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PSYCHOEDUCATIONAL SUPPORT TO MOBILISE THE SOCIOCOGNITIVE SKILLS OF CHILDREN WITH DOWN SYNDROME

A Dissertation defended on 30th of November 2024 for the fulfilment of the requirement for the Award of a Master's Degree of Education

Option: ***Specialized Education***

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To my parents FAMBFU FABIAN WIRNKAR and TANTOH GLORY NKWABFU

CERTIFICATION

We the undersigned hereby certify that the thesis entitled: “psychoeducational support to mobilize the sociocognitive skills of children with trisomy 21” in the National Center for the Rehabilitation of Handicapped Persons, submitted to the department of Special Education, Faculty of Education in the University of Yaoundé I was carried by Wirnkar Gracious Shalanyuy, registration number, (21V3702) under our supervision. The work has been properly referenced and acknowledged.

The Dean

Head of Department

Supervisor

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SUMMARY

LIST OF ABBREVIATIONS

WHO: World Health Organization

APA: American Psychiatric Association ‘s

DSM: Diagnostic and Statistical Manual of Mental Disorders

DV: Dependent Variable

IV: Independent Variable

DS: Down Syndrome

ToM: Theory of Mind

CNRPH : Centre National de Réhabilitation des Personnes Handicapée

UDHR: The Universal Declaration of Human Rights

MINAS: Ministry of Social Affairs

MINESEC: Ministry of Secondary Education

UNESCO: United Nations Educational, Scientific and Cultural Organization

UN: United Nations

ZPD: Zone of Proximal Development

AAIDD: American Association on Intellectual and Developmental Disabilities

MDGs: Millennium Development Goal

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RESUME

Le fait de fournir un accompangnement psychoéducatif au rythme et à la personnalité de chaque enfant suppose qu'une stratégie a été développée pour son développement personnel, et que le contenu lié à sons attentes en matière d'apprentissage a été défini. Cependant, recourir à l'augmentation du bien-être et de l'autonomie d'un enfant atteint du syndrome de Down nécessite une attention particulière à son individualité. En outre, étant donné que chaque enfant est unique dans son développement et ses intérêts, s'il Ya lieu de penser son avenir cette perspective un devient un possible qu'indépendamment es difficultés d'apprentissage eu effet l'analyses des besoins d'enfant qui est dépendent institutionnelle. Ainsi, l'objectif de cet article est d'analyser comment le soutien psychoéducatif peut être utilisé pour mobiliser les compétences sociocognitives des enfants atteints du syndrome de Down. Pour atteindre cet objectif, méthode qualitative a été utilisée avec un guide d'entretien et une grille d'observation comme outils de collecte de données. La population d'échantillons était composée de trois participants. Les résultats obtenus en analysant les trois objectifs spécifiques, avec l'aide de théoriciens comme Vygotsky et sa théorie du développement socioculturel, Piaget sur le développement cognitif et la théorie du développement social de Brunner, associés aux résultats obtenus sur le terrain, ont confirmé que l'accompagnement psychoéducatif peut être utilisé pour mobiliser les compétences sociocognitives des enfants atteints du syndrome de Down. Il a également été noté que, avec l'aide nécessaire des enseignants, des parents et des soignants de ces enfants atteints du syndrome de Down, ils peuvent apprendre et acquérir les compétences cognitives et sociales nécessaires pour s'intégrer correctement dans la société d'aujourd'hui. Cela confirme également que tout le monde a la capacité d'apprendre s'il reçoivent l'aide nécessaire.

Mots clés; trisomie 21, accompagnement psychoéducatif, éducateurs spécialisés, compétences sociocognitives, écoles d'inclusion.

ABSTRACT

Giving psychoeducational support at the pace and personality of each child assumes that a strategy has been developed for their personal development, and that the content related to their expectations regarding learning has been defined. However, resorting to increasing the wellbeing and the autonomy of a child with down syndrome requires particular attention to their individuality. Thus, if there is a reason to think about the child's future, this perspective becomes a possibility independently of the child's learning difficulties. Indeed, the analysis of the child's needs is institutional dependent. Thus, the objective of this paper is to analyze how psychoeducational support can be used to mobilize the sociocognitive skills of children with down syndrome. To meet this objective, a qualitative methodology, following a comprehensive paradigm and the case study method was used with an interview guide and observation grid as the tools for data collection our sample population was composed of three participants. The results obtained analyzing the three specific objectives and with help of theorist like Vygotsky and his theory on sociocultural development, Piaget cognitive development and the social development theory of Brunner coupled with the results obtained from the field confirmed psychoeducational support can be used to mobilize the socio cognitive skills of children with down syndrome. Also, it was noted that, with the necessary help from the teachers, parents and the caregivers of these children with down syndrome, they can be able to learn and acquire proper cognitive and social skills that are necessary for them to fit properly into today's society. It also confirms that everyone has the ability to learn if they are given the necessary help they need.

Key words; down syndrome, psychoeducational support, special educators, sociocognitive competencies, inclusion schools.

0- GENERAL INTRODUCTION

0.1.Context and justification of the study

In the course of the follow up of children with mental disabilities, the strategies are always diversified across the world. The advancement of follow up depends on the quality of development of the view point of these places. Given that this development does not depend only on the adults so, the development of a particular place must always start from the base and the base here are the children (Ravitz, L.R. 1981). Given that many difficulties are being exposed in the society such as economic, political and social, children have great chances of vulnerability.

As an objective of bringing our humble contribution on the follow up of vulnerable children, we are going base ourselves on children having mental disability in particular children with Down syndrome (DS). So, it will consist of measuring the level of their vulnerability which will help in determining their needs and what they need given their level of their disability. All this to determine the factors that determine their vulnerability (Howell, C. 2005). The historical developments of DS have been remarkable over the years. An earlier description of DS was reported by Jean Etienne Dominique Esquirol in 1838 and Edouard Seguin in 1844 and 1846. However, it was John Langdon Down, a British physician who gave a comprehensive description of DS in his landmark presentation titled: 'Observations on an Ethnic Classification of Idiots' in 1866. According to Down, 'I have been able to find among the large number of idiots and imbeciles which come under my observation very large number of congenital idiots are typical Mongols' three variants of DS, *trisomy 21, translocation* and *mosaic*, are known (Jean, E 1838). Regardless of the genetic variation or mode of transmission, people with DS have a portion of chromosome 21 in some or all of their cells. Trisomy 21 is the most common type of DS and the exact cause is unknown. The errors begin in either the sperm or the egg with the presence of the extra chromosome before the egg and sperm unite. Trisomy 21 compromises about 95% of all cases hence, trisomy (triplication) 21 is used synonymously as DS, and the number *21* implies that it occurs at chromosome number 21 (Edourd, S. 1984). Non-disjunction causing trisomy 21 is of maternal origin in about 88% of cases and occurs more frequently in older cells, which accounts for older women giving birth to offspring with trisomy 21.

Thus, in order to create awareness of this worry of mentally disabled children and children in particular, after the first word war there was the creation of the UNO which under it was created an organ called the UNICEF (1946) this organ was concerned with the education of children.

These organs were created so as to promote the wellbeing of children including children presenting all forms of disability and also mentally handicap children. All these was to be centered more on the educative domain of these children.

In the care and support of people with mental handicap and more particularly children with down syndrome, in Cameroon, three components can be observed which act simultaneously and in complementarity: the medical and health component, the social component, and the school component. The first represents hospital and health services in general and mainly psychiatry, neuropsychiatry, speech therapy and psychomotricity services (Ravitz, L.R. 1981). These services are responsible for screening and aspects of comorbidities resulting from the disease and to a certain extent, rehabilitation. In this task, they are assisted by psychologists.

The second component represents the social component and is intended to be the mediator between the family in difficulty and the interveners. Represented by the Ministry of Social Affairs, it directs, manages, clarifies and coordinates activities around the care of children suffering from any form of disabilities including down syndrome, which is understood here as a child suffering from a severe handicap (Turkel, H. 1963). The ministry welcomes the parent or any other applicant, directs him to the appropriate services, they regulate the activity of the school and medical-sanitary component through laws, charters, training sessions and awareness days on the disturbance as well as any other actions it undertakes. It works in partnership with the Ministries in charge of National Education.

The third component and which is not the least is the school component. In Cameroon, the integration of children with special educational needs is not a matter of charity but a constitutional right of all children and a duty of the Cameroonian State, which thus aligns itself with international requirements in terms of human rights disabled, including the right to education (UN CRPD, Article 24). Decree No. 90/1516 of November 26, 1990 setting the terms of application of Law No. 83/013 of July 21, 1983 relating to the protection of disabled persons which includes provisions on assistance with education of this target, not including age exemption, resumption of class and financial support. It is in this order that the signing of two (02) joint circular letters by the Ministry of Social Affairs (MINAS.) and the Ministry of Secondary Education (MINESEC) respectively on August 2, 2005 and August 14, 2007, aiming to facilitate the admission of disabled pupils and pupils born of disabled parents to public secondary schools and their participation in official examinations. This law also stipulates a promotion of school integration as well as equality of all children in access to

education, without taking into account their mental, physical or even intellectual capacities. Such an initiative is also provided for in an article of the law of 13 April 2010 relating to the protection and promotion of disabled people, which defines special education as that which "consists of initiating the physically, sensory, mentally and with multiple disabilities to appropriate methods of communication in order to allow them access to normal schooling, and later, to vocational training". It is this legal and also legitimate basis that governs and frames the operation of the third components.

Also, looking at the society and my immediate environment in which I find myself in the ignorance that comes with mental handicap many people need to be able to know and have the idea that mental handicap in children is something that we can't avoid and we can actually help to them to come to the light of the different ways in which we can collectively help these kids with mental handicap especially those with down syndrome gain sustainable knowledge for them to be able to live in our society now. This study carried out in Yaoundé the capital city of Cameroon shows that Down syndrome shouldn't be a hindrance for a child to acquire cognitive skills and cognitive skills. Despite their disability they should be able to gain those skills like any other child. This can be done in different ways from the normal child a personal follow-up will help them grow and develop their skills properly as they need to. So this study is important for the purpose of creating awareness of the different psychoeducational factors that can be put in place in order for a child with trisomy 21 to be able to gain social and cognitive skills so as to be able to live among people in the society.

0.2. Position and formulation of the problem

The educational policy as stipulated by UNESCO and the UN states that In article 24 of the Convention, the right to education of persons with disabilities is reaffirmed and inclusive education recognized as the means to make the universal right to education effective for persons with disabilities. Inclusion highlights opportunities for an equal involvement of individuals with disabilities (physical, social and emotional) when possible into typical education, but leaves accessible the probability of individual selections and possibilities for special aid and accommodations for persons who need it and want it (Rasmitadila & Tambunan, 2018).

The active call for inclusivity is boldly stipulated in the Salamanca Statement (UNESCO, 1994) which adheres nations to adopt the framework of action in providing inclusion and equity through education of children with perceived differences. In 1994 UNESCO's Salamanca

Statement on Principles, Policies and Practice in Special Needs Education was adopted and asserts that education for all must encompass the inclusion of all types of learners in a single learning environment. It further provides that "regular schools with this inclusive orientation are the most effective means of combating discriminatory attitudes, creating welcoming environments, building an inclusive society and achieving education for all."

The advocacy of the statement vigorously defends that inclusion and participation are inherent human rights (UNESCO, 2009a). Article 24, paragraph 2, provides for ensuring that persons with disabilities are not excluded from the general education system, which implies that students should not be rejected by mainstream schools on the basis of any impairment (art. 24, para. 2 (a)). States are also required thereby to ensure that persons with disabilities have access to an inclusive, quality and free primary education and secondary education on an equal basis with others. In article 24, paragraph 4, it is indicated that for general education systems to be inclusive teachers who are qualified in sign language and/or Braille must be employed. Furthermore, professionals and staff who work at all levels of education must be trained in disability awareness and in the use of appropriate communication, educational techniques and materials.

Also in Cameroon, the right to education is clearly stated in the Universal Declaration of human rights (UNESCO, 1946); "everyone has a right to education". The only Law in Cameroon, which addresses the needs of persons with disabilities, is law No. 83/13 of July, 1983 relating to the protection of persons with disabilities. The conditions for implementing this law are laid down in decree No.90/1516 of 26 November, 1990. These two documents form a foundation stone for a strong government policy toward the education of persons with disabilities. Article 3 of law No. 83/13 of July 1983 focuses on the education of children with disabilities.

Although the law on the protection of persons with disabilities was enacted by Parliament in 1983, the Head of State only signs the decree laying down the modalities of its application in November, 1990. It is divided into five parts with the first part dealing with the education and vocational training of persons with disabilities. Article 1 of this law clearly states "The education of children and young adults with disabilities shall be taken care of in regular and special schools. In case of necessity, regular schools enrolling children with disabilities shall be provided with special teachers and didactic material adapted to the children's needs" (MINAS, 1990).

As far as easing access of pupils with disabilities into various classes in ordinary schools is concerned, schools are required to make the necessary adjustments to suit the needs of all children. The Universal Declaration of Human Rights (UDHR) 1948 Article 3a states that admission to education should be based on merit, capacity, efforts, perseverance and devotion, showed by those seeking access. No discrimination can be accepted in granting education on grounds of race, gender, language or religion, or economic, cultural or social distinctions, or disability (UNESCO, 1998).

However, they did not clearly state the rights and educational strategies of children with mental disabilities especially those with Down syndrome. But looking at Piaget's theory of cognitive development (1993) which was primarily interested in how an organism adapts to its environment (Klahr, 2012). According to Chen and Siegle (2000: 95), Piaget stared from the assumption that human intelligence is a biological adaptation of a complex organization to a complex environment. Thus, the individual 's understanding of a given situation is part of the adaptation of that situation, and the cognitive development is the individual 's intelligence in making equilibration of the cognitive structures. Piaget was more interested in the fact children can learn and develop knowledge as they grow as advance in age and with abilities. He illustrated this using his four stages of individual development which are: Sensory Motor Stage, Preoperational Stage, Concrete Operational Stage and Formal Operational Stage.

Cognitive development, according to Piaget, is achieved through three interrelated processes: organization, adaptation (assimilation and accommodation), and equilibration (Gupta & Frake, 2009). For Piaget, every act an individual make is cognitively organized and then adaptation provides the means for change. According to Piaget a child can only be seen as fully developed when he passes through all this stages. But what he failed to add is that, there are children born with disabilities like children with Down syndrome and these children will not be able to develop as he has stipulated in his theory with all the milestones and at the different ages he stated. This is because of their physical, intellectual and emotional characteristics these characteristics are: Hearing and vision weakness, Fine motor skill impairment due to low muscle tone, Weak auditory memory, Short attention span and distractibility. Most children with Down syndrome meet developmental milestones later than other children including the ability to walk, talk and understand social cues.

They often have mild to moderate intellectual disability and may have specific challenges with attention span, verbal memory, and expressive communication. Behavioral problems such as

stubbornness, impulsivity, and temper tantrums may be more common in children with Down syndrome. Many children talk out loud to themselves as a way of understanding and processing information.

Also, a child with disability like down syndrome cannot be able to learn or manipulate his environment like Piaget has stipulated and also will need a favorable environment where his intellectual, social and psychomotor aspects can fully develop so will need assistance to be able to learn in class and also understand and manipulate his environment. However, Bandura believes that children learn from models that is by observation and imitation and that learning occurs both through those beliefs and through social modeling thereby originating the social cognitive theory (1986) which holds that a person's environment, cognition, and behavior all interact to determine how that person functions as opposed to one of those factors playing a dominant role.

Bandura (1977) believes that humans are active information processors and think about the relationship between their behavior and its consequences which he calls the social learning theory whereby, people learn from observing other peoples' behaviors and actions it has to do with continuous interaction of peoples cognitive, behavioral and environmental influences (Bandura 1993). He spoke pertinently on three aspects of his theory (Bandura 1991): Attention, Retention, Reproduction and Motivation. So according to Banduras theory even a child with disabilities and a child with Down syndrome can learn too if they are given the opportunity to observe the right models.

Again, Vygotsky (1978 cited Wertsch 1985) in his sociocultural theory declares that the child receives the knowledge initially through the contacts and interactions with people, and then assimilates this knowledge adding the personal values in it. He believed the socio-cultural environment is critical for cognitive development. Vygotsky emphasized the roles of social interaction and instruction. "He proposed that development does not precede socialization but rather, social structures and social relations lead to the development of mental functions" (Huitt, 2000, slide 22).

He also spoke about the Zone of Proximal Development (ZPD) which is a zone where the learner requires adults or peers to provide him with assistance to help complete the assigned task. The ZPD is the gap between what learners are able to do independently, and what they may need help in accomplishing (Daniels, 2001). Social interaction plays an important role in student learning. It is through social interaction that students learn from each other, as well as

adults. Fogarty (1999) stated, “Vygotsky’s theory suggests that we learn first through person-to-person interactions and then individually through an internalization process that leads to deep understanding”. So according to this theory it is clear that children with Down syndrome will need assistance to fully learn and this assistance can be given by a more experienced adult or peer this is to ensure that they are not left behind in the learning process. Furthermore, according to Kaes and Bleger one need to structure, add meaning and organize their experiences to be able to make sense out of it and also they spoke about the frame which helps in group cohesion that is for people to be able work together while understanding one another’s believes, values, strengths and weakness.

Frames also shape the way we communicate and interprets messages from others it helps use learn and understand social cues. Bleger also emphasized that the body schema is shaped by early childhood experiences, interpersonal relationships and cultural influences and this plays a great role in the individual’s self-esteem, self-image and sense of identity. This is to say that group learning is of great help and importance to children with Down syndrome since they can’t be able to learn alone this will help them develop their social, intellectual and psychomotor skills.

So, with all this analysis, the theories and the theorists and the laws of UNESCO and even that of Cameroon concerning the education of children with mental handicap especially those with down syndrome I came to the conclusion that children with disability in this case those with down syndrome are neglected based on the Cameroon inclusive education policy and that based on the above stated theories and the different authors they can be able to learn if they are taught appropriately and with the right materials.

0.3. Research questions

This research was based on several questions which the researcher was out to find answers to. The questions were divided into general research question and specific research question.

0.3.1. General research question

The main question that this research seeks to answer is**:** how can psychoeducational support be used to mobilize the sociocognitive skills of children with Down syndrome? This main question is then broken down into specific questions which will help us better answer the main research question which are:

0.3.2. Specific research questions

0.4.2.1. How does socialization affect the sociocognitive skills of children with Down syndrome?

0.4.2.2. How teachers teaching strategies and methods affects the sociocognitive skills of children with Down syndrome?

0.4.2.3. How does adaptation in the sociocultural context affect the sociocognitive skills of children with Down syndrome?

0.5.Research objectives.

The objectives of this research was divided into the general research objectives and the specific research objectives.

0.5.2. General research objectives

This was based on the topic of the thesis and what is needed to be able to carry out the research which is the psychoeducational support to mobilize the sociocognitive skills of children with trisomy 21. To be able to successfully carry out the research and collect the right data the general research objective was stated: “To analyse how psycho educational support helps to mobilize the socio cognitive skills of children with trisomy 21.” From this we brought out specific objectives to help us collect specific data these were:

0.5.3. Specific research objectives

0.5.3.1.To analyze how teachers teaching strategies and methods affect the socio cognitive skills of children with trisomy 21.

0.5.3.2. To analyze how socialization affects the socio cognitive skills of children with trisomy 21.

0.5.3.3. To analyze how adaptation to the sociocultural context affects the sociocognitive skills of children with Down syndrome.

0.6. Interest of the study

As times goes on so new research are done and this research is supposed to evaluate the past and the current events with regards to the topic being researched on. So with this change, the research we do has to give importance to the present and also serve as a stepping stone as it is said the only permanent thing is change and so interest of this research is first of all for the future scientific community.

0.5.1. To the social workers in handicapology

This research will be of help to those working in the field of special education and specifically on the various handicaps to help them know the realities of the field when it concerns one of their population of studies. Also, it will act as a guide for handicapologist to know the needs of children with Down syndrome and also how to be able communicate the needs of these children to the community and to parents and teachers so as to be able to properly help the children. Research can provide social workers with up-to-date information on the specific needs, challenges, and strengths of individuals with Down syndrome. This knowledge can inform their practice and help them tailor their interventions and support services to better meet the needs of their clients Research findings can be used by social workers to advocate for improved services, resources, and policies that support individuals with Down syndrome and their families. They can use research evidence to make a compelling case for the importance of inclusive education, employment opportunities, healthcare access, and other essential services.

Social workers can use this knowledge to provide more effective support to families, including counseling, access to community resources, and guidance on navigating the challenges associated with raising a child with Down syndrome. Research findings can inform the development and improvement of programs and interventions aimed at supporting individuals with Down syndrome. Social workers can use this information to advocate for or develop programs that address specific areas such as social skills development, independent living skills, and inclusion in community activities. It can also contribute to the professional development of social workers by enhancing their understanding of Down syndrome and its impact on individuals and families. This knowledge can help social workers deliver more effective and empathetic support to their clients. In summary, research on Down syndrome is essential for equipping social workers with the knowledge and evidence needed to effectively support individuals with Down syndrome and their families, advocate for their rights, and develop targeted interventions and programs.

0.5.2. To science and the world of research

This research will contribute to the increase in the knowledge on Down syndrome so as to add a plus to what have been done so far. As a consequence, will improve on the living conditions of children with Down syndrome in the world and Cameroon in particular. This is because, this research seeks to better the cognitive and social life of children living with down syndrome so with this knowledge laws governing persons with disabilities especially does with mental

disabilities like down syndrome will be looked into. Down syndrome is caused by an extra copy of chromosome 21, leading to specific physical and cognitive characteristics. Research on Down syndrome can provide valuable insights into the genetic mechanisms underlying the condition, which can contribute to a better understanding of genetics, chromosomal abnormalities, and gene regulation.

Research on Down syndrome can lead to the development of new medical interventions, treatments, and therapies to address the health issues and challenges faced by individuals with the condition. This so because despite the psychoeducational aspects that these research is trying to bring forth, persons especially children living with down syndrome needs medical interventions to be able to go along with the psychoeducational aspects of their follow-up for better results. This research can also contribute to advancements in areas such as neurodevelopmental disorders, cognitive disabilities, and age-related conditions that are more prevalent in individuals with Down syndrome. Studying the cognitive and neurological aspects of Down syndrome can provide insights into brain development, function, and plasticity. Research in this area can enhance our understanding of how the brain works, how it adapts to challenges, and how it can be supported to maximize functioning in individuals with cognitive disabilities. Research on Down syndrome can help raise awareness and promote social inclusion for individuals with disabilities. By highlighting the strengths, abilities, and unique perspectives of individuals with Down syndrome, research can challenge stereotypes, reduce stigma, and foster a more inclusive society that values diversity and promotes equality for all.

Research findings on Down syndrome can inform policy decisions, resource allocation, and advocacy efforts aimed at improving the quality of life and opportunities for individuals with disabilities. This research can support the development of evidence-based policies that promote access to education, healthcare, employment, and social services for individuals with Down syndrome. Overall, research on Down syndrome contributes to social inclusion, and policy development, ultimately benefiting individuals with the condition, their families, and society as a whole.

0.5.3. To the teachers and special educators.

This research will not only help them to know the students in their classroom but will also help them to know how to be able to help these children with down syndrome learn in the classroom and develop adequate social skills for them to be able to live in the society. The special educators will also be aware that these set if children have a very complicated system and will

not learn in the same pace as the other children in their classroom it will help them to shape their curriculum in such a way that it suits all of the students in their class be it those with special needs and normal children.

Research can provide teachers and special educators with a deeper understanding of the specific learning styles, cognitive strengths and challenges, and social-emotional needs of students with Down syndrome. This knowledge can inform the development of individualized education plans (IEPs) and instructional strategies tailored to the unique needs of each student. Research can identify effective teaching strategies, interventions, and accommodations that support the learning and development of students with Down syndrome. This can include evidence-based approaches for teaching literacy, numeracy, communication skills, and social skills, as well as techniques for promoting independence and self-advocacy.

Research findings can inform educators about the benefits of inclusive education for students with Down syndrome. It can provide insights into how to create supportive and inclusive classroom environments that foster positive social interactions, peer relationships, and opportunities for meaningful participation for students with diverse abilities. Research on Down syndrome can help educators collaborate more effectively with families by providing up-to-date information on best practices, resources, and support services available for individuals with Down syndrome. This collaboration can enhance the continuity of care and support for students both at school and at home.

Research can contribute to the professional development of teachers and special educators by offering evidence-based training, workshops, and resources that enhance their knowledge and skills in working with students with Down syndrome. This can empower educators to implement effective instructional practices and create inclusive learning environments. Research findings can support educators in advocating for the needs of students with Down syndrome within educational systems and policy-making processes. By using research-based evidence, educators can advocate for appropriate resources, support services, and inclusive practices that benefit students with Down syndrome. So, research on Down syndrome can provide teachers and special educators with valuable insights, evidence-based strategies, and resources to better support the learning, development, and inclusion of students with Down syndrome in educational settings.

0.6. Operational definition of key words

For better understanding of the subject matter of this research, we will have to define some important terms that we will be using in this research.

0.6.1. Trisomy 21

Trisomy 21, is a genetic condition where a person has three copies of chromosome 21 instead of the usual two copies. This results in various physical and intellectual disabilities. According to the American College of Obstetricians and Gynecologists (ACOG), trisomy 21 occurs in approximately 1 in 700 live births (ACOG, 2016). The condition is caused by a random error in cell division during early fetal development (NIH, 2021).

0.6.2. Special education

Akinade and Sulaiman (2010) define special education as the education given to students with special needs in a way that addresses the student's individual differences and needs. Also, according to the Individuals with Disability Act (IDEA), special education is also defined as specially designed instruction at no cost to parents to meet the unique needs of a child with a disability. Also, James M. Kauffman and Daniel P. Hallahan define special education as a form of education that is specifically designed to meet the unique needs of individuals with disabilities.

0.6.3. Inclusive education

Inclusive education is an approach to education that is aimed to provide equal opportunities for all learners regardless of their abilities, backgrounds or circumstances (Armstrong & Barton, 2018). It involves creating a learning environment that is responsive to the diverse needs of learners and promotes their full participation and engagement in the educational process (Booth & Ainscow, 2016). According to Armstrong and Barton (2018), inclusive education is based on the principles of social justice, human rights, and equity. It recognizes that all learners have the right to access quality education and to be treated with dignity and respect. Inclusive education also acknowledges that diversity is a strength and that learners can benefit from learning alongside their peers with different abilities and backgrounds.

0.6.4. Psychoeducational support

Baker defined psychoeducation as a process of teaching with mental disabilities and their family members about the nature of the illness, including its etiology, progression,

consequences, and treatment. Also, according to Mueseret all, 2002, psychoeducation is a structured, systematic and didactic approach that provides individuals with knowledge and skills related to their mental health conditions. It focuses on enhancing, understanding, promoting self-care and improving overall quality of life. Slade et al, 2014 also defines psychoeducation as an essential component of recovery oriented mental health conditions and their families. It involves providing evidence-based information, support, skills training to individuals with mental health issues and their families.

0.6.5. Socio cognition

The way in which individuals use process, remember and use information in social contexts to explain and predict how people behave. (Fiske and Taylor, 1991). It explores the cognitive processes involved in social perception, social judgment and social decision making (Tversky, 1973). This field of research investigates how people acquire, process and use social knowledge to navigate the social world. (Taylor, 1991).

CHAPTER ONE:

TRISOMY 21 AND KNOWLEDGE CONSTRUCTION

This chapter brings out what trisomy 21 or down syndrome is all about, history of down syndrome, the characteristics of children with trisomy 21, intellectual characteristics of children with down syndrome, relational characteristics of children with down syndrome, educational policies on inclusion which entails the international policies and national policies, how education and socialisation of the child with down syndrome, types of socialisations and their description, agents of socialisation, role of the teacher in socialisation, theory of the mind and how it is linked to children with down syndrome and many others.

1.2.Trisomy 21

According to WHO trisomy 21 or Down syndrome results when abnormal cell division involving chromosome 21 occurs. These cell division abnormalities result in an extra partial or full chromosome 21. This extra genetic material is responsible for the characteristic features and developmental problems of Down syndrome (Mitchell, 1997, pg. 72). Human cells normally contain 23 pairs of chromosomes. One chromosome in each pair comes from your father, the other from your mother. Down syndrome results when abnormal cell division involving chromosome 21 occurs. These cell division abnormalities result in an extra partial or full chromosome 21. This extra genetic material is responsible for the characteristic features and developmental problems of Down syndrome. Any one of three genetic variations can cause Down syndrome: (Dennis, J. 1995)

This extra genetic material is responsible for the characteristic features and developmental problems of Down syndrome. Genes are located in the chromosomes. Beside the egg and sperm cells which have 23 individual chromosomes, there are 46 chromosomes, made up of 23 homologous (identical pairs) in each human cell, thus an individual has 23 chromosomes from each parent. Human chromosomes comprise 22 pairs of autosomes (non-sex chromosomes) and a pair of sex chromosomes (XX, XY) (Dennis, J. 1995). These chromosomes are numbered according to their sizes from 1 to 22. During the development of egg or less commonly, in the sperm cells, errors may occur at the migration stage (segregation step) of meiosis. With this error, there is non-disjunction (improper separation of chromosomes) of the chromosomes, which result in an egg or sperm cell with the probability that some may have only 22 chromosomes while others, 24 chromosomes. As the cells divide, the extra chromosome is replicated in every cell of the body. The presence of three copies of chromosome 21 in all cells of the body is called *trisomy*. (Ravitz, L.R. (1981)

About 95 percent of the time, down syndrome is caused by trisomy 21 person has three copies of chromosome 21, instead of the usual two copies, in all cells. This is caused by abnormal cell division during the development of the sperm cell or the egg cell. (National Down Syndrome Society, 2021). Mosaic Down syndrome. In this rare form of Down syndrome, a person has only some cells with an extra copy of chromosome 21. Translocation Down syndrome which occurs when a portion of chromosome 21 becomes attached (translocated) onto another chromosome, before or at conception. These children have the usual two copies of chromosome 21, but they also have additional genetic material from chromosome 21 attached to another chromosome. Down syndrome varies in severity among individuals, causing lifelong intellectual disability and developmental delays. (Health line, 2021) It's the most common genetic chromosomal disorder and cause of learning disabilities in children. It also commonly causes other medical abnormalities, including heart and gastrointestinal disorders. (National Down Syndrome Society, 2021).

1.2.1. History of down syndrome

The historical developments of DS have been remarkable over the years. An earlier description of DS was reported by Jean Etienne Dominique Esquirol in 1838 and Edouard Seguin in 1844 and 1846. However, it was John Langdon Down, a British physician who gave a comprehensive description of DS in his landmark presentation titled: 'Observations on an Ethnic Classification of Idiots' in 1866. According to Down, 'I have been able to find among the large number of idiots and imbeciles which come under my observation very large number of congenital idiots are typical Mongols'. Down continued: The Mongolian type of idiocracy are always congenital idiots, and never result from accidents after uterine life. They are, for the most part, instances of degeneracy arising from tuberculosis in the parents (Edouard, S. 1844).

Down observed that 'the patients' resembled one another as if they were siblings; they possessed a broad, flat face, a thick tongue and a small nose, narrow palpebral fissures, obliquely placed eyes, roundish and laterally extended cheeks, long tongue and the degrees of their intellectual impairment varied. Down's descriptions of the patients were based on their physical and facial resemblance to people of the Mongolian descent and he called them 'Mongolian idiots'. Subsequently, Down's description generated a lot of controversy as people of the Mongolian race found his description derogatory. Another remarkable milestone in the history of DS is that, in 1909, Shuttlewort recognised AMA as an aetiological factor in DS birth. The maternal age aetiology link gave a new direction towards genetic investigations.

Thus, in 1932, a Dutch ophthalmologist named Waardenburg and an American geneticist named Davenport hypothesised that 'Mongolism' might be due to chromosomal abnormalities. The works by Waardenburg and Davenport paved way to several genetic studies, and with the invention of the karyotyping technique (analysis of the structure of chromosomes within an individual cell) in the 1950s, it became possible to study chromosomes and chromosomal abnormalities in detail. In 1956, Tjio and Levan (Cullen and Buttler, 1909) established that human cells have only 46 chromosomes or 23 pairs, comprising one pair of sex chromosomes (the X and Y chromosomes) contrary to an earlier theory of 24 pairs of chromosomes.

In 1959, a French geneticist Jerome Lejeune and colleagues as well as Patricia Jacobs and colleagues who were working independently in England showed that DS is caused by a trisomy (triplication) of chromosome 21. Other types of DS, translocation and mosaicism were described in subsequent years. Terminologies applied to describe DS are diverse. Various terms including Mongolism, Mongolian idiocy, Mongoloid, Mongolian Idiots, Mongolian Imbecile, Langdon Down anomaly, Down's syndrome anomaly, congenital acromicria or trisomy 21 anomaly have been used to describe DS. In 1961, renowned biomedical scientists (including John Langdon Down) discouraged researchers from using the word 'Mongolism' and suggested the use of 'Langdon Down anomaly', 'Down's syndrome/anomaly', 'trisomy 21 anomaly' or 'congenital acromicria'. Furthermore, the Mongolian delegates in 1965 submitted an objection to the World Health Organization (WHO) suggesting that the use of the term 'Mongol' or 'Mongolism' be discontinued due to its derogatory and racial connotations. Subsequently, the WHO officially discontinued references to mongolisms in all of its publications.

The possessive use of 's' in Down was also addressed. In 1975, at the United States National Institutes of Health's conference on standardization of the nomenclature of malformations recommended eliminating the possessive form stating that, 'The possessive use of an eponym should be discontinued, since the author (Langdon Down) neither had nor owned the disorder'. Although both the possessive and non-possessive forms are used in the literature, 'Down syndrome' (non-possessive form) is more commonly used in the USA, Canada and other countries, while 'Down's syndrome' (possessive form) is commonly used in some European countries including the United Kingdom (Down, L. 1845). In the current literature, DS is used interchangeably as trisomy 21 as this is the dominant variant of DS.

1.2.2. Physical characteristics of children with Down syndrome

Each person with Down syndrome is an individual intellectual and developmental problems may be mild, moderate or severe. Some people are healthy while others have significant health problems such as serious heart defects. Children and adults with Down syndrome have distinct facial features. Though not all people with Down syndrome have the same features, some of the more common features include (National Down Syndrome Societt, 2021); flattened face, small head, short neck, protruding tongue, upward slanting eye lids (palpebral fissures), unusually shaped or small ears, poor muscle tone, broad, short hands with a single crease in the palm, relatively short fingers and small hands and feet, excessive flexibility, tiny white spots on the colored part (iris) of the eye called brushfield's spots, short height

Infants with Down syndrome may be average size, but typically they grow slowly and remain shorter than other children the same age.

1.2.3. Intellectual characteristics of children with down syndrome.

The cognitive phenotype in individuals with Down's syndrome describes weaknesses in specific areas of functioning; working memory, executive functions (in particular attention and inhibitory responses, planning and problem solving) and processing speed. These areas appear to be affected more than would be expected given individuals' level of IQ, or mental age. Recent interest has been on understanding how physical differences in the morphology of the brain in individuals with Down's syndrome creates a particular 'path' or pattern of learning which leads to the development of the cognitive phenotype (Fidler et al., 2009). How much the complex interaction between differences in initial brain morphology, brain plasticity and environmental factors relate to the developing cognitive phenotype is still at the early stages of debate. Although there are clear differences between the structures of the brain in individuals with Down's syndrome and typically developing individuals, how these differences relate to development is the matter of continuing research (Dierssen, 2012; Rondal, Perera, & Spiker, 2011). It is possible that differences in the way the brain develops after the first few months sets up a complicated pattern of development influenced both by environmental and inherent cognitive factors (Fidler & Nadel, 2007). What is difficult to establish is how different domains of functioning impact upon one another to cause or affect areas of development; what may be an area of 'weaknesses at one stage of development, may not show as such at a different age.

These initial states may influence cognitive development, mediated by social and environmental factors, to create a particular cognitive phenotype which is apparent in

individuals with Down's syndrome. Children with Down syndrome may face various intellectual challenges. These can include difficulties in cognitive functioning, language development, memory, and problem-solving skills (Fidler, 2005; Nadel & Rosser, 2003). Cognitive functioning in individuals with Down syndrome is typically characterized by delays in intellectual development. They often exhibit lower IQ scores compared to typically developing individuals (Chapman & Hesketh, 2000). This delay can affect their ability to understand and process information, impacting their overall learning abilities.

Language development is another area where children with Down syndrome may experience challenges. They often have delayed language acquisition and difficulties with expressive and receptive language skills (Miller, Leddy, & Leavitt, 1999). These challenges can affect their ability to communicate effectively and may require additional support and intervention. Memory deficits are also common among individuals with Down syndrome. They may have difficulties with short-term memory, which can impact their ability to retain and recall information (Laws & Bishop, 2003). This can make it challenging for them to learn and remember new concepts or instructions.

Problem-solving skills may be affected in children with Down syndrome as well. They often struggle with abstract thinking and may have difficulties in planning, organizing, and reasoning (Pennington et al., 2003). These challenges can impact their ability to solve complex problems and adapt to new situations. It is important to note that while these intellectual challenges are commonly observed in individuals with Down syndrome, there is significant variability among individuals. Each person with Down syndrome is unique and may exhibit strengths and weaknesses within these areas of intellectual functioning.

1.2.4. Relational characteristics of children with Down syndrome.

The behavioral phenotype often used to describe individuals with Down's syndrome has a number of key features. A common difficulty for all individuals with Down's syndrome is speech and language. Although in young children with Down's syndrome receptive vocabulary can be almost on a par with peers, expressive vocabulary is often very much reduced (Næss, Lyster, Hulme, & Melby-Lervåg, 2011). A combination of difficulties with working memory, articulation and phonology can prevent clear and syntactically correct speech (Paterson, 2001). Issues with understanding conversational pragmatics and dealing with complex social situations can compound speech difficulties and prevent people with Down's syndrome from being able to fully articulate their ideas (Abbeduto, Warren, & Conners, 2007).

Young children with Down's syndrome have also been found to have motivational deficits which may lead to unstable skill acquisition and an avoidant learning style (Wishart & Duffy, 1990). It was observed in a variety of tasks which showed children were consistently unwilling to put effort into problem solving tasks, showed reversals in task competence and a refusal to complete tasks (Wishart, 2001). Gilmore and Cuskelly (2009) examined how enduring motivational aspects were in children with Down's syndrome and found that those children who showed good motivation at age 5 continued to do so into older childhood. Similarly, a lack of motivation also prevailed in some children in to older childhood and the authors suggest that, for children with Down's syndrome, motivational style may well be set at a young age, in contrast to the typically developing population.

Social understanding and awareness are considered a strength for individuals with Down's syndrome. Some studies have suggested that, when compared to individuals with other intellectual disabilities, children with Down's syndrome are more sociable and likable (Cuckle & Wilson, 2002). However other research has found that children with Down's syndrome may have some limits as to which areas of social functioning are working well and how they may use social strategies to avoid tasks. Fidler, Most, Booth-LaForce, and Kelly (2008) found that children with Down's syndrome at 12 months developed social relatedness skills, but had less well-developed emotion regulation, suggesting that the children's development in these areas may be inconsistent. Similarly, Wishart's findings (Wishart, 1996; Wishart, 1993) suggest that children with Down's syndrome may use their social strengths to avoid difficult learning situations. This is particularly important to consider when educationalists encourage children's behavioral and cognitive phenotypical strengths to support other areas of learning (Jones, Neil, & Feeley, 2013).

1.3. Educational policies on inclusion.

Inclusive education emerged by insisting that all children with special needs be included in the traditional classroom. Before the emergence of the inclusive system, it was the concept of integration or mainstreaming, which was practiced. The concept of integration is based on integrating children with disabilities according to their needs and severity of their conditions. Some children with disabilities could benefit from total integration, while others benefit from units/special class or resource rooms (Healey, M. 2004a). However, since the middle of the nineties, the American system of inclusive education has spread like fire across the world. The Salamanca conference on 'Special Needs Education' held in June 1994 emphasized the need

for policy change in the education of people with disabilities. The second goal in the Millennium Development Goal (MDGs) outlined in the "Millennium Declaration" of September 2000, focuses on 'Achieving universal primary education' (UNESCO, 2005).

1.3.1. International policies

Accordingly, the UNESCO (2005) stated that inclusive education is an approach that expresses how to change educational structures and other learning atmospheres to meet the needs of the variety of learners. In article 24 of the Convention, the right to education of persons with disabilities is reaffirmed and inclusive education recognized as the means to make the universal right to education effective for persons with disabilities. Inclusion highlights opportunities for an equal involvement of individuals with disabilities (physical, social and emotional) when possible into typical education, but leaves accessible the probability of individual selections and possibilities for special aid and accommodations for persons who need it and want it (Rasmitadila & Tambunan, 2018).

The active call for inclusivity is boldly stipulated in the Salamanca Statement (UNESCO, 1994), which adheres nations to adopt the framework of action in providing inclusion and equity through education of children with perceived differences. in 1994 UNESCO's Salamanca Statement on Principles, Policies and Practice in Special Needs Education was adopted and asserts that education for all must encompass the inclusion of all types of learners in a single learning environment. It further provides that "regular schools with this inclusive orientation are the most effective means of combating discriminatory attitudes, creating welcoming environments, building an inclusive society and achieving education for all." The advocacy of the statement vigorously defends that inclusion and participation are inherent human rights (UNESCO, 2009a). Article 24, paragraph 2, provides for ensuring that persons with disabilities are not excluded from the general education system, which implies that students should not be rejected by mainstream schools on the basis of any impairment (art. 24, para. 2 (a)).

States are also required thereby to ensure that persons with disabilities have access to an inclusive, quality and free primary education and secondary education on an equal basis with others. 23.In article 24, paragraph 4, it is indicated that for general education systems to be inclusive teachers who are qualified in sign language and/or Braille must be employed. Furthermore, professionals and staff who work at all levels of education must be trained in

disability awareness and in the use of appropriate communication, educational techniques and materials.

1.3.2. National policies

Traditional beliefs, customs and attitudes held by different ethnic groups in Cameroon have for a long time influenced the education and socialization of persons with special educational needs, Yuh & Shey (2008). In some parts of the country, children with disabilities were and are still denied their basic rights especially the right to go to school, communicate and interact with peers in spite of global movement towards universalization of access to schooling for all children (world's conference on education for all, Jomtien, Thailand, 1990; Salamanca conference on special need education, Spain 1994; millennium development goals, 2000). The right to education is clearly stated in the Universal Declaration of human rights (UNESCO, 1946); "everyone has a right to education".

The participants in the world's conference on education for all re-affirmed the right of all people to education, particularly, Basic education. The education of children with disabilities in the pre-colonial and colonial period indicates a slow yet steady recognition of the plight encountered by persons with special needs. The British Baptist Missionary Society first introduced western education in Cameroon in 1842. The number of schools remained with few Cameroonians gaining access to formal education. Catholic and Presbyterian missionary societies, like the Pallotine Fathers, the Mill Hill missionaries and the Basel Mission also made substantial contribution to formal education. By the time German colonial rule was established after 1884, there were already a few Cameroonians who had been educated by the missionaries. With the introduction of Christian education by western missionaries, consideration was given to the well-being of persons with disabilities. A small number of children were admitted in mission schools and were taught alongside other children.

The right to education is clearly stated in the Universal Declaration of human rights (UNESCO, 1946); "everyone has a right to education". The only Law in Cameroon, which addresses the needs of persons with disabilities, is law No. 83/13 of July, 1983 relating to the protection of persons with disabilities. The conditions for implementing this law are laid down in decree No.90/1516 of 26 November, 1990. These two documents form a foundation stone for a strong government policy toward the education of persons with disabilities. Article 3 of law No. 83/13 of July 1983 focuses on the education of children with disabilities.

Although the law on the protection of persons with disabilities was enacted by Parliament in 1983, the Head of State only signs the decree laying down the modalities of its application in November, 1990. It is divided into five parts with the first part dealing with the education and vocational training of persons with disabilities. Article 1 of this law clearly states "The education of children and young adults with disabilities shall be taken care of in regular and special schools. In case of necessity, regular schools enrolling children with disabilities shall be provided with special teachers and didactic material adapted to the children's needs" (MINAS, 1990). As far as easing access of pupils with disabilities into various classes in ordinary schools is concerned, schools are required to make the necessary adjustments to suit the needs of all children.

To ensure the proper digestion of the 1983 law, the Minister of National Education issued circular letter No. 86/1/658/MINEDUC/CTZ of January 13, 1986 calling on all national education authorities to implement the 1983 law by giving priority, easing and facilitation the enrolment of children with disabilities in public and private schools. This circular letter also stated that punishment would be meted out to recalcitrant head teachers and teachers who go against the 1983 law. The major setback witnessed today is lack of follow-up and implementation of this policy.

The most recent document on the education in Cameroon is the February 2005 Draft Document from the Technical Committee for the Elaboration of the Sector Wide Approach in education. Although this document reflects a common and coherent vision of education in Cameroon, nothing is mentioned about the education of persons with disabilities.

The Universal Declaration of Human Rights (UDHR) 1948 Article 3a states that admission to education should be based on merit, capacity, efforts, perseverance and devotion, showed by those seeking access. No discrimination can be accepted in granting education on grounds of race, gender, language or religion, or economic, cultural or social distinctions, or disability (UNESCO, 1998). However, the contents of this article have not clearly been implemented in higher institutions in many countries as the needs of SWD such as providing effective learning environment that could enhance academic participation, as it is the key to success in secondary education remained largely unnoticed hence this study filled the gap.

1.4. Education and socialization of the child with down syndrome.

Socialization is the process whereby individuals are made aware of behaviors that are expected of them with regards to the norms, beliefs, attitudes, and values of the society in which they live. Socialization is the process by which children and adults learn from others. (Kuh, 1993). We begin learning from others during the early days of life; and most people continue their social learning all through life (unless some mental or physical disability slows or stops the learning process). (Maria Voinea, 2000). Sometimes the learning is fun, as when we learn a new sport, art or musical technique from a friend we like. At other times, social learning is painful, as when we learn not to drive too fast by receiving a large fine for speeding. (Zamfir and L. Vlăsceanu, 1993).

1.4.1. Types of Socialization and description

Socialization is an important aspect in the life of children with down syndrome therefore, the teachers, parents and care givers of these children have to play an active role to help thischildren gain these skills. There exist different types of socialization which is of help to the children with down syndrome. These are:

Table 1: types of socializationa and description

Types	Description
Primary Socialization	Primary socialization occurs when a child learns the attitudes, values, and actions appropriate to individuals as members of a particular culture. Henslin (1999:76) For example, if a child saw his/her mother expressing a discriminatory opinion about a minority group, then that child may think this behavior is acceptable, and could continue to have this opinion about minority groups.
Secondary Socialization	Secondary socialization refers to the process of learning that what is appropriate behavior as a member of a smaller group within the larger society. Maria Voinea (2000). It is usually associated with teenagers and adults, and involves smaller changes than those occurring in primary socialization; e.g., entering a new profession or relocating to a new environment
Developmental Socialization	Developmental socialization is the process of learning behavior in a social institution or developing your social skills. (Freda & Pollack, 1997).

Source: Henslin, 1999, *primary socialization*, pg 79

Agents of socialization

Different people and agents are responsible for socialization at a different level. It is therefore necessary to be able to know these agents and how they influence the life of children with down syndrome. These agents are:

Table 2: agents of socialization and description

Agents	Description
Mass Media	Theorists, like Parsons, and textbook authors, like Ely Chinoy (1960), and Harry M. Johnson (1961), recognized that socialization didn't stop when childhood ended. They realized that socialization continued on into adulthood, but they treated it as a form of specialized education. Johnson (1961), for example, wrote about the importance of inculcating members of the US Coastguard with a set of values so as to respond to commands and act in unison without question. Some scholars accused theorists of socialization of not recognizing the importance of the mass media which, by the middle of the twentieth century, was becoming more significant as a social force. There was concern about the link between television and the education and socialization of children, a concern that continues today, but when it came to adults, the mass media were regarded merely as sources of information and entertainment, rather than molders of personality.
Peer Groups	A peer group is a social group consisting of people who are equal in such respects as age, education, or social class. Friendship groups and age grades are also known as peer groups. In course of child's growth, he is motivated to be with the friends of his age. It is mainly prominent from teen ages to adulthood. (Elkin & Handel, 1978).
School	The school is another important and crucial agent of socialization. The child who has been with the family for years extends his relationship with the outer society through school. The child receives his school education from six to eighteen years. Parental expectations and perceptions of their children's development of both cognitive and motor skills serve to affect the transition to the school environment (Coates & Wagenaar, 1999). The school is known as a micro system and it is an institution where learning takes place and individuals develop.
Family	Family is the most important and crucial institution of socializing a child. Soon after the birth, a child has to be with the mother and the child learns particular behavioral patterns from her. Of course, this is a crucial experience in his/her life. Subsequently he/she learns to interact with other members/individuals in the family. (McQuail 2005: 494). Activities such as sucking milk, smiling, carefulness and tottering are important in primary socialization. The infant gets fulfilled all physical and psychological needs within the family itself.

Source: Elkin & Handel, 1978. *Agents of socialization*. P 494

1.4.2. Role of a teacher in socialization

The teacher plays an important part in the life of children with down syndrome, it is important to note that these children spend the larger part of their day with these teachers and they have

the opportunity to better work a help these children out. The role of the teacher in socialization are:

Table 3: role of a teacher in socialization

Role	Description
Implement social skills training	Teachers can incorporate structured social skills training programs into the classroom curriculum to explicitly teach social skills to children with Down syndrome. These programs can focus on areas such as understanding social cues, initiating and maintaining conversations, and appropriate social behaviors (Nadel & Rosser, 2003).
Provide peer modeling and peer support:	Pairing children with Down syndrome with typically developing peers can provide opportunities for modeling appropriate social behaviors and fostering positive social interactions. This can be done through activities such as cooperative learning or buddy systems (Nadel & Rosser, 2003).
Foster inclusive educational settings:	Inclusive classrooms that promote interaction between children with and without disabilities can enhance socialization for children with Down syndrome. This can involve creating opportunities for collaboration, group work, and shared learning experiences (Nadel & Rosser, 2003).
Use visual supports:	Visual supports, such as visual schedules, social stories, or visual cues, can help children with Down syndrome understand social expectations and routines. These visual supports can assist them in navigating social situations and understanding appropriate behaviors.
Promote positive peer relationships	Teachers can facilitate the development of positive peer relationships by encouraging cooperation, empathy, and kindness among all students. This can be done through team-building activities, cooperative games, and promoting a supportive classroom.
Provide individualized support:	Recognizing that each child with Down syndrome may have unique needs, teachers can provide individualized support to address specific socialization challenges. This may involve adapting instructional strategies, providing additional practice opportunities, or offering one-on-one guidance (Fidler, 2005).

Source: Nadel & Rosser, 2003. *Role of the teacher in socialization P678*

By implementing these strategies, teachers can create an inclusive and supportive classroom environment that fosters socialization and positive social interactions for children with Down syndrome.

1.5. Attention in children with down syndrome.

Legerstee and Fisher (2008) also found that children with Down's syndrome produced coordinated attention at a similar mental age to typically developing children, but this was in limited a 'higher mental age' group in their sample (as measured using the Bayley Scales of Infant Development (Bayley, 1969)). This group had a mental age of 16.6 months

(chronological age 22.8 months) compared to a 'lower mental age group' who had a mental age of 8.5 months (chronological age 17.6 months). All the children with Down's syndrome went on to produce less declarative pointing than mental age matched typically developing groups. Children with Down syndrome often face attention problems that can impact their learning and development. These attention difficulties can manifest in various ways, including difficulties in sustaining attention, impulsivity, and difficulty shifting attention from one task to another. In this response, I will provide some information on the attention problems faced by children with Down syndrome, along with relevant in-text citations and references.

Table 4: Attention difficulties in children with down syndrome and description.

Difficulties	**Description**
Sustained attention difficulties:	Children with Down syndrome often struggle with sustaining attention for extended periods of time. They may have shorter attention spans compared to typically developing children, which can affect their ability to concentrate on tasks or activities. Research by Edgin and al. (2010) found that children with Down syndrome demonstrated poorer sustained attention compared to typically developing children of the same mental age.
Impulsivity:	Impulsivity is another attention problem commonly observed in children with Down syndrome. They may have difficulty inhibiting impulsive responses, leading to challenges in controlling their behavior. A study by Vicari et al. (2004) found that children with Down syndrome showed higher levels of impulsivity compared to typically developing children.
Shifting attention difficulties:	Children with Down syndrome often struggle with shifting their attention from one task to another. They may have difficulty transitioning between activities or switching their focus when required. Research by Lanfranchi et al. (2010) revealed that children with Down syndrome exhibited deficits in attention shifting abilities compared to typically developing children. To help boost the attention of children with Down syndrome, various strategies and interventions can be implemented. Here are some suggestions supported by research:
Use visual supports:	Visual supports, such as visual schedules, visual timers, and visual cues, can help children with Down syndrome understand and follow routines and tasks. These supports provide clear and concrete information, which can enhance their attention and understanding.
Break tasks into smaller steps:	Breaking tasks into smaller, manageable steps can help children with Down syndrome focus their attention and complete tasks more effectively. This approach reduces the cognitive load and allows them to concentrate on one step at a time.

Provide clear instructions**:**	Clear and concise instructions are essential for children with Down syndrome to understand what is expected of them. Using simple language, visual cues, and gestures can enhance their comprehension and attention.
Utilize structured environments:	Creating structured environments with predictable routines and clear expectations can support the attention of children with Down syndrome. Consistency and organization help them know what to expect and provide a sense of stability.
Incorporate multidisciplinary learning:	Multisensory learning approaches, such as using visual aids, manipulatives, and hands-on activities, can engage multiple senses and enhance attention in children with Down syndrome. This approach promotes active learning and can help sustain their interest.
Individualized instruction	Tailoring instruction to the specific needs and abilities of each child with Down syndrome is crucial for promoting attention. Individualized instruction considers their strengths, interests, and learning styles, which can increase engagement and motivation

Source: Edgin and al. 2010, *attention difficulties in children with down syndrome, pg 209.*

1.6. Memory in children with down syndrome.

Difficulties within the working memory (WM) system are a lifelong feature of many people with Down's syndrome. To frame the differences in working memory found in individuals with Down's syndrome this study has taken the revised working memory model from Baddeley (2000). This model has been extensively used across research in working memory and in research into people with Down's syndrome. This model of working memory is particularly fitting to understanding working memory in people with Down's syndrome because offers a clear distinction between the verbal and the visuospatial dimensions. People with Down's syndrome appear to learn better with visually presented materials and visuospatial processing is consistent with general levels of cognitive function (Baddeley & Jarrold, 2007). Verbally presented materials, or that which can be labelled verbally, appear to be more difficult for those with Down's syndrome to process or retain (Lanfranchi, Jerman, & Vianello, 2009).

Jarrold and Baddeley (1997) suggest that an inability to retain and manipulate verbal information stems from problems with the phonological loop system. The limitations of the verbal aspect of WM in individuals with Down's syndrome is shown through research finding typical digit spans ranging between 2 and 6 (E. K.-R. Bird & R. S. Chapman, 1994). Even when spoken numbers are supported with visual aids difficulties persist. Because items which can be verbally labelled are processed using the phonological loop system presenting the numbers

visually does not enable improved performance in people with Down's syndrome (Jarrold, Baddeley, & Phillips, 2002).

In contrast, memory functions utilising the visuospatial sketchpad appear to be less affected in people with Down's syndrome and have found to be consistent with other measures of general intelligence (Jarrold & Baddeley, 1997). However recent examinations of separate sub-systems of the visuospatial working memory have revealed dislocations in the way the visuospatial WM system may work in people with Down's syndrome. Lanfranchi, Carretti, Spano, and Cornoldi (2009) examined the distinction between spatial-simultaneous WM and spatial-sequential WM in children with Down's syndrome. Spatial-simultaneous WM requires remembering spatial locations of more than one object at a time (in their study the starting positions of two frogs on a simple chess board). Whereas spatial-sequential WM requires sequentially ordered information to be remembered (in this case remembering a path taken by one frog on a simple chess board).

They found that the children with Down's syndrome performed similarly to their verbal age matched typically developing controls on the spatial-sequential tasks, but below the typically developing group in the spatial-simultaneous tasks. Whilst the reasons for this imbalance are still unclear it may be linked to the way representations are used or because of the dynamic nature of the spatial-simultaneous task process (Lecerf & De Ribaupierre, 2005; Pickering, Gathercole, & Peaker, 1998). It's clear this area requires further research and it does suggest that the common conception that people with Down's syndrome have an intact visuospatial WM function may not be entirely accurate.

Other aspects of the working memory system in individuals with Down's syndrome have also been of interest to researchers. Executive functions (EF), a group of control processes which regulate purposeful attentional systems such as planning, inhibitory control, reasoning, set shifting and rule use, have found to be impaired in adults and adolescents with Down's syndrome (Rowe, Lavender, & Turk, 2006). Some studies suggest a global impairment in EF in line with lowered cognitive functioning (Lanfranchi, Jerman, Dal Pont, Alberti, & Vianello, 2010), whilst others suggest more specific difficulties. Carney, Brown, and Henry (2013) found that their cohort of individuals with Down's syndrome showed a poorer response than typically developing controls in tasks which measured Executive Load Working Memory and required concurrent processing and storage.

A number of studies have further investigated the role of executive functions in people with Down's syndrome. Borella, Carretti, and Lanfranchi (2013) examined how the inhibitory systems may be affected by poor executive functioning. A range of tasks were used to tap into three areas of inhibitory control: 1) Prepotent response inhibition (being asked to subvert a 'natural' response), 2) Response to distracter inhibition (how well a more interesting or appealing item can be ignored) and, 3) Resistance to proactive interference (how well interference can be ignored). The children with Down's syndrome (aged 10 – 19) performed less well in all the tasks than their typically developing counterparts and in particularly in the prepotent and distracter tasks. This group were unable to control distracting information and in particular found it difficult to forget words they had been asked not to remember. The authors suggest that this could lead to the words having a ''distracting' effect, remaining in their working memory, cluttering up its limited capacity.' (Borella et al., 2013, pg. 70)

There are several strategies and interventions that can help boost the memory of children with Down syndrome. It is important to note that these interventions should be individualized to meet the specific needs of each child. Here are some approaches that have been found to be effective:

Table 5: ways to boost socialization in children with down syndrome

Ways	Description
Use visual aids and cues:	Visual aids, such as pictures, charts, and diagrams, can help children with Down syndrome better understand and remember information. Visual cues can provide additional support for memory retrieval. (Lanfranchi et al., 2009)
Break tasks into smaller steps:	Breaking down tasks into smaller, manageable steps can help children with Down syndrome better process and remember information. This approach reduces cognitive load and facilitates memory retention.
Provide repetition and practice:	Repetition and practice are essential for memory consolidation. Repeating information and providing opportunities for practice can help children with Down syndrome reinforce their memory and improve retention.
Use mnemonic devices:	Mnemonic devices, such as acronyms, rhymes, or visual imagery, can aid in memory encoding and retrieval. These devices provide a structured and memorable way to remember information.
Incorporate multisensory approaches	Engaging multiple senses, such as sight, sound, and touch, can enhance memory encoding and retrieval in children with Down syndrome. Using multisensory approaches, such as hands-on activities or interactive games, can help improve memory performance.
Use assertive technology	Assistive technology, such as digital organizers or memory aids, can provide additional support for memory tasks. These tools can help children with Down syndrome manage and remember information more effectively.

Source: Lanfranchi and al., 2009. *Ways to boost the memory of children with down syndrome*.pg: 109

It is important to work closely with educators, therapists, and caregivers to develop an individualized plan for each child with Down syndrome. These professionals can provide guidance and support in implementing effective memory-boosting strategies.

1.7. Psychomotor skills and children with Down syndrome.

Fine motor skills are of crucial importance for children's everyday functioning. Fine motor skills can be defined as the coordination of muscles, bones and nerves to produce small precise movements (Kimmel & RatliffSchaub, 2011). A study by Wuang et al. (2008) found a high prevalence of sensorimotor dysfunctions in children with mild intellectual disability. These authors also found that in children with intellectual disability, fine motor skills are more impaired than gross motor skills.

They are necessary for a number of self-care activities such as dressing, feeding, bathing, holding objects, cutting. Besides this, fine motor skills are related to cognitive, social and academic abilities in young children (De Luca et al., 2013). Furthermore, motor functions significantly predict social and emotional adjustment of children to school (Bart et al., 2007). A large study conducted by Gligorović et al. (2011) clearly indicated that motor abilities are significantly correlated with the prerequisites of academic skills. Development of psychomotor abilities of upper extremities is in direct correlation with psychosocial development of personality (Ćordić & Bojanin, 1997). Motor development is dependent on the maturation of the Central Nervous System (CNS) and subsequent maturation of the CNS happens through its myelination (Piper et al., 1994).

Children with intellectual disability, including children with Down syndrome, are at risk of having fine motor skills delays compared to typically developing children. In this regard it is important to note that fine motor skills can be significantly improved through rehabilitation (Mitchell, 1997, pg. 72). It is encouraging that motor skills can be enhanced, even in children with severe intellectual disability (Pizzamiglio et al., 2008). The role of special educators/ rehabilitators is very important in this process. Their role is multilayered and consists of: *assessment of fine motor skills, creation of Individual Rehabilitation Plan, implementation of the plan/therapeutic intervention, and evaluation of the intervention.* As with any other rehabilitation service, same rules should be applied in improving the motor skills of children with Down syndrome. The remediation intervention needs to start as early as possible to

prevent or to reduce future problems. Special educators/rehabilitators are responsible for the whole process and need to follow children at risk starting from the earliest age through kindergarten and school years. Only by this systematic intervention the gap in motor skills between children with ID and typically developing children can be reduced. These rehabilitation programs are extremely important as the improvement of motor skills leads to the improvement of the quality of life. More emphasis is now being given to independent life of people with Down syndrome with adequate supports.

Children with Down syndrome often experience challenges with their gross motor skills, which involve the use of large muscle groups for activities such as crawling, walking, running, and jumping. These difficulties can impact their overall physical development and coordination. Here are some common gross motor skills problems observed in children with Down syndrome:

Table 6: gross motor skills challenges in children with down syndrome

challenges	Description
Delayed motor milestones:	Children with Down syndrome may reach developmental milestones, such as sitting up, crawling, and walking, at a later age compared to typically developing children (Ulrich et al., 2001).
Hypotonia:	Hypotonia, or low muscle tone, is a common characteristic of Down syndrome. It can affect the strength and stability of the muscles, making it challenging for children to maintain proper posture and perform gross motor activities (Ulrich et al., 2001).
Balance and coordination difficulties:	Children with Down syndrome may struggle with balance and coordination, leading to difficulties in activities such as walking in a straight line or riding a bike (Ulrich et al., 2001).
Poor spatial awareness:	Spatial awareness refers to the ability to understand one's body position in relation to the surrounding environment. Children with Down syndrome may have difficulties with spatial awareness, which can impact their ability to navigate through space and participate in activities that require precise movements (Ulrich et al., 2001).
Motor planning challenges:	Motor planning involves the ability to plan and execute movements in a coordinated manner. Children with Down syndrome may have difficulties with motor planning, which can affect their ability to perform complex motor tasks (Ulrich et al., 2001).
Muscle weakness:	Muscle weakness is commonly observed in children with Down syndrome, which can affect their overall physical strength and endurance (Pitetti et al., 2007).
Gait abnormalities:	Children with Down syndrome may exhibit gait abnormalities, such as toe-walking or an uneven stride, which can impact their ability to walk efficiently and maintain balance (Pitetti et al., 2007).

Source: Ulrich and al., 2001. *Gross motor skills challenges in children with down syndrome*

It is important to address these gross motor skills problems through targeted interventions and support to help children with Down syndrome improve their overall physical development and coordination. Boosting the psychomotor skills of children with Down syndrome requires a combination of targeted interventions and individualized support. It is important to work with a team of professionals, including occupational therapists, physical therapists, and educators, to develop an individualized plan for each child with Down syndrome. These professionals can provide guidance and support in implementing effective interventions to boost psychomotor skills. Here are some strategies that have been found to be effective:

Table 7: ways to boost the psychomotor skills of children with down syndrome

Ways	Description
Occupational therapy:	Occupational therapy focuses on improving fine motor skills, coordination, and sensory integration. It involves activities such as manipulating objects, drawing, and using tools to enhance motor skills (Ulrich and al., 2001).
Physical therapy:	Physical therapy aims to improve gross motor skills, strength, balance, and coordination. It includes exercises, stretches, and activities that promote physical development and mobility.
Use of adaptive equipment:	Adaptive equipment, such as specialized utensils or assistive devices, can help children with Down syndrome overcome physical challenges and perform daily tasks more independently.
Structured physical activities	Engaging children with Down syndrome in structured physical activities, such as sports or dance classes, can help improve their motor skills, coordination, and overall physical fitness (Ulrich and al., 2001).
Visual-motor integration exercises:	Visual-motor integration exercises involve activities that require coordination between visual perception and motor skills. These exercises can enhance hand-eye coordination and fine motor control.
Task analysis and practice:	Breaking down complex tasks into smaller steps and providing repeated practice can help children with Down syndrome develop and refine their motor skills.
Sensory integration therapy:	Sensory integration therapy focuses on addressing sensory processing difficulties that may impact motor skills. It involves activities that stimulate different senses to improve motor planning and coordination.

Source: Ulrich and al., 2001. ***Ways to boost the psychomotor skills in children with down syndrome P105***

1.8.Cognitive theory

1.8.1. Theory of the mind by Premack and Woodruff

The ability to ascribe, assign, attribute mental states (like believe, think, desire, attempt) to others and to oneself is referred to as Theory of Mind, as it was originally called by Premack and Woodruff (1978), defined also by other authors as the ability to attribute mental states to

others and to see these as the basis of people's actions (Bosacki, 2000). It would therefore be considered as a prerequisite skill for human interaction, in so much as it is necessary to understanding, explaining, predicting and manipulating the behavior of others (Yirmiya, Erel, Shaked, & Solomonica-Levi, 1998). Besides, Theory of Mind favors self-control, self-understanding and any type of social interaction (Zelazo & al, 1996). To have a Theory of Mind (ToM) is to have the ability to reason about one's own and others' mental states (Benson & al 1993), to recognize them as the same or different (Yirmiya & al, 1996), and use them to explain and predict actions.

There does seem to be certain agreement concerning its gradual development during the early years of a child's life (Yirmiya *et al*., 1998), pointing to four years of age as the moment when clear indicators of the presence of this competence begin to appear (Wimmer & Perner, 1983). Around 18 months the child has developed the symbolic play and is able to recognize the intentions of behavior of adults by watching their faces. During the second year of life people are understood as "armor wrapping intentions, desire" (Baron-Cohen, 1995). At three years the child has begun to demonstrate a wide understanding of mental states, and between three and four years is already able to understand false beliefs, distinguish between appearances and reality, understand the concepts of desire and intention, as well as different sources of beliefs, attributing them causal functions of behavior (Yirmiya *and al*., 1998).

Interest in the study of ToM was awakened by the work of Baron-Cohen *and al.* (1985), who suggested that the lack of competence in social interaction and self-understanding characterizing autism would be explained by the absence of a ToM in persons with this disorder. These authors evaluated the ability to attribute beliefs to others and predict their behavior in autistic children, children with Down syndrome and children with no development deficit.

'Theory of Mind' refers to the cognitive capacity to attribute mental states to self and others. Other names for the same capacity include "commonsense psychology," "naïve psychology," "folk psychology," "mindreading" and "mentalizing." Mental attributions are commonly made in both verbal and non-verbal forms. Virtually all language communities, it seems, have words or phrases to describe mental states, including perceptions, bodily feelings, emotional states, and propositional attitudes (beliefs, desires, hopes, and intentions). People engaged in social life have many thoughts and beliefs about others' (and their own) mental states, even when they don't verbalize them. In hindsight one might say that the philosopher Wilfrid Sellars

(1956) jumpstarted the field with his seminal essay, "Empiricism and the Philosophy of Mind". He speculated that the commonsense concepts and language of mental states, especially the propositional attitudes, are products of a proto-scientific theory invented by one of our fictional ancestors. This was the forerunner of what was later called the "theory-theory." This idea has been warmly embraced by many developmental psychologists.

1.8.2. Theory of the mind and Down syndrome

Studies in which autism and developmental delay are compared to analyze ToM usually include children with Down syndrome and retarded children without a definite etiology. It is understood that people with Down syndrome have attention, social and emotional characteristics which, a priori, would be related to skills typical of ToM tasks, so they would seem to be considered as an ideal group for comparison in studying the difficulties unique to autistic children (Shaked & Yirmiya, 2004). When autistic children are compared to children with Down syndrome, these seem be socially sensitive and attentive to the emotions of others (Kasari, Freeman, & Hugues, 2001), with a higher degree of social competence and solve ToM tasks correctly. Nevertheless, their action in this type of tasks is not as good as expected in children with normal development (Yirmiya & *al*., 1998). In this sense, Zelazo and *al*. (1996) found that 9 out of 12 adults with Down syndrome (and a mental age between 3.9 and 6.3) failed to solve tasks typical of ToM, while children without difficulties and of the same mental age completed them successfully.

Several studies in this direction (Watson, 1997) have provided data in favor of the relevance of parent-child interactions in forming ToM in children, concluding that the skills that define it are not simply given. It is suggested that the ability to describe, assign, and attribute mental states to others and to oneself originates as a part of socialization, and therefore, in the interactions of the child with his most immediate social surroundings. There is no doubt about how useful it would be for people closest to the child (at time of his earliest development, although later it will be also, as mentioned, a social interaction skill of the utmost importance) if he were able to give them information about his "mental states", as this knowledge would allow them to make predictions, control and prepare themselves for what he is going to do (Skinner, 1974). It could be said that persons with Down's Syndrome have difficulties in putting themselves in the place of the other this is due the fact that they find in hard to recognize emotions of other people and even demonstrate or explain their behaviors based on their

disability but could be able to learn it if they are given suitable time, resources and help from the teachers, care givers and parents.

In studies of non-verbal requesting behaviors, children with Down's syndrome have been found to produce fewer instrumental requests (the child's use of gestures and eye contact to elicit assistance from an adult in achieving a goal) than their typically developing peers (Mundy & al, 1988). Fidler & al 2005 also found they showed weaker problem-solving behaviors linked to inefficient requesting behaviors.

Alongside the split between requesting gestures and joint attention gestures, Fidler & al. (2005) also found that that children with Down's syndrome needed more help with problem solving tasks and had poorer quality reach strategies. They concluded that children with Down's syndrome may have a particular deficit in the way they approach problem solving and this could be linked to poor instrumental requesting. However, they caution that this interaction could work in either direction. In the same study it was found there was no difference in the way children with Down's syndrome and typically developing children used gesture to coordinate their focus with an adult (joint attention). This is an important indicator that, initially at least, toddlers with Down's syndrome may have some of the emerging skills necessary for developing theory of mind skills. However, this must be caveated with the ages of the children in the study. The children with Down's syndrome were on average 2 years and 10 months and in contrast the typically developing children were on average 18 months. So although there was joint attention ability in the Down's syndrome group, it appeared much later than we would see in typically developing children.

1.8.3. Working memory, language, social understanding and theory of mind

1.8.3.1. Working memory

The working memory is a system which refers to the cognitive system which absorbs information, holds it for a very short while and then either transfers the information to long-term memory or 'forgets' it. Baddeley and Hitch's model (Baddeley & Hitch, 1974) proposes a multi component model of working memory which comprises of a phonological loop system for the short-term storage of verbal input and a visuospatial sketchpad for immediate handling of visual and spatial cues, both of which feed information to the central executive which is a 'limited capacity attentional control system' (Jarrold & Baddeley, 1997, P. 926) but which has no space for storage. Baddeley's revision (Baddeley, 2000) added an episodic buffer to the model; this component stores and converts information from the phonological loop and the

visuospatial sketchpad into 'episodes. This then feeds into both the central executive and the long-term memory systems.

The importance of the working memory system to the development of theory of mind is twofold. From the time the child is beginning to mentally represent the present they are using their working memory to momentarily hold in mind the representation. In order to pass the false belief task (Wimmer & Perner, 1983), the child must hold in mind two representations, the reality of the situation and the character's false belief. This requires an efficient working memory in which material doesn't deteriorate too rapidly.

The second way the working memory system is implicated in theory of mind development is through the functions of the central executive. Executive functions are the complex set of processes which enable us to, for example, plan, control inhibition and task and rule switch. This purposefully vague description highlights the difficulty scholars have in trying to describe this *'ragbag into which could be stuffed all the complex strategy selection, planning, and retrieval checking that clearly goes on when subjects perform even the apparently simple digit span task.'* (Baddeley, 1996, pg. 6)

It is suggested that inhibitory control in particular plays an important part in children's ability to respond to the false belief tasks because the child has to inhibit their natural tendency to point to the actual whereabouts of the toy/chocolate. Carlson and Moses (2001) found that children with better inhibitory control responses performed better on a range of theory of mind tasks. When examining the relationship between inhibitory control and performance of false belief tasks in particular, Carlson, (2002) found that *delayed* inhibitory control (where the subject has to delay answering) had no correlation with performance on false belief tasks and neither did performance on working memory tasks alone. However, the combined effect of working memory performance and *conflict* inhibitory control performance (where the subject has to hold in mind two responses, the correct and incorrect and then select the response which conflicts with their prepotent response) were highly correlated with performance on false belief tasks.

1.8.3.2. Language development

Language developments spanning from the pre-verbal stage to an ability to describe someone else's false belief form a crucial part of the child's developing theory of mind (Astington & Baird, 2005). In the first instance, language is one type of initiation into the symbolic form; spoken words are not 'things', they stand for things. By learning to use language the child is

learning to use a type of symbolic representation, it is an insight into the non-physical properties of symbols (Nelson, 2005). This ability to separate the 'real' from the linguistically symbolic may pave the way for children's later separation of physical entities and mental entities. Children begin to label their own desires early on. However, Wellman and Estes (1987) found that although children talk about wants and desires around the age of 2, they don't use terms which express a mental state, such as 'think', 'know' and 'believe', in their proper context until around their 3rd birthday. Dunn's (1988) findings agree; from her observations of children between 14 and 36 months she suggests that throughout their 3rd year children are increasingly interested in how others are feeling and others' mental states.

Studies into parent-child interactions show that exposure to mental state language in young children can influence theory of mind development in later years (Villanueva, & al 1994). In support of this idea research suggests that preschool deaf children in hearing families may miss out on important conversations relating to others' thoughts, feelings and desires which has a later impact on their development of theory of mind (Peterson & al 2002). As the majority of hearing families are not fluent signers, conversations about internal states are not translated for the hearing-impaired child and so their exposure to such language is limited.

1.8.3.3. Social understanding and theory of the mind

Since the development of a theory of mind has at its core a social purpose, (to understand self and others) it may be presumed that the child's social development runs in conjunction with theory of mind (Caputi, & al 2012). Indeed, we can see how the social child develops throughout the 'precursors to theory of mind' imitation, joint attention and pretend play are all social acts.

This study sparked huge interest in this research field and a number of studies have replicated this finding (Baron-Cohen, & al 1994). Much of the discussion surrounding this debate relates to the interaction between theory of mind and the triad of social skill difficulties which those with down syndrome can show; social and emotional difficulties, language and communication impairments and difficulties with flexibility of thought. Some studies tentatively suggest that difficulties with social interaction and communication may lead to poor theory of mind construction (Peterson & Siegal, 1999), which raises interesting questions as to whether this may also be happening in other groups of children, such as those presented in this study.

Children's development of understanding about themselves and others' as social beings begins with an understanding of their own emotional selves and then of others. Children understand

that they are, as others are, emotional beings much earlier than they can ascribe beliefs or thoughts to themselves or others (Dunn, 1988). Their emotional understanding of others develops into a desire-behaviour theory (she is sad because she wanted a biscuit but there weren't any) and eventually into a belief theory (she believed there were biscuits but there weren't, so now she is sad). Children's understanding may be developed, in part, through asking questions about the world around them, specifically about others' inner states (Dunn, 1988). When children talk about the mind, they say 'I think', not 'my mind thinks' and so their relationship with the mind is wholly personal, it is about their being. When they begin to ask about others' mental states they do not ask 'Why did her mind think that?' they attribute the mind to the person; 'Why did she think that?'.

By the time the child is 4 years old, and they are able to pass the false belief tasks, a range of new social skills have also begun to emerge. Wellman (2014: P 58)) suggests that *'As children acquire an explicit preschool belief desire psychology, their social actions and interactions are changed'*. In hide and seek games the child no longer hides in full view and says 'Come and find me' but is beginning to understand the rules and concepts that underlie such games (Peskin & Ardino, 2003). At the same time their ability to deceive another person has developed and their lives are more effective in controlling another person's behaviour (Talwar & Lee, 2008). Pro-social behaviors also develop and children of 4 and 5 begin to show a greater understanding in social games (Astington & Jenkins, 1995).

This link between theory of mind skills and social competence may well continue into later childhood, impacting on peer relationships throughout school (Caputi & *al.*, 2012). What is not established is the causal link between social understanding and theory of mind, or indeed whether the links are concerned with 'social understanding' as a whole or with specific areas (Hughes & Leekam, 2004). Does a more socially aware baby develop theory of mind skills earlier, or does the early development of theory of mind allow for a more socially competent 4year old? The acquisition of theory of mind is a crucial part of a child's development; children who struggle to develop an initial understanding of others' beliefs and desires could find the socially complex worlds of the community, the playground and the classroom inaccessible and incomprehensible (Repacholi, 2003).

1.9. Piagets theory of constructivism

Piaget meant that learning occurs in distinct, age related stages: Jean Piaget states that there are "four invariant stages of cognitive development that are age related" (Merriam & Caffarella,

1999, p. 139). Piaget's research placed importance on two major issues, "formation of knowledge" and "increase of knowledge" (Shengfeng Tu, 1991). He believed that the process of thinking is generated from proceedings from the concrete well as learning patterns. According to the authors, Piaget contends that normal children will reach the final stage of development, which is the stage of formal operations, between the age of twelve and fifteen.

Piaget's theory worked on this principle of cognitive equilibrium (from the interplay of assimilation and accommodation processes) which balances prior information with new input (Mitchell, 1997, P. 72). He saw cognitive development as occurring in a series of four distinct stages characterized by increasingly sophisticated and abstract levels of thought. These stages always occur in the same order, and each build on what was learned in the previous stage (Bruner, 1966)". Each stage takes on a more mature perspective on reality. This changes how children view the world and assimilate new information. He did recognize the importance of helpful others and called the process "support" or "assistance social transmission".

Piaget's research placed importance on two major issues, "formation of knowledge" and "increase of knowledge" (Shengfeng Tu, 1991). So according to Piaget a learner can learn no matter their state of being as long as they are given the time to do that this is because according him every learner learns at a certain pace but what Piaget failed to mention the fact there are children who have disabilities and this their disabilities will make them not to follow the same developmental stages as other children. (J. Piaget, 1896-1980). Piaget talked about three stages of development in children. Which are:

The sensorimotor stage which refers to the period from birth to age 2. In this stage, children are inclined to perceive the outside world through movements and behaviors for children must learn to adjust their senses, such as vision, hearing, and touch, etc., in order to form them into a single action or behavior. The major concept completed in this stage is "object permanence". Later the reflex disappears and the baby chooses what and when to grasp. During this period the infants attain the concept of object permenance. This refers to the understanding that objects and events continue to exist even when they cannot directly be seen, heard or touched. Till this kind of understanding is achieved, an object that is out of sight remains out of mind and therefore, becomes non-existent.

Preoperational stage which refers to the period from ages 2 to 7. Children in this stage are able to form stable concepts by acting on objects, the most important developmental characteristics include the massive use of languages and symbols, features lie in concreteness, egocentrism,

focusing on certain details, and specious logic reasoning. During this stage the child develops the ability to think using symbols and signs. Symbols represent something or someone else; for example, a doll may symbolize a baby, child or an adult. This stage is characterized by egocentrism. Children believe that their way of thinking is the only way to think. A pre-operational child has difficulty in seeing more than one dimension or aspects of situation. It is called decentering. Children tend to refer to inanimate objects as if they have life-like qualities and are capable of actions.

Concrete operational stage which refers to the period from ages 7 to 11. He learns to add, subtract, multiply and divide. He is in a position to classify concrete objects. In short, children develop the abilities of rational thinking but their thinking is tied to concrete objects.

Formal operational stage where children begin to enter into the formal operational stage after age 11, during this period children's cognitive development reaches the peak for the abstract reasoning is present. They begin to think reversely with logics, can operate thinking in concrete objects, and rationally implement abstract and correlative reasoning using objects. Other important cognitive attainments during this period are: the ability to think about the hypothetical possibilities and to solve problems through logical deductions and in a systematic manner. The problem with this theory is that despite that fact Piaget gave all these stages of development and his ideas, he forgot or neglected the fact that there are children born with disabilities especially mental disabilities like down syndrome and due to this impairment, they cannot be able to cover these developmental milestones according to his timetable. But the theory is still valid in this research because he stated that children have the ability to learn if the conditions and their surroundings are favorable to them.

Implications of Piaget's theory in Education

By using Piaget's theory in the classroom, teachers and students benefit in several ways. Teachers develop a better understanding of their students' thinking. They can also align their teaching strategies with their students' cognitive level (e.g. motivational set, modeling, and assignments). Their goal is to help the individual construct knowledge. Conservation of constancy, as defined by Garner (2008), "is the ability to understand how some characteristics of a thing can change, while others stay the same". In other words, it is the realization that even though an object can be changed physically, some of the characteristics for that object remain the same. In order for students to develop their conservation of constancy skills, teachers must provide their students with opportunities to recognize similarities and differences at both the

physical and abstract level (Garner, 2008). Piaget emphasized the importance of active learning and exploration (Piaget, 1952). Incorporating hands-on activities, such as experiments, manipulative, and group projects, allows students to actively engage with the material and construct their own knowledge.

Piaget believed that children learn best through their own discovery and exploration (Piaget, 1970). Teachers can encourage this type of learning by providing open-ended tasks and problem-solving activities that allow students to explore different solutions and develop their critical thinking skills. According to Piaget, children go through stages of cognitive development and may require support from more knowledgeable individuals (Piaget, 1968). Teachers can provide scaffolding by breaking down complex tasks into smaller steps, offering guidance and support, and gradually reducing assistance as students gain proficiency.

Piaget recognized the importance of social interaction in cognitive development (Piaget, 1932). Teachers can promote peer collaboration, group discussions, and cooperative learning activities to encourage students to share their ideas, challenge each other's thinking, and construct new knowledge together. Piaget also proposed that, children adapt to new information by assimilating it into their existing schemas (Piaget, 1952). Teachers can facilitate this process by connecting new concepts to students' prior knowledge and experiences, providing real-world examples, and encouraging students to make connections between different subjects or topics.

It is important to note that while Piaget's theory has greatly influenced education, it is not without its criticisms and limitations. Some researchers argue that Piaget underestimated children's abilities and that individual differences should be considered (Lourenço & Machado, 1996). Therefore, it is essential to consider other theories and approaches to teaching and learning as well. Piaget's theory of cognition also known as Piagetian theory, is highly relevant in the classroom as it provides insights into how children think and learn. Here are some ways to apply Piaget's theory in the classroom:

Piaget emphasized the importance of active construction of knowledge by learners (Piaget, 1952). Teachers can adopt a constructivist approach by providing hands-on, experiential learning activities that allow students to actively explore and manipulate materials to construct their own understanding. Also, Piaget suggested that learners can benefit from support and guidance from more knowledgeable others (Piaget, 1976). Teachers can provide scaffolding by breaking complex tasks into smaller, manageable steps, offering prompts and cues, and

gradually reducing support as students gain mastery. According to Piaget, children in the concrete operational stage (ages 7-11) develop logical thinking and can perform operations on concrete objects (Piaget, 1952). Teachers can design activities that require students to manipulate concrete materials and engage in hands-on problem-solving tasks to promote their cognitive development.

Piaget's theory aligns with Vygotsky's concept of the ZPD, which refers to the gap between a learner's current abilities and their potential abilities with guidance (Vygotsky, 1978). Teachers can identify each student's ZPD and provide appropriate challenges and support to help them progress to higher levels of thinking. He advocated for discovery learning, where students actively explore and make their own discoveries (Piaget, 1952). Teachers can facilitate discovery learning by posing open-ended questions, providing opportunities for hands-on experimentation, and encouraging students to reflect on their findings.

It is important to note that Piaget's theory has been criticized for underestimating the role of social interaction and cultural influences on cognitive development (Wertsch, 1985). Therefore, it is crucial to consider other theories and perspectives when designing classroom practices and also Piaget in his theory did not consider children living with disabilities especially when it comes to children with down syndrome. He therefore did not note that these children have their own developmental progression which is different from the neurotypical child and hence will not be able to follow this steps according to the age that he stipulates.

In conclusion, children will develop at their pace at their own developmental timetable. No matter how slow the child seems to be developing if that child is given the necessary support and motivation the child will be able to fully develop. Children's development of understanding about themselves and others' as social beings begins with an understanding of their own emotional selves and then of others. Children understand that they are, as others are, *emotional* beings much earlier than they can ascribe beliefs or thoughts to themselves or others (Dunn, 1988). Also, motor functions significantly predict social and emotional adjustment of children to school (Bart & *al.*, 2007). A large study conducted by Gligorović and *al*. (2011) clearly indicated that motor abilities are significantly correlated with the prerequisites of academic skills. There are several strategies and interventions that can help boost the memory of children with Down syndrome. It is important to note that these interventions should be individualized to meet the specific needs of each child. Teachers can play a crucial role in improving socialization in the classroom for children with Down syndrome. Teachers can incorporate

structured social skills training programs into the classroom curriculum to explicitly teach social skills to children with Down syndrome. These programs can focus on areas such as understanding social cues, initiating and maintaining conversations, and appropriate social behaviors

CHAPTER TWO:

THE CHILD WITH DOWN SYNDROME AND PSYCHOEDUCATION

This chapter will be based on the educational support for children with down syndrome, the types of teaching strategies that are used to teach children with down syndrome, ways to support children with down syndrome in the classroom, psychoeducational support for children with down syndrome, how to motivate children with down syndrome, social cognitive learning theories like Brunner, sociocultural learning theory.

2.1. Psychoeducation support for the child with Down syndrome.

Psychoeducation is a treatment modality that is delivered professionally that integrates and synergizes psychotherapeutic and educational interventions. Many forms of psychoeducational intervention are based on traditional medical models designed to treat pathology, illness, liability and dysfunction. In contrast, psychoeducation reflects a paradigm shift to a more holistic and competence-based approach, stressing health, collaboration, coping, and empowerment (Dixon, 1999; Marsh, 1992). It is important to note that these strategies should be implemented in conjunction with ongoing assessment and individualized education plans (IEPs) that address the specific needs of each child with Down syndrome. Additionally, regular communication and collaboration between educators, parents, and other professionals involved in the child's education are crucial for ensuring a supportive and effective learning environment (Guralnick, 2017). Students with Down syndrome generally have good social skills. As is commonplace in a Montessori setting, using this strength to allow students to become role models for their peers in regards to socialization can provide a boost of confidence and an opportunity for them to truly shine.

2.2. Educational support for children with Down syndrome

As a result of the behavioral and cognitive phenotypes and additional medical needs, individuals with Down syndrome are often attributed to a specific learning style and range of measures are put in place in schools to aid learning. Parents play an important role in the development and education of learners with Down syndrome (DS), which is one of the most common congenital syndrome is caused by one extra copy of chromosome 21 (Livingston & Strydom 2012). It occurs once in every 700 births, but this number may vary from one in 500 to 1 000 (Hovorka & Naznin,2006).

Howell (2000) stresses the importance of the development of inclusive schools for learners who can benefit from it (Laws & Millward, 2001) because research supports the fact that people with intellectual disabilities can be taught and the best way would be in association with non-disabled learners (Seguin 1866 in 1907). Parents can also play an important role in helping to

prepare teachers informally with written material and personal information on their children, as well as talking to the child's classmates before the onset of inclusion, so as to help prepare them (Wolpert 2001).

A visual learning style: Children with Down's syndrome have phonological loop difficulties causing an inefficient verbal working memory, but a relatively efficient visual working memory (Jarrold and Nadel, 2008). Teachers are advised to use the stronger visual working memory to support learning and individuals with Down's syndrome are attributed with a 'visual learning style'. Modifications to teaching may come in the form of visual timetables, sign supported speech, a physical 'hands on' approach to abstract tasks and using the written word to support idea construction (Miller & Wong, 2004).

Pace and timing: Partly because of limitations with verbal short memory, and partly because of a general learning impairment a child with Down's syndrome can find the pace of everyday interactions fast and difficult to keep up with. Conversely, some children with Down's syndrome are bored easily by repetitive tasks and this may result in inconsistent results on tasks or refusal to comply (Wishart & Duffy, 1990).

Fine and gross motor difficulties: Many children with Down's syndrome find that poor control and strength of their motor skills limits their ability to succeed in classroom activities. Holding a pencil with enough strength and precision to write clearly and activities which require an element of physical detail (for example craft type activities) can be a challenge. Gross motor difficulties can make children with Down's syndrome appear clumsy and poor upper body strength can make sitting in chairs uncomfortable (Kelly, 2006).

Other modifications which are advised for children with Down's syndrome are clear and distinct images and text due to sight difficulties, short and precise information chunking to help with weak working memory and repeated activities to help with consolidation of new learning (Miller & Wong, 2004).

2.2.1. Applied behavioral analysis and Down syndrome

An applied behavioral analysis (ABA)-oriented approach is particularly ideal for targetting these areas in DS for several reasons. First, the three-term contingency is optimal for teaching these types of skills utilizing social reinforcement as the consequence. Given the relative strength in social relatedness observe in DS (Fidler & al 2005) utilizing social reinforcement would likely create a strong association between the antecedent (e.g., encountering a desired

object), and the desired behavior (e.g., requesting for that object with coordinated gaze and vocalization). Additionally, because children with DS show relative strengths in imitation skills (Fidler & al 2005), effective prompting would likely result in efficient learning of target behaviors, as children with DS would readily imitate the target behavior.

An additional feature of ABA that would be especially effective for targeted intervention in DS is differential reinforcement (Catania, 2007). Children with DS frequently engage in social behavior as a mechanism to avoid goal-directed and problem-solving tasks (Fidler, Philofsky, et al., 2005). While social reinforcement can be highly beneficial within the three-term contingency to create learned associations between stimulus and target behavior, implementing social reinforcement of escape (e.g., task-related) behavior could have a contraindicated effect. This use of social reinforcement would effectively shape the escape behavior to the extent that children with DS would learn to get avoid tasks by engaging in social behavior. Utilizing differential reinforcement, where social reinforcement is provided for desired behaviors, but escape behaviors are not attended to would effectively circumvent shaping escape from demands through social engagement.

There is also utility in an ABA approach to address challenging behavior observed in individuals with DS. Although DS is regarded as a neurogenetic disorder associated with relatively low levels of challenging behavior compared to other neurogenetic disorders, as well as autism, evidence is mixed and it is likely that problem behaviors are underestimated in this population. Individuals with DS show difficulty with expressive language (Fidler, 2005), which is an area specifically linked to increased risk in challenging behavior (Arron et al., 2011; McClintock, Hall, & Oliver, 2003).

2.2.2. Discrete trial training (DTT)

It is usually conducted in a one-on-one session with a therapist, breaks skills into small (discrete) units, and teaches them one by one, with the appropriate reinforcement as each unit is mastered. For example, in teaching speech skills, one unit may be devoted to producing the vocal sound S. The therapist will typically ask for the desired behavior, reward the correct response, and repeat the process until the sound is produced spontaneously. DTT may be used for teaching communication skills, social skills, and motor skills like writing letters of the alphabet. (Bentley et al., 2016).

Discrete trial training (DTT) is a one-to-one instructional approach used to teach skills in a planned, controlled, and systematic manner. DTT is used when a learner needs to learn a skill

best taught in small repeated steps. Each trial or teaching opportunity has a definite beginning and end, thus the descriptor discrete trial. Within DTT, the use of antecedents and consequences is carefully planned and implemented. Positive praise and/or tangible rewards are used to reinforce desired skills or behaviors. Data collection is an important part of DTT and supports decision making by providing teachers/practitioners with information about beginning skill level, progress and challenges, skill acquisition and maintenance, and generalization of learned skills or behaviors. The cornerstone of DTT is the use of task analysis to break down skills into small teachable steps (Cohen, 2002). To complete a task analysis, each step of the skill is broken down and listed in sequential order

2.2.3. **Ways to support children with Down syndrome in the classroom**

Provide opportunities for students to serve as social skills role models. Here, students with Down syndrome generally have good social skills. As is commonplace in a Montessori setting, using this strength to allow students to become role models for their peers in regards to socialization can provide a boost of confidence and an opportunity for them to truly shine.The Montessori Method encourages following the child and allowing them to set the pace for their learning. Applying this principle gives children with Down syndrome the freedom to take the time they may need to get acclimated to a project and will eliminate the frustration that is likely to arise from the feeling of being rushed.

Additionally, if they are feeling as though it is difficult to concentrate on a particular work, children with Down syndrome should be allotted the freedom to move on to another work for a period of time and come back to the first when they feel they are better able to focus. Giving students with Down syndrome enough time to process language and respond is also beneficial in ensuring they comprehend information. (Kumin, 2012). In all possible situations, providing visual aids (such as demonstrations, pictures, and illustrations) can assist students with Down syndrome in understanding and processing information. (Kumin, 2012)

Although intrinsic motivation is encouraged in the Montessori environment, taking the time to foster a sense of motivation for students with Down syndrome is crucial to helping them remain engaged with their learning. (Kumin, 2012). For students with Down syndrome, providing the appropriate supports within the prepared environment will be crucial to their success in the classroom. The guide should ensure the child has a choice of work spaces with the appropriate table height and foot support to prevent muscle fatigue. Providing something for a child to lean

against to ensure their back is supported will also be important when students with Down syndrome are working on the floor.

Although Montessori guides should always exhibit these qualities as the prepared adult, it is imperative that these feelings are made clear to students with Down syndrome who may be feeling discouraged and frustrated. Acknowledging and validating the child's feelings, encouraging them, and providing praise in the form of specific observations can motivate these students and allow them to reach their full potential. (Kumin, 2012).

Table 8: Special teaching strategies that can be effective for children with Down syndrome.

Teaching strategies	**Description**
Individualized instruction:	Tailoring instruction to meet the specific needs and abilities of each child with Down syndrome can enhance their engagement and learning outcomes (Eisenhower, Baker, & Blacher, 2005). This may involve breaking tasks into smaller steps, using visual aids or prompts, and providing additional support as needed.
Multi-sensory approaches:	Incorporating multiple senses into the learning process can help children with Down syndrome better understand and retain information. For example, using hands-on materials, incorporating movement and gestures, and incorporating visual aids can enhance their learning experience.
Structured routines and visual schedules:	Establishing predictable routines and using visual schedules can help children with Down syndrome feel more organized and secure in the classroom. This can reduce anxiety and promote a sense of control and understanding.
Positive reinforcement and rewards:	Providing positive reinforcement and rewards for desired behaviors and accomplishments can motivate children with Down syndrome to actively participate in learning activities. This can include verbal praise, stickers, or small tokens of recognition.
Peer collaboration and support:	Encouraging peer collaboration and support can foster positive social interactions and enhance learning outcomes for children with Down syndrome. This can involve pairing them with a peer mentor or implementing cooperative learning activities.
Learning with visual supports	Research suggests that people with Down syndrome learn better when they can see things illustrated. This finding has been demonstrated across a number of areas of development including the acquisition of language, motor skills and literacy. This suggests that teaching

	will be more effective when information is presented with the support of pictures, gestures or objects.
Word reading	Many children with Down syndrome can develop reading abilities in advance of what might be expected for their cognitive and language levels. Reading makes an important contribution to vocabulary and language development for all children and this may be a particular benefit for children with Down syndrome, given their specific language delays.

Source: Eisenhower, Baker, & Blacher, 2005. *Teaching strategies for children with down syndrome.*

It is important to note that these strategies should be implemented in conjunction with ongoing assessment and individualized education plans (IEPs) that address the specific needs of each child with Down syndrome. Additionally, regular communication and collaboration between educators, parents, and other professionals involved in the child's education are crucial for ensuring a supportive and effective learning environment (Guralnick, 2017).

2.2.4. **Psychoeducational support and down syndrome**

Psychoeducation is a professionally delivered treatment modality that integrates and synergizes psychotherapeutic and educational interventions. Many forms of psychosocial intervention are based on traditional medical models designed to treat pathology, illness, liability, and dysfunction. In contrast, psychoeducation reflects a paradigm shift to a more holistic and competence-based approach, stressing health, collaboration, coping, and empowerment (Dixon, 1999). It is based on strengths and focused on the present. The patient/client and/or family are considered partners with the provider in treatment, on the premise that the more knowledgeable the care recipients and informal caregivers are, the more positive health-related outcomes will be for all. To prepare participants for this partnership, psychoeducational techniques are used to help remove barriers to comprehending and digesting complex and emotionally loaded information and to develop strategies to use the information in a proactive fashion. The assumption is that when people confront major life challenges or illnesses, their functioning and focus is naturally disrupted (Mechanic, 1995).

Psychoeducation embraces several complementary theories and models of clinical practice. These include ecological systems theory, cognitive-behavioral theory, learning theory, group practice models, stress and coping models, social support models, and narrative approaches (Anderson, Hogarty & al 1986). Under this umbrella, psychoeducation can be adapted for individuals, families, groups, or multiple family groups. Although psychoeducation can be

practiced one-on-one, group practice models set the stage for within-group dialogue, social learning, expansion of support and cooperation, the potential for group reinforcement of positive change, and network building (Penninx et al., 1999). They reduce isolation and serve as a forum for both recognizing and normalizing experience and response patterns among participants, as well as holding professionals accountable for high standards of service. Cognitive-behavioral techniques such as problem solving and role-play enhance the presentation of didactic material by allowing people to rehearse and review new information and skills in a safe setting. These can be amplified through specific attention to the development of stress management and other coping techniques (Anderson et al., 1986). Narrative models, in which people are encouraged to recount their stories as related to the circumstances at hand, are used to help them recognize personal strengths and resources and generate possibilities for action and growth (White, 1989).

2.3. Motivation and acquisition of knowledge

When an individual is driven by autonomous motivation, they may feel selfdirected and autonomous; when the individual is driven by controlled motivation, they may feel pressure to behave in a certain way, and thus, experience little to no autonomy (Ryan & Deci, 2008).

2.3.1. Intrinsic motivation

Intrinsic motivation comes from within. There are internal drives that inspire us to behave in certain ways, including our core values, our interests, and our personal sense of morality. According to cognitive evaluation theory, intrinsic motivation can be *facilitating* or *undermining*, depending on the social and environmental factors in play. Referring to the Needs Theory, Deci & Ryan (1985,2000) argue that interpersonal events, rewards, communication and feedback that gear towards feelings of competence when performing an activity will enhance intrinsic motivation for that particular activity. However, this level of intrinsic motivation is not attained if the individual doesn't feel that the performance itself is self-determined or that they had the autonomous choice to perform this activity.

2.3.2. Extrinsic motivation

According to Deci and Ryan, extrinsic motivation is a drive to behave in certain ways based on external sources and it results in external rewards (1985). Such sources include grading systems, employee evaluations, awards and accolades, and the respect and admiration of others. Extrinsic motivation varies according to the internalization and integration of the value of the

activity. Internalization is how well the value of an activity is felt while integration explains the process of individual transformation from external regulation to their own self-regulated version (Ryan & Deci, 2000). Success in goal-striving is more likely when we are supported by empathetic and supportive people, rather than controlling or directive people (Koestner & Hope, 2014).

2.3.3. How to motivate children with Down syndrome?

Motivating children with Down syndrome can involve various strategies that take into consideration their unique cognitive and developmental differences.

Table 8: strategies to motivate children with down syndrome

Strategies to motivate children with down syndrome	Description
Set realistic and meaningful goals	Help children set achievable goals that are relevant to their interests and abilities. Break down larger goals into smaller, manageable tasks to provide a sense of progress and accomplishment.
Provide appropriate supports and accommodations	Tailor learning materials and activities to meet the child's individual needs. Use visual aids, simplified instructions, and hands-on learning experiences to enhance understanding and engagement.
Offer choices and autonomy	Give children with Down syndrome opportunities to make decisions and have control over their learning experiences. This can increase their sense of ownership and motivation.
Provide clear expectations and structure	Establish consistent routines and clear expectations for behavior and tasks. This can help children with Down syndrome understand what is expected of them and feel more motivated to meet those expectations
Use motivational strategies tailored to the individual:	Understand each child's unique strengths, interests, and preferences, and tailor motivational strategies accordingly. Some children may respond well to competition or challenges, while others may be motivated by praise or rewards.
Use positive reinforcement	Praise and reward children for their efforts and achievements. Focus on their strengths and highlight their progress, which can boost their self-esteem and motivation.

Foster a supportive and inclusive environment:	Create a welcoming and accepting atmosphere where children feel valued and included. Encourage peer interactions and friendships to promote social motivation.
Increased engagement	Motivated children are more likely to actively participate in classroom activities, which can enhance their learning experience and overall academic progress.
Improved attention and focus	When children with Down syndrome are motivated, they are more likely to pay attention and stay focused on tasks, leading to better comprehension and retention of information.
Enhanced self-esteem	Motivation can boost a child's self-confidence and belief in their abilities. This positive self-perception can lead to increased willingness to take on challenges and persevere through difficulties.
Increased independence	Motivated children are more likely to take initiative and independently engage in learning tasks. This can foster a sense of autonomy and self-reliance, which are important skills for success in school and beyond.
Positive social interactions	Motivation can contribute to positive social interactions with peers, as children with Down syndrome may be more inclined to participate in group activities and engage in collaborative learning experiences
Development of a growth mindset	Motivation encourages children to view challenges as opportunities for growth rather than obstacles. This mindset can foster resilience and a willingness to embrace new learning experiences.

Source: Deci and Ryan, 1985, *strategies to motivate children with down syndrome.*

Overall, motivation plays a significant role in the educational journey of children with Down syndrome. By implementing strategies that cater to their unique needs and interests, educators can help foster a positive and motivating learning environment that promotes their overall development and success.

2.4. Social cognitive learning

Social learning theory is increasingly cited as an essential component of sustainable natural resource management and the promotion of desirable behavioural change. (Muro & Jeffrey 2008). This theory is based on the idea that we learn from our interactions with others in a social context. Separately, by observing the behaviors of others, people develop similar behaviors. After observing the behavior of others, people assimilate and imitate that behavior, especially if their observational experiences are positive ones or include rewards related to the observed behavior.

2.4.1. Bruner's constructivist theory

Bruner's constructivist theory suggests it is effective when faced with new material to follow a progression from enactive to iconic to symbolic representation; this holds true even for adult learners (Bruner, 1960),. Bruner was of the opinion that by passing out and instructing knowledge cannot be regarded as complete education, we should let children explore, reason and think, solve problems, discover facts or principles, enjoy the happiness derived from learning results on their own in order to further cultivate the curiosity, encourage the creativity, and explore the unknown world in the future, as well as to cultivate innovative and responsible modern people (Lichao Chen, 1985). (Bruner in Rensick, 1964: 112) Bruner argues that learning involves three simultaneous processes. The three processes are: *(1) obtaining new information (2) transforming information and (3) testing the relevance and determination of knowledge*.

Bruner (1966) was concerned with how knowledge is represented and organized through different modes of thinking (or representation). Learners can be taught to generate their own instructional method and strategy for learning. In "The Process of Education" (Bruner, 1960), he claimed that knowledge of any subject could apply efficient teaching to any child at any stage of development via certain reasonable ways. A learner learns to study independently and acquires skills to establish his/her own standard. According to Bruner, learning should be flexible and exploratory and Institutions should arouse learners' curiosity, minimize the risk of failure and make the activities relevant to them.

Bruner emphasized that the important tasks for teachers are to teach children how to think and discover principles from activities of acquiring knowledge, and then integrate and summarize them and form it into their own experiences of knowledge (Bruner, 1960). He proposed the "discovery learning theory", as the teacher instructed students to learn, the purpose was not to have them learn knowledge and facts of all sorts, but have them discover whether meaning-related structure exist among teaching materials and objects, and as children were familiar of "structure", due to it comprised of generality and categorization, larger effect of learning transferring could thus be generated, which could help children face other similar situations. Bruner believed that the effective teaching environment should be available during teaching to stimulate students' curiosity and maintain their interests as well as to guide students to explore into the right directions. In Bruner's book "Toward a theory of instruction", which was

published in 1966, he mentioned four principles needed attention when came to curriculum design (Bruner, 1966):

In his research on the cognitive development of children, Jerome Bruner proposed three modes of representation:

Enactive representation (action-based); The most common cognitive approach for children from ages 1 to 2 that they learn and understand about the world around themselves through movements and actions.

Iconic representation (image-based); For children at ages 2 to 6, they learn through visual perceptions and can substitute explanations with pictures or imaginations of objects appeared in front of eyes, that is, children can express objects or things through iconic images instead of senses and controls of movements.

Symbolic representation (language-based); For children above 6 years old, in this stage children comprehend the world around themselves though language skills, works, and abstract symbols, are able to perform reasoning, and express using words, languages, or linguistic symbols as well as interact with the environment.

Bruner makes clear that what determines the level of intellectual development is: the extent to which the child has been given appropriate instruction together with practice or experience. So - the right way of presentation and the right explanation will enable a child to grasp a concept usually only understood by an adult. His theory stresses the role of education and the adult.

Bruner, like Piaget, believed children have an innate capacity to learn language, are naturally curious, and that cognitive abilities develop over time and through active interaction. Bruner was more firmly placed within the framework, often referred to as social *constructivism* or *sociocultural theory*. Bruner said that children have an innate capacity and that cognitive abilities develop through active interaction, Bruner argued that social factors, particularly language, were important for cognitive growth. Bruner contended that any subject can be taught effectively to *any child at any stage of development*, that “there is no unique sequence for all learners, and the optimum in any particular case will depend upon a variety of factors, including past learning, stage of development (Bruner, 1966)”, Bruner also talked about the foundation for the idea of a *spiral curriculum*. In *the spiral curriculum,* subjects are revisited again and again.

Bruner meant that *social factors* (particularly interactions between a learner and others who are more knowledgeable or experienced) impacted cognitive growth, and that this cognitive growth could be facilitated especially through language. This is underpinned by the concept of instructional *scaffolding*. Instructional scaffolding is tailored support given to a student by an instructor. Bruner brought forward the concept of *scaffolding* in the late 1950s - where small children's language acquisition improved through scaffolded dialogue with parents. This learning framework is often referred to as *social constructivism* or *sociocultural theory*

Bruner believed that education and cognitive development skills are closely related to each other; at the same time, he emphasized that functions of curriculum structure could reach peak only through education and teaching. Therefore, he emphasized that education was the key of helping an individual to develop his/her mental skills; in order to bring out the efficiency of education, curriculum arrangement should be thought highly of. Hence, again and again he emphasized that the content of curriculum requires theories of cognitive development, structure of materials, and teaching methods (Licho Chen, 1985).

This theory states that the best way for a student to start learning concepts and principles in mathematics is to construct that concept or principle. To construct a concept or principle is to simplify the concept or principle by considering the parts that make up the concept or principle. In relation, Bruner argues that "Any idea or problem or body of knowledge can be presented in a form that is simple enough so that any particular learner can understand it in a recognizable form." (Bruner, 1996: 113). According to Bruner in Bell (1978) the notion of a concept in the early stages of students learning the concept, is dependent on activities that use concrete objects. The implications of that theory in the teaching of mathematics are that new concepts are inappropriate when they are presented deductively. This is reasonable, if using indicator stages as proposed by Bruner, namely enactive, iconic and symbolic. Another implication is that students' activities to construct concepts or principles can be generated by rewriting the questions of understanding or illustration that form the concept or principle.

We should let children explore, reason and think, solve problems, discover facts or principles, enjoy the happiness derived from learning results on their own in order to further cultivate the curiosity, encourage the creativity, and explore the unknown world in the future, as well as to cultivate innovative and responsible modern people (Lichao Chen, 1985). Bruner emphasized that the important tasks for teachers are to teach children how to think and discover principles from activities of acquiring knowledge, and then integrate and summarize them and form it

into their own experiences of knowledge. He proposed the “discovery learning theory”, Bruner in Resnick cautioned that: "and even though some students may be quite" ready "for a purely symbolic presentation, it seems that wise, nevertheless, to present at least the iconic modes as well to fall back on in their case symbolic manipulation failed "(Bruner, 1996: 114). Bruner's suggestion implies that the development of ideas in the subject matter must be balanced with the development of the intellect. Bruner formulates four theories about learning, namely construction, notation, contrast and variation and connectivity (Bell, 1978: 78). Children with down have a very short span of attention and low IQ so to be able to teach them in the classroom Brunner’s theory is very necessary and important as it talks about simplifying materials for children in the classroom so breaking down complex ideas into simple ad less complex forms helps children with down syndrome to better assimilate and understand what is being taught in the classroom.

2.4.2 Sociocultural learning theory

According to Vygotsky (1978, cited Lantolf 2000), the sociocultural environment confronts children with a diverse set of tasks and questions. In early stages, the child is completely dependent on other people, especially on parents, who initiate his decisions while instructing him what to do, how to do it and what not to do. Initially these are realized through language, which plays a big role in the way the child adapts to the social inheritance. Vygotsky's theories stress the fundamental role that social interaction has in learning and cognitive development (Vygotsky, 1978). Vygotsky felt social learning precedes development. He states: “Every function in the child’s cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (interpsychological) and then inside the child (intrapsychological)” (Vygotsky, 1978).

Vygotsky (1978 cited Wertsch 1985) declares that the child receives the knowledge initially through the contacts and interactions with people, and then assimilates this knowledge adding the personal values in it. He believed the socio-cultural environment is critical for cognitive development. His work was influenced by the Marxist theory of “…historical changes in society and material life produce changes in human nature” (Huiitt, 2000, slide 21). In his work, Vygotsky emphasized the roles of social interaction and instruction. “He proposed that development does not precede socialization, but rather social structures and social relations lead to the development of mental functions” (Huitt, 2000). Vygotsky developed concepts of cognitive learning zones. The Zone of Actual Development (ZAD) occurs when students can

complete tasks on their own. There is nothing new for the students to learn. In this zone, the students are independent.

The Zone of Proximal Development (ZPD) requires adults or peers to provide assistance to students, who cannot complete the assigned task without help. The ZPD is the gap between what learners are able to do independently, and what they may need help in accomplishing (Daniels, 2001). Social interaction plays an important role in student learning. It is through social interaction that students learn from each other, as well as adults. Fogarty (1999) stated, "Vygotsky's theory suggests that we learn first through person-to-person interactions and then individually through an internalization process that leads to deep understanding". He also talks of the term "scaffolding" which was introduced in by Wood and. *al.* (1976) and means 'to create a scaffold' or to provide an external support through something that helps construct a building. However, this a metaphor that helps understand the used modalities by adults to organize their activities with kids (Carugati & Selleri, 2001).

Donato (1994) states that scaffolding is a concept coming from congnitive psychology. He confirms that during social interaction, a more capable participant, through the use of language and other supportive conditions, may help the child move forward to a higher lever with the knowledge and skills owned (Turuk C. M., 2008, p.252). In education, scaffolding is an instructional structure through which the teacher models the strategy or task of learning and then moves this responsibility to the children. According to Tharp and Gallimore (1988), learning, especially in schools can be seen as 'achievement with help' (Pollard &Tann, 1993 p.111).

Vygotsky theory was also an attempt to explain the contribution of three factors in the cognitive development of the individual. These factors, according to Oakley (2004: 38) include: culture, language, and zone of proximal development. Vygotsky saw that culture and social environment as crucial elements in the construction of human knowledge. The society where the individual lives in and the social settings where he is part of are the elements which determine what the individual learns about the world and acquires as knowledge. Therefore, the child learns through social interactions, but also through elements of his own culture such as language, songs, arts etc. (Vygotsky 1978)

According to Vygotsky (1978), language is indispensable in the learning process. He considered that there is a close relationship between language development and cognitive development. The individual could encode and represent the world through the contribution of

language (Wilhelm, 2001). Vygotsky explains that before the age of 2 years, children language and thought are separate processes because language at that period is used just for social purposes and is not linked to inner thought. However, by the age of 2 years, language and thought become related processes, and therefore language begins to constitute a crucial role in cognitive and social development.

The term Zone of Proximal Development, according to Vygotsky (1978 pg 86) refers to the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers (Wilhelm, 2001). This means that there is such a difference between a learner who performs a task independently and the one who performs a task with assistance and guidance of someone else who has already mastered the concept being learnt. For example, a 16 years old child can drive forward and backward perfectly, but when it comes to parking, he/she may find difficulties. For this reason, a teacher is needed to guide this child and teach him how to park the car. Bridging this gap, therefore, depends on the kind of support that is provided by an adult or any expert. In short, the basic and most important idea about the zone of proximal development is that with the most sensitive instruction or guidance, the child will be able to develop skills to use on his or her own to develop higher mental functions (Vygostky,1978).

The concept of scaffolding is central to many recent accounts of teaching and learning. Within literature, scaffolding, cooperative learning and guided learning all share the same meaning and it is synonymous with Vygotsky ‘s concept of Zone of Proximal Development (Stone, 1998). One of the most important aspects of scaffolding, stone says, is the role of the knowledgeable person who provides the learner with guidance in order to progress and achieve difficult tasks, this role then has perceptual, cognitive and affective components Scaffolding can be described then as an intellectual support offered by a teacher to take the learner to the next level of understanding. Sawyer (2006) on his part supports that scaffolding is the support given to students during the learning process with the intention to help them achieve their learning goals.

2.4.3. Implications of Vygotsky’s Theory in Education

Vygotsky’s central topic was the Zone of Proximal Development (ZPD), which uses social interaction with more knowledgeable others to move development forward. A more capable person, such as teacher or peer, provides assistance to the student; the student is able to

complete the task with this assistance. Students, who are in the ZPD, need active teaching. “It’s a waste of time to teach kids what they already know and what they cannot do even with assistance” (Utah Education Network, 2005, p. 11). Therefore, Vygotsky’s theory promotes the belief, “What is learned must be taught” (Wilhelm, 2001).

Teachers should be explaining, modeling, and using guided practice in the classroom. By modeling what they want their students to do, students will be better able to work through their assigned tasks. During think-aloud, students listen to a skilled reader using “strategies to comprehend text, and their teachers’ thinking become visible to them” (Beers, 2003, p. 43).

Students need time to try out various strategies, so they can develop answers or responses. Scaffolding is “a form of adult assistance that enables a child or novice to solve a problem, carry out a task or achieve a goal which would be beyond his unassisted efforts” (Wood *&. al,* 1976, as cited by Daniels, 2001, p.107). The use of language and shared experience is essential to successfully implementing scaffolding as a learning tool. Having an effective method of teaching coincides with effective classroom management. The idea is to keep the students focused on learning and interacting with the teacher and fellow students. It takes a creative teacher to come up with and utilize various styles of teaching.

First, the teacher and students should establish honesty and trust to make teaching and learning become effortless. Common ground has to be secured in the classroom where teacher and student discussions will take place. The students should feel comfortable expressing their ideas to their teacher (Cody, K. & Powell, K. 2009). This will set up a contagious atmosphere and good classroom management.

Vygotsky believes that social interaction is an integral part of learning. He also believed that social constructivism is based on social interactions in the classroom and how that student critically thinks (Cody, K. & Powell, K. 2009). Vygotsky's social development theory examines four theoretical application areas: the zone of proximal development, scaffolding, cooperative learning, and cultural influence. Understanding the theories and interaction with them helps develop effective classrooms (Cody, K. & Powell, K. 2009).

Zone of proximal development is a one where learning is developed when a child has help learning a concept in the classroom. A lot of times children learn best in this zone when others are involved (Cody, K. & Powell, K. 2009). When children are learning from others in the classroom, there is classroom management because of the involvement of several students. Scaffolding involves students learning from teachers, peers, and adults. In a counting activity

a child may skip a number, but if someone is assisting by pointing and counting out loud with the child, they will get it right (Cody, K. & Powell, K. 2009).

This way the student is learning and not just receiving the answer. It involves classroom management because the student is learning and focused through guided expectations set by the teacher. Cooperative learning is another one of Vygotsky's learning theories. It involves students working with another student's one on one. It is similar to a team environment. Students can learn a lot from one another and put their skills and talents together to complete an assignment with equal input. When students master the completion of projects or activities in a group, each individual internalizes that knowledge more effectively (Cody, K. & Powell, K. 2009).

Vygotsky emphasizes the role of language in cognitive development. Vygotsky believed that language develops from social interactions, for communication purposes. Vygotsky viewed language as man's greatest tool, a means for communicating with the outside world. For Vygotsky, cognitive development results from the internalization of language.

According to Vygotsky (1962) language plays two critical roles in cognitive development: 1) it is the main way adults share information with children; and 2) language becomes a tool of intellectual development and learning. For Vygotsky, thought and language are separate systems for infants and toddlers then merge at around three years of age, producing verbal thought (inner speech). Vygotsky (1987) differentiates between three forms of language: 1) social speech which is external communication used to talk to others (typical from the age of two); 2) private speech (typical from the age of three) which is directed to the self and supports intellectual development; and, 3) private speech which becomes softer and softer until it is silent inner speech with the purpose of self-regulate behavior (typical from the age of seven).

Cultural influence is another of Vygotsky's lenses that he believes has a significant impact on how learning occurs. He believes teachers should recognize and embrace different ethnic backgrounds. In this, students learn more about themselves and their own style through observation of those less similar to them. Curriculum should only be started once students have gotten comfortable with each other and had a discussion on their backgrounds according to Vygotsky Garrison and Ehringhaus (2017). There is a connection in all the social constructivism above. Communication is very pertinent to learning and should be based on the same common ground. Language usage in the classroom is very important according to

Vygotsky because it enhances learning and precedes knowledge (Wood &. *al*, 1976, as cited by Daniels, 2001, p.107).

An effective teacher is an effective learner. The main focus is to produce an atmosphere where each student will reach his or her full potential. The teacher must be attentive and offer guidance throughout the process. Developing tools that secure social interaction will improve classroom management. Students and teachers will both benefit from this effective learning atmosphere (Cody, K. & Powell, K. 2009).

2.4.4. Classroom Assessment

Classroom assessments are a very important aspect of running an effective class. Assessments are used to help gauge the progress that is being made by each student and assists the instructor is determining the efficiency of the teaching techniques that are being utilized (Simpson-Beck, 2011). There are many different development theories that influence the teaching styles of educators and in turn will influence what types of assessments will be most useful for the teacher. Vygotsky's theory of proximal development supports the idea that a child's development is guided by an adult and child has two levels of development (Bee & Boyd, 2007). A child's zone of actual development is the child's ability to perform a task individually while the zone of proximal development is the child's ability to perform a task with assistance from an adult.

To assess the child's zone of actual development it would be necessary to have the child perform the task independently (Garrison and Ehringhaus 2017). Once the baseline, or zone of actual development, is determined, the child should be asked to perform the task with assistance from an adult. Once the zone of proximal development is determined, the child's skills and abilities should be continually assessed with less and less assistance provided. As the child begins to master the skill with less assistance, their zone of proximal development widens to include harder tasks. The child can also take the language used by the instructor during the scaffolding and apply it to future tasks.

According to Garrison and Ehringhaus (2017), while there are many different types of assessments, two particular assessment types that can be helpful is the summative assessment and formative assessment. Using both types of assessments for different reasons will provide the most accurate overview of a classroom or individual student. A summative assessment is given to determine at a particular point in time what a student knows and doesn't know. Formative assessment is another useful type of assessment used to gauge the effectiveness of

the teaching style based on the student's understanding of the material and the goals of the teacher (Garrison & Ehringhaus, 2007).

Based on the idea that development is defined both by what a child can do independently and by what a child can do when assisted by an adult or more competent peer is Vygotsky's concept of the zone of proximal development. There are two levels in Vygotsky's zone that is important for teachers to know. Where the child is at a given moment as well as where the child is going is what these levels indicate. (Bandura 1993). There are several implications for teaching in the classroom attained from the zone of proximal development. As a teacher, you want the curriculum to be developmentally appropriate. Activities must be planned that encompass not only what children are capable of doing on their own but what they can learn with the help of others.

Vygotsky's theory is the backbone of this research as it covers literally almost the aspect the researcher is trying to proof when it comes to the education of children with down syndrome which are; socialization, teaching strategies and the adaptation to the sociocultural context if all these factors are put into place in the classroom, children with down syndrome will not be excluded when it comes to gaining knowledge and fitting into the society. (Garrison & Ehringhaus, 2007).

Conclusion

There are several different models of psychoeducation. These models include strategic elements while applying interventions like: development of single- and multiple-family groups; mixed groups that include family members and patients; groups of varying duration ranging from nine months to more than five years; and groups that focus on patients and families at different phases in the illness (White, 1989).The various psychoeducational models can be categorised into four approaches (Zipple & Spanial, 1997). Vygotsky's theory is the backbone of this research as it covers literally almost the aspect the researcher is trying to proof when it comes to the education of children with down syndrome which are; socialization, teaching strategies and the adaptation to the sociocultural context if all these factors are put into place in the classroom, children with down syndrome will not be excluded when it comes to gaining knowledge and fitting into the society. (Garrison & Ehringhaus, 2007).

Also, according to Bandura, individuals can learn by observing the consequences of others' actions (Bandura, 1986). Teachers can use this principle by providing positive feedback and recognition to students who demonstrate desired behaviors, which can motivate other students

to imitate those behaviors. Bandura suggested that learners benefit from guided practice and feedback (Bandura, 1977). Teachers can provide structured activities, step-by-step instructions, and constructive feedback to help students develop new skills and strategies. Bandura also recognized the influence of peers on learning and behavior (Bandura, 1986). Teachers can create opportunities for peer modeling by pairing students with different skill levels or strengths, encouraging collaborative learning, and providing opportunities for students to observe and learn from each other.

Bandura (1977) emphasized the importance of observing and imitating role models Teachers can serve as positive role models by demonstrating desired behaviors, such as respect, empathy, and perseverance, in their interactions with students.

CHAPTER THREE:

METHODOLOGY OF THE STUDY

All scientific research needs a justified method. This section involves the participants, instruments used, methods used in collecting data and procedures that were employed to arrive at the desired results (Lodico 2006). The methods and procedures that were employed to arrive at the choices of the aspect of the methodology presented above are presented in this chapter. This chapter will include: the research design, instruments of data collection, validity of the research instruments.

3.1.The General Hypothesis

According to Anapama (2018) the research process begins and ends with a research hypothesis because it is the core of the procedure of research and so as a consequence gives a relationship between the variables in the research process. According to Landshere (1969) the independent variable is the variable which relates the cause and the effect. Also called the experimentary variable, the stimulus variable or the active variable, it can be easily manipulated by the researcher so as to explain the phenomenon which has been observed. In the research there is an independent variable which will act as a stimulus to the research. This variable will be easily used by the researcher to bring out the modalities which are as follows: "Teaching methods, adaptation in the sociocultural context, social interaction."

The General hypothesis of this study is: "Psychoeducational support like teaching strategies, socialization and adaptation in the sociocultural context mobilizes the socio cognitive skills of children with trisomy 21."

This general hypothesis identifies two types of variables: an independent variable (IV) and a dependent variable (DV).

3.1.1 Independent variable (IV) of study is: psychoeducational support.

- Modality1: teaching methods

Indicator1: Structure of teaching in the classroom

Indices: Activity schedule, visual aids, motivation

Indicator 2: multi-sensory learning

Indices: sight, touch, sound

- Modality2 socialization

Indicator 1: Emotional exchange

indices: Role play, practice play, emotional skill, problem solving skill.

Indicator 2: social skills training

Indices: taking turns, sharing, greeting others

Modality 3: adaptation in the sociocultural context

Indicator 1**:** Adaptation of the sociocultural context in the classroom

indices: Language development**,** use of songs and arts**,** group activities

indicator 2: family involvement

indices: exposure to other languages, understanding cultural heritage, stories about their cultures.

3.1.2. Dependent Variable: sociocognitive skills

- Modality 1: social skills

Indicator 1: understanding social cues

indices : verbal cues, non-verbal cues

indicator 2: proxemics cues

indices: understanding other peoples' spaces, understanding physical distance

- Modality 2: cognitive skills

Indicator 1: knowledge acquisition and understanding

indices: attention, memory

indicator 2: visual-spatial skills

indices: understanding and interpreting visual information, understanding and interpreting spatial relationships

Table 9: Synoptic Table of variables, modalities, indicators and indices of the General Hypothesis

Variables	**Modalities**	**Indicators**	**Indices**
Independent variable: Psychoeducational support	Teaching strategies	Structure of teaching in the classroom	Activity schedule, visual aids, motivation, Role play
		multi-sensory learning	Sight, touch, sound
	Socialization	Emotional exchange of the sociocultural context in the classroom	practice play, emotional skill, problem solving skill.
		social skills training	taking turns, sharing, greeting others
	Adaptation to sociocultural context	Adaptation of the sociocultural context in the classroom	Language development, use of songs and arts; group activities
Dependent variable: sociocognitive skills		family involvement indices	exposure to other languages, understanding cultural heritage, stories about their cultures.
	Social skills	Understanding social Cues	Verbal Cues, non-verbal Cues
		proxemics cues indices:	understanding other peoples' spaces, understanding physical distance
	Cognitive skills	Knowledge acquisition and understanding	Attention, memory
		visual-spatial skills	understanding and interpreting visual information, understanding and interpreting spatial relationships

3.2.Specific Research Hypothesis

From the main research hypothesis, we brought out specific hypothesis that will help carry out our work smoothly and avoid mix up with data that does not concern this research. These specific hypotheses are:

RH1: Teachers teaching strategies and methods mobilizes the socio cognitive skills of children with trisomy 21.

RH2: socialization mobilizes the socio cognitive skills of children with trisomy 21.

RH3: adaptation to the sociocultural context mobilizes the sociocognitive skills of children with Down syndrome.

3.3. Research design

This study is a qualitative research design because it facilitates the link between psychoeducational support on the sociocognitive skills of children with down syndrome. With this design, the independent variable: psychoeducational support was examined and qualitative information was collected through interview guides for the teachers of these kids with down syndrome and observations for the children with down syndrome themselves over a purposive sampling to enable the researcher to explain its influence on the dependent variable: sociocognitive skills of children with down syndrome.

3.4.Research Area

The research was carried out in the Mfoundi Division precisely in the Centre National des Rehabilitation du Personnes Handicappee (CNRPH). The choice of this area was because the Centre has many Down syndrome students of different ages and also specialized and well-trained special educators. This enabled us to collect accurate data from the special educators and also observed the children with down syndrome. The administration was very cooperative and welcoming to us. This was also where we were opportune to work directly with the children and the special educators. Created in 1971 by Cardinal Paul Emile Leger of Canadian nationality of late memory, the National Center for the Rehabilitation of Disabled Persons was returned to the Cameroonian State in 1978, and in 2009 became a Public Administrative Establishment placed under the technical supervision of the Ministry of Social Affairs and under the financial supervision of the Ministry of Finance. In 2018, CNRPH takes on the character of a Public Establishment of a social nature. The CNRPH, vested with a mission to

implement government policy on the rehabilitation and retraining of people with disabilities, is responsible, among other things:

- Care for people with disabilities and their families;
- Special and inclusive education for children with disabilities;
- Apprenticeship, training and socio-professional retraining of people with disabilities;
- The socio-economic integration and socio-professional reintegration of people with disabilities;
- Medical and health care for people with disabilities;
- The promotion of research with a view to improving rehabilitation intervention.

With this mandate, the CNRPH has a particular interest in the inclusion of people with disabilities in participation in decision-making. Thus, a Directorate was set up to ensure the education, learning and vocational training of people with special needs. This Department has three departments:

- The Special and Inclusive Education Service (SESI);
- The Apprenticeship, Training and Professional Retraining Service;
- The Department of Cultural and Sporting Activities

The CNRPH is headed by a board of directors follow by general manager. It has four directorates as follows: The financial and administrative department, social intervention direction of medico sanitary care, directorate of Education, apprenticeship, and vocational training.

Our internship supervisor being the head of the special and inclusive education service, Mr. Ngen Salomon, we were able to learn in excellent conditions and had benefited from quality support. Our internship at the special and inclusive education department of the CNRPH consisted in supporting and caring for people with mental disabilities and hearing impaired. More broadly, this internship was an opportunity for us to understand the accompaniment of autistic children in terms of acquiring skills and abilities in order to allow them to achieve their autonomy. Beyond enriching our knowledge of care and support for children in difficulty, this internship also allowed us to familiarize ourselves with the professional environment. This internship was therefore an opportunity for me to perceive how the accompaniment of a

mentally handicapped person, particularly children with down syndrome, how he is allowed to acquire social skills and certain skills in order to make him independent. The main source of this report was drawn up from the various lessons learned from the daily practice of the tasks to which we were assigned.

3.5. Population of study

The study population is defined as a set of people or objects located in space or time, and on which the observations relate. It is therefore a gathering of all the cases which correspond to a determined set of character considered. In this case, the choice of our population is focused on children with down syndrome and their teachers inclusive in the CNRPH in Yaoundé. Being difficult to have access to all this population, we found it necessary to split it into two in particular: the target population and the parent population.

For this research, our sample is composed of three (03) persons diagnosed with down syndrome attending the CNRPH Yaoundé and three (03) special educators teaching these children with down syndrome in CNRPH Yaoundé.

3.6. Participant Selection Criteria

This research will have two set of participants which are the teachers of the students with down syndrome and the students themselves this is due to the fact that these children were not able to express themselves properly and the teachers being the closest and the possible who closely work with the children and understand them too it was easy to collect the data from them.

3.6.1. The teachers selection criteria

- First, you had to a trained special educator.
- Second, these persons had to teach in the CNRPH Yaoundé.
- Third, these persons should have children with down syndrome in their classroom.

Table 10: Presentation of the study sample for the teachers teaching children with down syndrome

No	attendance	Gender	Age	Region of origin	Class taught
1	Mrs. MJ	Female	35	East	Initiation 1B
2	Mrs. FG	Female	30	Center	Initiation 1B

3	Miss. NY	Female	26	East	Initiation 1A

3.5.2. The selection criteria children with down syndrome

- First, you had to be a person with down syndrome from the age of 5 upwards
- Second, these persons with Down syndrome had to be student in the (CNRPH) Yaoundé.
- Third, these persons should already be diagnosed to having Down syndrome

Table 11: Presentation of the study sample for the children with down syndrome

No.	Attendees	Gender	Age	Region of origin	Class
1	Case 1	Male	6	East	Initiation 1B
2	Case 2	Female	7	Center	Initiation 1B
3	Case 3	Male	11	Center	Initiation 1A

Following the presentation of our sample, let's discuss the technique and the data collection instrument.

So, given our research we are going to use a non-probability sampling given that we have some knowledge about our population. That is, we know the characteristics of the population we are studying. the peculiar thing about this method of research is the fact that all the sample have equal chance of being selected to carry out studies on them. Given that we are in a qualitative and using a non-probability type of research, that is why in our research we are going to be using the reasoning sampling method which in this method here the sampling will be restrain we shall be carrying our research on three (03) children with down syndrome and three (3) special educators teaching children with down syndrome.

3.7. Data Collection Instruments

In this study, the qualitative method with a comprehensive approach is used with interview guides to collect the information from the respondents. The data collection process began with the development of an interview guide for the teachers of the children with down syndrome. The interview guide is a support for the interviewer, which lists the themes that should be addressed during the interview. It is defined as an organized set of operator and indicator functions that structure the interviewer's listening and intervention activity (Blanchet et al.,

1992). It presents itself as a restructuring of the conduct of the interview and the translation of the hypotheses (Blanchet et al., 1985). It provides a general framework for the conduct of the interview, an orderly exposition of the subjects or themes to be addressed and a suggestion of follow-up or in-depth techniques to be used. It is structured in parts: an introduction, the part identifying respondents, the part concerning the presentation of the framework and the parts concerning the themes relating to the research hypotheses. In the semi-structured interview, the interview guide is established in the form of themes and indicators (sub-themes) that must be addressed by the interviewer during the interview, depending on the interlocutory dynamics (Catteeuw et al., 2001). This guide is available to the interviewer to enable her to follow the defined methodology, while observing appropriate behavior during the interview. However, it should be noted that the order in which the themes are mentioned, as well as the wording of the questions, may vary during the interview.

The researcher also used an observation grid to observe the children with down syndrome. The observation grid outlies the different characteristics of the children with down syndrome which acted as a guide for the researcher to be able to identify the type of children she was to be working with since the class was an inclusive class. The interview guide is developed on the specific research questions of the study. it directs the researcher as to what she is looking for based on observing the children in their classroom. It also directs the researcher on the different social activities that are carried out in the classroom by the kids and how they do these activities and at what degree are they able to carry out certain activities and assignments given them by the special educator. This is then graded under fair which is graded as 1, poor which is graded as 2, good which is graded as 3 and excellent which is graded by 4.

3.8. Interview guide for the special educators teaching children with down syndrome

Dear Sir/Madam, I am conducting a study as a part of our university research on; 'Psychoeducational support to mobilize the sociocognitive skills of children with trisomy 21". We kindly ask you to answer this interview guide in all sincerity and we assure you of the confidentiality of the information we will obtain from you, according to the code of the profession of educational psychologist.

Theme 0: Socialization

Sub-theme 1: role play?

Sub- Theme 2: practice play

Theme 1: teaching methods

Sub-theme 1: Use of visual aids

Sub-thème2: Motivation

Theme 3: Adaptation to sociocultural context

Sub-theme1: use of songs

Sub-theme2: language skills

Sub-theme3: working together

Theme4: sociocognitive skills

Sub-theme 1 Understanding social Cues

Sub-theme 2 proxemics cues indices:

Sub-theme 3 Knowledge acquisition and understanding

3.9. Observation grid to test the psychoeducational support to mobilise the socio cognitive skills of children with trisomy 21

Structure of teaching in classroom	**Fair (1)**	**Poor (2)**	**Good (3)**	**Excellent (4)**
How much does the child master visual aids and understands their meanings				
Does the child play games given by the teachers?				
How does the child react to motivation?				
Adaptation to sociocultural environment	**Fair (1)**	**Poor (2)**	**Good (3)**	**Excellent (4)**
How is the language development of the child?				
How well does the child engage in songs and arts?				
How well does the child work with others?				

Social interaction	**Fair (1)**	**Poor (2)**	**Good (3)**	**Excellent (4)**
How does the child react to role play?				
How do the children develop emotional skills?				
What is the children reaction when faced with problem solving?				

3.10. Ethical consideration

Given that in any research, ethical and deontological rules must be respected and announced to the respondents, before collecting the data, we explained to the participants who were the subject of our study emphasizing on the anonymity of people surveyed in order to guarantee the results of our study. In addition, we have made the commitment to communicate the results of the investigation to them after the defense of this thesis. The student researcher took into consideration informed consent, privacy, confidentiality and anonymity of the research participants. The student researcher asked for a research permit before going to the field because this was the first step in the process of data collection. Within authorization from the Faculty of Education, University of Yaoundé 1. What has just been said can also be summed up in certain fundamental principles that guided the relationship between the researchers and the participants. Free and informed consent, Respect for the dignity of the subject, Respect for privacy and confidentiality.

Conclusion

This chapter of the study focused on the methodology which dealt with the following: research design, area of study, sampling procedure, instrumentation, the validity of the study, reliability of the study, the procedure for data collection, instruments, data analysis and ethical considerations. As concerns the research design, a descriptive survey research was carried out in Yaoundé IV Municipality in the Centre Region. The population was all inclusive education schools in the Yaoundé IV Municipality. The accessible population was the teachers and children with down syndrome from 1 inclusive education school selected from the area which is CNRPH Yaoundé. The main instruments used were structured interview guides and observations. The interview guides were constructed to allow participants which in this case

are the inclusive educationist who have children with Down syndrome in their classes to answer the questions as elaborately as possible and their answers were written down. A total of 3 interview guides were administered to selected inclusive educationist who agreed to participate in the study.

CHAPTER FOUR:

PRESENTATION AND ANALYSIS OF RESULTS

This chapter presents the research findings and analysis. The study investigated the psychoeducational support to mobilize the sociocognitive skills of children with Down syndrome. The data was collected through interview guides. Findings were presented to respond to the three specific objectives of this study. The study sort to provide answers to three objectives which are: (i) To describe how teachers teaching strategies and methods affect the socio cognitive skills of children with trisomy 21, (ii) To explain how socialization affects the socio cognitive skills of children with trisomy 21, (iii)To investigate how adaptation to the sociocultural context affects the sociocognitive skills of children with Down syndrome.

4.1. Presentation of Participants

Here, the researcher is out to present the participants for this research, their characteristics and how they relate to the research.

4.1.1. Glory

A child of 6years and is an initiation 1B she is a child with trisomy 21 this can be easily noticed from her physical features which are: flattened face, small head, short neck and protruding tongue and is very quiet. The subject does not speak a lot; she only says one word referring to what she wants or wants to be done for her. For example, if she needs water, all she does is to point at her bag and say “l’eau” with just that word she is implying that she needs water. She sometimes gets angry and agitated when what she wants is not given to her and turns to just do it or get it herself despite the refusal of the teacher in class.

She does not associate with her classmates and only plays when she is included in the play or when the other kids come close to her, she does not take the initiative to engage in plays very often. With the help of the teacher, she is able to play with the toys given to her and doesn’t like to share with the others. Glory always on her own even the time she wants to associate the other children will not like to play with her because she always hits and pushes them to the side it is difficult to even make her do group work with the other children most at times the teachers have to force her to be able to interact with others. She struggles to understand Social cues, Language, Emotions which render forming and maintaining relationships difficult for her. she has difficulty expressing her feelings because of her poor communication and language skills and also face hardships controlling her muscles and coordinating her hand movements this is as a result of her cerebral palsy. When she even tries to socialize, it is very difficult for her to

maintain eye contact with her peers and even with the teachers she easily gets distracted when she is interacting with other children at times will prefer to just remain by herself and no even bother to play with people. During sports she usually just sits and watch her classmates play she refuse to join in the play even when she is asked to and prefers to be on her own. She does not know when to take turns during a conversation and especially due to the fact that she has problems talking and with her speech she decides just to allow everything that will seem difficult for her to understand and stress her up. I noticed that Glory does not use gestures a lot such as facial expressions to express her emotions she will at times just cry to get things done for her

Glory's teacher told us that: Glory talks only when she needs something, she even bullies her table mates so most of them don't like to play with her but she can be nice when she feels like it and also plays but not as Daniel. With Glory since her table mates hardly interact with her, I also engage them in play using toys with this her table mates are forced to play with her and also, she learns how to share in the process. I also engage her in role play and pretend play which helps her to develop skills such as: navigating social situations, understanding different roles, encourage empathy for her peers and social understanding.

The subject here is sitting position is very strategic given the fact that she seats at the first bench of the class when we observed her, she was often alone and isolated and always refuses to sit anywhere else apart from that particular place. The subject was noticed to have a certain level of cognitive abilities she could identify objects on the blackboard could point out the objects too and also identify colors even though she turns to be very slow when it comes to learning but with the persistence of the teacher she learns slowly but surely subject was also seen to have difficulty in walking due to cerebral palsy and also in her feeding, she feeds very well it was noticed that her lunch box was always packed with food of different types and fruits too, she always has a bottle of water and at times a bottle of milk too to go with the food she's to take for that day**.**

4.1.2. Daniel

Daniel is a child with Down syndrome of seven years who is in a class of initiation 1A the child is very playful he interacts very well with his peers and engages in plays with them. Even though he cannot speak fluently he has a certain degree of speech that can be understandable as you get to know him and he gets comfortable with you. He is very interactive with the teacher and is often seen helping out his friends in the classroom to get their lunch box from their bags.

To continue, the way of even developing even if it is considered minor a social skill on the child the subject tries to be social through the repetitive action done by the teacher in order to put in him the habit of greeting. Given the communicative barriers experienced by this child he always tries to greet his teacher this is so because every morning they had the habit of greeting their teachers "bonjour" this was done in a loud and slow manner for the children to be able to pronounce audibly a well. I noticed that the subject was very active in class. From all the other children with down syndrome, his condition didn't seem to hinder him from having fun with his mates on only on his table but all around the class. He would move from one table to another playing with anyone who is available and ready to play with him. He tries to stat up conversations even where he is not welcomed, he will try to start up a discussion this made the children in the classroom fun of him any time he comes around a table he will be welcomed with smiles.

Daniel knew the bags of all the children in the classroom. During break he is always the first to assist me with sharing and identifying the bags of his mates. Even when I am making a mistake, he is always very attentive to help me out. He is fun to be around but scared when threatened by the teacher. When it comes to outdoor activities like sports and recreational activities, Daniel is always very excited to out and play he makes sure that he plays on all the slides in the playground, all the swings and also takes turns in giving a helping hand to his friends on the swings and merry go rounds. Even though his speech is not that clear, it does not stop him from having fun and trying to create conversations with his peers and classmates and his teachers. He asks questions in class and answers questions when asked too.

The subject cognitive ability was way higher than the other two subjects he could easily interprets symbols and understands visuals used by the teacher in the classroom. The teacher even went ahead to teach him some letters of the alphabets and also some numbers which he will always practice anytime he comes to school so to help him not to forget. With regards to the Glory and Gabriel, Daniel is very intelligent he easily identifies numbers and letters, colors inclusive when it comes to doing things on the board he is always the first to take the initiative and even when he gets it wrong that does not stop him from going to the board if he is asked to. Looking at him his condition isn't as severe as the first two participants. At times when no one is looking he will take the chalk off the teachers table and try to write on his own. Even though he sometimes has difficulty holding the chalk due is poor fine muscle tone, he still trues anyways and as time went by, he got better and better. He also eats very well on his own and is very neat when he his eating, he takes his time to make sure he doesn't dirty the place by

getting his food everywhere and his lunch box is always seen to be filled with different types of food for different days and always a bottle of water.

According to his teacher, one of the ways to enhance socialization in Daniel is role play so she tries as much as she can to explain the roles of some common people around them like their mother and father and she acts it out then she shows them and help them to act these roles just like she did. With this strategy the child is able to understand the role of his or her mother and father in the home and will be able to do the role play without any help after some time of practice

It is very easy to notice one with down syndrome due to their distinctive physical characteristics but we see that their cognitive and social skills vary from one participants to another and the level at which they develop is totally different from each other and this is also one of the most vital reasons as to why we teach them differently.

4.1.3. Gabriel

The second case is the one of a 4years old with Down syndrome he is in the class of initiation 1B so, after the encounter with the children through the observation that was done. This is case being 4 years old a child with Down syndrome child who seem to have problems with talking this is so because when subject needs something done, he turn to start crying till he gets it. The subject has a problem of really adapting to the social changes around him which made us more interested in the research conducted.

The subject here is the one who even by the sitting position in class gives us the idea of the close monitoring which the teachers want to keep on him given the fact that he is seated on the first bench of the class given, we realized that he is bullied and often realize given this his state the teacher has to put him on the first bench which given the fact that falls to every provocation by his peers. The teacher has to be very keen to his needs since he cannot talk so the little gestures, he makes means a lot.

He is not so playful this so because he gives much importance to the details around him but for his pairs he does not show any interest on the play activity but gives more joy when he comes in contact with is teacher which he so much appreciates the social connection which is established between him and the teacher.

With Gabriel the teacher engages him in games with his friends and table mates she makes them play together in using toys and building blocks with this he is forced to work and talk

with them. Gabriel has problems walking due to cerebral palsy, he can't control his legs so is always sitting in the same position, he doesn't even talk just once and he does not interact with people. This helped him to understand social cues, interpreting the emotions of his friends as they play together and helped him to engage in reciprocal communications this helps him and gives him the opportunities to practice and refine his socialization skills. Also, these games enhance his peer relationships which in turn offer opportunities for collaboration, negotiation and problem-solving skills which is essential components for his sociocognitive developments.

The subject can't talk at all even to alter single words this id due to the fact that he is affected by cerebral palsy and this condition has affected his walking and even his speech. For easting, the subject is seen to eat alone even though he scatters the food around but he eats, practice of fine motor skills like holding of the spoon properly helps him during his feeding. His lunch box is always seen to be packed with nutritive food and milk to go with it but hardly has fruits. The subject was noticed to not like proteins food like meat and fish and eats little of it.

His cognitive capacity is very low so the teacher sets him apart with other children in his level. He only plays when his peers engage him into it but is found to always play by himself. For Gabriel, since he's the most slow in learning than the three of them, his teacher started by asking him what he will like to do she encourage what he wants to do and in turn used it to teach him some skills she gives him more appraisals and he seems to really love it when others clap for him so I made sure he gets claps after he tries doing something on his own even if not correctly. Motivation helps to enhance his social interaction skills, promote positive relationships, promote positive peer relationships and foster collaboration among him and other children in the classroom. When he is motivated to engage with others, he is more likely to communicate, cooperate, and build friendship with his peers. Motivation also empowers him to become more independent, self-reliant and proactive in his learning experiences. By fostering a sense of motivation, we encourage him to take ownership of his learning and make choices and develop autonomy in and out of the classroom.

4.2. DATA ANALYSIS

This part of the research is out to analyses the results from chapter three which are the results gotten from the interviews combined with the ones gotten from the observation of the children in their class.

4.2.1. Socialization

Here, the researcher set out to see how children with down syndrome socialize with other children in and out of the classroom.

4.2.1.1 Role play

As the researcher observed the students, she came to the understanding that the teacher of these children with down syndrome does not only use the normal way of teaching these children but inculcated some practical earning styles in her teaching methods so the researcher decided to find out how useful these strategies were to these children and how it helped them to learn. Role play provides opportunities for children to practice and develop their social skills. By taking on different roles and engaging in pretend scenarios, children with Down syndrome can work on important social skills such as turn-taking, sharing, cooperation, and communication.

Role play can support language development by encouraging children to engage in conversations, use vocabulary related to specific roles or scenarios, and express themselves in different contexts. This can help children with Down syndrome expand their language skills and improve their ability to communicate effectively. Through role play, children can explore and understand different emotions by portraying various characters and situations. This can help children with Down syndrome develop emotional awareness, empathy, and the ability to express and manage their own emotions.

Role play often involves navigating different scenarios and finding solutions to challenges within the context of the role play. This can help children with Down syndrome develop problem-solving skills, critical thinking, and the ability to adapt to different situations. Role play allows children to observe and imitate behaviors, language, and social interactions related to specific roles or characters. For children with Down syndrome, who often benefit from imitation and modeling of skills, role play can provide valuable opportunities to learn by observing and participating in different roles. Role play encourages children to express themselves creatively, use their imagination, and explore different roles and identities. This can be empowering for children with Down syndrome, allowing them to express themselves in a safe and supportive environment.

Role play can help children with Down syndrome understand real-life situations and roles they may encounter, such as pretending to be a doctor, a teacher, or a family member. This can support their understanding of the world around them and the roles people play in society. Role

play is inherently engaging and enjoyable for many children, including those with Down syndrome. It can motivate children to participate in learning activities, promote active engagement, and make learning experiences more enjoyable and meaningful. When using role play to teach children with Down syndrome, it's important to provide support, encouragement, and opportunities for individualized participation based on each child's abilities and interests. Creating a supportive and inclusive environment where children feel comfortable exploring different roles and expressing themselves can maximize the benefits of role play for their learning and social development.

Children with Down syndrome do not learn like all these neurotypical kids we have to put into considerations their disabilities when we are constructing their own lessons this is to help them to learn at their own pace while understanding the materials being thought. One of these ways is role play so I try as much as I can to explain the roles of some common people around them like their mother and father and I act it out then I show them and help them to act these roles just like I did. With this strategy the child is able to understand the role of his or her mother and father in the home and will be able to do the role play without any help after some time of practice

It is very easy to notice one with down syndrome due to their distinctive physical characteristics but we see that their cognitive and social skills vary from one participants to another and the level at which they develop is totally different from each other and this is also one of the most vital reasons as to why we teach them differently.

With Gabriel I engage him in games with his friends and table mates I make them play together in using toys and building blocks with this he is forced to work and talk with them. Gabriel has problems walking due to cerebral palsy, he can’t control his legs so is always sitting in the same position, he doesn’t even talk just once and he does not interact with people. This helped him to understand social cues, interpreting the emotions of his friends as they play together and helped him to engage in reciprocal communications this helps him and gives him the opportunities to practice and refine his socialization skills. Also, these games enhance his peer relationships which in turn offer opportunities for collaboration, negotiation and problem-solving skills which is essential components for his sociocognitive developments.

Glory on the other hand talks only when she needs something, she even bullies her table mates so most of them don’t like to play with her but she can be nice when she feels like it and also plays but not as Daniel. With Glory since her table mates hardly interact with her, I also engage

them in play using toys with this her table mates are forced to play with her and also, she learns how to share in the process. I also engage her in role play and pretend play which helps her to develop skills such as: navigating social situations, understanding different roles, encourage empathy for her peers and social understanding.

4.2.1.2 Practice play

Practice play is very vital in teaching children with disabilities because it helps with attention problems and is a teaching method that encourages modeling. This is also a vital teaching tool in the hands of a special educator working with children with down syndrome. In carrying out the research, the researcher was made to understand how practice play can be used as a teaching method. Skill Development: Practice play provides opportunities for children with Down syndrome to develop and practice various skills in a fun and engaging way. Through play, they can work on physical, social, cognitive, and emotional skills that are important for their overall development.

Play activities can reinforce academic and functional skills that children are working on in more formal learning settings. For example, playing games that involve counting or sorting can help reinforce math concepts, while engaging in pretend play can support language and social skills. Many children with Down syndrome have sensory processing differences, and practice play can provide a rich sensory experience. Activities such as playing with different textures, exploring sensory bins, or engaging in movement-based play can help children regulate their sensory input and develop sensory integration skills.

Practice play offers opportunities for children with Down syndrome to engage in social interactions with peers, siblings, or adults. These interactions can help them develop social skills such as turn-taking, sharing, cooperation, and communication. Children with Down syndrome often benefit from imitation and modeling of behaviors and skills. Practice play allows them to observe and imitate others, which can support their learning and skill acquisition. Many children with Down syndrome experience delays in motor skills development. Practice play activities can target gross motor skills (e.g., running, jumping) and fine motor skills (e.g., using manipulatives, drawing), helping them improve their physical abilities.

Play can serve as a tool for emotional expression and regulation. Children with Down syndrome may struggle with managing their emotions, and engaging in play activities can provide a safe and enjoyable outlet for expressing and understanding their feelings. Practice play is inherently

motivating and enjoyable for children, which can enhance their engagement in learning activities. When learning is embedded within playful experiences, children are more likely to be motivated to participate and persist in the learning process. When using practice play to teach children with Down syndrome, it's important to consider individual interests, strengths, and developmental needs. Tailoring play activities to match each child's preferences and abilities can maximize the benefits of practice play for their learning and overall development. Additionally, providing a supportive and inclusive environment that encourages participation and celebrates progress can further enhance the effectiveness of practice play for children with Down syndrome.

Daniel easily copies when he sees what I do in class he is very attentive and likes to take part in practice play, he sometimes takes control of the whole session and in turns make his friends join him in the playing prices this helps him recall things easier. With this, Daniel has the opportunity to develop his motor skills, cognitive abilities and social skills too. Through this method, he strengthens his muscle coordination, problem solving skills and communication abilities. Practice play also involves sensory experiences such as touching feeling and exploring different objects and materials this helps Daniel to develop his sensory processing skills, enhance his sensory awareness and improve their sensory integration.

Glory even though shy at times still joins in play when she feels like it. The essence here is not force her into doing things that she doesn't want to be encouraging and persuading her to be able to take action. Engaging in practice play also helps Glory develop her cognitive development by enabling her retain more information, her attention span and concentration on tasks in class. It also provides her opportunities to engage in social interactions with peers, siblings at home and caregivers or parents these interactions help them to develop her social skills such as; sharing, taking turns, cooperation and communication.

Gabriel due to the fact he has cerebral palsy really hinders him from taking part in certain activities but that doesn't mean that I don't encourage him to, he will usually only play roles that will allow him sit down since working is still difficult for him.

Gabriel due to the fact he has cerebral palsy really hinders him from taking part in certain activities but that doesn't mean that the teacher does not encourage him to, he will usually only play roles that will allow him sit down since working is still difficult for him. Also, practice play is helping Gabriel as a tool to express his emotions, relieve stress and regulate his emotional responses. It also gives him a sense of comfort, predictability and security which can

help him manage his anxiety or challenging situations. Also, by mastering skills of task through practice play, he can build his self-confidence, independence that is learn to do things by his self which will give him a sense of accomplishment and boost his self-esteem too and motivate him to continue learning too.

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4.2.2 Teaching strategies

Here, the researcher was out to see the different types of teaching strategies that the special educators used in their classrooms and how effective it was to help teach children with down syndrome.

4.2.2.1. Use of visual aids

The children with down syndrome in this classroom despite their similarities in their disabilities they do not belong to the same cognitive or socialization skills level that is they are all different and need different teaching methods to be able to teach them but one thing they have in common is that they are all captivated by colors and symbols so we use symbols to be able to teach them. Different things in the school and classroom are represented by different symbols which we make the kids aware of their meaning so if for example a child wants to use the toilet, he or she simply needs to raise a symbol indicating the toilet and he or she is taken there. This doesn't only help the child to learn to communicate nonverbally but also helps the teacher to be able to help the child properly". Children with Down syndrome often benefit from visual learning, as it can help them better understand and process information. Visual aids such as pictures, diagrams, charts, and videos can make abstract concepts more concrete and easier to grasp.

Visual aids can aid in memory retention. Children with Down syndrome may have difficulty with short-term memory, so visual cues can help reinforce learning and improve recall of information. Visual aids can capture the attention of children with Down syndrome and keep them engaged in the learning process. Colorful and interactive visuals can make learning more

interesting and enjoyable for them. Children syndrome may struggle with expressive language skills, so visual supports can help them communicate their thoughts and understand others' communication more effectively. Visual schedules and timetables can provide a clear structure for daily activities and transitions, which can be particularly beneficial for children with Down syndrome who thrive on routine and predictability.

Visual aids can cater to individual interests and preferences, making learning more motivating and relevant for children with Down syndrome. Personalized visual materials can help create a positive and engaging learning environment. Visual aids can be combined with other sensory modalities to create a multi-sensory learning experience, which is often effective for children with Down syndrome who may benefit from a variety of sensory input to support their learning.

Visual aids can promote independence by providing children with tools to access information and complete tasks on their own. For example, visual instructions and checklists can help them follow steps independently. When using visual aids to teach children with Down syndrome, it's important to consider their individual needs and preferences. Tailoring visual materials to match their interests and strengths can make the learning experience more meaningful for them. Additionally, providing consistent access to visual supports across different learning environments, such as home and school, can further support their learning and development.

The school uses different types of teaching methods like applied behavioral analysis, discrete trial training where we try to break the skills or task into small discrete units and teach them one by one for better understanding and easy comprehension. The use of visual aids is very important specially to teach children like Glory since she has challenges in talking it helps him to be able to say what she wants to say but through the use of pictures and symbols. It helps her to also understand and express their thoughts, needs and emotions. Visual aids also help to make abstract concepts more understandable for her, with things like graphs, chart, diagrams and illustrations it helps her to grasp new information, learn new skills and remember important details more effectively.

The school is also in support of role play to use to teach the kids with down syndrome this helps them learn different types of behaviors and how to act in certain situations and also include visual learning styles since children with down syndrome learn more by visual representations. Visual aids empower Gabriel to become more independent in their daily routines and activities. Visual schedules, tasks list and step by step instructions helps him to navigate tasks, follow routines and complete tasks with greater autonomy which empowers him

to be more independent in his daily routines and activities. Visual aids such as facial expressions, gestures, or social stories helps him to understand social cues and develop social skills. It also helps him in behavior management, regulate his behaviors, understand boundaries and make more positive and better choices.

Howell (2000) stresses the importance of the development of inclusive schools for learners who can benefit from it (Laws & Millward 2001) because research supports the fact that people with intellectual disabilities can be taught and the best way would be in association with non-disabled learners (Seguin 1866 in 1907). Parents can also play an important role in helping to prepare teachers informally with written material and personal information on their children, as well as talking to the child's classmates before the onset of inclusion, so as to help prepare them (Wolpert 2001). Teachers are advised to use the stronger visual working memory to support learning and individuals with Down's syndrome are attributed with a 'visual learning style'. Modifications to teaching may come in the form of visual timetables, sign supported speech, a physical 'hands on' approach to abstract tasks and using the written word to support idea construction (DSA, 2011a, 2011b).

As a result of the behavioral and cognitive phenotypes and additional medical needs, individuals with Down syndrome are often attributed with a specific learning style and a range of measures are put in place in schools to aid learning. Parents play an important role in the development and education of learners with Down syndrome (DS), which is one of the most common congenital syndromes and is caused by one extra copy of chromosome 21 (Livingston & Strydom 2012). It occurs once in about every 700 births, but this number may vary from one in 500 to 1 000 (Hovorka & Naznin Virji-Babul 2006; Laws & Millward 2001; Selikowitz 2008; Shiver 2010). If one looks at the overall picture, it affects around 5.8 million people worldwide and is the most common inherited cause of learning difficulties. This fact stresses the importance of this study (Hanney, Jones, Francis & Ballard 2012).

4.2.2.2.Motivation

Motivation is a very essential part in the learning of children with down syndrome it serves as encouragement and makes them try to do better. I noticed that no matter how small the accomplishment was, the teacher always tried to motivate the kids with claps and praises and this boasted their morals to do more.

Motivated children are more likely to be engaged in learning activities. When children with Down syndrome are motivated, they are more willing to participate, pay attention, and actively

involve themselves in the learning process. Motivation can help children with Down syndrome stay persistent and focused on their learning goals. It encourages them to keep trying, even when faced with challenges or setbacks.

Motivated children are more likely to achieve positive learning outcomes. When they are eager to learn and participate, they are more likely to grasp new concepts, retain information, and develop new skills. Motivation can boost the self-esteem of children with Down syndrome. When they experience success and progress in their learning, it enhances their confidence and sense of accomplishment.

Motivated children are more likely to take initiative and become independent learners. They may be more inclined to explore new activities, ask questions, and seek out opportunities for learning. Motivation can contribute to positive behavior in children with Down syndrome. When they are motivated, they are more likely to exhibit behaviors that support learning, such as attentiveness, cooperation, and enthusiasm. Motivation can contribute to the emotional well-being of children with Down syndrome. Feeling motivated and engaged in learning activities can lead to a sense of enjoyment, satisfaction, and fulfillment.

Motivation can foster positive relationships between children with Down syndrome and their teachers, caregivers, and peers. When children are motivated, they may be more open to forming connections and engaging in social interactions within the learning environment. To enhance motivation in teaching children with Down syndrome, it's important to consider their individual interests, strengths, and preferences. Tailoring learning activities to align with their motivations and providing positive reinforcement can help create a supportive and encouraging learning environment. Additionally, incorporating interactive and engaging teaching methods, such as hands-on activities, games, and music, can further enhance motivation and promote a positive learning experience for children with Down syndrome.

With Daniel I noticed he was very as compared to the other kids and motivation helped him to do better so I gave him more praises and rewards anytime he did an exercise correctly this helped him do more. Motivation plays a crucial role in supporting the children with down syndrome like Daniel, motivation can help him to engage in learning activities, participate in the classroom, and show interest in exploring new concepts and skills. When he is motivated, he is likely to be more attentive in the classroom, focused and willing to learn. Also, motivation helps him to be persistent in his efforts, overcome challenges and work towards achieving his

goals a strong sense of motivation can help the stay determined, resilient and committed to learning despite obstacles and setbacks

With Glory, she knows what to do but at times will deliberately refuse to do it so I try to bring her close to Daniel and as she saw him working and receiving all the praises she gradually started trying out to do some of the activities and I also encourage every little milestone that she crossed this proved to work wonders for her. Also, motivation boost her self-esteem, self-confidence and belief in her own abilities. when she feels motivated, she is more likely to try new things and develop a positive attitude towards learning and problem solving. Also, motivation helps her to set goals, establish targets for improvement and strive towards achieving success in their academic and personal endeavors. Setting achievable and realistic goals can give a sense of purpose, direction and accomplishment for children.

For Gabriel, since he's the most slow in learning than the three of them, I started by asking him what he will like to do I encourage what he wants to do and in turn used it to teach him some skills I give him more appraisals and he seems to really love it when others clap for him so I made sure he gets claps after he tries doing something on his own even if not correctly. Motivation helps to enhance his social interaction skills, promote positive relationships, promote positive peer relationships and foster collaboration among him and other children in the classroom. When he is motivated to engage with others, he is more likely to communicate, cooperate, and build friendship with his peers. Motivation also empowers him to become more independent, self-reliant and proactive in his learning experiences. By fostering a sense of motivation, we encourage him to take ownership of his learning and make choices and develop autonomy in and out of the classroom.

4.2.3 Adaptation to socio cultural context

We provide culturally responsive education that acknowledges and celebrates the cultural diversity of students with Down syndrome. Incorporate diverse perspectives, traditions, and values into the curriculum to create a more inclusive learning environment. Involve families and communities in the education and support of children with Down syndrome. Collaborate with parents, caregivers, and community members to create a network of support and resources that can help meet the needs of the child within their sociocultural context. Offer language and communication support that is sensitive to the linguistic diversity of children with Down syndrome.

Provide multilingual resources, interpreters, and communication aids to facilitate effective communication with students and their families. Provide training and professional development opportunities for educators, therapists, and other professionals working with children with Down syndrome to enhance their cultural competence. This training can help them better understand and address the unique needs of students from diverse sociocultural backgrounds. Develop individualized support plans that take into account the cultural beliefs, practices, and preferences of children with Down syndrome.

Tailor interventions, accommodations, and strategies to align with the child's sociocultural context and promote their overall well-being. Foster a culture of inclusion and diversity within the school environment by promoting acceptance, respect, and understanding of different cultures, languages, and traditions. Encourage students to learn from each other's backgrounds and experiences.

4.2.3.1. Use of songs

Firstly, songs are a way to learn and having in mind that these songs give these children a high enthusiasm, it is therefore very important to be able to use these songs to teach them different things in their environment, the names of objects and the names of the days of the week and months of the year. This allows them to be able to recall in the later future. Songs also helps teach them their roots where they come from and gives them a little history of their ancestral background.

Singing songs with peers, caregivers, or teachers can promote social interaction and communication skills in children with Down syndrome. Group singing activities can foster a sense of belonging, cooperation, and teamwork. Music is a powerful medium for emotional expression and can help children with Down syndrome communicate their feelings and emotions. Singing songs with emotional content can provide an outlet for self-expression and promote emotional well-being. Songs engage multiple senses, including auditory, visual, and kinesthetic elements. This multi-sensory experience can benefit children with Down syndrome by providing different pathways for learning and comprehension. Incorporating songs into teaching activities can make learning more enjoyable, effective, and inclusive for children with Down syndrome. Teachers, therapists, and caregivers can use a variety of songs, including educational songs, nursery rhymes, and personalized songs, to support the development of language, cognitive, motor, social, and emotional skills in children with Down syndrome.

We introduce children with Down syndrome to songs from different cultures and traditions. By exposing them to a variety of music styles, languages, and cultural practices, you can help them appreciate diversity and broaden their understanding of the world around them. Use songs as a fun and interactive way to support language development in children with Down syndrome. Singing along to songs can help improve vocabulary, pronunciation, and communication skills while also promoting cultural awareness through exposure to different languages. Encourage group singing activities to promote social skills and cooperation among children with Down syndrome. Singing together can foster a sense of community, teamwork, and inclusivity, while also providing opportunities for peer interaction and collaboration.

Songs can be a powerful tool for helping children with Down syndrome express their emotions and feelings in a safe and creative way. Encourage them to choose songs that resonate with their emotions and experiences, allowing them to connect with the music on a personal level. Use songs as part of cultural celebrations and events to help children with Down syndrome learn about and participate in different cultural traditions. Incorporate music from various cultures into holiday celebrations, festivals, and special events to promote cultural awareness and appreciation. Combine songs with movement and dance activities to engage children with Down syndrome in a multi-sensory learning experience. Dancing to music can help improve coordination, motor skills, and physical fitness while also providing a fun outlet for self-expression and creativity. Use songs as a storytelling tool to convey cultural narratives, myths, and legends to children with Down syndrome. Choose songs that tell stories or convey important messages about history, values, or traditions, allowing them to connect with the cultural significance of the music. Consider incorporating music therapy sessions into the educational program for children with Down syndrome.

Music therapy can help improve cognitive skills, emotional regulation, social interaction, and sensory processing while also promoting cultural sensitivity and awareness through music-based interventions. Encourage children with Down syndrome to participate in collaborative songwriting activities where they can create their own songs based on their experiences, interests, and cultural background. This can help them develop creativity, self-expression, and a sense of ownership over their musical creations. Provide opportunities for children with Down syndrome to showcase their musical talents through performances, recitals, or cultural events. Encourage them to share their songs with others, fostering confidence, self-esteem, and a sense of accomplishment within a sociocultural context. By incorporating songs into the educational and therapeutic activities of children with Down syndrome, educators and

caregivers can harness the power of music to support their sociocultural development, promote inclusivity, and enhance their overall well-being within diverse learning environments.

4.2.3.2. Language skill

Firstly, we recognize each child's need even though there are combined actives they do together but locating a child's need helps us to plan their scheme of work and schedule individually. We also collaborate with speech therapies and other professionals who specialize in language development to create a comprehensive plan for supporting children with Down syndrome in the classroom. It also helps us ensure that the children receive the specialized support they need to develop their language skills effectively.

Early intervention services, such as speech therapy and occupational therapy, can help address language delays and provide individualized support for children with Down syndrome. Visual aids, such as picture cards, visual schedules, and communication boards, can help children with Down syndrome understand and communicate better. Encourage your child to communicate through gestures, sounds, or words. Respond positively to their attempts to communicate and provide opportunities for them to practice their language skills. Reading books aloud to your child can help improve their language skills, vocabulary, and comprehension. Choose books with colorful pictures and simple language.

Teaching your child basic sign language can help them communicate more effectively. Start with simple signs for common words like "more," "eat," and "play." Encourage your child to engage in play activities with peers and siblings to practice social communication skills and language development. Use simple and clear language when speaking to your child. Repeat words and phrases, and provide opportunities for them to imitate and practice new words. There are various apps and software programs designed to support language development in children with special needs. Explore these resources to supplement traditional therapy approaches.

Set achievable goals for your child's language development and track their progress over time. Celebrate small milestones and achievements along the way. Remember that every child develops at their own pace. Be patient, supportive, and encouraging as your child works on improving their language skills. By implementing these strategies and providing consistent support, you can help children with Down syndrome develop their language skills and enhance their overall communication abilities. Songs are inherently engaging and can capture a child's attention and interest. The rhythmic and melodic elements of music can help children with Down syndrome stay focused and motivated during learning activities. Songs often contain

repetitive lyrics and melodies, which can help reinforce key concepts and vocabulary. Repetition is beneficial for children with Down syndrome as it allows them to practice and internalize new information.

Music has been shown to enhance memory retention in individuals with cognitive impairments, including those with Down syndrome. Children may remember lyrics, melodies, and concepts more easily when they are presented in a musical format. Songs can support language development by introducing new words, phrases, and concepts in a fun and engaging way. Singing along to songs can help children with Down syndrome improve their vocabulary, pronunciation, and communication skills. Many songs involve movement, gestures, and actions that can help children with Down syndrome develop their motor skills and coordination. Dancing, clapping, and moving to the rhythm of a song can promote physical activity and enhance gross and fine motor abilities.

For Glory in particular we use more of visual aids for her since we discovered that she loves pictures. Pictures, diagrams, charts help make abstract concepts easier to grasp this helps her to express her emotion, ideas, concepts more effectively. Also, we ensure she goes for speech therapy every day when she is in school this also helps her a lot. The use of visual aids such as pictures, charts, diagrams and flashcards help her to be able to understand and remember new ideas, vocabulary words, concepts, and instructions. It also enhances her comprehension and facilitates communication the classroom and even outside at home. Also, her instructions are broken down into clear and concise, simple and clear steps to make it easier for children with down syndrome to follow directions and complete tasks also use of visual cues and gestures along with verbal instructions helps to reinforce verbal communication.

Since Daniel is more cognitively built than any of the kids, we designed his own lessons by providing more predictable routines to make him feel comfortable and confident in his environment this also helps to support his language development by providing a framework for communication. Encourage peer interactions helps to facilitate opportunities for him to engage in social interactions with peers also encouraging group work, cooperative learning tasks and partner work helps to promote communication skills, turn making and social engagement skills which helps him to improve on his language and communication skills. He also goes for speech therapy which is of great help to him. We also engage him into multisensory activities that involves multiple senses such as touch, sight, sound and movements this helps to support language through experiential learning.

For Gabriel we use more of repetition and positive reinforcement whenever he repeats a word correctly. Repetition is key for language development in children with Down syndrome. Repeating short words over and over frequently enhances learning. Positive reinforcement, such as praise and rewards also encourage him to engage in language. Also repeating key words, phrases and concepts frequently helps reinforce learning and memory retention. also providing positive reinforcement such as praise and encouragement for their efforts motivates them to practice language and communicate effectively. Also fostering a supportive and inclusive environment where he and others feel valued and accepted and included by encouraging peer support, collaboration and mutual respect and the students helps to promote positive social interactions and language skills.

4.2.3.3. Working together

Ok, so we engaging Glory in cooperate play with other kids which requires them to work together, helps them to develop problem solving skills and also helps her to complete task that are challenging to her as an individual this also helps her to foster a sense of camaraderie with her classmates. Collaborating with peers enhances her motivation and engagement in learning activities. Working together on group projects, group tasks or games fosters a sense of team work and shared achievements which boosts her interests and participation. It gives her the chance to observe and learn from others by observing appropriate behaviors, language and problem-solving skills, social interactions which will in turn help her in her own development.

We also discovered that Gabriel loves when we do role play so we organized more role play activities involving him in it too we also stimulate real life scenarios that requires them to work together or act out different roles. This is to help him pick up positive social skills from his classmates, develop empathy and have fun while doing it. It also helps him to practice and enhance his motor and socialization skills and also his communication skills this is done by encouraging him to use verbal languages and gesture, facial expressions and other form of communication to express his thoughts and ideas and emotions more effectively.

With Daniel we engaged him in ore of singing, music acuities and a little bit of art work, which made him to have to work more with his friends we assigned them to draw together which also allowed them to express themselves in their own way. Collaborating with helps foster empathy, compassion and understanding amongst him and his peer. Through shared experiences, challenges, successes they can develop a greater appreciation for diversity, differences and individual strengths.

Conclusion

If we are to design a particular subject matter, then the organization of the content should be a sequence that is compatible with the learners 'cognitive abilities. In other words, programs should be set according to the actual level of learners, and teaching strategies should be aligned with the learners 'cognitive level. This can be implied with children with down syndrome in the classroom as it was observed from our participants. Acknowledging that these kids are special and thus will need special teaching methods is the first step to helping them so teaching strategies should be aligned to the children's cognitive level. Bruner makes clear that what determines the level of intellectual development is: the extent to which the child has been given appropriate instruction together with practice or experience. So, the right way of presentation and the right explanation will enable a child to grasp a concept usually only understood by an adult. Learners can be taught to generate their own instructional method and strategy for learning.

It shows that, Vygotsky theory encourages teachers also to not focus too much on teaching concrete maters, but to invoke the learners 'abstract thinking about the world. This would be helpful for the learners in the sense that it develops multiple skills that will assist them to deal with complex learning matters. He believed the socio-cultural environment is critical for cognitive development. According to Vygotsky (1978, cited Lantolf 2000), the sociocultural environment confronts children with a diverse set of tasks and questions. In early stages, the child is completely dependent on other people, especially on parents, who initiate his decisions while instructing him what to do, how to do it and what not to do. Initially these are realized through language, which plays a big role in the way the child adapts to the social inheritance. The society where the individual lives in and the social settings where he is part of are the elements which determine what the individual learns about the world and acquires as knowledge.

The teachers themselves testified that when these children are given the opportunity to learn from each other they learn faster and better "engaging them in games with friends and table mates makes them play together in using toys and building blocks with this they are forced to work and talk with one another this helped them to understand social cues, interpreting the emotions of friends as they play together and helped them to engage in reciprocal communications this helps them and gives them opportunities to practice and refine their socialization skills.

From the interview of the teachers teaching these kids with down syndrome they stated that “repetition and practice are essential for memory consolidation. Repeating information and providing opportunities for practice can help children with Down syndrome reinforce their memory and improve retention motivation is also helpful with children with down syndrome which helps children set achievable goals that are relevant to their interests and abilities. Break down larger goals into smaller, manageable tasks to provide a sense of progress and accomplishment, tailor learning materials and activities to meet the child's individual needs”.

Songs also helps teach them their roots where they come from and gives them a little history of their ancestral background Dancing to music can help improve coordination, motor skills, and physical fitness while also providing a fun outlet for self-expression and creativity. Use songs as a storytelling tool to convey cultural narratives, myths, and legends to children with Down syndrome”.

CHAPTER FIVE

INTERPRETATION AND DISCUSSION OF RESULTS

The main objective was to analyze how psychoeducational support helps to mobilize the sociocognitive skills of children with trisomy 21. This chapter focuses on the interpretation and discussion of results or major findings with reference to the objectives, hypothesis of the study, recommendation based on the conclusions will be made to special educators, the parents of children living with trisomy 21, special education and inclusive schools and some suggested areas for further research will also be proposed.

5.1. The recall of theoretical data

This research was based mainly on the sociocultural theory by Lev Vygotsky and supported with Jean Piaget's theory of constructivism, and the social learning theory of Brunner. These theories were used to prove how psychoeducational support is used to mobilize the sociocognitive skills of children with trisomy 21.

It was observed that teachers who teach children with down syndrome promote peer collaboration, group discussions, and cooperative learning activities to encourage students to share their ideas, challenge each other's thinking, and construct new knowledge together. So, in conclusion, when children with down syndrome observe others in this case a more experienced neurotypical child they can copy socialization skills from them and which will help them to be able socialize in the society with other people their peers and their relatives at home. From the data collected teachers have to play a very vital role in the socialization of children with down syndrome giving them adequate assistance and creating necessary environment to the children to be able to socialize and learn from their peers in the classroom. Parents too should be taught on ways to be able help these children socialize even in their homes so what they watch especially on television should be monitored.

Also, Teachers teaching strategies and the methods teachers use should act as guides on the side who just provide the learners with opportunities to test their current level adequacy. Ashton and Gregoire-Gill (2003: 102) quote Piaget words as regards the role of teacher in the classroom as follows: what is desired is that the teacher ceases being a lecturer, satisfied with transmitting ready-made solutions; his role should rather be that of a mentor stimulating initiative and research. So, if given the opportunity and the right situations to learn children

with down syndrome can be able to construct their knowledge with the teacher as the guide and an instructor to these children. Piaget ‘s stages of cognitive development can be used in different ways, for example as general guides to sequential curriculum design.

In “The Process of Education” (Bruner, 1960), he claimed that knowledge of any subject could apply efficient teaching to any child at any stage of development via certain reasonable ways. A learner learns to study independently and acquires skills to establish his/her own standard. Bruner believed that the effective teaching environment should be available during teaching to stimulate students’ curiosity and maintain their interests as well as to guide students to explore into the right directions. Good teaching methods coupled with the child’s socialization skills will help the child learn basic things in the classroom, taking into consideration that no child is dull or unable to learn but with the right teaching styles and assistance from parents and teachers these children can be able to learn well even though it might not be in the same pace as their neurotypical counterparts but they will still be able to learn.

Finally, when it comes to the adaptation to the Sociocultural context, Vygotsky (1978 cited Wertsch 1985) declares that the child receives the knowledge initially through the contacts and interactions with people, and then assimilates this knowledge adding the personal values in it. Based on the sociocultural view, teachers should not look at the learner’s deviations from the second/foreign language norms as indication of failure, but as attempts made by the learners to create new identities and gain self-regulation.

Therefore, the child learns through social interactions, but also through elements of his own culture such as language, songs, arts etc. According to Vygotsky, language is indispensable in the learning process. He considered that there is a close relationship between language development and cognitive development.

5.1.2 Recall of empirical data:

From the data collected in the field it shows that psychoeducational support can be used to mobilize the sociocognitive skills of children with trisomy 21. It was also noticed that the teachers of these special children play a very vital role in the lives and education of these kids. To better understand, the research topic was broken down into three specific indicators and how they can be used to mobilize the sociocognitive skills of children with trisomy 21; socialization, teaching strategies, adaptation to the sociocultural context.

For Socialization and how it can be used to mobilize the sociocognitive skills of children with down syndrome it was noticed that socialization plays a very vital role in the lives of these children with down syndrome and can be used to help the gain knowledge and social skills. From the data obtained, we see that pairing children with Down syndrome with typically developing peers can provide opportunities for modeling appropriate social behaviors and fostering positive social interactions. Teachers can also facilitate the development of positive peer relationships by encouraging cooperation, empathy, and kindness among all students. This can be done through team-building activities, cooperative games, and promoting a supportive classroom environment.

Secondly, with teachers teaching strategies and methods and how it can be used to mobilize the sociocognitive skills of children with trisomy 21. the researcher was out to find out the different types of teaching methods and strategies that can be used in a classroom of children with down syndrome taking into considerations their mental state. It was noticed that each child with down syndrome is different and therefore will need different teaching strategies to help them learn better in and out of the classroom. People with Down syndrome learn better when they can see things illustrated teaching is more effective when information is presented with the support of pictures, gestures or objects. Also, visual aids, such as pictures, charts, and diagrams, can help children with Down syndrome better understand and remember information. Visual cues can provide additional support for memory retrieval.

Thirdly, Adaptation to the Sociocultural and how it can be used to mobilize the sociocognitive skills of children with trisomy 21 the researcher brings out the ways in which our sociocultural context in which we grow up influences our learning and socialization skills and in this case children with down syndrome. In class, songs are taught to these kids in their mother tongues, French and English also this is to help the kids grow up with a sense of belonging to a larger community and making them understand their roots and where they are from.

Cultural influence believes has a significant impact on how learning occurs. Teachers recognize and embrace different ethnic backgrounds. In this, students learn more about themselves and their own style through observation of those less similar to them the teacher's reasons for teaching these kids about their culture was, "We provide culturally responsive education that acknowledges and celebrates the cultural diversity of students with Down syndrome. Incorporate diverse perspectives, traditions, and values into the curriculum to create a more inclusive learning environment. Involve families and communities in the education and support

of children with Down syndrome. Collaborate with parents, caregivers, and community member's songs are a way to learn and having in mind that these songs give these children a high enthusiasm, it is therefore very important to be able to use these songs to teach them different things in their environment, the names of objects and the names of the days of the week and months of the year.

5.2. Interpretation of Results

This research was based on the topic; psychoeducational support to mobilize the sociocognitive skills of children with trisomy 21. The results gotten from this research was based on three main modalities from the hypothesis of this research and the main theory of this research being that of Vygotsky, Vygotsky's sociocultural theory which encompasses all the modalities of this research work. The sociocultural theory of Vygotsky opens us up too many things that are peculiar to be able to enhance the social and cognitive skills with children with down syndrome. Having in mind that each child learns differently and therefore each will need different methods to help them learn. Also according to Piaget, he emphasized the importance of active learning and exploration (Piaget, 1952). Incorporating hands-on activities, such as experiments, manipulative, and group projects, allows students to actively engage with the material and construct their own knowledge. Bruner also emphasized that the important tasks for teachers are to teach children how to think and discover principles from activities of acquiring knowledge, and then integrate and summarize them and form it into their own experiences of knowledge (Bruner, 1960).

5.2.1. From teaching strategies to how it enhances the sociocognitive skills of children with down syndrome

When it comes to teaching children with down syndrome, it should be clear that no child with down syndrome is different and therefore no one teaching strategy can be applicable to more than one child so as a teacher you have to be versed with all the teaching strategies that can be applicable to any child as per their needs, strengths and level of their disability. Teachers should therefore act as guides on the side 'who just provide the learners with opportunities to test their current level adequacy. Ashton and Gregoire-Gill (2003: 102) quote Piaget words as regards the role of teacher in the classroom as follows: what is desired is that the teacher ceases being a lecturer, satisfied with transmitting ready-made solutions; his role should rather be that of a mentor stimulating initiative and research.

Inclusive classrooms and inclusive teaching approaches benefit children with disabilities including the provision of higher levels of social competence and communication skills, opportunities to build on friendships and some identified gains in curriculum areas (Ainscow & Kaplan, 2005; Foreman, 2008). Many teachers find supporting inclusion requires some changes in their approaches to teaching and learning (Foreman, 2008). These changes come in the form of making judgements about the amount of support needed to facilitate inclusion, and extra demands on teachers to problem-solve to ensure challenges associated with the inclusion of a child with a disability are overcome (Foreman, 2008). For children with Down syndrome in classrooms, there is evidence that their educational experiences are not always inclusive, and that exclusion and discrimination still occur (Rietveld, 2008). No two children with Down syndrome are the same and children with Down syndrome exhibit many strengths which, when identified, can inform teaching approaches, pedagogy, and interventions. It is contended in the current research that to effectively teach children with Down syndrome, teachers need to understand what Down syndrome is, the associated learning profiles of children with Down syndrome, particular health and medical issues, as well as wider contextual information of family structure and communication issues (Cuskelly, 2005). By balancing the known health implications with the knowledge that all children are individuals with unique learning profiles, educational activities can be optimized to support children with Down syndrome.

Children with Down syndrome display variations within the domain of visual spatial processing, including strengths in visual memory, visual-motor integrations, and visual imitation (Fidler, 2005). For teachers, these variations present an opportunity to work with a strengths-based approach to teaching by capitalizing on visual-spatial processing. Fidler and Nadel (2007) highlight that a profile that includes strengths in visual processing and implicit memory could inform educational approaches when working with children with Down syndrome. This can be done through designing learning experiences and environments which are based on the strengths identified in research relating to children with Down syndrome.

Children with Down syndrome typically display some form of intellectual impairment, however, there is a significant variance in the intellectual impairment in individuals with Down syndrome (Davis, 2008). An identified strength in children with Down syndrome has included the area of visual learning (Abbeduto, 2003; Buckley, Bird, Sacks, & Archer, 2006). Visual short-term memory is also highlighted as an area of strength (Davis, 2008).

The use of explicit teaching strategies has been associated with the development of phonemic awareness and the teaching of grammar (Hewitt, Hinkle, & Miccio, 2005; Kennedy & Flynn, 2003). Learning environments which contribute to rich and targeted language development prior to school and during school are associated with higher vocabulary, comprehension, functional receptive and expressive communication outcomes (Couzens & Cuskelly, 2014).

The most effective teaching/learning materials identified by Wolpert (2001) include the use of concrete materials, the use of computers, and the use of pencil and paper. The use of concrete materials, or hands on materials, has been identified as particularly useful for students with Down syndrome as there is a tendency for learning through doing and through the use of manipulation of familiar and concrete learning materials (Ashman & Elkins, 2009). For example, in lessons where counting is a focus, the introduction of real materials to count is extremely useful. This use of concrete materials is supported by Faragher's (2004) research into mathematics that identifies the use of calculators to be effective combined with direct teaching strategies, ensuring adequate time is given for learning concepts and consolidating newly acquired skills into learning for students with Down syndrome (Faragher, 2004; Wishart, 2000). The use of computers as the second most effective material identified by Wolpert (2001) could be due in part to the technological advances seen in the last decade. The invention of hand held devices, touch pads, and wireless devices have impacted the way curriculum is delivered in classrooms worldwide, but as yet there is little research done in this area.

He was of the opinion that teachers must understand the cognitive structure of children, the design of curriculum should meet the cognitive method and correspond to cognitive approach, making students take the initiatives to discover the structural context, and designing new curriculum should be benefited to the cognitive approaches that children could find them easier to study, making students take initiatives to discover the content included in the textbook, and further to promote the individual’s cognitive development as teaching methods should be applied to stages of cognitive development in order to increase the effectiveness of learning. Bruner emphasized that the important tasks for teachers are to teach children how to think and discover principles from activities of acquiring knowledge, and then integrate and summarize them and form it into their own experiences of knowledge. Bruner believed that the effective teaching environment should be available during teaching to stimulate students’ curiosity and maintain their interests as well as to guide students to explore into the right directions.

Teachers should create an environment where learning can take please where a child with down syndrome can learn even without the teacher's presence cause the aim of teaching them is to make them independent and not a burden on their parents or caregivers. In Bruner's book "Toward a theory of instruction", which was published in 1966, he mentioned four principles needed attention when came to curriculum design (Bruner, 1966). Bruner said that children have an innate capacity and that cognitive abilities develop through active interaction, Bruner argued that social factors, particularly language, were important for cognitive growth. Bruner contended that any subject can be taught effectively to *any child at any stage of development*, that "there is no unique sequence for all learners, and the optimum in any particular case will depend upon a variety of factors, including past learning, stage of development (Bruner, 1966)", Bruner also talked about the foundation for the idea of a *spiral curriculum*. In *the spiral curriculum*, subjects are revisited again and again.

The area of motivation and engagement in learning for children with Down syndrome represents a pivotal role in learning and educational outcomes. An educational environment which offers appropriate cognitive stimulation, engaging learning activities, positive expectations of children's learning and other environmental factors may have the potential to increase levels of engagement for children with Down syndrome. Alternatively, factors such as illness, fatigue and associated health conditions may impede children with Down syndrome's motivation and engagement in learning. Deficits in motivation for individuals with Down syndrome have been identified as part of the behavioral phenotype of Down syndrome (Fidler, 2005).

The engagement of children with Down syndrome in teaching and learning contexts relies on teachers' abilities to understand factors such as health conditions and cognitive delays which may impact the motivation and engagement of these learners. Also, relevant to building engagement and motivation is the provision of understanding around the individual nature of learners with Down syndrome, and their strengths and weaknesses in learning. Educational planning which builds upon the child's interests and levels of skills in an incremental way will more likely engage the learner more fully (Gilmore & Cuskelly, 2014). Combined with this, feelings of success in their learning will contribute to the child's self-efficacy and well-being, in turn further increasing their engagement and motivation in learning (Gilmore & Cuskelly, 2014). Learning approaches used by teachers which recognize engagement in learning as dependent on other factors such as health conditions, building on feelings of competence, the

child's interests and skills, and incremental learning experiences are likely to be profoundly more successful for children with Down syndrome

Some of the teachers actually testified of the use of different teaching strategies which they use in their classroom and how it has enhanced on the children's sociocognitive skills which are; In all possible situations, providing visual aids (such as demonstrations, pictures, and illustrations) can assist students with Down syndrome in understanding and processing information for example the toilets in the schools are differentiated using drawings that is, the toilet for girls is represented by a drawing of girl and that of a boy is represented by a drawing of a boy this allows the children comprehend and understand better again most of their lessons are taught with the use of shapes, symbols and graphs that is if we are to learn about kitchen utensils, the utensils are actually drawn for them on the board and colored with different colors to make them know that these utensils can be found in different colors and shapes too. Also, the Montessori Method encourages following the child and allowing them to set the pace for their learning. Applying this principle gives children with Down syndrome the freedom to take the time they may need to get acclimated to a project and will eliminate the frustration that is likely to arise from the feeling of being rushed. Additionally, if they are feeling as though it is difficult to concentrate on a particular work, children with Down syndrome should be allotted the freedom to move on to another work for a period of time and come back to the first when they feel they are better able to focus. Giving students with Down syndrome enough time to process language and respond is also beneficial in ensuring they comprehend information.

5.2.2. From socialization to how it mobilizes the sociogonitive skills of children with down syndrome

For socialization and how it can be used to mobilize the sociocognitive skills of children with down syndrome, we came to the conclusion that socialization plays a very important role in the education of children with down syndrome which is not only to gain social skills but to understand the emotions of others, be able to interpret those emotions and also gain cognitive skills while socializing with peers. Social interaction plays an important role in student learning. It is through social interaction that students learn from each other, Fogarty (1999) stated, "Vygotsky's theory suggests that we learn first through person-to-person interactions and then individually through an internalization process that leads to deep understanding". The teacher therefore has a responsibility to put in place various activities and structures that will help a child with down socialize, the teacher's role here is more of a facilitator, observing the

child to make sure that the child is copying the right behavior they are copying and not just any one so the teacher discourages bad behaviors and encourages helpful behaviors.

Teachers who use small group formations and peer tutoring arrangements to enable children to interact with peers has been identified as a successful learning strategy for enhancing learning for children with Down syndrome (Wolpert, 2001). In addition, how to facilitate peer interaction to effectively support children with Down syndrome in general education settings and how children with Down syndrome interact with peers in activities has been examined recently in literature (Dolva, Gustavsson, Borell, & Hemmingsson, 2011; Dolva, Hemmingsson, Gustavsson, & Borell, 2010). However, explorations of peer interaction as experienced by teachers and how they facilitate peer interaction with children with Down syndrome revealed this to be a challenging aspect of teachers' practice (Dolva et al., 2011). Teachers were noted to strategically arrange learning activities in groups to encourage peer interactions, teachers also required other peers to provide assistance for the student with Down syndrome. By focusing on acceptance for diversity teachers encouraged other students in facilitating peer interactions, and this was identified as working toward the aims of peer facilitation for children with Down syndrome in general education settings. Activities chosen based on the interest of the child had positive repercussions for the child's level of engagement in tasks and also increased participation with the classroom (Dolva et al., 2011). The higher level of engagement that was supported by peer interaction provided opportunities for students with Down syndrome to do activities together which the students with Down syndrome could not do on their own (Dolva et al., 2010). Increasing the level of engagement in tasks through learning experiences based on the interests of the student, and with peer co-operation, has been identified as a successful teaching strategy for children with Down syndrome.

The notion of belonging to a class or group and how it legitimizes participation and involvement is a key component found in peer interaction for children with Down syndrome. Dolva et al. (2010) found that formal belonging for children with Down syndrome and other children, with and without disabilities in general education settings appears associated with high expectations and acceptance of diversity within a classroom group. This finding suggests that there is scope for teachers to increase the belonging of children with Down syndrome in the early years of schooling through their teaching approaches.

In terms of social interactions with others it has been identified that children with Down syndrome, in comparison to typically developing peers, have a more limited repertoire of play,

are less likely to be the initiators of play, and engage in more stereotypic and repetitive acts during play (Krakow & Kopp, 1983). Repetitive play can be characterized by engagement in play over and over again, for example, the bathing of a doll over and over again. Krakow and Kopp (1983) interpreted these repetitive acts of play as "regressive and inflexible" and as "limiting the object and social resources available" (pp. 1152-1153). However, further research by Lender, Goodman, and Linn (1998) into repetitive activity in the play of children with Down syndrome and typically developing children found otherwise. While Lender et al. (1998) agree that children with Down syndrome engage in more repetitive activity, they found that the quality of repetitive and non-repetitive play was similar, explaining that repetitive play may serve some constructive purposes for children including knowledge construction, mastery, and integration.

For educators, understanding the nature of children's play in the early years of schooling has implications. For example, the temptation to intervene in a child engaging in repetitive play could be seen as warranted and educators may be tempted to constantly redirect the play. Lender et al.'s (1998) findings, however, highlight that repetitive play is not necessarily unproductive, and may in fact be assisting as a rehearsal and mastery strategy. Play, in the context of educational settings, has been used but frequently with the intention that through play the teaching of play skills will occur (Jobling, 1996). Of concern here is that play is not merely a vehicle for children with Down syndrome to identify and achieve a list of developmental tasks, but rather engagement in play should be seen as an intended source of pleasure and enjoyment as well as learning (Jobling, 1996).

Research with children with Down syndrome in the area of social competence have reported teachers describing children with Down syndrome as being hyperactive, more distractible, and less pro-social than typically developing children matched on mental age (Guralnick et al., 2011). This has implications for the children's ability to engage in sustained play, particularly when the play is of an unstructured nature. Research carried out on children with Down syndrome and their mothers in the home environment has identified issues regarding play with their children with matched mental age groups including less well-developed linkages between playmates, less involvement with playmates during play, and less control exerted over the play by children with Down syndrome (Guralnick et al., 2009).

The issue of social competence indicates that children with special educational needs are often socially excluded, have fewer relationships and participate less in groups within the classroom

(Pijl, Frostad, & Flem, 2008). The nature of social competence as a strength for children with Down syndrome has not been actively researched in terms of the how this transfer into quality friendships within the schooling context. Understanding classroom settings and the teachers' role in assisting in the establishment of children with Down syndrome and their peer social networks are important considerations (Guralinick et al., 2011). Teachers who appear aware of children with Down syndrome as exhibiting peer interaction difficulties are described as more proactive in their supportive efforts including assisting children to initiate and maintain play, as well as understanding the basic rules and structure of social play (Guralinick et al., 2011).

The socialization of children is the acquisition of social skills. In the process of socialization, norms, skills, values, attitudes and behavior are shaped, the child to be able to role to play in the society as a desirable way appropriate social skills training and providing opportunities and experiences will increase their social interactions, and causes the students to apply strategies and social skills in all environments and real life situations. According to Bandura, imitation involves the actual reproduction of observed motor activities This theory is based on the idea that we learn from our interactions with others in a social context. Separately, by observing the behaviors of others, people develop similar behaviors. After observing the behavior of others, people assimilate and imitate that behavior, especially if their observational experiences are positive ones or include rewards related to the observed behavior. (Bandura 1977).

In general, these children exhibit a strong orientation to social aspects of their environment and appear motivated to engage in social interactions (see Fidler & Nadel, 2007; Kasari & Hodapp, 1996, for reviews). Certain developmental characteristics of children with Down syndrome, such as well-developed representational skills, are also compatible with involvement in social forms of play. It was observed and gotten from the results that when children with down syndrome are exposed to certain types of activities like group work, role play, they turn to learn and copy social and cognitive skills from one another. For example, Daniel in our study leant new words anytime he interacts and plays with his friends on the table he struggles to pronounce those words every time he has the opportunity to. At first it is difficult for him to pronounce them but as time goes on and he continuously hears the word he grabs it and can say it on his own even without hearing it**.**

5.2.3. From adaptation to the sociocultural context to mobilization of sociocognitive skills

Vygotsky saw that culture and social environment as crucial elements in the construction of human knowledge. The society where the individual lives in and the social settings where he is part of are the elements which determine what the individual learns about the world and acquires as knowledge. Therefore, the child learns through social interactions, but also through elements of his own culture such as language, songs, arts almost all cognitive abilities of children with mental disabilities experience abnormalities such as slow learning, ability to solve problems, and lack of ability to establish causal relationships, so their appearance is very different from other children (Kim et al., 2009). Cultural influence is another of Vygotsky's lenses that he believes has a significant impact on how learning occurs. He believes teachers should recognize and embrace different ethnic backgrounds. In this, students learn more about themselves and their own style through observation of those less similar to them. Curriculum should only be started once students have gotten comfortable with each other and had a discussion on their backgrounds according to Vygotsky.

The family contributions given to children with Down syndrome certainly have different contributions, both in how parents educate, parenting styles, and the relationships given by family members to children with Down syndrome. The family environment is part of community life. The environment is where people live and interact in the chain of life, need each other, and are interrelated. The family environment is the first place where life begins. It is very influential in the success of children with Down syndrome so that children can interact, socialize and integrate with their family environment. Therefore, the family is seen as the primary determinant of child development. Parents' love and praise become a channel for children to secure themselves with their parents so that a harmonious atmosphere in the family can be achieved easily (Lehmann et al., 2019).

It was then observed and discovered based on the data collected in the field that when children with down syndrome are engaged in different activities in several different languages their curiosity spikes up making them motivated to want to learn new things. In the school that this research was carried out in, it was noticed that during the assembly sessions the children are engaged into different songs in different languages. These songs come along with dance steps that the children learn. This is another form of learning and socialization because in most of

the songs the children have to attain different roles for example the role of the mother or father this does not only build on their motor skills but also on their socialization skills too.

The teachers in this school shared with use their idea about the adaptation of the children to their sociocultural context and how it helps children with down syndrome learn Songs can be a powerful tool for helping children with Down syndrome express their emotions and feelings in a safe and creative way. Encourage them to choose songs that resonate with their emotions and experiences, allowing them to connect with the music on a personal level. Use songs as part of cultural celebrations and events to help children with Down syndrome learn about and participate in different cultural traditions. Incorporate music from various cultures into holiday celebrations, festivals, and special events to promote cultural awareness and appreciation. Combine songs with movement and dance activities to engage children with Down syndrome in a multi-sensory learning experience.

One identified reason for weakness in language development includes issues with the phonological loop in individuals with Down syndrome (Purser & Jarrold, 2005). Limits in verbal working memory are exhibited in individuals with Down syndrome and are well reported within Down syndrome research, however understanding remains limited about how this occurs (Purser & Jarrold, 2005). A relationship between language production and working memory has been established (Seung & Chapman, 2003). Chapman, Hesketh, and Kistler (2002) identified the role of verbal and visual working memory abilities in the development of language including both expressive and receptive language skills for individuals with Down syndrome.

Language profiles for individuals with Down syndrome indicate language difficulties when compared to children of matched mental age (Abbeduto et al., 2001). The nature of weakness in language domains shows variance between individuals with Down syndrome with variances from non-verbal, one- or two-word utterances or language abilities identified as particularly high level (Papagno &

Vallar, 2001). There is an imbalance between receptive language and expressive abilities (Chapman, & al 1991). Fidler and Nadel (2007) encourage educators to be aware of these identified imbalances in receptive and expressive language, and that these differences may be frustrating for the child with Down syndrome who can understand more than they can express.

Educators need to sensitively consider social and motivational consequences of language difficulties. To reduce frustration, which may result in children becoming unmotivated

learners, educators need to minimize the "potential for negative experiences, while allowing the child with Down syndrome to benefit from the opportunity to build their speech, language and communication skills" (Fidler & Nadel, 2007, p. 266).

Dancing to music can help improve coordination, motor skills, and physical fitness while also providing a fun outlet for self-expression and creativity. Use songs as a storytelling tool to convey cultural narratives, myths, and legends to children with Down syndrome. Choose songs that tell stories or convey important messages about history, values, or traditions, allowing them to connect with the cultural significance of the music. Use songs as a fun and interactive way to support language development in children with Down syndrome. Singing along to songs can help improve vocabulary, pronunciation, and communication skills while also promoting cultural awareness through exposure to different languages. Encourage group singing activities to promote social skills and cooperation among children with Down syndrome. Singing together can foster a sense of community, teamwork, and inclusivity, while also providing opportunities for peer interaction and collaboration. From all these we concluded that adaptation to the sociocultural context is very vital role in the lives of the children with down syndrome and hence enhances sociocognitive skills of these kids.

5.3. Discussion of Results

In this research we explored three teachers of students with Down syndrome and three children with down syndrome. The findings reveal that the idea of socialization, teaching strategies and adaptation to the sociocultural context plays an important role in the children with down syndrome to acquire sociocognitive skills. Mrs. MJ, Mrs. FG and Miss NY were all teachers in CNRPH Yaoundé even though in different classes.

Their attitudes towards socialization, the teaching strategies of the teachers and the adaptation of these kids to their sociocultural environment proved the point that children with down syndrome can be supported to gain sociocognitive skills with the necessary help and support especially from their teachers this comes to support the ideas of Rietveld (2008), who suggested that many teachers of children with Down syndrome focus on the child's deficits, which tends to exclude rather than include them in the everyday running of the class. Teaching strategies therefore plays a very important role in helping the children with down syndrome gain sociocognitive skills. Also, working with these children includes some understanding that children with Down syndrome experience key areas of developmental delay. For example, language profiles indicate that children with Down syndrome experience more and greater

language difficulties when compared to children of matched mental age (Abbeduto et al., 2001). Children who have Down syndrome typically display some form of intellectual impairment; however, there is a substantial variation in the intellectual impairment from one child to another (Davis, 2008).

The engagement of children with Down syndrome in teaching and learning contexts relies on teachers' abilities to understand factors such as health conditions and cognitive delays that may impact the motivation and engagement of learners. Not knowing how to support children who present with these kinds of developmental delays can, in turn, have a negative impact on teachers' motivation. Huang and Diamond (2009) suggested that in taking a deficit approach teacher identify students by stereotypical characteristics based on their own knowledge of a particular disability, such as Down syndrome, rather than exploring specific characteristics of the child in their class. Norwich and Lewis (2001) investigated pedagogy for children with learning difficulties, including children with Down syndrome, and concluded that what is successful for these students would in fact work for all students. Significant to the current research, Norwich and Lewis suggested a need for teachers to value pedagogies based on the recognition of individual learning needs, which they called 'unique differences' (Norwich & Lewis, 2001). A similar study in the United Kingdom focused on the importance of connecting with individual learners, and making learning experiences meaningful was identified as being useful in inclusive education (Corbett, 2001). Shaddock et al. (2007) found that teachers who were successful in including students with disabilities in general education classes were routinely collaborating with colleagues, parents, and other students rather than trying to work in isolation.

When it came to socialization, it is one fundamental thing to our development as a human. By interacting with others, we learn how to think, feel, and behave. The result of this socialization is the formation of our behavior including thoughts and emotions by the wishes of the community (Henslin, 2006). In general, these children exhibit a strong orientation to social aspects of their environment and appear motivated to engage in social interactions (see Fidler & Nadel, 2007). Down syndrome display substantial difficulties with respect to various aspects of social understanding and associated sociocognitive skills (Cebula & Wishart, 2008). The school as an agency of socialization should be recognized as the first organizer of social relationships (Elkin & Handel, 1978). The classroom is often seen as a place where the child is easily faced with socializing amongst peers. Since most of the things that children do in the classroom are done in the presence of their peers, they have to learn how to deal with a more

formalized group situation? Parental expectations and perceptions of their children's development of both cognitive and motor skills serve to affect the transition to the school environment (Coates & Wagenaar, 1999).

Children learn when they are with friends during play and other activities they are prune to pick up different behaviors which are positive and even negative so the teacher has a responsibility to be able to guide these kids to positive behaviors by discouraging the negative behaviors this is supported by Vygotsky sociocultural theory which he says that, students can learn a lot from one another and put their skills and talents together to complete an assignment with equal input. When students master the completion of projects or activities in a group, each individual internalizes that knowledge more effectively (Cody & Powell, 2009).

When it come to the adaptation to the sociocultural context, where the child grows up is very important and having agreed on the fact that children with down syndrome are prune to pick up behaviors even in their natural environment at home. Cultural influence is another of Vygotsky's lenses that he believes has a significant impact on how learning occurs. He believes teachers should recognize and embrace different ethnic backgrounds. In this, students learn more about themselves and their own style through observation of those less similar to them. Curriculum should only be started once students have gotten comfortable with each other and had a discussion on their backgrounds according to Vygotsky. Vygotsky's sociocultural theory of human learning describes learning as a social process and the origination of human intelligence in society or culture. Vygotsky emphasizes how culture affects cognitive development. For Vygotsky, the environment in which children grow up will influence how they think and what they think about. Hence Vygotsky assumes cognitive development varies across cultures. Furthermore, while observing these kids in their classrooms I discovered that even though they might look like they know nothing but they have a simple knowledge of things they've seen, heard or seen they can therefore make sense of some peculiar objects they've seen more than once and this proves what Piaget said about children learning by manipulating their environment.

5.4. Limitation of the Study

The study was carried out precisely in the CENTRE NATIONAL DES REHABILITATION DES PERSONNES HANDICAPPEES. The study therefore confined itself only to this sample schooling in this center since they had more numbers of children with trisomy 21. Also, since the literature on persons with Down syndrome in this inclusive center was scarce in Cameroon,

the literature review was drawn from other African countries and some specific Countries of the World. The effect of psychoeducational support on the sociocognitive skills of children with down syndrome in America, Europe and Asia differed from the effects observed in Africa because of many factors of which cultural barriers and financial burden are major amongst others. Despite these limitations, the focus of this study was not derailed. Language too posed a problem for the researcher since most of the teachers in the school were strictly francophone so the researcher had to look for an interpreter to clearly explain the interview questions to be able to the get the right answers. Another limitation to the study is that we explored working with children with Down syndrome with three teachers only. A larger pool of participants would provide more extensive findings in this area that would better inform general education teachers about working with children who have Down syndrome. Another limitation is the relatively short span of time for data collection. Although a sample size of three is small, the richness of the data allowed for a detailed examination of each of the teacher's experiences. The nature of this research relied on self-reported data from teachers. A limitation of this type of reliance on experiences as told by the participants is that they may be giving answers that they feel are correct, or answers that they feel have a high level of social desirability. Independent sampling of the emergent themes in future research is warranted to interrogate the findings further.

GENERAL CONCLUSION

The concept of special needs education such as what it is and how to deal with it in developing world remains in a state of confusion. This may account for the poor provisions that have been made by the various governments. In fact, the state of education for persons with disabilities in developing countries such as Cameroon has been a source of concern for professionals. (Alur, 2001). The provision for children with disabilities across developing countries has often been regarded as a privilege rather than a right (Alur, 2001). Abosi, 2006 noted that proper attention has not been given to special needs education in terms of planning and organization. It's planning; organization and management have been characterized by lack of vision and commitment, inadequate funding, lack of cooperation among experts, negative attitudes influenced by traditional values, and culture. Early effort to educate persons with disabilities in developing countries in general was made by missionaries. Since then, the various governments have become more sensitive and committed. Special schools, classes, units and resource centers have been built.

Teacher training facilities have been established locally in some cases, and more teachers have been trained locally and abroad. All these efforts notwithstanding, most developing countries have been caught in the web of international controversy of acceptable approach to effective education of persons with disabilities. Some special needs children with talents in Cameroon and indeed the world over have lived and died without education (Abang,1981). As it is the case in most developing countries, effective participation of all able-bodied individuals is required for the building and total transformation of their respective societies. This expectation is a bit difficult for persons with special needs due to their handicapping conditions.

Traditional beliefs, customs and attitudes held by different ethnic groups in Cameroon have for a long time influenced the education and socialization of persons with special educational needs (Shey, 2008). In some parts of the country, children with disabilities were and are still denied their basic rights especially the right to go to school, communicate and interact with peers in spite of global movement towards universalization of access to schooling for all children (world's conference on education for all, Jomtien, Thailand, 1990; Salamanca conference on special need education, Spain 1994 (millennium development goals, 2000). The right to education is clearly stated in the Universal Declaration of human rights (UNESCO, 1946); "everyone has a right to education". The participants in the world's conference on education for all re-affirmed the right of all people to education, particularly, Basic education. The Salamanca conference on 'Special Needs Education' held in June 1994 emphasized the need for policy change in the education of people with disabilities. Development Goal (MDGs)

outlined in the "Millennium Declaration" of September 2000, focuses on 'Achieving universal primary education'.

Special education in Cameroon began in informal settings, especially in the family circles where some parents and family members of persons with disabilities tried to teach their children like skills, for example, showing the blind child how to wash its hands, and how to move around the home; making signs to a deaf child when communicating with it. Teaching all the children how to count in their local dialects and the use of local currency in buying and selling was also the pre-occupation of most parents in the early days in Cameroon. The education of children with disabilities in the pre-colonial and colonial period indicates a slow yet steady recognition of the plight encountered by persons with special needs. The only Law in Cameroon, which addresses the needs of persons with disabilities, is law No. 83/13 of July, 1983 relating to the protection of persons with disabilities.

The conditions for implementing this law are laid down in decree No.90/1516 of 26 November, 1990. These two documents form a foundation stone for a strong government policy toward the education of persons with disabilities. Article 3 of law No. 83/13 of July 1983 focuses on the education of children with disabilities. Although the law on the protection of persons with disabilities was enacted by Parliament in 1983, the Head of State only signs the decree laying down the modalities of its application in November, 1990. It is divided into five parts with the first part dealing with the education and vocational training of persons with disabilities.

Article 1 of this law clearly states "The education of children and young adults with disabilities shall be taken care of in regular and special schools in case of necessity, regular schools enrolling children with disabilities shall be provided with special teachers and didactic material adapted to the children's needs" (MINAS, 1990). As far as easing access of pupils with disabilities into various classes in ordinary schools is concerned, schools are required to make the necessary adjustments to suit the needs of all children.

To ensure the proper digestion of the 1983 law, the Minister of National Education issued circular letter No. 86/1/658/MINEDUC/CTZ of January 13, 1986 calling on all national education authorities to implement the 1983 law by giving priority, easing and facilitation the enrolment of children with disabilities in public and private schools. This circular letter also stated that punishment would be meted out to recalcitrant head teachers and teachers who go against the 1983 law. The major setback witnessed today is lack of follow-up and implementation of this policy.

The most recent document on the education in Cameroon is the February 2005 Draft Document from the Technical Committee for the Elaboration of the Sector Wide Approach in education. Although this document reflects a common and coherent vision of education in Cameroon, nothing is mentioned about the education of persons with disabilities.

Also, looking at the society and my immediate environment in which I find myself in the ignorance that comes with mental handicap many people need to be able to know and have the idea that mental handicap in children is something that we can't avoid and we can actually help to them to come to the light of the different ways in which we can collectively help these kids with mental handicap especially those with down syndrome gain sustainable knowledge for them to be able to live in our society now.

This study was carried out in Yaoundé the capital city of Cameroon Down syndrome shouldn't be a hindrance for a child to acquire cognitive skills and cognitive skills. Despite their disability they should be able to gain those skills like any other child. This can be done in different ways from the normal child a personal follow-up will help them grow and develop their skills properly as they need to. So this study is importance for the purpose of creating awareness of the different psychological and factors that can be put in place in order for a child with trisomy 21 to be able to gain social and cognitive so as to be able to live among people in the society.

Because despite all the laws and articles about the education of children with disabilities, it is seen that the few schools who even try to give education to children with disabilities are more focused on physical disabilities and those with mental disabilities like down syndrome are not included in the teaching and learning process. But looking at Piaget's theory of cognitive development (1993), was primarily interested in how an organism adapts to its environment (Klahr, 2012). According to Chen and Siegle (2000: 95), Piaget stared from the assumption that human intelligence is a biological adaptation of a complex organization to a complex environment‖. Thus, the individual 's understanding of a given situation is part of the adaptation of that situation, and the cognitive development is the individual 's intelligence in making equilibration of the cognitive structures.

Piaget was more interested in the fact children can learn and develop knowledge as they grow as advance in age and with abilities. For Piaget, every act an individual make is cognitively organized and then adaptation provides the means for change. According to Piaget a child can only be seen as fully developed when he passes through all this stage. But what he failed to add is that, there are children born with disabilities like children with Down syndrome and these

children will not be able to develop as he has stipulated in his theory with all the milestones and at the different ages he stated this is because of their physical, intellectual and emotional characteristics these characteristics are: Hearing and vision weakness, Fine motor skill impairment due to low muscle tone, Weak auditory memory, Short attention span and distractibility. Most children with Down syndrome meet developmental milestones later than other children, including the ability to walk and talk.

Also, a child with disability like down syndrome cannot be able to learn or manipulate his environment like Piaget has stipulated and also will need a favorable environment where his intellectual, social and psychomotor aspects can fully develop so will need assistance to be able to learn in class and also understand and manipulate his environment. However, Bandura believes that children learn from models that is by observation and imitation and that learning occurs both through those beliefs and through social modeling thereby originating social cognitive theory (1986), which holds that a person's environment, cognition, and behavior all interact to determine how that person functions, as opposed to one of those factors playing a dominant role.

Bandura (1977) believes that humans are active information processors and think about the relationship between their behavior and its consequences which he calls the social learning theory whereby, people learn from observing others peoples' behaviors and actions it has to do with continuous interaction of peoples cognitive, behavioral and environmental influences (Bandura 1993). He spoke pertinently on three aspects of his theory (Bandura 1991): Attention, Retention, Reproduction and Motivation. So according to Banduras theory even a child with disabilities and a child with Down syndrome can learn too if they are given the opportunity to observe the right models.

Again, Vygotsky (1978 cited Wertsch 1985) in his sociocultural theory declares that the child receives the knowledge initially through the contacts and interactions with people, and then assimilates this knowledge adding the personal values in it. He believed the socio-cultural environment is critical for cognitive development. Vygotsky emphasized the roles of social interaction and instruction. "He proposed that development does not precede socialization, but rather social structures and social relations lead to the development of mental functions" (Huitt, 2000, slide 22). He also spoke about the Zone of Proximal Development (ZPD) which is a zone where the learner requires adults or peers to provide assistance to students, who cannot complete the assigned task without help.

The ZPD is the gap between what learners are able to do independently, and what they may need help in accomplishing (Daniels, 2001). Social interaction plays an important role in student learning. It is through social interaction that students learn from each other, as well as adults. Fogarty (1999) stated, "Vygotsky's theory suggests that we learn first through person-to-person interactions and then individually through an internalization process that leads to deep understanding". So according to this theory it is clear that children with Down syndrome will need assistance to fully learn and this assistance can be given by a more experienced adult or peer this is to ensure that they are not left behind in the learning process.

From the problem of this study as stated above we came out with the general research question as; *"How can psychoeducational support be used to mobilize the sociocognitive skills of children with Down syndrome?"*. And then, to better understand the topic and for proper explanations, this research question was broken down into various specific research questions which are;

- How does socialization affect the sociocognitive skills of children with Down syndrome?
- How teachers teaching strategies and methods affects the sociocognitive skills of children with Down syndrome?
- How does adaptation in the sociocultural context affect the sociocognitive skills of children with Down syndrome?

For the research hypothesis and in other to better collect data and gather information in the field, the researcher hypothesized that *"Psycho educational support through good teaching strategies, socialization and adaptation of knowledge to the sociocultural context mobilizes the socio cognitive skills of children with trisomy 21."* This was the main research hypothesis which was also later broken down into simpler and more workable and attainable specific research hypothsis which are;

- Socialization mobilizes the socio cognitive skills of children with trisomy 21
- Teachers teaching strategies and methods mobilizes the socio cognitive skills of children with trisomy 21.
- Good adaptation to the sociocultural context mobilizes the socio cognitive skills of children with Down syndrome.

The theories that the researcher used to come up with this research objective was; Looking at Piaget's theory of cognitive development (1993), was primarily interested in how an organism adapts to its environment (Klahr, 2012). According to Chen and Siegle (2000: 95), Piaget stared from the assumption that human intelligence is a biological adaptation of a complex organization to a complex environment‖. Thus, the individual 's understanding of a given situation is part of the adaptation of that situation, and the cognitive development is the individual 's intelligence in making equilibration of the cognitive structures. Piaget was more interested in the fact children can learn and develop knowledge as they grow as advance in age and with abilities. Also young children with Down's syndrome have also been found to have motivational deficits which may lead to unstable skill acquisition and an avoidant learning style (Wishart & Duffy, 1990). These strategies were observed in a variety of tasks which showed children were consistently unwilling to put effort into problem solving tasks, showed reversals in task competence and a refusal to complete tasks (Wishart, 2001). Gilmore and Cuskelly (2009) examined how enduring motivational aspects were in children with Down's syndrome and found that those children who showed good motivation at age 5 continued to do so into older childhood.

This study is an exploratory study of a descriptive nature because it facilitates the link between psychoeducational support on the sociocognitive skills of children with down syndrome. With this design, the independent variable: psychoeducational support was examined and qualitative information was collected through interview guides for the teachers of these kids with down syndrome and observations for the children with down syndrome themselves over a purposive sampling to enable the researcher to explain its influence on the dependent variable: sociocognitive skills of children with down syndrome.

In the case that concerns us, the choice of our population is focused on children with down syndrome and their teachers inclusive in the CNRPH in Yaoundé. Being difficult to have access to all this population, we found it necessary to split it into two in particular: the target population and the parent population. Our target population is all the children with Down syndrome from the ages 5 and above and their teachers in the center. It is a subset of the target population, available to the researcher and from which the researcher can extract his sample.

So, the characteristics respect the objectives that we set ourselves at the start. Thus, our sample is composed of three (03) persons diagnosed with down syndrome attending the CNRPH Yaoundé and the special educators teaching these children with down syndrome in CNRPH

Yaoundé. In this study, the sampling technique used is the purposive sampling technique. This research will have two set of participants which are the teachers of the students with down syndrome and the students themselves this is due to the fact that these children were not able to express themselves properly and the teachers being the closest and the possible who closely work with the children and understand them too it was easy to collect the data from them.

The data collection process began with the development of an interview guide for the teachers of the children with down syndrome which acts as a support for the interviewer and which lists the themes that should be addressed during the discussion. The observation grid outlies the different characteristics of the children with down syndrome which acted as a guide for the researcher to be able to identify the type of children she was to be working with since the class was an inclusive class. The instruments used for this research were constructed under the guidance of the supervisor.

In order to prevent reports of negative implications and other hitches during the administration of the interview guides, authorization to carry out research was given by the authorities of the faculty of Education of the University of Yaoundé 1 to analyze the qualitative data of this study, we used content analysis. By content analysis, we can understand a method that seeks to account for what the interviewees have said in the most objective and reliable way possible. For Berelson (1952), it is defined as a research technique for the objective, systematic and quantitative description of the manifest content of communication‖. Given that in any research, ethical and deontological rules must be respected and announced to the respondents, before collecting the data, we explained to the participants who were the subject of our study emphasizing on the anonymity of people surveyed in order to guarantee the results of our study. In addition, we have made the commitment to communicate the results of the investigation to them after the defense of this thesis.

In this research we explored three teachers of students with Down syndrome and three children with down syndrome. The findings reveal that the idea of socialization, teaching strategies and adaptation to the sociocultural context plays an important role in the children with down syndrome to acquire sociocognitive skills. Mrs. MJ, Mrs. FG and Miss NY were all teachers in CNRPH Yaoundé even though in different classes. Their attitudes towards socialization, their teaching strategies and the adaptation of these kids to their sociocultural environment proved the point that children with down syndrome can be supported to gain sociocognitive with the necessary help and support especially from their teachers this comes to support the ideas of,

Rietveld (2008), who suggested many teachers of children with Down syndrome focus on the child's deficits, which tends to exclude rather than include them in the everyday running of the class. Teaching strategies therefore plays a very important role in helping the children with down syndrome gain sociocognitive skills.

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Children learn when they are with friends during play and other activities they are prune to pick up different behaviors which are positive and even negative so the teacher has a responsibility to be able to guide these kids to positive behaviors by discouraging the negative behaviors this is supported by Vygotsky sociocultural theory which he says that, students can

learn a lot from one another and put their skills and talents together to complete an assignment with equal input.

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This research first and foremost will contribute to the increase in the knowledge and so the improvement of research on Down syndrome so to add a plus to what have been done so far. As a consequence, will improve on the living conditions of children with Down syndrome in the world and Cameroon in particular. Also, this research will not only help them to know the students in their classroom but will also help them to know how to be able to help these children with down syndrome learn in the classroom and develop adequate social skills for them to be able to live in the society.

The special educators will also be aware that these set if children have a very complicated system and will not learn in the same pace as the other children in their classroom it will help them to shape their curriculum in such a way that it suits all of the students in their class be it those with special needs and normal children. This research will also be of great help those working in the field of special education and specifically on the various handicaps so to help them know the realities of the field when it concerns one of their population of studies. More so, it will act as a guide for handicapologist to know the needs of children with Down syndrome also how to be able communicate the needs of these children to the community and to parents and teachers so as to be able to properly help the children.

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APPENDICES

INTERVIEWS

Interview 1: Mrs. MJ

0-Socio-demographic information of the participant

Place of interview: CNRPH

Day and Time: Friday 10:00am-10:15am

Age of respondent: 31

Region of origin: East

Class taught: Initiation 1B

Researcher: thank you for coming and responding positive for this research. If you are okay, we can start

Participant: okay

Researcher: So, I will as fast as possible, go through a set of themes that I will propose to you. But in the meantime, tell me a little about what is down syndrome.

Participant: down syndrome is a chromosome defect that occurs when there is abnormal cell division in the 21 chromosomes of a developing child. This abnormal cell division causes many mental problems with the child when he or she is born like intellectually, emotionally and even with his or psychomotor development.

Researcher: what can make you know a child has down syndrome?

Participant: yes, a child with down syndrome will have defect in their physical characteristics so they are easily noticeable some of which are; Flattened face, small head, short neck, a protruding tongue, short neck, small ears, poor muscle tone.

Researcher: do they also face problems with their studies and socially?

Participant: yes, they face a lot of problems when it comes to learning in the classroom. Like for example, their level of reasoning is very low so we have to put in place different ways to be able to teach them since they cannot learn like other children.

Researcher: what are those different ways you teach them?

Participant: I use role play, they act drama in class, a lot of repetition, diagrams and graphs, symbols and counting objects too.

Researcher: how does the children with Down syndrome in your class carry out role play?

Participant: Children with Down syndrome do not learn like all these neurotypical kids we have to put into considerations their disabilities when we are constructing their own lessons this is to help them to learn at their own pace while understanding the materials being thought. One of these ways is role play so I try as much as I can to explain the roles of some common people around them like their mother and father and I act it out then I show them and help them to act these roles just like I did. With this strategy the child is able to understand the role of his or her mother and father in the home and will be able to do the role play without any help after some time of practice.

Researcher: How is practice play helpful to the children with Down syndrome in your class?

Participant: what I do in class for Daniel for example is, he is very attentive and likes to take part in practice play, he sometimes takes control of the whole session and in turns make his friends join him in the playing prices this helps him recall things easier. With this, Daniel has the opportunity to develop his motor skills, cognitive abilities and social skills too. Through this method, he strengthens his muscle coordination, problem solving skills and communication abilities. Practice play also involves sensory experiences such as touching feeling and exploring different objects and materials this helps Daniel to develop his sensory processing skills, enhance his sensory awareness and improve their sensory integration.

Researcher: you spoke about using visual aids too in class. So how is that done?

Participant: The children with down syndrome in this classroom despite their similarities in their disabilities they do not belong to the same cognitive or socialization skills level that is they are all different and need different teaching methods to be able to teach them but one thing they have in common is that they are all captivated by colors and symbols so we use symbols to be able to teach them. Different things in the school and classroom are represented by different symbols which we make the kids aware of their meaning so if for example a child wants to use the toilet, he or she simply needs to raise a symbol indicating the toilet and he or she is taken there. This doesn't only help the child to learn to communicate nonverbally but also helps the teacher to be able to help the child properly"

Researcher: how do you motivate the children with down syndrome in your class to even want to carry out these activities with you?

Participant: With Daniel I noticed he was very as compared to the other kids and motivation helped him to do better so I gave him more praises and rewards anytime he did an exercise correctly this helped him do more. Motivation plays a crucial role in supporting the children with down syndrome like Daniel, motivation can help him to engage in learning activities, participate in the classroom, and show interest in exploring new concepts and skills. When he is motivated, he is likely to be more attentive in the classroom, focused and willing to learn. Also, motivation helps him to be persistent in his efforts, overcome challenges and work towards achieving his goals a strong sense of motivation can help the stay determined, resilient and committed to learning despite obstacles and setbacks.

Researcher: I would like to know if you can use of songs in your classroom and how can it be used to develop the sociocultural skills of a child with Down syndrome.

Participant: yes I do, Firstly, songs are a way to learn and having in mind that these songs give these children a high enthusiasm, it is therefore very important to be able to use these songs to teach them different things in their environment, the names of objects and the names of the days of the week and months of the year. This allows them to be able to recall in the later future. Songs also helps teach them their roots where they come from and gives them a little history of their ancestral background. We provide culturally responsive education that acknowledges and celebrates the cultural diversity of students with Down syndrome. Incorporate diverse perspectives, traditions, and values into the curriculum to create a more inclusive learning environment.

Researcher: can you please tell me what you can do to develop the language skill for a child with Down syndrome? Because I believe they need to talk before they can sing.

Participant: you are very correct; they need to know how to talk even though they might not talk fluently like you and I but they do talk small. Since Daniel is more cognitively built than any of the kids, we designed his own lessons by providing more predictable routines to make him feel comfortable and confident in his environment this also helps to support his language development by providing a framework for communication. Encourage peer interactions helps to facilitate opportunities for him to engage in social interactions with peers also encouraging group work, cooperative learning tasks and partner work helps to promote communication skills, turn making and social engagement skills which helps him to improve on his language

and communication skills. He also goes for speech therapy which is of great help to him. We also engage him into multisensory activities that involves multiple senses such as touch, sight, sound and movements this helps to support language through experiential learning.

Researcher: Is there anything else you would like to share about your experiences with down syndrome?

Participant: As a teacher you have to be multidimensional, being able to fit into any situation that the child brings from home. Also, as a teacher of children with down syndrome I noticed that these children are not only called special because of their disability but because of the fact that they are able to deal with life situations that most of us who call ourselves normal, I have been able to learn many life lessons from these kids, being able to accept myself for who I am, being able to put in force when everyone has given up on me. These are life lessons you don't get to see every day but I get to experience it with these kids and working with them is the highlight of my life.

Researcher: thank you very much madam for your corporation. I think I have gotten much from you and it will be helpful with my research. The information gotten here will be use strictly for my research purpose and shall be treated with confidentiality and anonymously. Thank you again.

Interview 2: Miss. NY

0-Socio-demographic information of the participant

Place of interview: CNRPH

Day and Time: Monday 10:00am-10:15am

Age of respondent:26

Region of origin: East

Class taught: Initiation 1A

Researcher: thank you for coming and responding positive for this research. If you are okay, we can start

Participant: okay

Researcher: So, I will as fast as possible, go through a set of themes that I will propose to you. But in the meantime, tell me a little about what is down syndrome.

Participant: down syndrome is a chromosome defect that occurs when there is abnormal cell division in the 21 chromosomes of a developing child. This abnormal cell division causes many mental problems with the child when he or she is born like intellectually, emotionally and even with his or psychomotor development.

Researcher: what can make you know a child has down syndrome?

Participant: yes, a child with down syndrome will have defect in their physical characteristics so they are easily noticeable some of which are; Flattened face, small head, short neck, a protruding tongue, short neck, small ears, poor muscle tone.

Researcher: do they also face problems with their studies and socially?

Participant: Glory on the other hand talks only when she needs something, she even bullies her table mates so most of them don't like to play with her but she can be nice when she feels like it and also plays. With Glory since her table mates hardly interact with her, I also engage them in play using toys with this her table mates are forced to play with her and also she learns how to share in the process. I also engage her in role play and pretend play which helps her to develop skills such as: navigating social situations, understanding different roles, encourage empathy for her peers and social understanding.

Researcher: do they also face problems with their studies and socially?

Participant: yes, they face a lot of problems when it comes to learning in the classroom. Like for example, their level of reasoning is very low so we have to put in place different ways to be able to teach them since they cannot learn like other children.

Researcher: what are those different ways you teach them?

Participant: I use role play, they act drama in class, a lot of repetition, diagrams and graphs, symbols and counting objects too.

Researcher: how does the children with Down syndrome in your class carry out role play?

Participant: Glory even though shy at times still joins in play when she feels like it. The essence here is not force her into doing things that she doesn't want to be encouraging and persuading her to be able to take action. Engaging in practice play also helps Glory develop her cognitive development by enabling her retain more information, her attention span and concentration on tasks in class. It also provides her opportunities to engage in social

interactions with peers, siblings at home and caregivers or parents these interactions helps them to develop her social skills such as; sharing, taking turns, cooperation and communication.

Researcher: How is practice play helpful to the children with Down syndrome in your class?

Participant: The school uses different types of teaching methods like applied behavioral analysis, discrete trial training where we try to break the skills or task into small discrete units and teach them one by one for better understanding and easy comprehension. The use of visual aids is very important specially to teach children like Glory since she has challenges in talking it helps him to be able to say what she wants to say but through the use of pictures and symbols. It helps her to also understand and express their thoughts, needs and emotions. Visual aids also help to make abstract concepts more understandable for her, with things like graphs, chart, diagrams and illustrations it helps her to grasp new information, learn new skills and remember important details more effectively.

Researcher: you spoke about using visual aids too in class. So how is that done?

Participant: The school uses different types of teaching methods like applied behavioral analysis, discrete trial training where we try to break the skills or task into small discrete units and teach them one by one for better understanding and easy comprehension. The use of visual aids is very important specially to teach children like Glory since she has challenges in talking it helps him to be able to say what she wants to say but through the use of pictures and symbols. It helps her to also understand and express their thoughts, needs and emotions. Visual aids also help to make abstract concepts more understandable for her, with things like graphs, chart, diagrams and illustrations it helps her to grasp new information, learn new skills and remember important details more effectively

Researcher: how do you motivate the children with down syndrome in your class to even want to carry out these activities with you?

Participant: With Glory, she knows what to do but at times will deliberately refuse to do it so I try to bring her close to Daniel and as she saw him working and receiving all the praises she gradually started trying out to do some of the activities and I also encourage every little milestone that she crossed this proved to work wonders for her. Also, motivation boost her self-esteem, self-confidence and belief in her own abilities. when she feels motivated, she is more likely to try new things and develop a positive attitude towards learning and problem solving. Also, motivation helps her to set goals, establish targets for improvement and strive

towards achieving success in their academic and personal endeavors. Setting achievable and realistic goals can give a sense of purpose, direction and accomplishment for children.

Researcher: I would like to know if you can use of songs in your classroom and how can it be used to develop the sociocultural skills of a child with Down syndrome.

Participant: yes, I do, Music therapy can help improve cognitive skills, emotional regulation, social interaction, and sensory processing while also promoting cultural sensitivity and awareness through music-based interventions. Encourage children with Down syndrome to participate in collaborative songwriting activities where they can create their own songs based on their experiences, interests, and cultural background. This can help them develop creativity, self-expression, and a sense of ownership over their musical creations. Provide opportunities for children with Down syndrome to showcase their musical talents through performances, recitals, or cultural events. Encourage them to share their songs with others, fostering confidence, self-esteem, and a sense of accomplishment within a sociocultural context. By incorporating songs into the educational and therapeutic activities of children with Down syndrome, educators and caregivers can harness the power of music to support their sociocultural development, promote inclusivity, and enhance their overall well-being within diverse learning environments.

Researcher: can you please tell me what you can do to develop the language skill for a child with Down syndrome? Because I believe they need to talk before they can sing.

Participant: For Glory in particular we use more of visual aids for her since we discovered that she loves pictures. Pictures, diagrams, charts help make abstract concepts easier to grasp this helps her to express her emotion, ideas, concepts more effectively. Also, we ensure she goes for speech therapy every day when she is in school this also helps her a lot. The use of visual aids such as pictures, charts, diagrams and flashcards help her to be able to understand and remember new ideas, vocabulary words, concepts, and instructions. It also enhances her comprehension and facilitates communication the classroom and even outside at home. Also, her instructions are broken down into clear and concise, simple and clear steps to make it easier for children with down syndrome to follow directions and complete tasks also use of visual cues and gestures along with verbal instructions helps to reinforce verbal communication.

Researcher: Is there anything else you would like to share about your experiences with down syndrome?

Participant: When I started it was hard for me to come to terms with the fact that there are children like this who everyone has given up on them. It was difficult for me to look at some of them without shedding tears. So, I took the job more like a calling to be able to impact the lives of these people whom even their parents don't see them amounting to anything. I come here every day with a different motivation to teach these kids I must confess it's really hard but at the same time it is worth all my time and all my energy.

Researcher: thank you very much madam for your corporation. I think I have gotten much from you and it will be helpful with my research. The information gotten here will be use strictly for my research purpose and shall be treated with confidentiality and anonymously. Thank you again.

Interview 3: Mrs. FG

0-Socio-demographic information of the participant

Place of interview: CNRPH

Day and Time: Tuesday 10:00am-10:15am

Age of respondent:30

Region of origin: Center

Class taught: Initiation 1B

Researcher: thank you for coming and responding positive for this research. If you are okay, we can start

Participant: okay

Researcher: So, I will as fast as possible, go through a set of themes that I will propose to you. But in the meantime, tell me a little about what is down syndrome.

Participant: down syndrome is a chromosome defect that occurs when there is abnormal cell division in the 21 chromosomes of a developing child. This abnormal cell division causes many mental problems with the child when he or she is born like intellectually, emotionally and even with his or psychomotor development.

Researcher: what can make you know a child has down syndrome?

Participant: yes, a child with down syndrome will have defect in their physical characteristics so they are easily noticeable some of which are; Flattened face, small head, short neck, a protruding tongue, short neck, small ears, poor muscle tone.

Researcher: do they also face problems with their studies and socially?

Participant: Glory on the other hand talks only when she needs something, she even bullies her table mates so most of them don't like to play with her but she can be nice when she feels like it and also plays. With Glory since her table mates hardly interact with her, I also engage them in play using toys with this her table mates are forced to play with her and also, she learns how to share in the process. I also engage her in role play and pretend play which helps her to develop skills such as: navigating social situations, understanding different roles, encourage empathy for her peers and social understanding.

Researcher: do they also face problems with their studies and socially?

Participant: yes, they face a lot of problems when it comes to learning in the classroom. Like for example, their level of reasoning is very low so we have to put in place different ways to be able to teach them since they cannot learn like other children.

Researcher: what are those different ways you teach them?

Participant: I use role play, they act drama in class, a lot of repetition, diagrams and graphs, symbols and counting objects too.

Researcher: how does the children with Down syndrome in your class carry out role play?

Participant: With Gabriel I engage him in games with his friends and table mates I make them play together in using toys and building blocks with this he is forced to work and talk with them. Gabriel has problems walking due to cerebral palsy, he can't control his legs so is always sitting in the same position, he doesn't even talk just once and he does not interact with people. This helped him to understand social cues, interpreting the emotions of his friends as they play together and helped him to engage in reciprocal communications this helps him and gives him the opportunities to practice and refine his socialization skills. Also, these games enhances his peer relationships which in turn offer opportunities for collaboration, negotiation and problem solving skills which is essential components for his sociocognitive developments.

Researcher: How is practice play helpful to the children with Down syndrome in your class?

Participant: Gabriel due to the fact he has cerebral palsy really hinders him from taking part in certain activities but that doesn't mean that I don't encourage him to, he will usually only play roles that will allow him sit down since working is still difficult for him. Also, practice play is helping Gabriel as a tool to express his emotions, relieve stress and regulate his emotional responses. It also gives him a sense of comfort, predictability and security which can help him manage his anxiety or challenging situations. Also, by mastering skills of task through practice play, he can build his self-confidence, independence that is learn to do things by his self which will give him a sense of accomplishment and boost his self-esteem too and motivate him to continue learning too.

Researcher: you spoke about using visual aids too in class. So how is that done?

Participant: The school is also in support of role play to use to teach the kids with down syndrome this helps them learn different types of behaviors and how to act in certain situations and also include visual learning styles since children with down syndrome learn more by visual representations. Visual aids empower Gabriel to become more independent in their daily routines and activities. Visual schedules, tasks list and step by step instructions helps him to navigate tasks, follow routines and complete tasks with greater autonomy which empowers him to be more independent in his daily routines and activities. Visual aids such as facial expressions, gestures, or social stories helps him to understand social cues and develop social skills. It also helps him in behavior management, regulate his behaviors, understand boundaries and make more positive and better choices.

Researcher: how do you motivate the children with down syndrome in your class to even want to carry out these activities with you?

Participant: For Gabriel, since he's the most slow in learning than the three of them, I started by asking him what he will like to do I encourage what he wants to do and in turn used it to teach him some skills I give him more appraisals and he seems to really love it when others clap for him so I made sure he gets claps after he tries doing something on his own even if not correctly. Motivation helps to enhance his social interaction skills, promote positive relationships, promote positive peer relationships and foster collaboration among him and other children in the classroom. When he is motivated to engage with others, he is more likely to communicate, cooperate, and build friendship with his peers. Motivation also empowers him to become more independent, self-reliant and proactive in his learning experiences. By

fostering a sense of motivation, we encourage him to take ownership of his learning and make choices and develop autonomy in and out of the classroom.

Researcher: I would like to know if you can use of songs in your classroom and how can it be used to develop the sociocultural skills of a child with Down syndrome.

Participant: Songs can be a powerful tool for helping children with Down syndrome express their emotions and feelings in a safe and creative way. Encourage them to choose songs that resonate with their emotions and experiences, allowing them to connect with the music on a personal level. Use songs as part of cultural celebrations and events to help children with Down syndrome learn about and participate in different cultural traditions. Incorporate music from various cultures into holiday celebrations, festivals, and special events to promote cultural awareness and appreciation. Combine songs with movement and dance activities to engage children with Down syndrome in a multi-sensory learning experience. Dancing to music can help improve coordination, motor skills, and physical fitness while also providing a fun outlet for self-expression and creativity. Use songs as a storytelling tool to convey cultural narratives, myths, and legends to children with Down syndrome. Choose songs that tell stories or convey important messages about history, values, or traditions, allowing them to connect with the cultural significance of the music. Consider incorporating music therapy sessions into the educational program for children with Down syndrome.

Researcher: can you please tell me what you can do to develop the language skill for a child with Down syndrome? Because I believe they need to talk before they can sing.

Participant: For Gabriel we use more of repetition and positive reinforcement whenever he repeats a word correctly. Repetition is key for language development in children with Down syndrome. Repeating short words over and over frequently enhances learning. Positive reinforcement, such as praise and rewards also encourage him to engage in language. Also repeating key words, phrases and concepts frequently helps reinforce learning and memory retention. also providing positive reinforcement such as praise and encouragement for their efforts motivates them to practice language and communicate effectively. Also fostering a supportive and inclusive environment where he and others feel valued and accepted and included by encouraging peer support, collaboration and mutual respect and the students helps to promote positive social interactions and language skills.

Researcher: Is there anything else you would like to share about your experiences with down syndrome?

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AUTORISATION DE RECHERCHE

Je soussigné, **Professeur BELA Cyrille Bienvenu**, Doyen de la Faculté des Sciences de l'Education de l'Université de Yaoundé I, certifie que l'étudiante **WIRNKAR Gracious Shalanlyuy,** Matricule **21V3702**, est inscrite en Master II à la Faculté des Sciences de l'Education, Département **de Education spécialisée,** Spécialité: **Handicap mental**

L'intéressée doit effectuer des travaux de recherche en vue de la préparation de son diplôme de Master. Elle travaille sous la direction du Pr **MGBWA Vandelin**. Son sujet est intitulé: « **Psycho-educational support and mobilization of socio-cognitive skills of children with trisomy 21** ».

Je vous saurai gré de bien vouloir la recevoir pour la recherche et mettre à sa disposition toutes les informations susceptibles de l'aider dans son travail.

En foi de quoi, cette autorisation de recherche lui est délivrée pour servir et valoir ce que de droit.

Fait à Yaoundé, le 10 JAN 2023

Pour le Doyen et par ordre

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AUTORISATION DE STAGE

Je soussigné, **Professeur BELA Cyrille Bienvenu**, Doyen de la Faculté des Sciences de l'Education de l'Université de Yaoundé I, certifie que l'étudiante **WIRNKAR Gracious Shalanlyuy,** Matricule **21V3702**, est inscrite en Master II à la Faculté des Sciences de l'Education, Département **de Education spécialisée,** Spécialité: **Handicap mental**

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Je vous saurai gré de bien vouloir la recevoir pour le stage et mettre à sa disposition toutes les informations susceptibles de l'aider dans son travail.

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