabilities in the education structure of developing countries is important and the most cost-effective way of meeting the needs of all the learners is to implement a system of inclusive education. In a developing country the argument about providing education for disabled learners is not about the location of provision. Rather it is the challenge of being able to provide even the most basic education. Inclusion in developing countries is therefore not something that can be implemented overnight.

Due to the challenges that are being faced, inclusion is the process that Booth et al. (2000) see as a journey in which supporting the direction towards greater inclusion is rather more helpful than critiquing schools as being inclusive or not inclusive. These critiques are based on a set of predetermined standards that have been developed around educational contexts in richer countries.

### **3.1.5. Inclusion in South Africa**

Being in the classroom does not automatically qualify a learner for being educated and does not guarantee learner participation. What happens within the classroom will determine how long a learner stays within the education system and the degree to which they will achieve social and/or academic success. (Croft, 2010). With regards to the implementation of inclusion in developing countries, South Africa is considered to be a developing country. It is important to look at how inclusion has developed through South African history to reach the point of how learners with barriers to learning, and specifically those with Asperger's syndrome and Nonverbal learning disability, are included in mainstream classrooms in South Africa. In a study undertaken by Sayed, Subrahmanian, Soudien and Carrim (2007) a broad area of inclusionary practices and policy is discussed. In post-apartheid South Africa the newly formed state initiated many policy changes in education with the aim of creating an enabling environment in order to effect the inclusion of all learners. Two distinct threads had to be followed to make the enabling policy environment effective. The first thread was the necessity to pass a series of laws that would define desired goals and intentions of a non racial and inclusive society, encompassing the goals and outcomes needed to redefine the education system. The second thread focused on the creation and establishment of a number of structural mechanisms that would promote and monitor the enabling policy environment. Apartheid was an exclusionary practice whose influence had to be redressed in all policy considerations in order to build a united and Democratic South Africa. (Sayed et al., 2007).

Inclusion in post-apartheid South Africa is also based on the Constitution of South Africa (1996) that speaks to a South Africa that is a democratic and open society that upholds peoples' fundamental human rights. Changes in the education policy environment in South Africa began in 1994 and the emphasis was placed on establishing an education system that was unified, democratic and accountable.

The education system had to be participatory in terms of the development of a policy that was responsive to people who were previously disenfranchised. Therefore the key imperative of the national and provincial education departments was to integrate an education system that was fragmented along ethnic and racial lines. New officials had to be appointed to fulfil these duties and new structures had to be implemented to reconstitute a new education. (Sayed et al., 2007).

Occurring concurrently with changes in the education policy environment at this time, The South African Federal Council on Disability (SAFCD) called for the development and implementation of an education system that was fully inclusive. The statement reiterated the rights of learners with barriers to learning to have equal access to all levels of education in a single, fully inclusive education system. The central theme of the statement is as follows: “Learners with Special Education Needs (LSEN) have a right to equal access to education at all levels in a single inclusive education system that is responsive to the diverse needs of all learners, accommodating both different styles and rates of learning, as well as different language needs..., ensuring quality education to all through appropriate curricula, organizational arrangements, technical strategies, resource use and partnerships with their communities”. (Engelbrecht et al., 2004, p 16).

### **3.1.6. The impact of White Paper 3**

Between 1997 and 1999 the South African Government released Educational White Paper 3: A Programme for the Transformation of Higher Education. White Paper 3 required the transformation of education in accordance with the human rights as provisioned in the South African Constitution (1996). The Constitution guarantees that all people in South Africa have the right to basic education including access to basic adult education. White Paper 3 provided the basis for the National Education Policy Act (NEPA). The National Education Policy Act was passed in 1996 and set out the responsibilities of the Minister of Education with regards to policy, legislation and monitoring procedures.

Following the release of White Paper 3, the new Ministry of Education appointed bodies to investigate and make recommendations on ‘all aspects of special needs and support services in education and training in South Africa’ (Engelbrecht et al., 2004, p16). These bodies were The National Commission on Special Needs in Education and Training (NCSNET) and the National Committee for Education Support Services (NCESS).

The investigations undertaken by these two bodies were comprehensive and included the need for immediate and long-term strategies, support structures, training implications, policy implications as well as implementation and guidelines for the education of learners with barriers to learning in education. The conclusion and recommendations of The National Commission on Special Needs in Education and Training (NCSNET) and the National Committee for Education Support Services (NCESS) were that the education systems at the time needed to be fully integrated to provide one national education system that was able to recognize and appropriately respond to the diverse needs of the learners in South Africa. It also stipulated that the education system must be structured in a way that would allow learners the opportunity for inclusion and integration in all aspects of education regardless of the learning context.

Between 1999 and 2004 the then Minister of Education, Kader Asmal, started a campaign called Tirasano which literally means 'a call to action'. This was an attempt at ensuring that the nature and type of policy that was initiated focused on concrete action coupled with an improvement in school practice. In the process of taking steps towards more inclusive curriculum and assessment the following two frameworks were used by the Ministry. The first is the National Qualifications Framework (NQF) and the South African Qualifications Authority (SAQA). The South African Qualifications Authority (SAQA) was responsible for overseeing the development and implementation of the National Qualifications Framework (NQF). These acts were implemented to form the scaffolding of a learning system that aimed to integrate education and training at all levels. The second group of general education policy frameworks to be adopted by the Ministry were Curriculum 2005 and the National Curriculum Statement (NCS). These are considered to be a move away from an education system that was considered to be a racist model of learning, towards an education system that was inclusive, geared towards building a nation of learners through a model that was learner centred and outcomes based. Knowledge and skills were integrated through different pathways which allowed for greater mobility between different levels of education and institutions. (Sayed et al., 2007).

### **3.1.7. White Paper 6**

One of the most important documents on inclusion in South Africa is the Education White Paper 6. (Department of Education, 2001). This paper was published under the leadership and guidance of the Minister of Education at the time, Professor Kader Asmal. White paper 6 is the culmination of research done and papers written with regards to inclusive education in South Africa. Previous documents were critiqued with a view towards using the best methodology and discarding what was not useful in attaining the goals of inclusive education. The aim of the White Paper 6 was to move away from segregating learners according to different categories of disability and to make provision for an education system for disabled learners that is based on the intensity of support needed. Furthermore, the emphasis was to be placed on supporting learners in full-service schools that were geared towards helping learners with particular disabilities depending on the support needed. The White Paper 6 also set out to direct the accessing of additional resources that would be required. There would also be an indication of how learners with disabilities would be identified, assessed and incorporated into full-service, ordinary or special schools. Strategies and interventions were introduced to provide support for educators to enable them to cope with a diversity of teaching needs to ensure that ‘transitory learning difficulties are ameliorated’. The White Paper 6 policy provides direction to the education support system and also clear indicators as to how current special schools will be able to serve learners who have identified disabilities and to serve as a resource centre for educators and schools in the surrounding areas.

The White Paper 6 takes a very strong position on the segregation of any person with disability. The Constitution of South Africa (Act 108 of 1996) advocates the achievement of equality and the advancement of freedom and human rights. The way in which this can be achieved is by establishing an education and training system that ensures that all learners, with or without disabilities, are able to pursue their learning potential without restriction.

Inclusive education, as the focus of White Paper 6, is discussed thoroughly. It is recognizing and respecting differences amongst learners and recognizing and building on similarities. It is about supporting learners, educators and the education system as a whole. In this way the full range of the needs of the learners will be met. The focus of inclusion is therefore on teaching and learning and the development of good teaching strategies.

Inclusion is also about overcoming barriers to a learning system that prevents it from meeting the needs of all learners, including adaptations and support systems available in the classroom.

One of the most significant changes in policy is the understanding that all people have the potential to learn and they all require varying degrees of support. Another significant stipulation to ensure the success of inclusion is that the public be made aware of what inclusion is and accept the establishment thereof for an inclusive society and an inclusive education and training system. White Paper 6 is widely referred to by educators as the cornerstone document for inclusive practice in South Africa. The development and implementation of inclusion in all countries is a process rather than a quickly achieved objective. In this climate of progressive inclusion it is valuable to identify how the objectives in White Paper 6 have translated into classroom practice and, with regards to this research, the inclusion of learners with Asperger's syndrome and Nonverbal learning disability.

### **3.1.8. The SIAS document**

In 2008 the National Strategy on Screening, Identification, Assessment and Support was introduced by the South African Department of Education. This strategy was compiled in response to the question regarding the implementation of White Paper 6. SIAS aims to respond to the needs of learners across South Africa, especially those learners who are vulnerable and most likely to be marginalised and excluded. (South African Department of Education, 2008). White Paper 6 created the need in education for a new process of identifying, assessing and providing programmes of support for learners in order to enhance learner participation and inclusion. SIAS provides educators with a toolkit that includes information about learner profiles, diagnostic profiles, support needs assessment forms and individual support plans (ISP). It also provides forms and guidelines for the requesting and provisioning of additional support and monitoring of support. The purpose of the SIAS process and use of the toolkit is to bring support to the learner in the classroom rather than take the learner to different places to receive the support they need. It also provides indicators and guidelines for support programme design.

The information contained within the SIAS strategy is descriptive and enables the educator to help each learner by using a step-by-step process that ensures that the learner's needs are being met in the classroom to ensure maximum participation by all learners. In state schools SIAS is presently the most important document used. The package provides educators with practical, hands on tools that they are able to use to screen the learners in their classroom, identify barriers to learning, assess learners and ensure that support is provided. However, SIAS does not insist on a specific diagnosis being made in order for the learner to benefit from intervention. Learners with Asperger's syndrome and Nonverbal learning disability rely on a correct diagnosis as the intervention for these disabilities are very specific. The incidence of Asperger's syndrome and Nonverbal learning disability are becoming more prevalent in independent and state schools.

### **3.2 Asperger's syndrome - diagnosis**

#### **3.2.1. History**

Hans Asperger was an Austrian Paediatrician after whom Asperger's syndrome is named. In 1944 Hans Asperger published the first definition of the syndrome. He had identified a pattern of behaviours and abilities in four boys that he termed 'Autistic Psychopathy'. The pattern included 'a lack of empathy, little ability to form friendships, one sided conversation, intense absorption in a special interest and clumsy movements'. The subjects of the study also had the ability to talk at length and in detail about their favourite subjects. (Attwood, 2007). Asperger's work was, however, not available in English before the mid 1970s. As a result, Asperger's syndrome was often unrecognised in English speaking countries until the late 1980s. Before the DSM-IV that was published in 1994, there was no official definition of AS. Lorna Wing of the MRC Social Psychiatry Unit, Institute of Psychiatry in London, was the first person to use the term 'Asperger's syndrome' in a paper. Published in 1981, this paper popularised the research of Hans Asperger and introduced the term 'Asperger's syndrome' to the academia of Psychiatry. (Wing, 1981).

#### **3.2.2. Etiology**

Tony Attwood's earliest research into the syndrome dates back to 1971. He has an honours degree in Psychology, a Masters degree in Clinical Psychology and a PhD from the University of London. He is considered to be an expert in the field of diagnosis and intervention for people who have AS.

Attwood (2007) describes learners with AS as having the following characteristics:

- They have delayed social maturity and social reasoning, showing an immature sense of empathy.
- They have difficulty making friends and are often teased or bullied by other learners.
- They display difficulty with communicating with others and controlling their emotions.
- Learners with AS display unusual language abilities that include advanced vocabulary and syntax, but delayed conversation skills, unusual prosody and a tendency to be rather pedantic.
- They have a particular fascination with a topic that is unusual in its intensity or focus.
- These learners have difficulty maintaining attention in class for prolonged periods and display an unusual profile of learning abilities.
- They need assistance with some self-help and organisational skills.
- They display clumsiness in gait and co-ordination as well as sensitivity to specific sounds, aromas, textures and touch.

AS belongs to a group of childhood disorders commonly known as pervasive developmental disorders or PDDs or autistic spectrum disorders. AS is one of the milder PDDs. Learners with AS learn to talk at the usual developmental age and often have above average verbal skills and normal or above normal intelligence. Most learners falling into this category are diagnosed during their nursery school years because the symptoms of the disorder become more apparent at this time. Behaviours displayed are poor pragmatic language skills, problems with hand-eye coordination, difficulty with visual skills, problems making eye contact, learning difficulties, absorption in a particular topic and repetitive behaviours. (Lovecky, 2004).

### **3.2.3. Assessment and diagnosis**

One of the most favoured forms of assessment for AS is the practice of professionals referring to the DSM-IV-TR (2007). AS is included in the section for Pervasive Developmental Disorders. PDDs are characterized by “severe and pervasive impairment in several areas of development”. These areas are: reciprocal social interaction skills, the skill of communication and the presence of stereotyped behaviour, activities or interests.

The qualitative impairments defining these conditions are considered to be deviant relative to the development and/or mental age of the individual. Other disorders included in this section are Autistic disorder, Rett's disorder and Pervasive Developmental Disorders Not Otherwise Specified (including Atypical Autism).

The DSM-IV-TR (2007) provides us with the most accurate and inclusive diagnostic criteria for AS. The diagnostic criteria have been related verbatim from the DSM-IV-TR below.

#### Diagnostic criteria for Asperger's Disorder

A. Qualitative impairment in social interaction, as manifested by at least two of the following:

1. Marked impairment in the use of multiple nonverbal behaviours such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction.
2. Failure to develop peer relationships appropriate to developmental level.
3. A lack of spontaneous seeking to share enjoyment, interests, or achievements with other people.
4. Lack of social or emotional reciprocity.

B. Restricted repetitive and stereotyped patterns of behaviour, interests and activities, as manifested by at least one of the following:

1. Encompassing preoccupation with one or more stereotyped and restricted patterns of interest that is abnormal either in intensity or focus.
2. Apparently inflexible adherence to specific, non-functional routines or rituals.
3. Stereotyped and repetitive motor mannerisms (e.g., hand or finger flapping or twisting, or complex whole-body movements).
4. Persistent preoccupation with parts of objects.

C. The disturbance causes clinically significant impairment in social, occupational, or other important areas of functioning.

D. There is no clinically significant general delay in language (e.g., single words used by age 2 years, communicative phrases used by age 3 years).

E. There is no clinically significant delay in cognitive development or in the development of age-appropriate self-help skills, adaptive behaviour (other than in social interaction), and curiosity about the environment in childhood.

F. Criteria are not met for another specific Pervasive Developmental Disorder or Schizophrenia

Even though the DSM-IV-TR is used extensively in the diagnosis of AS, learners presenting with this syndrome do not have to display all the characteristics as stipulated. They do, however, need to fulfil the minimum criteria for a diagnosis. There is, however, a danger in relying on predominantly one form of reference for diagnosis. The DSM-IV-TR (2007) must certainly form a part of a series of assessments used for accurate and insightful diagnosis. There is currently a new DSM under review. This will be called the DSM-5. In the DSM-5 there will be a reclassification of AS. Asperger syndrome will no longer be listed as a separate entity. Rather it will fall under the category of autism spectrum disorder. This category will also encompass autistic disorder, childhood disintegrative disorder and pervasive developmental disorder not otherwise specified. This change has been made due to the inconsistencies noted within the variables of sites, the severity of the disorder, the level of language displayed and the intelligence of the person being tested. It is found that autism is best represented in one diagnostic category that is defined by common clinical specifiers and associated features. Autism spectrum disorder will be classified as a neurodevelopmental disorder that must be present from either infancy or early childhood even if it is only detected later on in the child's life due to minimal social demands. (<http://www.dsm5.org/proposedrevisions/pages/proposedrevision.aspx?rid=94>.)

Another assessment used for diagnostic purposes is the Asperger Syndrome Diagnostic Scale (ASDS) (Myles, Jones-Bock & Simpson, 2000). The ASDS is used to obtain an AS quotient that would indicate that the individual being tested has AS. Questions pertaining to the five specific subtests relate to behaviour in the areas of cognitive, language, maladaptive, sensorimotor and social are answered by therapists, teachers, parents, pathologists and siblings. The total score from these subtests is used to identify individuals with AS.

### **3.2.5. Alternative forms of diagnosis**

Koegel and Koegel (2006) take the assessment criteria further by insisting that the person or people doing the assessment and diagnosis delve deeper into the psyche of the individual being tested to arrive at a more accurate diagnosis. They also provide more insights into the clinical features of AS. The main clinical features are circumscribed interest, social difficulties and language difficulties. With regards to circumscribed interest, learners with AS often have one special area of interest in which they have accumulated an exhaustive amount of knowledge and facts. Socially learners with AS are typically isolated from their peers due to the fact that they often use inappropriate or awkward strategies when they approach others during social interactions. On a verbal level they are able to explain what different emotions are and can talk about social rules. They are, however, unable to use this knowledge during social interactions. When conversing with others, learners with AS tend to only talk about their circumscribed interest. They also have difficulty with picking up nonverbal cues of other people. Language difficulties are evident in the pragmatics of language such as the improper regulation of voice volume, the use of a monotonous tone of voice, a pedantic way of speaking and difficulties with the expression and interpretation of nonverbal cues.

In recent years the term AS has become a public term that is used widely and inaccurately by teachers who are not conversant in the criteria used for the diagnosis of AS or are not qualified to make a diagnosis. According to Fitzgerald and Corvin (2001), AS appears to be an uncommon condition. Misdiagnosis or delayed diagnosis of this disorder is a serious problem as this can be traumatic for learners and their families. Many parents and guardians like to have a label for the symptoms their child is displaying. This helps them by providing areas in which they can do further research to see how they are able to further help their child. If a diagnosis is offered and then retracted, the results can be rather confusing and frustrating for the parents. A misdiagnosis can also be upsetting for the child as they would have to participate in different types of intervention for each diagnosis made. Intervention may include the necessity to take various types of medication. In some instances the child could be taking medication unnecessarily which is harmful to the body and the immune system. This also affects the intervention given, as the earlier intervention can be implemented the more effective it would be for the learner. An assessment of Asperger's syndrome should therefore include a medical examination to exclude medical causes such as sensory impairments.

Assessment should therefore include:

- A laboratory workup to exclude fragile-x syndrome and other syndromes.
- Psychiatric evaluation for co-morbidity.
- Psychological assessment including an IQ assessment.
- Speech and language assessment.

Chowdhury (2009) concurs with the above assessment tools. The assessment of AS should include a history of the learner's development, school reports, observation and a profile of the learner's strengths and weaknesses. To receive a diagnosis of AS a learner must show no delay in acquiring spoken language and must have an IQ above 70. They must display poor social skills, a lack of insight, behavioural inflexibility and a narrow range of interests as well as motor clumsiness. Also present must be a qualitative impairment in social interaction, qualitative impairment in communication and restrictive, repetitive and stereotyped patterns of behaviour, interests and activities. These are recognized as the "Triad of impairment" and all three have to be present for a diagnosis.

Chowdhury provides us with the most comprehensive list of assessments that should be completed for a diagnosis of AS. This is:

A general assessment including:

- The learner's developmental history.
- Observations of the learner in structured and semi-structured situations.
- Nursery/ school reports.
- Assessment of cognitive level.
- Assessment of problem behaviours.
- Speech and language assessment.
- Audiology and visual tests if included.
- Chromosomal screening if there are dimorphic features.

Diagnostic interviews and Differential diagnoses.

Information from the above assessments is used to determine the degree to which a learner would meet the criteria for Asperger's syndrome. This would take into account that there may be differential diagnoses for learning difficulties, hearing problems, speech and language disorders, Rett's syndrome, Childhood Disintegrative Disorder, Landau-Kleffner syndrome and Reactive Attachment Disorder.

Fitzgerald and Corvin (2001) and Chowdhury (2009) agree that it is better to perform an assessment that is over prescribed than an assessment that leaves space for errors in diagnosis and therefore ill-informed intervention procedures being implemented. Comprehensive developmental assessments may therefore assist in a differential diagnosis being achieved and the correct UK short programming being implemented. (Long, Gurka & Blackman, 2011).

There has been an emergence of alternative forms of assessment tools in various parts of the world. These are less popular than the DSM-IV-TR. (2007).

Other instruments that are used to identify learners with AS include Gillberg's criteria which is a six item list compiled by Gillberg, a Swedish researcher. This list specifies problems in: social interaction, a preoccupying narrow interest, forcing routines and interests on the self and others, speech and language problems, nonverbal communication problems, and physical clumsiness. Another instrument for identification is the Australian Scale for AS that is a detailed multi-item questionnaire, developed in 1996. (Wilkinson, 2010). Misdiagnosis of AS is common as it has been confused with other neurological disorders. Some researchers believe that it may overlap with certain types of learning disabilities such as Nonverbal learning disability. All assessments used for the diagnosis of AS would be administered by a psychologist, psychiatrist or paediatric neurologist.

### **3.3. Nonverbal learning disability - diagnosis**

#### **3.3.1. History**

The classification of Asperger's syndrome in the DSM-IV-TR is comprehensive. The DSM-IV-TR does not specifically list Nonverbal learning disability (NLD). Therefore, according to the American Psychiatric Association, NLD is not regarded as a Pervasive Developmental Disorder and the criteria for the diagnosis of Nonverbal learning disability must be found elsewhere.

#### **3.3.2. Etiology**

The content and dynamic of NLD as presented by Drummond, Ahmad, and Rourke (2005) shows the assets as well as deficits of NLD. It is of great value for the clinician with the task of identifying any learning disorder to keep in mind that learners being tested do not only display weaknesses. They also have a host of strengths and compensatory behaviours that must be examined. The syndrome of NLD includes a number of specific symptoms that can be debilitating. At the same time the individual possesses a vast amount of assets. According to Byron Rourke, the foremost researcher in this area, NLD has been described only recently as a distinct diagnostic entity. (Davis & Broitman, 2011).

Mamen (2007) is very careful to state that NLD is not only a language-based disability, although she states that the primary focus of NLD is on language skills. A language-based learning disability (LLD) is diagnosed when a learner's thinking and reasoning skills fall within the average range, with deficits presenting in at least one major aspect of linguistic processing that is directly related to his or her difficulty with learning. This difficulty with learning could extend to the discrimination of sounds, short or long term auditory memory, central auditory processing of skills and the sequencing of sounds, expressive and receptive language and so on. In her book, Mamen has drawn up an inclusive table of why a NLD does not qualify only as a language problem. It then follows that, in her opinion, a speech and language therapist as the sole assessor would not be adequately equipped to diagnose and provide intervention for a learner with NLD as they would not be trained to deal with the complexities of this disability. Mamen places value on team assessments consisting of a number of trained professionals from various fields concurring on a diagnosis and the intervention that should follow. Mamen concurs with Rourke's criteria for the diagnosis of NLD, though her criteria are stated in a simpler form.

Nonverbal learning disabled learners have difficulty recognising their own feelings and other people's emotions. They do not know how to deal with emotions and keep them under control. Their capacity to feel a certain emotion in a certain situation is underdeveloped. Physical contact is also difficult as the individual feels discomforted with physical contact. In younger learners, discomfort is expressed through tantrums, hyperactivity and destructive tendencies. In an older individual these behaviours tend to turn towards fear, depression and being more withdrawn and inhibited. Nonverbal learning disabled learners do not seem to feel the need to understand social situations or the need to adapt their emotions to suit the moment. Their lack of social behaviour leads to an inactive social life and a complete lack of insight into social situations. They do not understand the Nonverbal reactions such as facial expressions, body language or the pitch of a person's voice. They also struggle to estimate the space between themselves and others which results in the standing in other people's "space". The interpretation of subtle aspects of communication is therefore missing. They cannot understand the world around them as they lack the basic comprehension of the signals that are used to communicate on a Nonverbal level within society. (Marti, 2006; Davis & Broitman, 2011).

In the average individual with NLD there is a difficulty with psychomotor co-ordination. (Marti, 2006; Drummond, 2005). These learners develop slowly and often lag behind in basic co-ordination and finer co-ordination. The Nonverbal learning disabled individual experiences a lot of difficulty with movement patterns where co-ordination is required, such as tying shoelaces, eating and climbing. The combination of several actions poses problems for this learner as they have difficulty maintaining good posture while trying to do gross and fine motor actions.

With regards to perception, Nonverbal learning disabled learners are rather good at noticing details but have difficulty separating the details from the whole of the object that is being perceived. The way that these learners perceive the world is related to their development and thinking in a spatial context. The development of the thinking processes is thought to be very slow in Nonverbal learning disabled learners. This is due to the fact that their ability to analyse, organize and synthesise is weak. They also have very few environmental impressions due to their lack of exploration. As a result of this they have difficulty with forming understandings of places and situations, with logical reasoning and with problem solving.

In facing new situations, the learner tends to rely heavily on verbal memories. He/ she is unable to identify the differences in the new situation and his/ her responses will therefore be limited and stereotyped, based on the verbal memory of another social situation.

Learners with NLD are unable to do familiar activities in a new environment. Small changes in the environment can confuse the learner and they spend all their time focusing on the changes in the environment rather than focusing on the task at hand. Due to their poor perception skills, Nonverbal learning disabled learners become very frightened from loud noises, thunder, sirens, etc. Their capacity to hear is better than their capacity to see or feel. (Molenaar-Klumper, 2002). Molenaar-Klumper highlights another characteristic of NLD as fluctuating activity level. They have a very short attention span. They are also very impulsive and often act before thinking of the consequences of these actions.

Furthermore, language and speech development is slow initially but then starts to develop at a rapid pace when the learner is older. Their vocabulary is enhanced, they talk at a fast pace and they know something about almost everything. Nonverbal learning disabled learners tend, however, to speak in a monotone voice with little prose or emotion. It appears as though they are reciting facts.

They have difficulty in making a story sound cohesive and comprehensible to the listener. Even though this disability is called a NLD, the learner's verbal ability appears to be well developed.

Rourke (1995), Marti (2006) and Mamen (2010) concur that Nonverbal learning disabled learners have difficulty recognizing their own feelings and other people's emotions. They do not know how to deal with emotions and keep them under control. Their capacity to feel a certain emotion in a certain situation is underdeveloped. Physical contact is also difficult as the learner feels discomforted with physical contact. This discomfort is expressed by tantrums, hyperactivity and destructive tendencies. In an older learner, these behaviours tend to turn towards fear, depression and being more withdrawn and inhibited. Nonverbal learning disabled learners do not seem to feel the need to understand social situations or the need to adapt their emotions to suit the moment. Their lack of social behaviour leads to an inactive social life and a complete lack of insight into social situations.

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One of the most debilitating and isolating features of NLD is the extent of social impairment experienced by the learner. Most social communication takes place nonverbally. It involves the subtle nuances of body language, tone of voice, facial expressions and gestures. Due to their impairment in visual-spatial perception and visual processing, learners with NLD tend to miss many social cues in social interactions as they fail to appreciate the nuances in behaviour and the subtle cues that these nuances display. Social judgment and social problem solving are also impaired. A lack of adaptability and extreme behaviours arise due to the individual's inability to deal with changing circumstances. However, practitioners who are tasked with the identification and diagnosis tend not to use tests of social difficulty and none has been mentioned in any of the literature that has been researched. It would appear that these interferences need to be made by the practitioner based on observation and interviews.

#### **3.3.4. Assessment and diagnosis**

Rourke (1989) lays down specific criteria for the diagnosis of Nonverbal learning disabilities. These criteria have been outlined by Rondalyn Varney Whitey (2008). The criteria for diagnosis are as follows: bilateral tactile-perceptual deficits; bilateral psychomotor coordination deficiencies and complex psychomotor skills; outstanding deficiencies in visual-spatial-organisational abilities; extreme difficulty in adapting to novel and otherwise complex situations with an overreliance on prosaic, rote behaviours; marked deficits in Nonverbal problem solving and concept-formation; and concept-formation deficits in hypothesis testing and the inability to benefit from both positive and negative feedback in novel and otherwise complex situations.

The criteria that would need to be met for a diagnosis of NLD falls into the areas of thinking and reasoning skills, multiple intelligences, impairments in psychological processors related to learning, how the learner performs on the test, the information processing profile model and visualization. (Mamen, 2010). The first diagnostic indicator of NLD that is concrete and measurable is found in the learner profile. This can be measured by one of the standardised tests such as the Weschler Scales, the Woodcock-Johnson Tests of Cognitive ability, the Stanford-Binet or the Kaufman Assessment Battery for Learners. On the Weschler Scales, a learner with NLD shows a significant discrepancy between the verbal comprehension and perceptual reasoning scales in favour of the verbal comprehension. A learner with NLD would therefore show relatively few deficits on verbal comprehension subtests and would appear to be extraordinarily strong in areas such as general knowledge, verbal concept formation, vocabulary and social problem-solving. (Mamen, 2010). As the starting point for gathering diagnostic information about a learner suspected of having a NLD, Weschler Scales provide a valid indicator as to the deficits in perceptual reasoning skills and the need for further investigation. A detailed psycho-educational profile must be examined before proceeding with further differential diagnosis. Some learners with NLD do not show a significant discrepancy between verbal comprehension and perceptual reasoning scales, due to one or two unexpectedly high test scores. (Mamen, 2010; Davis & Broitman, 2011).

Davis and Broitman, through their discussion on the screening and evaluation of learners with NLD, (2011) talk about deficits in the areas of visual-spatial, visual-motor, motor deficits and sensory functioning. These deficits are complex indicators of basic deficits of visual and tactile perception and discrimination.

The visual discrimination subtest from the Test of Visual Perceptual Skills - Revised (TVPS-R) or the Judgement of Line Orientation Test is used to determine the spatial orientation of lines. A test for the tactile perception and tactile discrimination is the Tactile Form Recognition or Fingertip Number Writing Test from Halstead-Reitan Neuropsychological Test Battery.

A difficulty that is common in all learners with NLD is that of visualization. This is essentially related to the contexts of past, present and future. Learners with NLD have difficulty with tasks that require specific recall from their visual memory.

At times we are required to visualize in the present. Problems with immediate visualization hamper information processing. The use of future visualization is used by learners to help them to imagine and create options. It is also used for prediction and planning. Difficulties in this area can severely hamper academic success. (Mamen, 2010). Learners with NLD are described as better auditory learners than visual learners. They are more proficient in verbal modalities than tactile-visual modalities. (Rourke, 1995). They are also described as being less active and more reluctant to set out and physically explore their environment. This lack of conscious exploration is secondary to their lack of proficiency with visual and tactile input. One explanation from Rourke is that these learners gain little information of use through manipulating their environment, so they seldom explore the environment on their own initiative. A clinician would therefore need to include a test of psychological processes as part of the assessment battery for NLD.

With regards to impairments in psychological processes related to learning there should be measurable, documented evidence that the learner has an impairment in at least one area of nonverbal processing. Evidence can include, but is not limited to: difficulties with visual, motor or tactile memory and attention; visual motor and/or fine motor processing speed; difficulties with pragmatic language; perceptual motor processing and visual spatial processing; and executive functions such as planning, monitoring and selective focusing. Impairments in processing should be connected to the learner's observable learning deficits in terms of being causal. Many of these psychological processes can be measured during that administration of a cognitive-based assessment. In addition to tests of psychological processes, the Kaufman ABC-II should be completed.

The Kaufman ABC-II provides the chance to examine the difference between a learner's ability to process sequential versus simultaneous information, resulting in the opportunity to differentiate different types of pattern recognition problems.

Learners with NLD are expected to do better on the tests of sequential reasoning than those of the simultaneous scale. (Mamen, 2010; Davis & Broitman, 2011; Martin, 2007). Once a learner's profile with regards to psychological processes has been established, the clinician tests the learner's academic and educational performance.

Learners with NLD tend to perform better on measures of spelling and word recognition than on measures of Mathematics. There are psychometrically formal measures that can be used for diagnostic purposes.

For a diagnosis of NLD, thinking and reasoning skills in academic performance must be at least average. This means that there should be documented evidence that the learner must have at least one major area of thinking and reasoning that reaches the criteria for 'average'. There are many different and valid tests for thinking and reasoning skills and the clinician needs to back up their opinions with more than one test result. For many tests with a mean of 100 and a standard deviation of 15, an average score is usually taken to be 80 or above. Learners with NLD tend to perform well on tests for individual academic sub-skills. They may score in the average range or better. They are, however, unable to use these skills in a more generalized application in complex task situations. The integration of skills therefore reflects deficits and not the specific level of difficulty. Due to the difficulty of measuring integration and knowledge, this part of the assessment must be inferred. Assessment can, therefore, not only be based on formal testing and must include a broader range of observational and anecdotal information.

In the learners with a learning difficulty there are anomalies or abnormalities in the underlying neurological processes. These anomalies or abnormalities will disrupt the normal development and acquisitions of secondary areas of learning that are the more academic areas of learning such as Mathematics and reading. This profile leads to a pattern of secondary learning deficit that is evident in the classroom. If the assessment of learners includes a neuropsychological or a psycho-educational assessment, it is possible to predict which of the learning situations would likely prove difficult and challenging for each pattern of learning difficulty. (Mamen, 2010; Davis & Broitman, 2011; Martin, 2007).

There are several tests that can be used for the diagnosis of the NLD. These tests are:

- The WRAT Reading, Spelling and Arithmetic scales used as measures of academic achievement.
- The motor/ psychomotor tests include the Grip Strength Test and the Grooved Pegboard Test.
- Tests for tactile/ perceptual assessment are Finger Agnosia, Fingertip Writing, Tactile Form Recognition and Tactile Perception.

- Tests to evaluate visual-spatial skills and abilities are the Weschler Intelligence Scale for learners PIQ, Digit Symbol Coding, Picture Completion, Picture Arrangement, Object Assembly and Block Design Subtests, the Category Test, the Underlining Test and the Target Test.
- Auditory Perceptual measures include The Weschler Intelligence Scale for learners Arithmetic and Digit Span subtest, The Speech-Sounds Perception Test and the Auditory Closure Test.
- Language is assessed using the Weschler Intelligence Scale for learners VIQ, Comprehension, Information, Similarities and Vocabulary subtests, the Sentence Memory Test, and the Verbal Fluency Test.
- Problem solving skills are evaluated using the Tactual Performance Test.

(Drummond et al., 2004)

A diagnosis of NLD therefore relies on a number of comprehensive diagnostic and standardized tests focusing on academic achievement, motor and psychomotor skills, tactile and perceptual skills, visual spatial skills, auditory/perceptual skills, language ability and the use of language in problem solving. These tests would usually be administered by a speech and language therapist or, in part, a remedial therapist.

### **3.3.5. Alternative forms of diagnosis**

A different way of looking at the diagnosis of learners with NLD is to investigate and take into account the multiple intelligences. A test of multiple intelligences would include H. Gardner's theory of multiple intelligences (1999) which includes consideration of concepts such as kinaesthetic intelligence, musical intelligence, interpersonal intelligence, intra-personal intelligence and naturalist intelligence. Kinaesthetic intelligence is the use of mental abilities to coordinate bodily movements.

Musical intelligence is the composition, performance and appreciation of musical patterns. Interpersonal intelligence is the understanding of emotions, intentions and desires of other people, allowing us to interact with others. Intra-personal intelligence is the ability to recognize and appreciate one's own feeling, fears and motivations. Naturalist intelligence is the ability to recognize, categorize and draw upon certain features of the environment.

Loewen, Deppeler and Harvey (2010) debate universal design as an alternative form of learning. The universal design has a set of three governing principles. It uses the multiple means of representation, multiple means of expression and the multiple means of engagement. Multiple means of representation is giving all learners a variety of ways to acquire information and knowledge. Multiple means of expression is providing learners with different ways of demonstrating their knowledge and multiple means of engagement is investigating how to identify learners' interests, offer the learners appropriate challenges and keep them motivated. The universal design for learning refers to the planning of curriculum material in such a way that all learners have access to them. Differential instruction is the implementation of the curriculum plan in the classroom and offers a framework for addressing learner variances. If one is to have an alternative form of diagnosis it would be prudent to look at alternative forms of making adaptations to the learning environment to include learner variances.

Neither Gardner's theory of multiple intelligences nor Loewen's research on universal design make mention of the type of assessment needed to diagnose learners with a disability such as Asperger's syndrome or Nonverbal learning disability. They choose to look at the intelligences and the way in which a learner works with those intelligences as something that cannot be assessed scientifically, even though multiple, ongoing assessment is recommended. They do not describe learners as being disabled in any way, rather these learners think differently to other learners. They would not categorise learners according to the deficit model of disability.

### **3.4. Analysis of the deficit model of disability**

In the deficit model of disability, people are interpreted as being unable to do or carry out commonplace activities due to the deficits they possess. The degree of their impairment is significant in determining their level of social competence. The belief is that the impairment is permanent and causes the ongoing inability to function normally. These people are labelled as being 'disabled'. There are three variations of the deficit model of disability (Pfeiffer, 2002). These are the medical model, the rehabilitation model and the special education model. According to Pfeiffer the term 'disability' does not belong to the deficit model as the deficit model implies that there is a deficit that must be corrected. Each of the three models listed above specify a deficit which needs to be corrected in order to make the person experiencing the deficit appear to be normal.

People with disabilities such as Asperger's syndrome and Nonverbal learning disability are therefore considered to be abnormal and these value judgements are used to justify why people with disabilities are disadvantaged.

Disability, however, does not refer to a deficit in a person. The term disability is further separated into nine models of the disability paradigm. The models of disability that I have chosen to discuss as being the most useful to my research are the impairment version, the social constructionist version and the social model version. The implications of these models of disability are that disability is not natural and people with disabilities should not be included in or participate in society. Walmsley (2008) states that having a disability is a normal part of life and people with disabilities are deserving of ordinary patterns of living as enjoyed by those who do not have a disability. In their book, Snyder and Mitchell (2006) admonish outdated theories of disability as being a form of domination based on the application of diagnostic pathologies to exclude members from society.

The fact that there are models of disabilities that are formed to exclude members of the society in which they live, goes against all the work that is being done with the express purpose of including members of society who have disabilities. A disability, in any form, should not automatically serve to exclude a person from participating in society in any form, especially not in education. According to Henley et al. (2009) what learners are called, and the names they are labelled with, determine the services they receive and where they will receive the services.

There are therefore far-reaching implications in the diagnosis and labelling of learners. This classification process assumes that assigning a learner with a label implies knowledge of the characteristics of the learner's learning problem.

Labels can, however, shape a teacher's expectations of the learner as they may expect less from that learner than if there were no labels presented. At times labels can be used to exaggerate or undermine a learner's behaviour. These labels can send a clear message that the learner is qualitatively different from their peers. This is perpetuated by the clear message that is being sent that the learning problem is with the learner without taking extrinsic factors into account.

Labelling also brings into question the need for standardized testing which clearly separates learners into groups of those who are standard and those who are not. I am in agreement with Slee (2011) who says that practitioners seek explanations for the failures of children, their distractions, anger and defiance. We look in their genetic and medical profiles and label their defectiveness. Over time these labels are conferred upon these children. Like Slee, I think a child who is labelled will eventually come to accept the label as who he/ she is, rather than something that they experience. Labels may give educators and practitioners good direction with regards to intervention strategies. However, no decision of support should rest solely on a diagnosis. The SIAS strategy (2008) is the most useful in this regard as it responds to the need for support based on the behaviours of the learner, not the diagnosis of the learner. The deficit model of disability therefore essentialises and individualises the barriers to learning experienced by a learner. The labelling of a learner is stigmatising and exclusive by nature as they could possibly be excluded from many experiences through the label they have been given.

However, SIAS (2008) states that assessment is not meaningful if it does not ensure access to support. So while I feel it is not ideal to label a child, it is imperative that Asperger's syndrome and Nonverbal learning disability be correctly assessed and diagnosed using a label. It is only when a label is used that the correct intervention strategies can be put in place. In this instance a label is beneficial to the learner as a misdiagnosis or playing down of their learning disability could be detrimental to their academic and social progress. There has to be a specific follow-on with regards to support and intervention.

## Chapter 4

### 4. Asperger's syndrome and Nonverbal learning disability.

#### Findings

#### 4.1. The convergence between Asperger's syndrome and Nonverbal learning disability

The basis for this study is the convergence between Asperger's syndrome and Nonverbal learning disability. There is wide range of literature supporting the overlap of etiology of the two disorders.

Rhode and Klauber (2004) describe AS as the name given to a certain cluster of symptoms as originally documented by Asperger himself in 1944. They bring to our attention that there is an ongoing debate as to whether AS exists as an entity that is separate from autism. These debates are further complicated by a number of related conditions that have been identified and defined in a literature relating to an accurate diagnosis of AS. One of these conditions is that of NLD.

Koegel and Koegel (2006) also discuss differential diagnosis with regards to NLD. AS bears a strong resemblance to other disabilities that are rooted in different disciplines. When looking at symptoms, it would appear that common features of AS and NLD are difficulties with social interactions and nonverbal communication. AS also tends to follow the same psychological profile as that seen in NLD. This is evident in the intelligence profiles of learners with AS and NLD, exhibited by high verbal scores and low performance scores showing a significant discrepancy on intelligence tests. (Koegel & Koegel, 2006).

Tony Attwood mentions NLD in his studies that are largely oriented on AS. He states that a young learner may be recognised as having a very unusual profile of intellectual and academic abilities. Formal testing by a neuropsychologist would indicate a significant discrepancy between their verbal reasoning abilities, the Verbal IQ, and visual-spatial reasoning abilities (Performance IQ). If the discrepancy is a more significantly Verbal IQ than the Performance IQ, a diagnosis of Nonverbal learning disability may be indicated and then validated with further assessment.

Attwood suggests that there is an overlap between Nonverbal learning disability and AS that needs to be an area of continuing study and discussion. He also states that a diagnosis of Nonverbal learning disability may be subsequently changed to a diagnosis of AS. (Attwood, 2007).

When a learner is being referred for further assessment they are sent to either a speech and language therapist or a clinician who is able to do psychometric testing. Most times a teacher will refer out based on his or her knowledge of the signs presented by the learner and a vague idea of what diagnosis would be made. A speech and language therapist would usually diagnose NLD as it is a language-based disability. A psychologist, psychiatrist or paediatric neurologist would diagnose AS as it is a cognitive-based disability.

An article written by Stein (2004) for the Journal 'Paediatrics' titled *When Asperger's syndrome and Nonverbal Learning Disability Look Alike*, presents a case about a boy who demonstrated features that presented numerous diagnostic challenges. Two clinicians were invited to comment on his case. One of the clinicians, Professor Klin, is a Professor of Child Psychology who had focused on the neuropsychology of AS and NLD. The second clinician, Doctor Miller, is an Assistant Professor of Paediatrics and a developmental-behavioural paediatrician. Professor Klin stated that AS and NLD are not mutually exclusive diagnoses because they have different classification systems. They can co-occur because the NLD profile predisposes learners to social vulnerabilities due to their over reliance on skills that are verbally mediated and the neglect of intuitive, integrative visual perception and visual motor skills resulting in reduced social intuition, slow social responses and social naivety. Dr. Miller concurred that there is a possibility of either AS or NLD being evident in the learner presented in the case study as there is considerable overlap between the two. Both present with a history of advanced verbal skills, issues with social interaction and motor problems.

The above articles and books explain the extent of the convergence between AS and NLD. The overlap lies within the history of advanced verbal skills, issues with social interactions and motor problems. In order to elaborate further on the overlap regarding social difficulties we can look to Laura (2011).

There are challenges inherent in AS that a learner would have to overcome. The most severe of these challenges is learners with AS have patterns of interest and behaviours that can become obsessive. These patterns and behaviours impede the social interactions of the learner and hamper their inclusion in social gatherings. A learner may ruminate on their topic of interest. Initially their knowledge is impressive, but becomes rather exhausting and burdensome for others. The apparent lack of interest and boredom from others often goes unrecognized by the learner with Asperger's syndrome. These social challenges are increased when the learner experiences difficulties deciphering nonverbal behaviour such as tone of voice, facial expressions, gestures, body language and nuances. If learners are unable to master these behaviours they face social isolation and harassment from the peers. This leads to behavioural problems and acting-out behaviour due to the learner feeling overwhelmed while trying to navigate social situations.

In his earlier works, Rourke (1985) pointed out that the interpersonal interactions and forming of significant relationships for learners with NLD is often impaired. These learners, not unlike learners with AS, experience difficulties in understanding and deciphering nonverbal behaviour such as facial expressions, tone of voice, body language, gestures and other subtle social communication nuances that occur during social interactions. If one had to refer to the table presented in this chapter, the convergence between AS and NLD goes beyond the deficits presented in reciprocal social interaction. The symptoms that need to be present for both Asperger's syndrome and NLD are: the absence of a general language delay, the exclusion of other disorders; delayed motor milestones; and difficulty with simple movements. There are so many platforms of convergence between the two disorders that it would be irresponsible to ignore that there is a convergence between AS and NLD. One of the more telling statements has been made by Attwood (2007). Attwood is known as a leader amongst his peers in the field of AS. He writes that "there is an overlap between NLD and AS that needs to be an area of continuing study and discussion". He goes on to say that a diagnosis of NLD may subsequently be changed to a diagnosis of AS.

Attwood's views on the convergence of AS and NLD are further reiterated by Varney (2008) who has written a book dedicated to both AS and NLD. The parallels she makes between the two disabilities are as follows: learners with either disability typically have a high level of intelligence and they have an extraordinary verbal memory and advanced verbal skills. As they get older these learners are likely to experience difficulty with problem solving, reasoning, reading comprehension and written expression. They have difficulty understanding relationships with regards to cause and effect, contrasting, comparing and anticipating the outcomes of behaviour.

Learners with either disability are also often confused by systems, units of measurement and time concepts. Another parallel shared by these two disorders is the inability to recognize and/or interpret the use of nonverbal communication with regards to facial expression, postures, meaning and intensity of tone, gestures, the appropriate distance between people and the rhythm and timing of conversation. They also do not understand the importance of appropriate grooming and hygiene.

Varney (2008) goes on to say that learners with AS and NLD have difficulty adjusting to novel situations and the processing of newly presented material. They tend to withdraw from these situations. They lack the ability to use past experiences for the sake of understanding unique or new information. They struggle to generalize from one situation to another. The last parallels drawn by Varney is the inability of learners with either of these disorders to anticipate the consequences of their actions and poor safety awareness arising from this. This, in conjunction with the motor clumsiness inherent in both conditions, leads to these learners being prone to frequent injuries.

Boucher also draws our attention to the convergence of AS and NLD. She said that the resemblance of NLD to AS is obvious and some investigators have already concluded that the two disorders are 'virtually' the same disorder. (Boucher, 2009).

Strong reference to the findings of Klin and Colleagues (1995) is made in the book 'Learning and Behaviour Problems in AS', edited by Prior (2003). Klin et al. claimed an overwhelming convergence between learners with AS and NLD.

Fitzgerald and Corvin (2001) state that there are many overlapping categories that are unrepresented in the DSM-IV and may be a source of confusion for professionals and families. Terms such as Semantic pragmatic disorder, NLD and developmental learning disability of the right hemisphere of the brain have arisen as professionals from different specialities have struggled independently to categorize learners who present with social disabilities that do not meet the criteria for classic autism or AS. NLD is characterized by specific deficits in coordination, perception, nonverbal problem solving, socialization and understanding of humour paired with a well-developed rote memory. Many people with AS present with the same deficits, and a diagnosis of AS is often preferred as it is considered to be the most clinically useful. Fitzgerald and Corvin (2001) go on to say that this is an example of excessive diagnostic splitting and the misdiagnosis of AS can result in contradictory treatments with a range of divergent outcomes. The key to correct diagnosis is therefore a precise early developmental history with the systematic discussion of all criteria. A multidisciplinary team approach is critical and sole diagnosis from a neurological, speech and language and educational point of view must stop to spare the confusion arising from partial diagnoses.

#### **4.2. Assessment measures**

With regards to the identification of Asperger syndrome and NLD, the tools of investigation used are different. In order for Asperger syndrome to be identified in an individual, the doctor who has been consulted for this purpose would have to turn to the DSM-IV-TR (2007). The individual would have to meet certain criteria as laid out in the manual in order for an identification to be made. With regards to the identification of a NLD, there is not one test or battery of tests that are able to fully assess a learner for having a NLD. Rather, there are multiple tests that are all designed to test different aspects of a learner's development, aspects which can then be tied to NLD. A large portion of the diagnosis of NLD is based on an IQ test rather than a set of standards. The most common intellectual assessment of NLD is therefore the WISC (2004). Results for this IQ test are broken up into two groups - the verbal scale and the performance scale. A statistically significant difference between these two scales would mean the verbal result is 15 points (one standard deviation) higher than the performance result. Sometimes, however, this test will not reveal a discrepancy in a younger individual. (Davis & Broitman, 2011).

Howlin (2000) discusses the current situation with regards to the diagnostic instruments used to identify AS. He believes that there is a paucity of adequate instruments and a lack of suitable standardization data for the few diagnostic instruments that do exist. He argues that they are not adequately 'standardized diagnostic instruments' that have been specifically designed for the diagnosis of AS. The instruments that are available do not demonstrate an acceptable level of validity, reliability, specificity or sensitivity. He also states that it is unrealistic to use a single instrument when testing for a syndrome as they may be similar conditions to AS that may have resulted from different causes.

AS and Nonverbal learning disabilities look alike in many aspects and there is a great deal of overlap between the two, it is therefore possible that the symptoms of each diagnosis describe the same group of learners, each from a different perspective. A Yale study into this phenomenon suggests that up to 80% of learners who meet all the criteria for Asperger's disorder also meet the criteria for having NLD. (Klin et al., 1995). At this moment in time, as discussed above, the assessment tools used to diagnose either AS and Nonverbal learning disability are completely different as they are seen as different areas of difficulty. AS is a psychiatric or behavioural disorder and Nonverbal learning disability is a neuropsychological disorder. There are signs in this field of research that the two disorders are too similar to be separated from each other and that they are simply the same disorder on different points of the Autistic spectrum. (Volkmar, 2000). For the purpose of this research the author has chosen not to pursue this field of enquiry. To highlight the similarities and differences between AS and NLD, I have drawn a table to this end.

**Table 1. Comparison of Asperger’s syndrome and Nonverbal learning disability as derived from the DSM-IV-TR (2007) and Molenaar-Klumper (2002)**

		<b>Asperger’s syndrome</b>	<b>Nonverbal learning disability</b>
Social interactions	1	Qualitative impairment in reciprocal social interaction.	Deficits in social awareness and social judgement. Socially indiscrete.
Behaviour	2	Restricted, repetitive and stereotyped patterns of behaviour, interests and activities.	Prefer dealing with known or familiar situations.
Language	3	No general language delay.	No general language delay
Cognitive impairment	4	No severe global cognitive impairment.	No severe global cognitive impairment.
Co-morbidity	5	Exclusion of other disorders.	Exclusion of other disorders.
Motor milestones	6	Delayed motor milestones and presence of motor “clumsiness”.	Difficulty with simple movements. Delayed motor milestones.
Skills and interests	7	Isolated, unusual all-absorbing special skill or activity.	No all absorbing special skill or activity.

Having looked at the similarities between AS and Nonverbal learning disability, and having researched the assessment tools used when making a diagnosis of either one of the above, the logical next step would be to question whether or not professionals make an educated guess based on their first impression of the learner, and then decide which battery of tests they are going to use. It is therefore possible that the Neurologist/ Psychiatrist concerned uses the incorrect battery of tests, the outcome of which would determine the type of intervention the learner receives after the assessment.

Based on the literature presented and the ongoing debate by various clinicians about the overlap between AS and NLD, the evidence denotes a distinct convergence between the two disorders.

### **4.3. Does the convergence between Asperger's syndrome and Nonverbal learning disability affect the treatment and intervention given?**

#### **4.3.1. Asperger's syndrome. Intervention/ treatment**

The intervention regarding any disorder is largely based on outcomes of assessment and the diagnosis that has been made. This statement presupposes that an assessment has actually been done. If no assessment has been done, the intervention plan will be based on the difficulties experienced by the learner. If an assessment has been done, there is always a concern that a learner may have been misdiagnosed. This concern is even greater given convergence between Nonverbal Learning disability and Asperger's syndrome. Even though some aspects of intervention are similar when supporting learners with either AS or NLD, it must be acknowledged that the intervention for AS is largely medical through the use of a drug regime. A misdiagnosis could result in a learner with NLD being subjected to drugs that could potentially harm their system as well as being of no benefit in supporting them with their learning difficulty.

The literature on intervention for AS is designed mainly to remedy social difficulties that a learner may be experiencing. The ultimate goal is to help these learners to become more accepted within their peer group. Intervention is therefore critical in helping to establish and maintain social relationships. Intervention for the learners would include computer-aided approaches, group intervention and direct instruction techniques. Learners who are in secondary learning institutions would benefit from self-management techniques. Learners with language difficulties would be referred to a speech and language therapist for remediation. (Koegel & Koegel, 2006).

Volkmaar (2000) writes that a cognitive style of treatment for AS is heavily biased towards verbal functioning. Language skills are relatively preserved for social interaction, although there is usually a discrepancy between the sophistication of linguistic form and structure and the use of language for socializing. Due to the fact that learners with AS display better verbal abilities, the suggestion is made that these verbal abilities are utilised in verbally mediated treatments.

Strong verbal skills can be used to teach the learner problem-solving techniques that can be generalized for use in different situations. The learner can be taught a set of rules that can be used to identify contextual cues such as location, body proximity, facial expressions and gestures to enable them to make more appropriate social inferences, comments and topic initiations. Verbal problem-solving techniques can be implemented to help the learner to identify and respond appropriately to more difficult and complex situations. Verbal cues also help learners respond to more challenging motor demands by breaking up each task into smaller steps and promoting verbal self-regulation.

Niehart (2000) stresses that part-to-whole verbal instruction is the most appropriate approach because AS learners tend to over focus on detail. Care must be taken to teach strategies in the exact sequence students will need to use them to be successful. Niehart also says that a programme responding to the sensory integration difficulties of learners with AS is necessary.

Sensory Integration refers to the neurological process of taking in sensory information and combining it with internal sensory information to make adaptive responses to the environment. People who have difficulty with sensory integration lack the means to respond easily as they misinterpret sensory information or interpret this information slowly to make the world an unpredictable and frightening place. Poor sensory integration makes the learner with AS become more anxious, aggressive and over-stimulated. Treatment for poor sensory integration intervention would provide sensory experiences that target deficit areas, allowing a learner with AS to cope better with their sensory environment.

Learners with AS will therefore find it difficult to cope with problems that are inherent in day-to-day interactions. If no informed help and support is given the consequences can be potentially devastating and may include extreme anxiety and distress, injury, exclusion and withdrawal. Due to the complex nature of their difficulties, it is important for sensitive and appropriate intervention to be used. (Wilkinson, 2010).

As a form of intervention for AS, Chowdhury (2009) advises that it be provided for parents to give them the opportunity to understand the disorder. As a second form of intervention, the learner's educational situation must be investigated and possibly revised as it is sometimes difficult to arrange sufficient support for the learner within the mainstream environment. Further interventions must focus on behavioural treatment goals and methods used for achieving these goals, diet and medication. Critical components of an effective intervention for learners with AS include early entry into a strategy that includes parent training, structure and the implementation of strategies for generalization. (Long et al., 2011).

Many learners with AS do not require medication, although there are drugs available. Recommended drugs are psycho stimulants, tricyclic antidepressants for hyperactivity and inattention, beta blockers, neuroleptics or lithium for anger and aggression, selective serotonin reuptake inhibitors for rituals and preoccupations or TCAs for anxiety symptoms. A herbal remedy that has been tried is St John's Wort. Psychotherapy is indicated for the treatment of AS in order to help learners cope with depression and other feelings that are related to their social difficulties. Group therapy is also indicated as this brings them together with others of the same age who are facing the same difficulties. Play therapy can also be useful in teaching the learner how to observe and react to social cues as well as how to lower their emotional tension.

For a learner with AS certain educational considerations need to be made. (Wilkinson, 2010; Lovecky, 2004) These learners have a normal to above-normal intelligence and are able to complete their education to a tertiary level. Many are also unusually skilled in a certain academic area. However, they may also experience difficulty with teachers due to their communication difficulties. These learners do best in an environment that is structured and presents opportunities to learn problem solving and social skills as well as academic skills. They also need protection from teasing and bullying from their peers.

Another form of treatment for AS is targeted intervention strategies. These strategies capitalise on the strengths of the learner to target specific areas of impairment whether they be social, academic or adaptive. Interventions that target discrete aspects of functioning are said to ensure success and the generalization of skills across all settings. (Toth & King, 2008).

#### **4.3.2. Nonverbal learning disability. Intervention/ treatment**

With the treatment of NLD a similar path as that prescribed for the intervention and treatment of AS is followed. Specific areas in which a learner would require intervention are: executive functions and higher-level reasoning; memory functions; language functions; visual-spatial abilities; sensory-perceptual and motor functioning; academic performance; social performance; and intervention for emotional issues. (Landsberg et al., 2005).

An important issue in the intervention for learners with NLD is that of translating nonverbal into verbal ability by using the learner's strengths in verbal ability. This approach takes the form of specific and applied social skills and verbal skills training and includes, but is not limited to, labelling feelings and emotions, talking through copying, printing and other similar tasks and modelling self-talk. It is important to connect verbal with nonverbal abilities as often as possible. There could be a tendency to over verbalize during intervention sessions that could lead to a widening discrepancy between verbal and nonverbal abilities.

A part-to-whole approach is recommended because of the learner's difficulty with integrated tasks and complex problem-solving. Intervention for sensory integration and multisensory learning is the use of an occupational therapist that would be able to utilize as many input channels as possible in order to maximize learning. (Mamen, 2007).

The specific interventions for NLD have remained rather static since 1999 and it is a generally accepted rule that one needs to use the learner's strong points to work on the weak points. Molenaar-Klumper (2000) outlines strategies that can be used for the treatment of NLD. She maintains that the treatment must include maximum prediction. The teacher must make careful preparations for new situations, apply external structures and incorporate a lot of training and recognition. This will help to avoid the stress and anxiety felt by the learner when their environment is unpredictable or contains surprises. Lesson plans should be structured to allow maximum teaching and remediation across all areas in which the learner is experiencing difficulty. Language skills should be reinforced at all times. Skills and academic areas are to be constantly addressed to ensure that a learner with NLD is able to link new knowledge to existing knowledge to make it more meaningful.

According to Molenaar-Klumper (2000), the remediation of psychomotor skills needs to be specifically addressed by way of motor remedial teaching and motor sensory integration therapy. A learner with NLD should also have specific training in social skills. They should be provided with a step-by-step plan or strategy whereby that learner is able to react to daily situations that they are finding difficult and to problem solve with greater success. Structured contact with peers and group therapy sessions can be valuable if a learner was provided with sufficient guidance.

The treatment and intervention strategies for AS are more prescriptive and far reaching than those for NLD. This is largely due to the fact that one of the first interventions used for AS is medication. When treating AS through the use of medication, practitioners need to be very careful about the drugs they are prescribing. AS is deemed to be a more serious disability than NLD as it is placed on the autism spectrum and has been included in the DSM-IV-TR (2007). It is a high profile disability whereas NLD is almost unheard of amongst educators and practitioners.

#### **4.4. The inclusion of learners with Asperger's syndrome and Nonverbal learning disability in the classroom**

Placing learners within an inclusive education classroom does not automatically ensure that their specific academic difficulties will be addressed. It should also not be taken for granted that social skill deficits will be appropriately addressed. A large component of the success achieved by a learner with Asperger's syndrome or Nonverbal learning disability within the mainstream classroom lies with the teacher. Hart, Travers (2009) and de Boer (2009) agree that barriers to the inclusion of learners in the mainstream classroom are largely due to the attitudes of the teacher. The teacher's feelings, resources available, beliefs and values affect the meaning that he/she bestows on a situation and is reflected in his/ her treatment of the learners in the classroom.

A second barrier is the relationship between the learner's behaviour and features of the classroom and how the learner prescribes his/ her own meaning, purpose and agenda towards being in the classroom.

A third barrier to learning within the inclusive classroom is possible limitations on the information and resources that the teacher has available.

To be able to support learners with special educational needs in an inclusive classroom, Lomofsky (2003) purports that teachers have to be sensitive not only to the needs of the learners who experience barriers to learning, but also to the learners who do not have special needs. The teacher must be aware of his/her own attitudes and feelings. They also need to develop an understanding of their own strength and vulnerabilities to enable them to be agents of change in the classroom, school and community.

Due to the significant convergence between AS and NLD, it comes as no surprise that the recommended intervention in the inclusive classroom for each is almost identical in prescribed academic and social adaptations. In recent years there had been an increase of learners who are being diagnosed with AS. Lathe (2006) suggests that this increase can be attributed to the inclusion of autism-related conditions in the diagnostic criteria of the DSM-IV-TR (2007). Due to the increase in numbers of learners diagnosed with AS, inclusive schools have to look at how they can include these learners in their schools. Behavioural and cognitive approaches to teaching learners with AS need to be considered to make them more easily applicable in inclusive classrooms. (Spencer & Simpson, 2009).

With learners who have AS or NLD their difficulties become more apparent as they get older due to increased participation and involvement in formal education. This is the time when teachers, parents, therapist and the school-based support team spend time in discussions about how best to support the learner in the classroom. Regular discussion is essential.

Tanguay (2003) and Seach (2011) place great emphasis on the importance of individual behaviour and personality in learners who have AS or NLD. School staff must remember that the learner has an individual personality that has an influence on how he/she behaves in the classroom and relates to others. The learners' behaviour will have an impact on their ability to learn, the effectiveness of the intervention that has been put in place and their interaction with others. The classroom focus must be on the developmental and personal needs of the learners rather than on the deficits related to a diagnosis of AS or NLD. One of the features of AS and NLD is the difficulty with nonverbal communication.

The teacher of a learner with AS or NLD must study and understand the pragmatics of communication as the basis for the development of adequate speech and language skills, so that all aspects of learning are supported. Teaching a learner how to communicate properly involves the learner and his/her relationship to the adult in the classroom, the environment and his/her peers. Learners with AS or NLD develop most in an environment in which the development of spontaneous communication is encouraged. Language is a symbolic form of communication that is based on shared meaning using pictures, signs and symbols. Spoken language is socially regarded as the most important measure of competence in communication.

Learners with AS or NLD are likely to be highly competent in their use of language, to the extent that there is a possible over-reliance on their verbal language skills and not enough practice in other language-based skill areas. (Seach, ED Knowles, 2011). It is important to focus on learners' educational needs in relation to their developmental profile rather than in terms of deficits they are experiencing in other skill areas.

From an academic perspective, learners with AS or NLD are typically within normal to above-average range of academic functioning, in accordance with norms stipulated in the WISC (2004). They may also display a particular skill in certain subjects. These skills may be hidden by difficulties in concentration and social interaction. An Individual Education Programme (IEP) is developed for these learners by teaching staff in collaboration with the learner's parents and therapists. The IEP is aimed at recognizing the learner's areas of strengths and addressing those areas in which a learner is experiencing difficulties. Key areas of the IEP are: personal organization, motivation, remembering and recording information, homework, reducing frustration and mood swings, rules and focused topics of conversation. (Seach, ED Knowles, 2011). In South Africa, the preferred term for an IEP is an Individual Support Plan or ISP. Specific academic goals that are realistic and achievable are recorded. Learners with AS or NLD present a significant challenge to teachers as they have key curricular needs and will need curricular differentiation. The priority education goals would include the development of basic social language, the provision of academic instruction that is in line with cognitive levels of functioning, the teaching of functional skills for post-school success, behavioural interventions and to enhance social and functional skills. (Smith, Polloway, Patton & Dowdy, 2007). All of these provisions would be included on an ISP.

In the learning environment a learner with AS or NLD would show deficits specific to their disability. However, they may display significant problems in other areas such as emotional maturity, social interactions, hyperactivity and attention, cognition, metacognition, memory, perceptual skills and motor skills. (Bender, 2008; McNamara, 2007). The intervention offered for learners with a learning disability and, more specifically, AS or NLD, is therefore largely based on the ISP. (Tod & Blamires, 1999). A whole-language approach is the preferred method of classroom-based intervention as it encompasses all the learning areas such as reading, Mathematics, written language, all language and listening skills.

Due to the similar profiles of AS and NLD, specifically in the area of social deficits, intervention and adaptations made for learners presenting with either disability would - to a greater or lesser extent - be similar depending on the individual for whom intervention is being planned.

A separate yet integral part of the ISP is the intervention provided for social inadequacies. Intervention for social interactions is linked with emotional maturity. Therefore a critical part of any education strategy is changing the way in which a learner interacts with their peers. Teachers need to model pro-social skills for learners. They also need to provide many opportunities for conversation and conflict resolution. Learners with AS or NLD find social interactions to be frustrating as they have difficulty in interpreting and making sense of the social behaviour of other people and will eventually withdraw, preferring their own company. Classrooms are social environments and can be intimidating places for these learners. They need to be helped to better understand the form and nature of social interactions, how relationships are established and be helpful to develop empathy for others. One of the strategies that has been introduced into inclusive classrooms to aid the social development of learners with AS or NLD is Social Stories (Gray, 2010). Social Stories are specific examples of social situations to help learners to understand their own feelings and the feelings of others in certain situations.

Placement in the mainstream classroom is beneficial to learners with AS or NLD. Learners with AS or NLD can successfully be integrated into a mainstream classroom if the interventions that have been put in place are appropriate and will be of academic and social benefit to the learner.

As has been stated before, the key factor for successful inclusion is the teacher's approach and attitude to the learner and the collaboration between the school administration, the teacher, therapists, parents and the community in which the learner lives. It is a necessity that the above platform is supported by governmental policies and structures. The assessment of learners for the purpose of diagnosis is rigid and scientific. There are alternative forms of assessment that are being used towards the same result.

#### **4.5. An alternative form of assessment**

The assessment and diagnosis of any condition, be it an academic based or cognitive condition is important as it provides the tester with validation of concerns that have been presented by parents or teachers. Whitney (2008) states that diagnosis begins in the school where the teacher may have noticed the learner is experiencing difficulties. He/ she would then have alerted the parent to the fact. The school support team would meet and discuss the learner's profile to plot the way forward.

A diagnosis provides an explanation for a group of symptoms and signs and provides a statement regarding possible causal factors of the condition. Assessment provides a direction for intervention and a deeper understanding of the long-term implications.

With the assessment of all conditions, the first sign that a learner is experiencing difficulty is through observable behaviour. The learner exhibits a specific behaviour or a pattern of behaviours that is deemed to be incongruent with 'normal' developmental changes in behaviour. These differences are usually noticed by the teacher and parents, or those close to the learner. Questioning and various forms of data gathering is undertaken to identify cognitive patterns and a specific learning profile of the individual. Possible causal factors and remedial approaches are investigated. It is important to identify an individual's strengths as well as their weaknesses as part of the investigation process. If the process of data gathering identifies the need for further assessment, and classroom-based interventions have not been beneficial, additional interventions should be introduced by the school-based assessment team (SBAS). These interventions could include further staff training or more specialised help within the school. If these interventions prove to be ineffective, DBST is consulted and the learner is referred to a professional who has been specifically trained in the area of assessment. The responsibility for this referral lies with the DBST. No referral for assessment should be undertaken solely by the teacher.

The professional should then undertake to do a thorough evaluation of the learner's abilities, taking into account the learner's cognitive potential, academic achievements and other causal factors such as environmental factors, academic positioning, family circumstances, etc.

The assessor will then identify any learning or cognitive disability, or lack thereof, by examining the evidence presented in the diagnostic testing by comparing the learners achievements against a set of standardized norms, comparing these against a check list of identifiable indicators of various learning and cognitive disabilities. A diagnosis is then made and appropriate interventions and long term strategies are devised. These interventions are implemented by the teacher in the classroom.

SIAS is used in all state schools. It is presented in such a way that it can be used in all schools across South Africa. When using SIAS, the educator would first fill in a learner profile. The school would then assist the parents in having the diagnostic profile filled in with the help of medical practitioners, therapists, hospitals or primary health care clinics. The diagnostic profile would provide an indication of the disability as well as the limitation of the learner with regards to functioning. No official decisions regarding support are made at this stage as decisions are not based on the diagnostic profile. Initial risk factors and the additional need for support are identified and a learner-needs assessment form can be completed. This form also serves as an interview schedule and has to be completed with the involvement of the learner's parents or someone who knows the learner well. The form provides all parties with a better understanding of the barriers to learning that are being experienced as well as particular strengths. This provides the school with a guide to support needed and the evaluation of support implemented. An extended profile of the learner's needs is completed to take a more in-depth look at the learner's learning, behaviour, social competence, health, personal care, wellness and physical ability. The form also takes contextual factors such as the community, family, school and classroom into account.

When this form has been completed the DBST consult with the teacher and parents/caregivers to identify what teaching adjustments and support is needed to ensure that the learner has full access to the curriculum and is able to participate in school activities while progressing towards planned learning outcomes. This form informs the last stage in the strategy which is the action plan.

The action plan is a review of the areas where support is needed and determines the level of support that is required and further placement of the learner if such is required. An official decision is then made for learners who would need a higher level of support through placement in a special-needs school or full service school.

The value of SIAS is that it helps to avoid an increased number of learners being placed in special needs schools. SIAS does not, however, insist that a specific diagnosis is made in order for a learner to receive intervention. In the case of Asperger's syndrome and Nonverbal learning disability it is imperative that a diagnosis is made and that the diagnosis is correct if the learner is to receive correct intervention. The learner, without an accurate diagnosis, would be underserved within the classroom.

When looking at the literature presented regarding the definition of Asperger's syndrome and Nonverbal learning disability, similar traits and symptoms are in evidence. The most closely linked traits are delayed social maturity and social reasoning (Attwood, 2007 & Mamen, 2007) as well as difficulty with psychomotor coordination (Marti, 2004 & Attwood, 2007). Even though there are similar traits, the two disorders are treated as separate and distinct entities. The one, AS, is deemed to be a Pervasive Developmental Disorder and appears in the DSM-IV-TR (2007). NLD is not included in the DSM-IV-TR and is therefore treated as a language-based learning disorder. The evidence of the disorders being treated as separate can be found in the battery of assessments that are used for diagnosis. The diagnosis of AS is based largely on the use of the diagnostic criteria as stipulated in the DSM-IV-TR, with extra tests used for confirmation of the diagnosis.

The diagnosis of NLD is largely based on standardized assessment. Both AS and NLD have as their starting point the Weschler Intelligence Scales, with both disorders presenting with a significant discrepancy in scores between verbal comprehension and perceptual reasoning skills.

Due to the similarities between AS and NLD, much debate has been generated concerning the possibility that AS and NLD are the same disorder and should be treated as such. Koegel and Koegel (2006) concur that AS and NLD share common features. Laura (2011) specifically mentions the overlap of social inadequacies and the inability to decipher nonverbal behaviours. Even Rourke (1985), the most knowledgeable clinician on AS, questions if AS and NLD are not in fact the same disorder.

The danger inherent in the doubt presented by these clinicians is that of misdiagnosis. Presently AS and NLD are two separate disorders that happen to share similar features. One needs to be very careful when diagnosing either one of these disorders to ensure that assessment takes all the areas of functioning into account as diagnosis affects the intervention and treatment given.

Because of different biases in knowledge and training, the probability of a particular opinion being given, even with the same symptom presentation, will vary depending on the background of the particular professional involved. For example, while a psychological service provider may interpret a given set of symptoms as NLD, a psychiatrist or neurologist may see the same set as AS. (Mamen, 2010)

Regardless of commonly accepted forms of assessment and diagnosis, I recommend that an alternative form of assessment be constructed and implemented. The assessment should be comprehensive, going beyond the use of tools that are diagnostic, normed and standardized. The assessment profile should be accessible for use by all clinicians and therapists. For diagnostic purposes, testers are provided with information about the pervasive features of AS and NLD. The overlapping features of the two disorders should be included in the information pack as well as features that are different and unique to each disorder for the purpose of differential diagnosis. The tester is then able to use the same battery of tests for all learners regardless of whether they are being tested on the suspicion of having AS or NLD. Ideally, this battery of tests should be administered by a multi-disciplinary team. Each member of the team completes those components of the assessment that fall within their professional field of expertise.

The literature agrees that a good starting point for assessment is the administration of the Weschler Scales (Mamen, 2010) as there is usually a significant discrepancy between verbal comprehension and perceptual-reasoning scales in favour of verbal comprehension in a learner with AS and in a learner with NLD.

The assessment progresses with a laboratory workup to exclude other syndromes. This is coupled with a psychiatric evaluation. (Fitzgerald & Corvin, 2001). Once the clinical assessments have been completed, a therapist who has the appropriate qualifications can continue with the academic assessments in order to build a profile of the learner's strengths and deficits. Academic assessments could include the WRAT (Reading, Spelling and Arithmetic Tests), the Gray Oral Reading Test, the Gray Silent Reading Test, The British Spelling Test, Progress in Maths and the DST (Dyslexia Screening Test). All of these tests are standardized.

Further testing would be undertaken by a speech and language therapist who would administer tests that are more language based such as the Speech-Sounds Perception Test, the Auditory Closure test, the Sentence Memory test and Verbal Fluency test. The occupational therapist in the multi-disciplinary team would then complete the tests for tactile and perceptual features such as Finger Agnosia, Fingertip Writing and the Tactile Form Recognition and Tactile Perception tests. Tests for motor and psychomotor functioning to be included in this battery are the Grip Strength test and the Grooved Pegboard test. (Drummond et al., 2004). In order to make this assessment valid and reliable it is advisable to appropriate a copy of the learner's school reports, the developmental history of the learner, assessments of problem behaviours, observations and any previous assessments for the learner. (Chowdhury, 2009).

The multi-disciplinary team would then meet to discuss the results from all the diagnostic and histrionic information collected. Following a thorough investigation, the team decides on a diagnosis and the most appropriate form of intervention. The use of a multi-disciplinary team helps to avoid the chances of misdiagnosing a learner.

## Chapter 5

### 5.1. Summary

When a teacher is concerned about how a learner is not achieving in his/ her classroom despite their best attempt at intervention, they look at possible barriers to learning that the learner may be experiencing. The most direct way to discern this is to send the learner for a diagnostic assessment. Based on the finding of the diagnostic assessment, intervention strategies are compiled that are then implemented by the teacher in the classroom.

Assessment results, the diagnosis and intervention are taken in good faith as the goal is to provide all the support necessary for the learner to succeed academically, socially and emotionally.

When a practitioner is presented with the learner that could have AS or NLD, the convergence between the two disorders is so great that there is a window for misdiagnosis. I have looked at the main concepts of each disorder that are used for diagnosis. I have then looked at the two disorders together to identify areas of difficulty that share similar features. There is an overlap of features in difficulty with social interactions, behavioural difficulties, motor difficulties and nonverbal language. There is only one point of difference between the disorders. The learners with AS present with an isolated and all absorbing special skill or activity. Learners with NLD do not have this feature. Asperger's syndrome is known to be on the autism spectrum. It is a higher-functioning autism.

I have discussed the extent to which the identification or misidentification of either Asperger's syndrome or Nonverbal learning disability influences the form of treatment and intervention offered to an individual. I have not discussed what these treatment methods and forms of intervention are, and this would make for an interesting research topic at a further date. It is unrealistic to talk about learning disorders without placing them in the context of implications in classroom practice. South Africa has adopted the global policy of inclusion in education as an imperative move towards including all learners in mainstream schools in providing these learners with equal, easily accessible educational and social opportunities regardless of barriers to learning. In order to explain inclusion better, I have taken the reader through a journey from the development of early inclusion frameworks to present-day practice.

Important contributors to inclusion on a global scale have been UNESCO's Salamanca Statement and the Convention on the Rights of Persons with Disabilities. In South Africa the most important documents on inclusion are the White Paper 6 and SIAS. These inform how the inclusion framework in South Africa should be adopted and implemented on all levels of society.

It follows that learners with AS and NLD are included in mainstream classrooms. There is the possibility that these learners may not have been identified as having a learning difficulty. If they had been identified as having difficulties by the class teacher they may have been sent for an assessment. I have discussed the tools used to assess and diagnose AS and NLD. I have also proposed a new battery of tests that could be used to assess learners who are suspected of having either AS or NLD. The new assessment battery would ensure that there are minimal chances for error and misdiagnosis to occur.

Diagnosis informs the treatment and intervention that is provided for a learner who is experiencing difficulty. If a misdiagnosis should occur, the learner is ultimately the one who would not benefit from the intervention plan as fully as they should have. Even though the profiles for AS and NLD are so similar, the intervention provided differs in all but one aspect. They both require the learner to participate in social skills training to promote an understanding of social norms to aid them in their daily social interactions. Beyond the social skills training, the intervention is different as intervention for AS is based on medication whereas the intervention for NLD is language-based therapy. A misdiagnosis would therefore have a big impact on the learner. They may even end up being medicated when medication is not needed. The knock on effects are therefore far reaching and detrimental.

## **5.2. Conclusion**

In almost all of the literature consulted the convergence between Asperger's syndrome and Nonverbal learning disability has been highlighted. In terms of the overlap of the features of AS and NLD, the tools used for diagnosis are of a similar nature and interventions share the same goal which is to help the learner to socialise appropriately in order to become better integrated in society. There is also scope for these learners to be successfully integrated into inclusive mainstream classrooms within the inclusive education system in order for these learners to succeed to their optimal potential.

The form of intervention used for AS and NLD are very similar due to the similarities of the profiles of the two disorders. As such, even if there is a misdiagnosis of either disorder, the learner will still, to some extent, benefit from intervention that has been plotted on an IEP by the teacher in collaboration with the school administration, parents, therapists and the community. The issue remains that even if there is a misdiagnosis between the two disorders and planned intervention does help the learner to some degree, it is imperative that a learner be diagnosed with the correct disorder so that intervention can have the maximum benefit to the learner. A further issue is that many teachers do not have the knowledge, understanding or the training to help these learners in their classroom. In the mainstream inclusive environment there will be learners presenting with a range of learning difficulties and barriers to learning. A teacher who is not a remedial therapist would find it difficult to address the individual special needs of each learner in the classroom without the support of the Department of Education, school management, support staff and the community.

It is of great interest to note that AS and NLD are increasingly thrown together in articles. In an online article written for the Life Development Institute (2011) there is discussion about the growing worldwide recognition of AS and NLD as distinct conditions which persist throughout the lifespan. It is said the American Psychiatric Association will render the conditions of AS and NLD as historical footnotes in the publication of the fifth edition of the Diagnostic and Statistic Manual of Mental Disorders (DSM-V) in 2013. NLD is already not included in the Diagnostic and Statistic Manual of Mental Disorders, not even as a Pervasive Developmental Disorder. The DSM is considered to be one of the most used and reliable sources of commonly accepted diagnostic criteria for psychiatric diagnosis among clinicians, educational institutions and others. This will mean that people seeking a diagnosis for either of these conditions will have to rely on other forms of testing for diagnosis.

This research does not present the reader with an in-depth scientific investigation into either Asperger syndrome or Nonverbal learning disability. Rather, it provides the reader with a coherent and clear outline of the profile of Asperger syndrome and Nonverbal learning disability.

Secondly, this research does not endeavour to produce case studies concerning learners and their experiences with either Asperger syndrome or Nonverbal learning disability, but rather a greater insight into a group of learners who have been identified as having Asperger's syndrome or Nonverbal learning disability.

Third, this research is mostly based on an investigation into the identification methods used when identifying learners with Asperger's syndrome and Nonverbal learning disability. The research does not, therefore, investigate the possibility of the personal preferences concerning identification by either professional body. It follows that the researcher is not intending to change the methods of identification used, but rather critically discuss the methods of identification used and offer an alternative battery of assessments based on those already in use.

I hope this research will be of value to therapists, teachers and parents, all of whom have the task of either identifying or providing intervention for learners with Asperger's syndrome or Nonverbal learning disability. Further research must be conducted into classroom practice in inclusive mainstream schools with regards to the support available for teachers who have learners with AS and NLD, as well as other learning difficulties, in their classroom. Further research must take into account practical application of interventions that have been drawn up by support staff.

Nelson Mandela. "Disabled children are equally entitled to an exciting and brilliant future."

Inclusive education has the potential to help all learners across South Africa to succeed in education and as optimal contributors to society, ideally, as they have access where necessary to the correct diagnosis and intervention to enhance their personal and academic development.

## Chapter 6

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