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See something do something project:
empowering teachers for early
identification and support strategies for
children with neurodevelopmental disorders

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BOSTON UNIVERSITY
SARGENT COLLEGE OF HEALTH AND REHABILITATION SCIENCES

Doctoral Project

**SEE SOMETHING DO SOMETHING PROJECT:
EMPOWERING TEACHERS FOR EARLY IDENTIFICATION
AND SUPPORT STRATEGIES FOR CHILDREN WITH
NEURODEVELOPMENTAL DISORDERS**

by

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DEDICATION

I dedicate this work to my parents, Kingsley and Elizabeth Oti, both of blessed memory,
and to my siblings Kingsley, Mabel, Catherine, Patrick, Stephen, Michael, and
Shadrack Oti—your love and support inspire me every day.

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ABSTRACT

Neurodevelopmental disorders (NDDs) significantly affect the developmental capacities and overall quality of life for children, including Ghana, where approximately 45% of children under 5 years old in a child welfare clinic show signs of NDDs. Early identification and intervention for NDDs are crucial for optimizing the children's development and ensuring their inclusion in education, aligning with the United Nations Sustainable Development Goal 4 on quality education for all.

The See Something Do Something (SSDS) program aims to train educators in Ghana to recognize early signs of NDDs, refer, and provide adapted support. This program is grounded in Bronfenbrenner's ecological systems theory and Bandura's social cognitive theory and incorporating principles of Andragogy. It offers a comprehensive, 6-week training program that equips teachers with the necessary knowledge and skills to create inclusive classrooms, manage challenging behaviors, and develop individualized education programs.

The SSDS program seeks to increase teacher confidence and improve classroom practices through interactive workshops, practical activities, and ongoing support. The expected outcomes include enhanced teacher capability, efficient referral systems, and better support for children with NDDs. The program's impact will be measured through a mixed-methods approach, ensuring both quantitative and qualitative insights into its effectiveness.

The SSDS program not only addresses a critical educational need but also fosters systemic changes toward inclusive education in Ghana. By empowering teachers, the program aims to enhance the developmental potential of children with NDDs, ultimately improving their quality of life and reducing the burden on families. This abstract invites readers to explore the comprehensive approach and promising outcomes of the SSDS program, highlighting its potential to drive significant improvements in education and support for children with NDDs in Ghana.

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LIST OF ABBREVIATIONS

CEU.....	continuing education unit
EST	ecological systems theory
GEOP	Ghana Education Outcomes Project
GETFund.....	Ghana Education Trust Fund
GH¢.....	Ghanaian cedi
IEP.....	individualized education program
LMIC.....	low- and middle-income countries
NDD.....	neurodevelopmental disorder
OT	occupational therapy
SAGES.....	Strengthening Accountability in Ghana’s Education System
SCT	social cognitive theory
SSDS.....	“See Something Do Something” program
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children’s Fund
USAID	United States Agency for International Development

CHAPTER ONE – Introduction

Neurodevelopmental disorders (NDDs) encompass a range of conditions that significantly impact children’s development and functioning. With the global and local prevalence of NDDs on the rise, particularly in Ghana, there is a pressing need for effective early identification and intervention strategies. The “See Something Do Something” (SSDS) program developed as part of this doctoral project aims to address these challenges by equipping teachers with the skills and knowledge necessary to recognize early signs of NDDs, ensuring timely support and fostering inclusive educational environments. This chapter explores the background of NDDs, the current state of identification and support systems in Ghana, the role of occupational therapy (OT) in addressing the needs of children, families, and teachers, and the proposed intervention—the SSDS program to enhance educational outcomes for children with NDDs.

Background

According to the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed., American Psychiatric Association, 2013), *NDDs* are a group of conditions that manifest during childhood and result in deficits causing impairments in functioning. These conditions include attention-deficit/hyperactivity disorder, autism spectrum disorder, specific learning disabilities, intellectual disability, communication disorders, motor disorders, and other specified and unspecified NDDs. Children with NDDs often struggle to fully engage in their roles, such as personal independence, productivity, and leisure activities. This can lead to marginalization, low self-esteem, and a diminished quality of

life for both the children and their families (Liefler et al., 2022). The prevalence and incidence of NDDs have been rising globally (Danielson et al., 2018; Maenner et al., 2021) and in Ghana (Olusanya et al., 2018). Research indicates that almost 45% of Ghanaian children under 5 years old from a rural child welfare clinic exhibited some form of NDD (Bello et al., 2013). The responsibility for identifying NDDs in Ghana falls primarily on community health nurses in child welfare centers, a system that has proven ineffective (Dickson et al., 2020). Consequently, many children with NDDs are either identified late or not at all (Ruparelia et al., 2016).

In Ghanaian culture, children with NDDs are often mischaracterized as lazy, cursed, or bewitched. This perception stems from deep-rooted cultural and spiritual beliefs that view disabilities through a supernatural lens. As a result, parents frequently avoid seeking medical assistance, opting instead for spiritual interventions. This cultural backdrop, combined with an ineffective system for identifying NDDs, leads to late or missed diagnoses and inadequate support for these children (Dickson et al., 2020).

A delayed diagnosis further increases the developmental gap and negatively influences a child's future prospects, requiring more time and resources to support their development; hence, the need for early identification and support of NDDs. Early identification of NDDs is crucial for optimizing children's social, emotional, and intellectual development (Coutinho et al., 2022; Dickson et al., 2020).

Factors Contributing to the Problem

Inefficient Identification and Referral Systems

The rising incidence and prevalence of NDDs in Ghana are exacerbated by inefficient identification and referral systems and insufficient expertise among caregivers. Support systems, fragmented due to a lack of collaboration between health care providers, schools, and families lead to inconsistent care with schools. Health care facilities often lack the necessary resources to effectively screen for and diagnose NDDs. Additionally, the shortage of specialized health care professionals, such as developmental pediatricians, child psychologists, speech therapists, and occupational therapists, is a significant issue in Ghana. This shortage is more pronounced in rural areas (Asamani et al., 2021). The necessity for long and costly journeys discourages families from seeking care for their children with NDDs and further delays the identification process.

Specialized schools for children with NDDs are few, particularly in rural areas, making it unrealistic to rely on them for education. These schools are often unnecessary, inaccessible, and unaffordable for most families (Hardy & Woodcock, 2015). Although some children with severe NDDs require specialized education, most children with mild forms can thrive in regular schools if appropriately supported (United Nations, 2016; United Nations Educational, Scientific, and Cultural Organization, 1994, 2005). Therefore, equipping educators in regular schools to identify and optimize these children's learning would significantly benefit the children, their families, and society.

Policy and Legislative Gaps

Ghana lacks comprehensive policies that fully address the needs of children with NDDs. Even where policies exist, insufficient funding and bureaucratic obstacles hamper implementation. Inclusive education has been shown to be highly beneficial for children with NDDs (Bölte et al., 2021; Hardy & Woodcock, 2015; van der Merwe et al., 2020). The trend of early school enrollment in Ghana, driven by development and urbanization, presents an opportunity for teachers to serve as critical points for identifying NDDs in young children.

Many preschools accept children as young as 6 months, ideally positioning teachers to play a vital role in early detection and intervention due to their direct and early contact with students. However, like teachers in more developed countries (Bölte et al., 2021), Ghanaian teachers also report a lack of adequate knowledge and confidence in identifying and supporting children with special needs. The existing policies and legislative frameworks do not comprehensively address the needs of children with NDDs; educational policy and infrastructure are often inadequate, with many schools lacking the physical infrastructure needed to support inclusive education. Overcrowded classrooms, coupled with a lack of best-practice guidelines on inclusive education (Nilholm, 2021; Nilholm & Göransson, 2017) and limited knowledge about the needs of neurodivergent students (Hume et al., 2021; Toye et al., 2019), make it difficult for teachers to provide the individualized support children with NDDs require.

Stigmas and Cultural Context

Stigmas and cultural misconceptions about NDDs in Ghana significantly impede early diagnosis and appropriate interventions. Many educators and school administrators lack awareness and understanding of NDDs, leading to late identification and inadequate support for affected children. Insufficient training and resources leave teachers unprepared to manage or advocate for students with NDDs effectively. Additionally, families and children with NDDs frequently encounter social stigma, resulting in isolation and exclusion from community activities.

Some communities' cultural beliefs attribute NDDs to supernatural causes, prompting families to seek spiritual interventions from traditional healers or religious leaders instead of pursuing medical help. This reliance on spiritual remedies delays crucial medical or educational interventions, exacerbating the difficulties children with NDDs face. Further, the lack of coordinated efforts from parents, health care providers, educators, and communities to dispel these myths and provide accurate information about NDDs perpetuates these problems. The absence of culturally sensitive training for educators contributes to the gap between traditional beliefs and current medical practices, discouraging families from seeking appropriate care. These deep-seated beliefs and the resulting lack of understanding and acceptance create significant barriers to creating a more inclusive and supportive environment for children with NDDs and their families.

Broader Societal and Economic Impacts

The issue of inadequate identification and support for children with NDDs extends beyond individual classrooms; it affects broader societal and economic outcomes

in Ghana. Without timely intervention, children with NDDs face long-term challenges, including academic failure, social isolation, and limited employment opportunities, perpetuating cycles of poverty and socioeconomic inequality. Addressing this problem aligns with the United Nations Sustainable Development Goal 4, which advocates for inclusive and equitable quality education for all (Comfort, 2023). The importance of early intervention and inclusive educational practices is well documented, underscoring the relevance of the SSDS program within the OT domain.

The Role of Occupational Therapy

The significant role of OT in enhancing the participation of children with NDDs in daily activities and learning environments is well documented (Novak & Honan, 2019). Participation is a recognized key health and educational outcome, serving as a primary goal of rehabilitation efforts (Adair et al., 2015; Whiteneck & Dijkers, 2009). By fostering engagement in essential daily routines and educational settings, occupational therapists help children with NDDs achieve significant developmental milestones, promoting their physical, intellectual, and social growth. These children often face challenges that hinder their ability to fully engage in learning, a fundamental occupation. This lack of engagement not only impacts their physical and intellectual development but also affects their independence and social integration (Blanco-Martínez et al., 2020). Occupational therapists focus on addressing these issues of occupational justice and promoting meaningful participation in their communities (Boop et al., 2020).

The Occupational Therapy Practice Framework (4th ed.; Boop et al., 2020) and the World Federation of Occupational Therapists emphasize the need for occupational

therapists to foster a positive relationship between occupation and health. The framework underscores the importance of ensuring that personal and environmental factors do not hinder participation, whereas the federation's position statement on OT and human rights highlights the profession's role in supporting citizenship, full participation, and access to social, economic, and cultural opportunities. The position statement emphasizes the importance of combating marginalization and low expectations. Inclusive education, as promoted by the SSDS program, aims to achieve occupational justice for Ghanaian children with NDDs by enhancing their overall health and well-being, advocating for equity, and reducing caregiver burden to ensure they receive the support they need to thrive in all aspects of their lives.

Proposed Intervention: The SSDS Program

The SSDS program focuses on addressing these challenges within the school setting by equipping teachers with the skills and knowledge to identify early signs of NDDs in children. This approach ensures that children with NDDs are recognized and supported as early as possible, improving their educational and developmental outcomes. By integrating early identification strategies into the school environment, the SSDS program aims to allow more students with NDDs to attend mainstream schools (Florian, 2014). It can help create a more inclusive and supportive educational framework that addresses the urgent need for timely identification and intervention efforts in the Ghanaian pediatric health practice.

Solving the challenges associated with NDDs requires a multifaceted, multidisciplinary approach involving educators, policymakers, and clinicians. The SSDS

program will focus on training teachers, who are ideally positioned to identify and support children with NDDs due to their direct and early contact with students (Bölte et al., 2021; Ganesh, 2023; van der Merwe et al., 2020). Education on the early signs and symptoms, important screening, and evidence-based interventions tools could be instrumental in empowering them to identify such children. They should also be informed of appropriate procedures to make referrals and obtain appropriate help for the children. Considering that time is of the essence, they also should be encouraged not to remain silent when they make such observations.

The SSDS program is an innovative and comprehensive teacher-training program that spans 6 weeks. It combines 2 hours of in-person training sessions, weekly readings, and activities in each of the six learning modules. Each week, participants engage in interactive sessions covering a range of topics from understanding the basics of NDDs to implementing effective classroom strategies and collaborating with parents and specialists. The six learning modules include an overview of common NDDs, recognizing early signs and symptoms, and using screening tools.

Participants then learn strategies for creating inclusive classrooms, including multisensory learning approaches. They explore managing challenging behaviors, positive behavior support strategies that embraces neurodiversity, and building attention and participation. Teachers are guided on developing and implementing individualized education programs, integrating assistive technologies, and analyzing case studies. Additionally, the program addresses managing burnout, building resilience, communicating concerns sensitively, and involving parents. The final sessions focus on

legal policies related to inclusive education, continuing professional development, and practical next steps for sustaining inclusive practices. The training program was designed to be integrated at teacher-training institutions and as a continuing professional development program for teachers, ensuring its sustainability and long-term impact.

Summary and Conclusion

This chapter outlined the background, problem statement, and proposed intervention for the development of the SSDS program, which addresses the critical issue of early identification and support for children with NDDs in Ghana. Given the rising prevalence of NDDs and the inadequacies of current identification and referral systems, the SSDS program aims to equip teachers—who have early and direct contact with students—with the necessary skills to identify, refer, and support children with NDDs. The SSDS program is named to emphasize the urgency of action, encouraging teachers to take immediate steps when they observe potential signs of NDDs in their students promoting inclusive education and occupational justice.

Chapter Two provides the theoretical and evidence-based understanding of the problem, needed to design an innovative and effective solution. Chapter Three reviews current approaches and best methods to implement effective teacher-training, identifying the strengths and limitations of existing programs. Chapter Four details the proposed SSDS program, including its structure, content, and implementation strategies. Chapter Five outlines the SSDS program evaluation plan, specifying the criteria and methodologies for assessing the program's effectiveness. Chapter Six discusses the program dissemination plan, detailing strategies for sharing findings and promoting the

SSDS program training. Chapter Seven presents the funding plan, including a detailed budget and potential funding sources. Finally, Chapter Eight summarizes the project's significance, anticipated benefits, and future considerations, calling for stakeholder support to enhance the educational prospects of children with NDDs in Ghana.

CHAPTER TWO – Project Theoretical and Evidence Base

Introduction

Neurodevelopmental disorders (NDDs) such as attention-deficit/hyperactivity disorder, autism spectrum disorder, specific learning disabilities, intellectual disability, communication disorders, motor disorders, and other specified and unspecified NDDs result in significant functional impairments (American Psychiatric Association, 2013). Children with NDDs often struggle to fully engage in their daily tasks, such as school participation, personal independence, productivity, and leisure activities. The NDDs often lead to marginalization, low self-esteem, and a diminished quality of life for the children and their families (Liefler et al., 2022). In Ghana, approximately 45% of children under 5 years old from rural areas exhibit some form of NDD (Bello et al., 2013). In Ghanaian culture, children with NDDs are often mischaracterized as lazy, cursed, or bewitched. This perception stems from deep-rooted cultural and spiritual beliefs that view disabilities through a supernatural lens. As a result, parents frequently avoid seeking medical assistance, opting instead for spiritual interventions. This cultural backdrop, combined with an ineffective system for identifying NDDs, leads to late or missed diagnoses and inadequate support for these children (Dickson et al., 2020).

Early identification and intervention are critical for optimizing the social, emotional, and intellectual development of children with NDDs (Coutinho et al., 2022; Dickson et al., 2020). However, several factors hinder the effective identification and support of children with NDDs in Ghana, including a lack of awareness among caregivers, particularly educators, insufficient teacher training, and inadequate

collaboration between schools, health care providers, and families. All of these negatively impact the developmental and educational outcomes of these children.

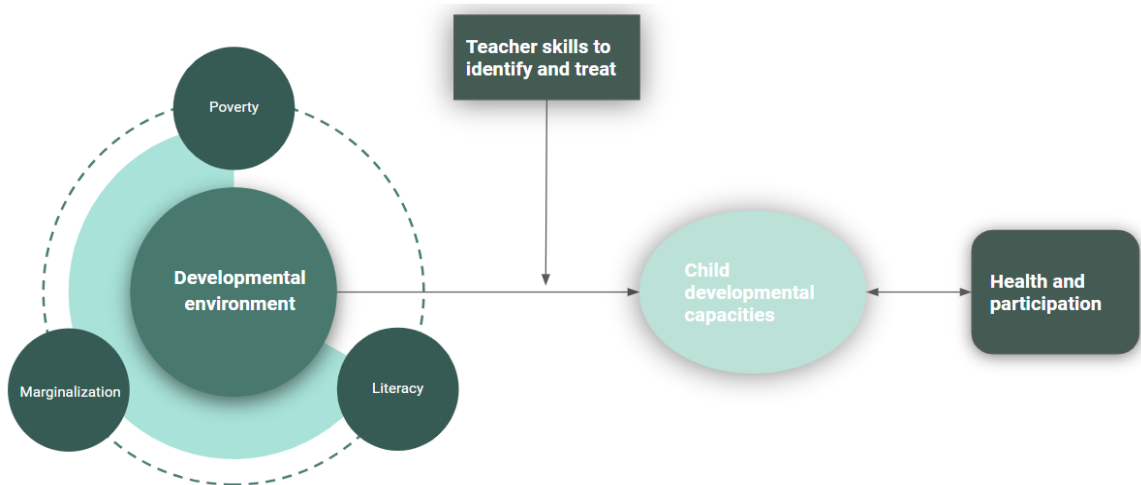
This chapter aims to provide a deeper understanding of the key factors leading to the problem of reduced health and participation of children with NDDs in Ghana. First, an explanatory model is presented. The model was inspired by Bronfenbrenner's (1979) ecological systems theory, which was used to analyze the systems involved in child development. The key factors included in the explanatory model include the influence of the child's developmental environment factors, such as poverty, literacy, and marginalization, on the child's developmental capacities, and the mediating role of teachers. Then, evidence of the influence of each factor is presented.

Problem Explanatory Model

Figure 2.1 illustrates an explanatory model showcasing the role of the environment in fostering children's developmental capacities and achieving health and participation milestones. The model underscores the mediating influence of early identification and intervention on the child's developmental capabilities. In Ghana, a significant number of children are raised in challenging environments marked by poverty, marginalization, and limited literacy. These circumstances exert a detrimental impact on children's development, particularly those with NDDs.

Figure 2.1

Explanatory Model of Factors Influencing Children's Health and Participation

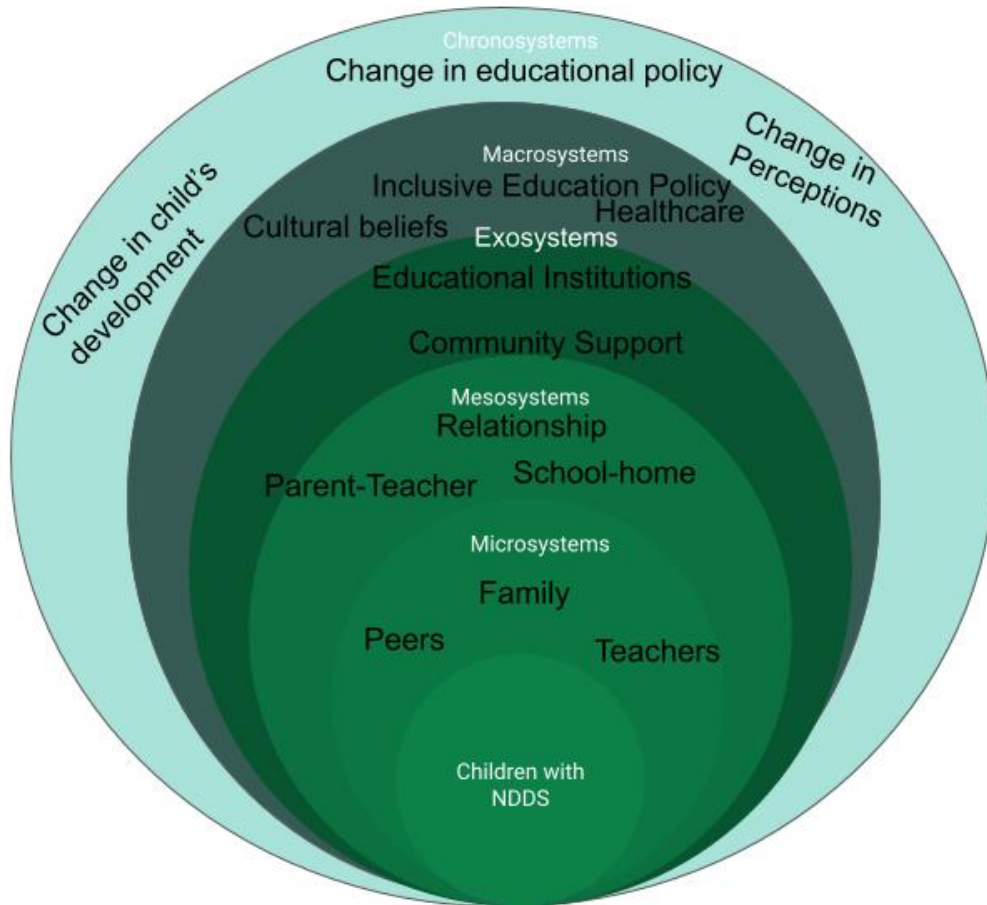


Theoretical Base of the Explanatory Model

Bronfenbrenner's (1979) ecological systems theory is a theoretical framework emphasizing the influence of various environmental systems on an individual's development and highlighting the dynamic interplay between the individual and their surrounding contexts. It provides a comprehensive perspective on how different levels of environmental factors contribute to a person's growth and development. The model is depicted as nested circles, as presented in Figure 2.2. The following sections address the levels of Bronfenbrenner's ecological systems theory and their role in child development.

Figure 2.2

Bronfenbrenner's (1979) Ecological Systems Theory



Level 1: Microsystem

The *microsystem* refers to the immediate and direct environments with which an individual interacts daily. They include family, school, peers, and community. The microsystem plays a crucial role in providing the child with social interactions, relationships, and experiences essential for their cognitive, emotional, and social development. For example, a supportive family environment can foster a sense of security and self-esteem in a child.

Level 2. Mesosystem

The *mesosystem* involves the interconnections between different microsystems. It examines how the various microsystem components work together and influence each other. Understanding the interactions between, for example, home and school environments, allows researchers and interventionists to identify potential sources of support or conflict that can impact a child's development. This insight helps in designing interventions that take into account the child's overall environment.

Level 3: Exosystem

The *exosystem* includes settings that only indirectly affect the child but still have a significant impact. It can include the parent's workplace, community services, and extended family. The exosystem can influence the child's development by affecting the microsystems in which they are directly involved. For instance, a parent's work schedule or workplace policies may impact the time and attention they can devote to their child, which in turn affects the child's development.

Level 4: Macrosystem

The *macrosystem* refers to the larger cultural, societal, and ideological factors that shape the overall context in which the individual lives. It encompasses cultural norms, values, economic conditions, and political ideologies. The macrosystem sets the broader framework within which the micro-, meso-, and exosystems operate. It impacts the availability of resources, opportunities, and support systems for child development. For example, a society that prioritizes education and invests in early childhood programs will likely provide a more supportive environment for children's learning and growth.

Level 5: Chronosystem

The *chronosystem* recognizes that development occurs over time and is influenced by historical events, societal changes, and individual life transitions. Understanding the chronosystem allows researchers and interventionists to consider how changing circumstances or historical events (such as economic recessions, technological advances, or family transitions) can impact a child's development and potentially lead to identifying and treating neurodevelopmental delays.

By considering the multiple levels of influence outlined in Bronfenbrenner's theory, researchers and interventionists can gain a more holistic understanding of child development and tailor their approaches to address the specific needs and challenges faced by each child. In this doctoral project, the model is used as a broad lens to identify the many areas that influence child development. Although widely influential, Bronfenbrenner's theory has also faced critique. Some argue that it may not adequately address issues of power, inequality, and diversity within ecological systems. Additionally, there are debates about the extent to which the theory can be applied universally across cultural contexts. These aspects will be explored in this doctoral project.

Evidence Supporting the Explanatory Model

This section presents a synthesis of evidence to support the proposed explanatory model. Evidence was collected via the CINAHL, APA PsycINFO, and PubMed search engines. The search process used keywords and Boolean operators "AND" or "OR" to diversify the scope and identify important sources. The keywords used were *child*,

children, childhood, developmental capacity, developmental capacities, participation, health, developmental environment, learning environment, poverty, marginalization, and illiteracy.

The review applied inclusion and exclusion criteria to determine the most accurate sources reflecting the objectives. In this respect, the inclusion criteria considered several characteristics to qualify the study for reference. The first criterion was the publication language; this review considered only studies written in English. The second criterion was the nature of the publication; only full-text journal articles were included. The third criterion was the publication year; this study considered studies conducted between 2005 and 2023; studies published before or during 2005 were excluded from this study.

Evidence of the Reciprocal Connection Between a Child's Developmental Capacities and Their Health and Participation

Extensive research provided compelling evidence of a reciprocal relationship between a child's developmental capacities and their health and participation in various activities. The child's abilities significantly influence their levels of engagement and participation in diverse aspects of life (Alam, 2022; Kirschner et al., 2018). In turn, their active involvement has far-reaching effects on their physical, mental, sensorimotor, and socioemotional capacities (Bono et al., 2013; Di Marino et al., 2018; Eccles & Gootman, 2002; Fredricks & Eccles, 2006; Rosenberg et al., 2013).

Children diagnosed with NDDs typically exhibit constrained capacities, resulting in reduced ability to partake in age-appropriate activities compared to their typically

developing peers (Askari et al., 2015; Simpson et al., 2020). The environmental context assumes a pivotal role in facilitating or impeding participation. For example, children with NDDs who lack adequate support in educational institutions and at home are more likely to encounter cognitive and educational challenges (Askari et al., 2015; Lara & Saracosti, 2019; Rigby et al., 2006). Additionally, children with NDDs residing in resource-constrained areas are prone to encountering heightened limitations and exclusion (Imms et al., 2017).

Participation in activities at home, school, and the community is considered a fundamental human right for every child (United Nations, 2006). Meaningful participation in these routine activities has been associated with positive outcomes, but young people with impairments or chronic diseases, especially in resource-limited areas, often face various participation constraints and forms of exclusion (Imms et al., 2017).

Engagement in physical activities, including sports and outdoor play, promotes physical fitness and overall well-being. However, children with NDDs may face challenges in following the directions required for participation, leading to exclusion. Regular physical exercise is associated with a lower risk of chronic illnesses, improved fitness, and healthy weight maintenance (Janssen & LeBlanc, 2010). Thus, a developmental environment lacking support for physical activity can lead to difficulties in coordination, physical growth, and overall fitness (Dankiw et al., 2020).

Active involvement in social, artistic, musical, and recreational activities is crucial for children's self-assurance, self-concept development, and emotional resilience. Strong social bonds, peer support, and positive interactions with adults contribute to an

improved overall quality of life for children. Social interaction and engagement also positively impact emotional well-being and reduce feelings of isolation (Fredricks & Eccles, 2006).

Children's cognitive health benefits from active engagement in intellectual and educational pursuits, including reading, problem-solving, and critical thinking (Kirschner et al., 2018). Educational programs, cultural events, and exposure to new concepts further enhance intellectual growth (Alam, 2022). In Ghana, common NDDs like autism spectrum disorder and intellectual disabilities can hinder cognitive development due to limited interaction and hands-on learning (Rigby et al., 2006).

Access to quality education is crucial for personal growth and self-discovery, especially for children with NDDs. Addressing disparities and ensuring equitable access to education is essential for enabling all individuals to pursue their goals and interests, leading to more fulfilling lives. It is particularly important to address concerns related to participation in school environments, especially at young ages and without adequate support from caregivers, educators, and the community (Askari et al., 2015).

Effects of Poverty, Marginalization, and Illiteracy on Children's Developmental Environments

Extensive evidence consistently highlights the profound impact of poverty, marginalization, and illiteracy on the developmental environments of children, significantly influencing their education, health, socioemotional development, and social cohesion (Pérez Alonso-Castrillo, 2021). Marginalized children often confront social exclusion, discrimination, inequalities, and restricted access to supportive environments

(Luthar & Kumar, 2018). Recognizing the critical importance of addressing these concerns, the World Health Organization, United Nations Children's Fund (UNICEF), and the Lancet Commission (H. Clark et al., 2020) emphasized the urgent need to assess and implement strategies and systems for the betterment of affected children's overall development. The ensuing sections delve into the specific impacts of poverty, marginalization, and illiteracy on children's health, emotional well-being, social integration, and cognitive development.

The detrimental effects are substantial. The Lancet Commission (H. Clark et al., 2020) reported that an estimated 6.3 million children under 5 years old succumb annually to preventable causes, predominantly in low-income countries. Inadequate access to health care and nutritious sustenance, coupled with precarious living conditions contribute to heightened malnutrition, disease prevalence, and stunted growth.

Children raised in poverty contend with social and emotional challenges exacerbated by adverse circumstances. Stressors such as unstable living conditions, exposure to violence, and family disruptions can escalate chronic stress levels, further impeding social and emotional development. Blair and Raver (2016) contended that chronic stress can impair brain development, leading to difficulties in emotion regulation, impulse control, and social interaction. Moreover, children from underprivileged backgrounds often lack stable, supportive relationships, resulting in anxiety, depression, and behavioral issues (UNICEF, 2016).

Children from marginalized communities frequently confront social exclusion and discrimination, hindering their social integration and sense of belonging. Ruck et al.

(2019) emphasized the crucial importance of understanding the impact of economic disparity on children's development. Discrimination based on race, ethnicity, and socioeconomic status constrains opportunities for cultural integration, community involvement, and social inclusion.

Poverty significantly affects the cognitive development of children from low-income backgrounds due to limited access to quality education. According to the WHO-UNICEF-the Lancet Commission (H. Clark, 2020), approximately 258 million children and young people are not enrolled in school, including 200 million children in low- and middle-income countries who do not reach their full cognitive potential due to inadequate nurturing environments (Danaei et al., 2016). Financial constraints impede poor children's access to educational resources, including the ability to cover school fees, uniforms, and instructional materials. Marginalized groups encounter discrimination and structural barriers that hinder access to education, leading to a shortage of adequate schools and qualified teachers (United Nations Educational, Scientific, and Cultural Organization, 2020). Limited access to quality early childhood education and reduced exposure to enriching experiences result in restricted cognitive stimulation and significant developmental delays.

Furthermore, as K. A. Clark et al. (2020) emphasized, illiterate parents face challenges supporting their children's cognitive development because they lack guidance and advice for navigating the educational system. This further widens the achievement gap between children from impoverished backgrounds and their more affluent peers, perpetuating a cycle of poverty.

Evidence of Teachers' Mediating Role in Identifying and Intervening to Facilitate the Health and Participation of Children with NDDs

The role of teachers in the education and well-being of children with NDDs cannot be underestimated. Significant evidence (Arcangeli et al., 2020; Christopoulos & Kean, 2020; McGregor, 2020; Taneja-Johansson, 2021; Taresh et al., 2020; Tryfon et al., 2021) emphasized the teacher as a key stakeholder playing a pivotal role in the identifying and intervening for children with NDDs. This evidence supporting the importance of teachers' roles in mainstream and special education comes from all over the world, including Ghana (Dickson et al., 2020), South Africa (van der Merwe et al., 2020), Greece (Tryfon et al., 2021), Italy (Arcangeli et al., 2020), India (Taneja-Johansson, 2021), Yemen (Taresh et al., 2020), and many from the United States.

Teachers' Role in Identifying and Supporting Students

Teachers are the first line for identifying special needs. They spend extensive time with groups of students, which allows them to keenly observe whether a student's behaviors and learning patterns differ from their peer group. Once identified, the teachers' intervention becomes central to fostering the well-being and participation of children with NDDs. Teachers use a variety of support strategies, such as cooperative learning, ability grouping, extensive visual aids, and peer learning to support learners to participate in the academic setting (van der Merwe et al., 2020). Teachers also collaborate with parents and specialists to develop and implement individualized education programs, incorporating tailored strategies that address academic, social, and emotional dimensions (Christopoulos & Kean, 2020; McGregor, 2020).

This role highlights the significance of addressing academic challenges and nurturing children's social and emotional development with NDDs. Further, a study by Dickson et al. (2020) shed more light on Ghana, where teachers spend time with students from the primary to junior high school levels. However, the approximate age for referral in Ghana was 9 years old, with teachers referring for the sole reason of poor academic performance.

Factors Influencing Teachers' Ability to Identify and Intervene for Children With NDDs

Taresh et al. (2020) reviewed research evidence of factors influencing teachers' ability to identify and intervene for children with NDDs. These factors were organized into themes, including the teachers' knowledge, skills, and confidence; classroom practices; and parental involvement. Additional factors unique to the Ghanaian context include societal beliefs, lack of resources and materials, and lack of continuing professional development opportunities.

Teachers require knowledge, skills, and confidence to correctly identify and address NDDs. A lack of knowledge about NDDs, early signs, and identification strategies is repeatedly documented as a central barrier requiring urgent remediation (Atun-Einy & Ben-Sasson, 2018; Ben-Sasson et al., 2018; Dillenburger et al., 2016). Teachers may not know of services like occupational therapy, other appropriate professionals, or the referral process to use in such situations. The lack of comprehensive knowledge hampers their timely recognition of atypical behaviors and learning patterns and potentially delays necessary interventions. Teachers need skills and confidence to

correctly recognize the symptoms of an NDD and voice their concerns to other team members or parents, alerting them of concerns and making referrals for screenings and other services. Skills and confidence develop with ongoing professional development opportunities and support. The lack of such opportunities hampers Ghanaian teachers' ability to stay updated on best practices and evidence-based interventions and requires urgent attention in the educational landscape.

Classroom practices play a pivotal role in identifying and supporting students with NDDs. Like their global counterparts, teachers in Ghana, may use various strategies to support learners with NDDs (van der Merwe et al., 2020). However, the lack of resources and materials poses a challenge unique to the Ghanaian context. Inadequate access to specialized tools, teaching aids, and adaptive materials limits the range of interventions teachers can use in their classrooms. Additionally, a large class size, which is a common challenge, may cause difficulties in providing individualized attention and support needed by children with NDDs.

Societal beliefs, influenced by religious, cultural, and scientific orientations, can contribute to stigma and misconceptions surrounding NDDs, as Dickson et al. (2020) highlighted. Teachers may face resistance or reluctance from parents and communities to acknowledge or address atypical behaviors, impacting their ability to intervene effectively. For example, many children in Ghana with unexplained behaviors could easily be associated with the call of the gods of the land. Parents in religious families may rebuke or reject the teachers' observations, making it harder for them to receive the needed support.

In the Ghanaian context, fostering teachers' confidence would require providing support structures that encourage open communication and collaboration, especially with parents.

Ghanaian familial and community ties are strong, and parents have important knowledge about their children. Therefore, collaborative efforts between teachers and parents will improve identification and enrich the overall understanding of the student's needs. However, prominent factors such as poverty, illiteracy, time constraints, and reluctance to acknowledge a child's challenges can limit effective collaboration.

Summary

This chapter provided a deeper understanding of the key factors influencing the health and participation of children with NDDs in Ghana. The explanatory model based on and inspired by Bronfenbrenner's ecological systems theory focuses on the child's developmental environment, including factors of poverty, literacy, and marginalization; their influence on the child's developmental capacities; and the mediating role of teachers. Evidence of the influence of each factor was presented. Based on the understanding of the key factors, the importance of the teachers' essential role becomes evident. The next chapter reviews evidence of effective solutions to empower teachers to be effective in the early identification of children with NDDs.

CHAPTER THREE – Overview of Current Approaches and Methods

Introduction

Neurodevelopmental disorders (NDDs) such as attention-deficit/hyperactivity disorder, autism spectrum disorder, specific learning disabilities, intellectual disability, communication disorders, motor disorders, and other specified and unspecified NDDs result in significant functional impairments (American Psychiatric Association, 2013). Children with NDDs often struggle to fully engage in their daily tasks, such as school participation, personal independence, productivity, and leisure activities. The NDDs often lead to marginalization, low self-esteem, and a diminished quality of life for the children and their families (Liefler et al., 2022). In Ghana, approximately 45% of children under 5 years old from rural areas exhibit some form of NDD (Bello et al., 2013). In Ghanaian culture, children with NDDs are often mischaracterized as lazy, cursed, or bewitched. This perception stems from deep-rooted cultural and spiritual beliefs that view disabilities through a supernatural lens. As a result, parents frequently avoid seeking medical assistance, opting instead for spiritual interventions. This cultural backdrop, combined with an ineffective system for identifying NDDs, leads to late or missed diagnoses and inadequate support for these children (Dickson et al., 2020).

Early identification and intervention are critical for optimizing the social, emotional, and intellectual development of children with NDDs (Coutinho et al., 2022; Dickson et al., 2020). However, several factors hinder the effective identification and support of children with NDDs in Ghana. Central to these factors is the teachers' preparation for providing inclusive education, which can be attributed to insufficient or

nonexistent instruction in efficient pedagogy for educating children with disabilities (Kuyini et al., 2016). Kuyini and Mangope (2011) supported this, claiming that Ghanaian teachers receive less inclusive education training than their counterparts in other African nations.

Efforts, although short-lived, were made by the United Nations Children's Fund in partnership with the Ghana Education Service to work in selected districts. They offered teacher training and working with head teachers and circuit supervisors to disseminate the principles and methodologies of inclusive education. Scattered evidence or literature existed from Google, journals, and newspaper articles about the availability of training programs that worked. Other training available was often too expensive or inaccessible to Ghanaian teachers. Although making strides toward inclusive practices, Ghana's existing educational infrastructure lacks a robust foundation of empirical evidence guiding teacher-training programs. The dearth of research on the impact of training for teachers creates uncertainty about how these programs enhance the skills and knowledge needed to identify and support students with NDDs effectively.

This chapter aims to provide research-based evidence regarding teacher training in general, with a specific focus on training related to NDDs. First, it presents evidence concerning the content necessary for effective training. Second, it discusses evidence highlighting best practices in delivery approaches. The chapter culminates in a summary consolidating key conclusions that will subsequently inform and shape the proposed solutions outlined in Chapter Four of this doctoral project.

Content to Include in Teacher Training

Evidence on important content was collected from three main resources. First, a survey of 235 preservice teachers from a university in Ghana investigated their perceptions of the extent to which the curriculum prepared them to identify children with special needs and facilitate teaching and learning for these students (Gyimah & Amoako, 2016). Another study reported on 232 experienced teachers (Kuyini & Mangope, 2011) from major regions within Ghana, seeking teachers' concerns and allowing teachers to identify their professional development needs (M. Chitiyo et al., 2019) toward inclusive education. Participants' practice settings included urban and rural, spanning teachers from preschool, basic, and secondary private and government schools, with varying years of experience and qualifications. Thus, it presents a holistic perspective of the topics relevant to this program.

Those studies identified key content areas crucial for teachers' effective engagement in inclusive education:

- Screening and identification: Equipping teachers with the skills to identify students with special needs and disabilities within a diverse classroom setting
- Lesson organization and instructional strategies: Providing guidance on structuring lessons and integrating diverse instructional methods suitable for an inclusive classroom environment
- Collaboration in inclusive education teams: Training teachers to recognize and collaborate with relevant stakeholders, including parents, health care professionals, and paraprofessionals, to support inclusive education practices

- Parent communication and collaboration: Addressing teachers' need for specific training in communicating and working with parents concerning suspected needs or disabilities in students
- Assessment procedures and referral protocols: Educating teachers on conducting initial assessments and referring children with suspected needs or disabilities for comprehensive evaluation, diagnosis, and support services
- Understanding specific conditions: Providing knowledge about various disabilities, such as physical disabilities, intellectual disabilities, autism, behavior disorders, and other health-related conditions like deafness, blindness, visual impairment, and epilepsy. This includes guidance on precautions, managing individual needs and behaviors, and fostering inclusivity within the classroom.
- Individualized education program (IEP) implementation: Offering insights into planning, executing, and evaluating IEPs tailored to students' diverse needs
- Collaboration, diversity, and legal aspects: Equipping teachers with the skills to collaborate with peers effectively, understanding diverse cultural contexts within the classroom, and navigating the legal aspects inherent in inclusive education practices

By addressing these specific content areas in teacher-training programs, educators can better meet the needs of students with disabilities within inclusive classroom settings.

Delivery Approaches to Teacher Training

There is a growing recognition of the pivotal role of teachers' professional learning and training in equipping students with the advanced skills necessary for success in the 21st century. However, many existing teacher-training programs in Ghana seem unable to bridge the gap in teaching practices to cater to the learning needs of all students, often due to cost or accessibility constraints (Darling-Hammond et al., 2017). While teachers in countries like England spend an average of 10.5 days annually engaged in courses, workshops, conferences, seminars, observation visits, or in-service training (Sellen, 2016), that is not the case in Ghana.

School leaders and teacher educators need to know which characteristics of training are essential to help carry out effective teacher training and development. To address this, they must discern the key characteristics of effective teacher training and development (Hill et al., 2013). Darling-Hammond et al. (2017) examined 35 rigorously methodological studies to determine what constitutes an effective training and professional development program. Their results showed a favorable correlation between the teachers' professional development and training, the courses' instructional strategies, and student outcomes. Based on these findings, the researchers outlined the characteristics of best practices found:

- **Content-focused approach:** This training emphasizes teaching strategies aligned with specific curriculum content, empowering teachers to apply these strategies effectively in their classroom settings.

- Active learning based on adult learning theory: The curriculum engages teachers in active learning experiences, drawing from adult learning theory principles. Through practical applications and hands-on experiences, educators develop and implement innovative teaching techniques. This training model mirrors the learning experiences they aim to create for their students.
- Promotes job-embedded collaboration: High-quality professional development fosters teacher collaboration within work-related contexts. It connects innovative instructional methods directly to teachers, students, and classroom settings, nurturing idea-sharing and collaborative growth.
- Uses effective practice models and instructional modeling: Teachers are presented with clear examples of optimal practices through curriculum models and instructional demonstrations. Access to diverse resources such as lesson plans, student work samples, peer observations, and successful instruction examples equips teachers with valuable guidance.
- Offers coaching and expert support: Tailored support and knowledge-sharing targeted at individual teacher needs are central to coaching and expert assistance. Specialists engage in one-on-one sessions, group workshops, or remote mentoring using technology, imparting specific knowledge to enhance teaching practices.
- Encourages feedback and reflection: Effective professional development provides dedicated time for reflection, feedback, and adjustment of teaching

practices. Teachers receive feedback on lesson plans or observations, facilitating critical reflection for improvement and reinforcement of effective strategies.

- Sustained duration for continuous learning: Successful professional development programs prioritize long-term learning over quick, one-time seminars. Extended durations, spanning weeks, months, or academic years, allow educators ample time to study, practice, and implement new approaches, facilitating meaningful practice modifications.

Implications for Program Design

Drawing from the reviewed evidence, the See Something Do Something program's training curriculum will encompass various critical elements. It will cover content focused on organizing teaching methodologies, instructional strategies, collaboration with parents/guardians, behavior management, life-skill teaching, assessment techniques, screening, and referral procedures. Additionally, it will include comprehensive knowledge about individual disabilities, physical and intellectual disabilities, autism, behavior disorders, and various health-related conditions like deafness, blindness, visual impairment, and epilepsy. Moreover, the training will incorporate aspects such as collaboration with peers, understanding diversity within cultural contexts, exploring legal facets of inclusive education, and mastering IEP planning and evaluation. Aligned with best practices in teacher training, the course design will prioritize content concentration, integrate active learning principles rooted in adult learning theory, support collaboration within school-based environments, employ

effective practice models and demonstrations, provide coaching and expert guidance, offer avenues for ongoing feedback and reflective practices, and sustain learning over a prolonged duration.

Chapter Four demonstrates the integration of these principles into the proposed solution. Furthermore, dissemination and advocacy efforts should emphasize the need for flexible funding and continuing education units. These resources will facilitate sustained engagement in collaborative activities, mentoring, coaching, and participation in institutes, workshops, and seminars.

CHAPTER FOUR – Description of the Proposed Program

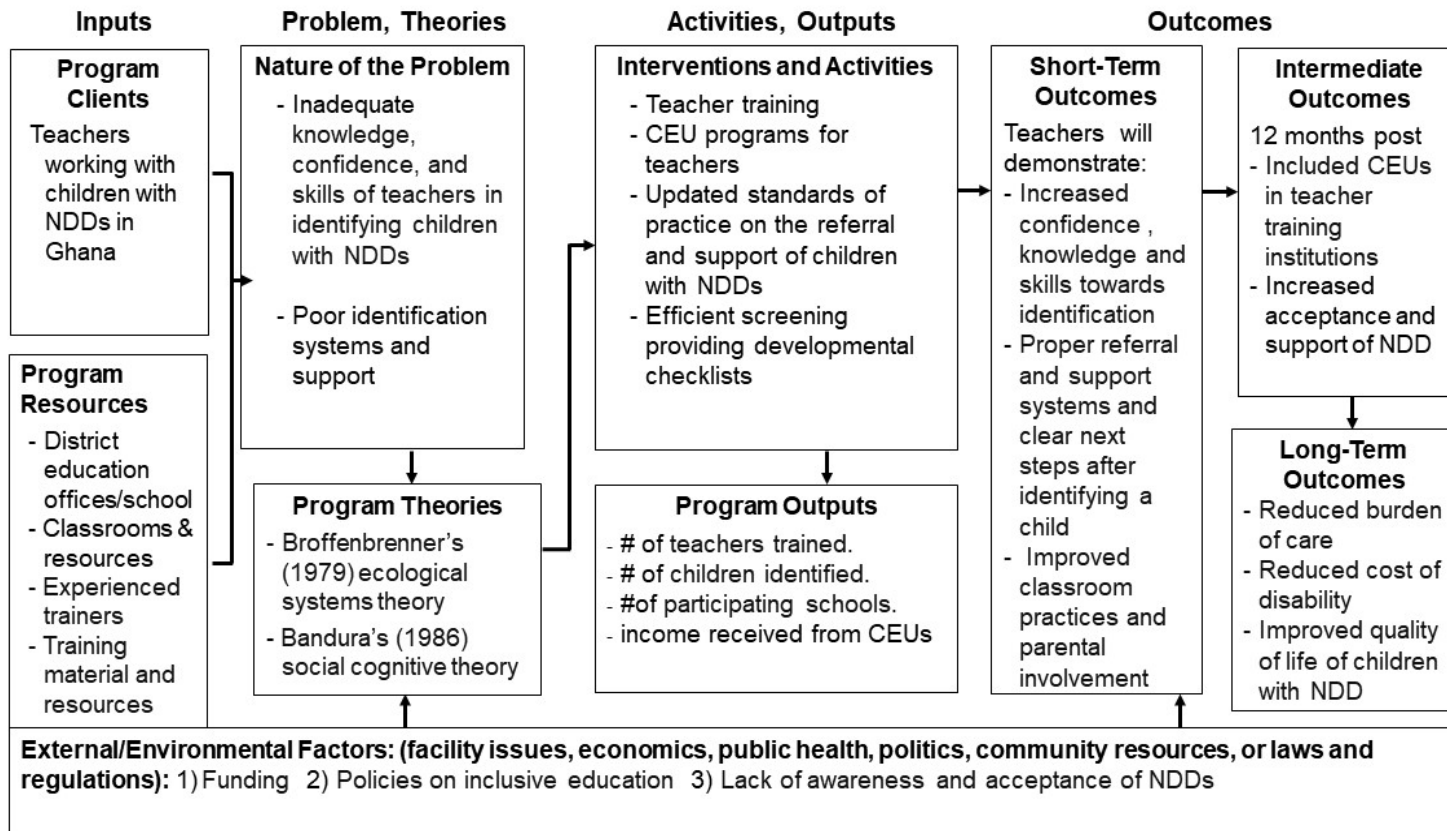
Introduction

The See Something Do Something (SSDS) program is a 6-week teacher-training program designed to enhance Ghanaian teachers' knowledge, confidence, and skills in identifying and supporting children with neurodevelopmental disorders (NDDs). This initiative is prompted by the pressing need to bridge existing gaps between support services available in the health sector and its translation into supporting the educational needs of children with NDDs. Figure 4.1 presents the program logic model containing the program inputs, nature of the problem, theory base, activities, outputs, outcomes, and potential risks. Each section is explained in the following sections.

Figure 4.1

See Something Do Something Program Logic Model

Program title: *See Something Do Something: Empowering Teachers for Early Identification and Support Strategies for Children with Neurodevelopmental Disorders*



Note. CEU = continuing education unit; NDD = neurodevelopmental disorder.

Nature of the Problem

The problem addressed by the SSDS program is threefold. It considers the negative impact of NDDs, the limited identification system, and the pivotal role of teachers in the early identification and referral process.

Neurodevelopmental Disorders

The *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; American Psychiatric Association, 2013) defined NDDs as a group of conditions with onset in the developmental period, inducing deficits that produce impairments of functioning. Neurodevelopmental disorders comprise intellectual disability, communication disorders, autism spectrum disorder, attention-deficit/hyperactivity disorder, neurodevelopmental motor disorders, including tic disorders, and specific learning disorders.

The impact of NDDs on a child's developmental trajectory can be profound. It influences various aspects of a child's life, including delayed skill development surrounding speech, social, emotional, behavioral, motor, and cognitive and academic achievements. It also affects the child's psychological and physical well-being and can result in chronic disease and disabilities throughout adulthood (Aldharman et al., 2023). Lack of early identification and intervention can escalate the NDD symptoms, reducing the capacity to optimize the normal functioning in the child (Bélanger & Carson, 2018). The developing brain is highly plastic during early childhood, making it more responsive to timely and tailored support developed through early identification and intervention (Zatorre et al., 2012).

Identifying and treating NDDs at an early stage can mitigate challenges, enhance

adaptive skills, and promote better integration into society. Early interventions contribute to improved academic performance, increased social competence, and enhanced emotional well-being, fostering a positive developmental trajectory (Aldharman et al., 2023; Finlay-Jones et al., 2019). Consequently, the benefits extend beyond the individual child, positively affecting society by reducing long-term educational and health care costs and promoting a more inclusive and supportive community.

Poor Identification and Support Systems

The poor identification and support systems in Ghana contribute significantly to the challenges that teachers face in addressing the needs of children with NDDs. The existing mechanisms for identifying and supporting children with NDDs are inadequate. In Ghana, these current mechanisms rely primarily on community health nurses operating child welfare centers within the health care system (Dickson et al., 2020). These centers play a central role in the identification process, often serving as the first point of contact for families seeking assistance for their children with NDDs. The identification processes lack efficiency, leaving teachers without clear guidelines on how to recognize or categorize different neurodevelopmental challenges. The nonexistent support systems within the educational framework leave teachers without a structured or comprehensive framework for providing targeted assistance to students with NDDs. These poor identification and support systems place additional burdens on teachers.

Teacher Knowledge, Confidence, and Skills

Another problem lies in the inadequacy of teacher knowledge, confidence, and skills concerning the identification and support of children with NDDs in Ghana.

Teachers, essential players in the educational system, currently face significant challenges understanding and addressing the diverse educational needs of children with NDDs. A noticeable shortfall in their body of knowledge impedes the prompt detection of NDDs and the implementation of effective support strategies. This problem reflects a critical need for targeted interventions that enhance teacher knowledge, instill confidence, and equip them with the essential skills to foster an inclusive educational environment for all students

Program Theories

The SSDS program draws from two central theories: Bronfenbrenner's (1979) ecological systems theory maps the factors leading to the problems essential to understanding the nature of NDDs and the potential influence on the training; Bandura's (1986, 2002) social cognitive theory (SCT) provides the basis to promote teachers' skills and efficacy. Both theories recognize the intricate interplay between individual, environmental, and societal factors in shaping teachers' ability to identify and support children with NDDs.

Bronfenbrenner's Ecological Systems Theory

Bronfenbrenner's (1979) ecological systems theory is a theoretical framework that underscores the multifaceted layers influencing development. Spanning from immediate settings to broader societal contexts, it highlights the dynamic interplay between individuals and their surrounding environments, emphasizing the influence of various environmental systems on an individual's development. This theory categorizes these environmental systems into microsystems, mesosystems, exosystems,

macrosystems, and chronosystems.

Within the teacher-training context, the ecological systems theory translates to addressing specific layers of influence. The SSDS training program will be offered directly within the teachers' microsystem, which influences the teachers' knowledge, skills, and confidence. The *microsystem* pertains to the immediate educational environment, encompassing teacher–student interactions, classroom practices, and school policies, which significantly impact training outcomes. The *mesosystem* involves interactions between elements within the school setting, including management, district education offices, and school personnel, which may influence the implementation of the training program.

The *exosystem* encompasses broader institutional factors, such as educational policies and community resources, which can shape the program's effectiveness. The training program aims to align with and influence these external elements, fostering an inclusive educational environment. The *macrosystem* refers to cultural and societal norms, including the overall lack of awareness about NDDs, which may impact the program's reception and implementation. Last, *the chronosystem* acknowledges the dynamic nature of the educational landscape, recognizing changes over time. The teacher-training program is designed to include feedback mechanisms that allow for adaptation and evolution over time, ensuring its continued relevance in the ever-changing educational context of Ghana.

Bandura's Social Cognitive Theory

Bandura's (1986, 2002) SCT focuses on understanding how individuals learn and develop by observing others within their social environment. This theory's principles will inform strategies for shaping teacher behavior, building confidence, and promoting effective strategies for identifying and supporting children with NDDs. The central concept of Bandura's theory is observational learning or modeling, emphasizing that individuals learn by observing others and imitating their behaviors—one of the core approaches used in the teacher-training program, where educators can observe and learn from experienced trainers and personnel. Through workshops, demonstrations, and hands-on activities, teachers are exposed to effective strategies for identification and support, enhancing their observational learning experiences.

Another key concept in Bandura's (1986, 2002) SCT is self-efficacy and reciprocal determinism. These concepts will be used to instill confidence in teachers regarding their ability to identify and support children with NDDs and create a positive feedback loop wherein teachers gain confidence and skills through personal experiences and external feedback, enhancing the effectiveness of their teaching practices.

Program Outcomes

Short-Term Outcomes

Immediate gains include increased teacher confidence, knowledge, and skills, coupled with the establishment of efficient referral systems and improved classroom practices. Teachers will experience a noticeable increase in confidence, knowledge, and skills related to identifying and supporting children with NDDs. They can demonstrate

theoretical understanding and practical application of effective strategies within the classroom. Establishing efficient referral systems and improvements in classroom practices will contribute to an immediate positive change in the educational environment.

Intermediate Outcomes

The integration of NDD content in teacher-training institutions and enhanced societal acceptance of NDDs are anticipated at 12 months postprogram. The SSDS program anticipates a significant shift in teacher-training institutions by integrating NDD content into the curriculum and making continuing education units (CEUs) available to teachers. These ensure the sustainability and institutionalization of the acquired knowledge and practices. Additionally, a crucial intermediate outcome involves enhancing societal acceptance of NDDs. By influencing the attitudes and perspectives of educators, the program aims to create a more inclusive and supportive societal environment for children with NDDs.

Long-Term Outcomes

The long-term outcomes of the SSDS program focused on broader societal and individual impacts. Envisioned results include a reduced burden of care for families with children with NDDs. As teachers become more adept at early identification and support, families may experience decreases in the challenges associated with caring for children with NDDs. Furthermore, there is an expectation of decreased disability-related costs for families and the education system because early intervention and support can mitigate more severe issues in the long run.

Ultimately, the overarching long-term outcome is an improved quality of life for

children with NDDs. By empowering teachers with the knowledge and skills to create inclusive and supportive learning environments, the SSDS program aims to contribute to a positive and transformative impact on the lives of these children, fostering their holistic development and overall well-being.

Program Clients

The SSDS program was designed for practicing teachers working with children in preschool, basic, and secondary schools. Teachers from urban and rural areas work in private and government schools, with varying years of experience and qualifications, and represent a holistic perspective of teachers. Implicit in the success of the SSDS program is the commitment of the participating teachers. Their active engagement and willingness to embrace new strategies and incorporate NDD considerations into their teaching practices are pivotal. This commitment signifies a collective endeavor to create inclusive and supportive learning environments, ultimately benefiting the holistic development of children with NDDs.

Program Resources

The program requires the commitment of experienced trainers, offices for classroom space with necessary resources, and comprehensive training materials ensuring a comprehensive approach to teacher development.

Experienced Trainers

Experienced trainers will deliver high-quality training sessions to teachers. These trainers should possess expertise in NDDs, inclusive education practices, and effective teaching strategies. Their ability to communicate, engage, and transfer knowledge is

essential for ensuring that teachers not only understand theoretical concepts but also gain practical skills applicable in real classroom settings.

Classroom Space

The classroom space required for the SSDS program should comfortably accommodate up to 30 teachers, providing ample room for interactive learning activities. It would be equipped with essential amenities, including computers and a projector, to facilitate multimedia presentations and interactive sessions. Additionally, the space should be conducive to group discussions and equipped with workstations, teaching aids, manipulatives, and demonstration materials where teachers can engage in activities that reinforce theoretical concepts learnt during the training.

Training Materials

The SSDS program emphasizes the significance of well-crafted training materials and resources. These materials, spanning various aspects of NDDs, evidence-based teaching strategies, and practical tools for identification and support, form the educational backbone of the program. Training materials will range from printed materials to multimedia presentations; these resources facilitate an immersive learning experience, empowering teachers with the necessary tools to navigate the complexities of teaching children with diverse neurodevelopmental profiles.

Organizational Support

District education offices serve as the backbone of organizational coordination. They can provide logistical support and ensure seamless communication between program organizers and participating teachers. The collaborative effort between

education authorities and the SSDS program guarantees alignment with existing educational policies and standards, reinforcing the program's relevance within the broader educational framework.

Intervention and Activities

The program will be offered by a certified occupational therapist and cofacilitated by other experienced health care providers. Over the course of 6 weeks, participants engage in weekly sessions lasting 2 hours each, with time for demonstrations, discussions, and hands-on activities. These sessions are carefully designed to incorporate a variety of activities and interventions tailored to meet the learning needs of students.

Information gathered from administering a learner profile questionnaire to each participant will be used to tailor the training to the participants' specific needs and backgrounds. The questionnaire will gather detailed information on personal and professional backgrounds, prior experience with NDDs, training preferences, and learning goals, ensuring relevant and engaging content for the teachers and school staff. Understanding the participants' challenges, motivations, and preferred learning formats allows the program to address specific areas of need and enhance the training effectiveness. This personalized approach will provide individualized support and maximize the impact of the SSDS program.

Learner Profile Questionnaire

Section 1: Personal Information

1. Full Name:
2. School Name:
3. Educational Background:
 - Highest Qualification:
 - Field of Study:
4. Years of Teaching Experience:
5. Have you received any previous training or professional development related to neurodevelopmental disorders (NDDs)?
 - Yes
 - No
6. Socioeconomic Level:
 - Current employment status:
 - Full-time
 - Part-time
 - Contract
 - Other (please specify): _____
 - Access to educational resources:
 - Excellent
 - Good
 - Fair
 - Limited
 - Financial constraints impact participation in professional development activities:

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

Section 2: NDD Experience

7. Have you encountered children with NDDs in your classroom?
 - Yes
 - No
 - If yes, please specify/describe the NDDs you have encountered:
[Open-ended response]
8. What are the biggest challenges you face in identifying and supporting children with NDDs? [Open-ended response]

Section 3: Training Preferences

9. Preferred Learning Format:
 - Online
 - In-person workshops
 - Combination of both
10. Preferred Mode of Delivery (select all that apply):
 - Interactive presentations
 - Case studies and real-life scenarios
 - Role-playing exercises
 - Group discussions
 - Other (please specify): _____

11. Ideal Training Schedule:
 - Weekdays (morning/afternoon/evening)
 - Weekends (morning/afternoon)

Section 4: Readiness and Motivation

12. Rate your confidence level in identifying and supporting children with NDDs on a scale of 1 to 5:
 - [1] Not confident at all
 - [2] Slightly confident
 - [3] Moderately confident
 - [4] Very confident
 - [5] Extremely confident
13. What motivates you to participate in this training program? [Open-ended response]
14. What do you hope to gain or achieve by completing this training program? [Open-ended response]
15. How do you envision this training benefiting your teaching practice? [Open-ended response]
16. What specific areas of professional development do you feel you need to focus on at this stage of your career? [Open-ended response]

Section 5: Learning Goals

17. What are your specific learning goals or objectives for this training program? [Open-ended response]
18. How do you plan to apply the knowledge and skills gained from this training in your classroom? [Open-ended response]

Section 6: Additional Comments

19. How comfortable are you with asking questions or seeking clarification during training sessions?
 - [1] Not comfortable at all
 - [2] Slightly comfortable
 - [3] Moderately comfortable
 - [4] Very comfortable
 - [5] Extremely comfortable
20. Specify your preferred mode of seeking clarification: [Open-ended response]
21. How would you prefer receiving feedback that is constructive or critical in nature? [Open-ended response]
22. To what extent do you value collaborative learning and sharing knowledge with peers?
 - [1] Not valuable at all
 - [2] Slightly valuable
 - [3] Moderately valuable
 - [4] Very valuable
 - [5] Extremely valuable
23. Are there any language/communication preferences or considerations that would enhance your learning experience? [Open-ended response]
24. Are there any specific accommodations or support you would need during the training sessions to enhance your learning experience? [Open-ended response]
25. Is there any additional information or feedback you would like to provide regarding the training program or your participation? [Open-ended response]

Sample Course Syllabus

A sample syllabus for the 6-week pilot implementation of the training encompasses modules on NDD characteristics, evidence-based strategies, and practical application allowing teachers to gradually incorporate new knowledge and skills into their practices. The training will include six main modules over 6 weeks, with ample room for extensive discussions, hands-on demonstrations, and practice. Each 2-hour lesson will be tailored to the individual learning needs of the group. Table 4.1 provides an overview of the syllabus and its evidence/applications.

Table 4.1*Course Syllabus Overview*

Initiative component, module, topic	Content	Activity	Research evidence/theory application
Module One: Understanding neurodevelopmental disorders (NDDs) and early identification	<ul style="list-style-type: none"> • Overview of common NDDs, such as ADHD, autism spectrum disorders, and learning disabilities • Recognizing early signs and symptoms • Introduction to screening tools and techniques 	<ul style="list-style-type: none"> • Welcome • Distribute training materials/ schedule • Present on NDDs with case examples • Group discussions on early signs and symptoms • Demonstrate and practice of how to administer/interpret screening tools 	<p>Dickson et al. (2020) Squires & Bricker (2009) Washington-Nortey et al. (2023)</p> <p>Social cognitive theory (SCT): observational learning</p>
Module Two: Creating inclusive learning spaces for all students	<ul style="list-style-type: none"> • Strategies for creating an inclusive classroom environment • Multisensory learning approaches to accommodate diverse learning styles 	<ul style="list-style-type: none"> • Ice breaker/group introductions • Group discussion using case scenario to brainstorm ideas for an inclusive classroom environment • Role-play using visual, auditory, kinesthetic, and tactile approaches to support different learning styles. • Make DIY classroom supplies with everyday materials • Reflective activity 	<p>Al Hamdani (2015) Nilholm & Alm (2010) Penner (2018)</p> <p>SCT: self-efficacy</p>
Module Three: Managing challenging behaviors in children with NDDs: Strategies for positive behavior support	<ul style="list-style-type: none"> • Understanding challenging behaviors associated with NDDs • Positive behavior support strategies • Building attention and participation 	<ul style="list-style-type: none"> • Recap and questions • Present on common challenging behaviors, differentiating between sensory and behavioral issues • Role-play scenarios to practice implementing positive behavior support techniques • Build an attention toolbox: eight simple activities to keep children engaged 	<p>Ben-Sasson et al. (2007) Kaur et al. (2021) Leader et al. (2020)</p> <p>SCT: self-regulation Bronfenbrenner's (1979) ecological systems theory (EST)</p>

Initiative component, module, topic	Content	Activity	Research evidence/theory application
Module Four: Basics of individualized education program (IEP) development and implementation	<ul style="list-style-type: none"> • Basics of IEP development and implementation • Effective communication with children with NDDs • Integrating assistive technologies for children with NDDs 	<ul style="list-style-type: none"> • Lecture on the components and importance of IEPs • Role-play exercises to practice effective communication DOs and DON'Ts. • Hands-on training on the picture exchange communication systems • Small group facilitation by special education coordinators 	<p>Ariwijaya (2020) Yell et al. (2020)</p> <p>SCT: self-efficacy, social learning EST</p>
Module Five: Supporting parent–teacher collaboration and self-care	<ul style="list-style-type: none"> • Managing burnout and building resilience in difficult situations • Communicating concerns sensitively • Building partnerships with parents 	<ul style="list-style-type: none"> • Role-play scenarios to practice sensitive communication with parents • Group discussion on building effective partnerships with parents • Self-care workshop on mindfulness with strategies to maintain well-being 	<p>Dye et al. (2020) Lobato et al. (2023) Wilson et al. (2021)</p> <p>SCT: self-efficacy, social learning</p>
Module Six: Legal policies and professional development	<ul style="list-style-type: none"> • Discuss legal policies on inclusive education • Continuing professional development and resource sharing • Summary and practical next steps 	<ul style="list-style-type: none"> • Present legal policies related to inclusive education • Resource-sharing session with materials for ongoing support • Summary and action planning • Reflective activity 	<p>Opoku et al. (2021)</p> <p>SCT: observational learning, self-efficacy, social learning EST</p>

Note. The full sample syllabus and additional evidence can be found in the Leaders’ Manual (Appendix A).

Sample Lesson Plan

The lesson plan is designed for adult teachers from mainstream schools in Ghana who are participating in a training program focused on identifying and supporting children with NDDs. The learners, who come from diverse educational backgrounds and have varying levels of experience in working with children with disabilities, are motivated and committed to improving their instructional practices to create inclusive learning environments that meet the unique needs of students with NDDs. They bring a wealth of practical experience and a strong desire to make a positive impact on the educational experiences of their students. The program is guided by the andragogy learning theory, which emphasizes self-directed learning and active participation. By incorporating this theory into the training program for teachers focusing on NDDs, the SSDS program aims to enhance their engagement and ownership of the learning process. The use of interactive and participatory learning activities, along with practical examples and case studies relevant to their classroom settings, will not only deepen their understanding but also empower them to apply the knowledge and skills gained directly into their teaching practices. This approach fosters a sense of responsibility and efficacy among the teachers, leading to more effective identification and support for children with NDDs in mainstream schools in Ghana. Table 4.2 is a sample lesson plan.

Table 4.2
Sample Lesson Plan

Specific learning objective: At the end of this training program, teacher will be able to . . .	Learning activity/supporting learning theory	Teaching method	Resources and materials	Evaluation method
1. accurately identify and describe common neurodevelopmental disorders (NDDs) prevalent in Ghana, including signs, symptoms, and early indicators, with a minimum 90% accuracy level in 1:1 opportunities during classroom discussions and assessments.	<p>Lesson 1</p> <ul style="list-style-type: none"> • Group introduction/icebreaker game where teachers share experiences related to NDDs • Interactive guest-speaker presentation with multimedia elements (videos, infographics) showcasing key information about each disorder, including prevalence, characteristic features, and potential impact on learning <p>Lesson 2</p> <ul style="list-style-type: none"> • Case studies/role-play scenarios where teachers identify early signs and symptoms of different NDDs • Hands-on workshop/simulation activity where teachers practice using common screening tools for NDDs • These activities are supported by andragogy learning theory (Knowles, 1984) 	Group discussions, interactive case studies, demonstration, followed by guided practice and interactive presentations with visual aids and real-life videos	Case-study materials, presentation slides, handouts, screening tools and manuals, guest speaker	Participation through Q&A sessions and discussions; pre- and posttests
2. demonstrate effective communication and collaboration skills to facilitate appropriate referrals for students suspected of having NDDs to relevant professionals and support facilities with a proficiency level of at least 90% accuracy in 1:1 opportunities	<p>Lesson 3</p> <ul style="list-style-type: none"> • Group discussions with professionals from relevant support facilities to share insights on roles, collaboration, and the referral process • Demonstrate communication skills and referral protocols <p>Lesson 4</p> <ul style="list-style-type: none"> • Role-playing scenarios where teachers practice communicating concerns about a child’s development with parents in a sensitive and empathetic manner (Almendingen et al., 2022) <p>These learning activities were carefully chosen considering</p>	Group discussion, role playing, demonstrations, and return demonstrations	Professionals, information on relevant support facilities, communication tools	Peer feedback, pre-and posttests

Specific learning objective: At the end of this training program, teacher will be able to . . .	Learning activity/supporting learning theory	Teaching method	Resources and materials	Evaluation method
3. effectively implement evidence-based teaching strategies and accommodations that create inclusive and supportive learning environments for students with NDDs, demonstrating proficiency in using these strategies with a minimum accuracy level of 90% in regular classroom teaching sessions and activities	<p>principles from andragogy learning theory (Knowles, 1984).</p> <p>Lesson 5</p> <ul style="list-style-type: none"> • Demonstrations, hands-on activities, and interactive exercises that engage different senses and accommodate diverse learning styles using multisensory learning techniques • Scenario-based discussions illustrating effective behavior support techniques in children with NDDs • Interactive exercises and fun games focused on how to build attention and participation in students with NDDs. <p>Lesson 6</p> <ul style="list-style-type: none"> • Guidelines, templates, and case studies for IEP development; discussions on goal-setting and progress monitoring (Rashid & Wong, 2023) • Demonstrate and hands-on practice on integrating assistive technologies for educating children with NDDs (Pontikas et al., 2022) • Guest lectures to discuss legal frameworks, rights of students with disabilities, and educators’ responsibilities (Graham, 2020) <p>Learning activities guided by andragogy learning theory (Knowles, 1984).</p>	Demonstrations, lectures, case-studies, discussions	Experts and professionals, demonstration materials, low-tech assistive devices, individualized education program templates, attention games, DIY supplies	Self-assessment/ reflection, peer feedback, pre- and posttests

Overall Learning Goal

By the end of the training program, teachers will be able to accurately identify NDDs in students, facilitate appropriate referrals and implement appropriate support strategies in the classroom.

Program Outputs

Measurable outputs include an increased number of trained teachers, identification of more children with NDDs, expanded participation of schools, and potential income generated through CEU programs. The SSDS program aims to achieve an increased number of trained teachers equipped with enhanced knowledge, confidence, and skills in identifying and supporting children with NDDs, and the proactive identification of more children with NDDs, fostering timely interventions. The expanded participation of schools will signify a systemic embrace of inclusive practices and potential income generated through CEU programs will ensure financial sustainability.

External and Environmental Factors: Potential Risks and Solutions

Potential risks lie in the areas of funding, policies on inclusive education, and societal awareness. Mitigation strategies involve seeking diverse funding sources, advocating for inclusive education policies, and implementing awareness campaigns.

Summary and Conclusions

The SSDS program addresses critical gaps in teacher preparedness for NDDs, using diverse approaches embedded in educational theories. This chapter presented the program logic model (Figure 4.1) outlining the program inputs, nature of the problem and theory base, activities, outputs, and a plan for risk mitigation. Anticipated outcomes aim

for immediate and long-term improvements in teacher capabilities and consequently improve the quality of support for children with NDDs in Ghana. Chapter Five describes the evaluation plan for the program.

CHAPTER FIVE – Program Evaluation Research Plan

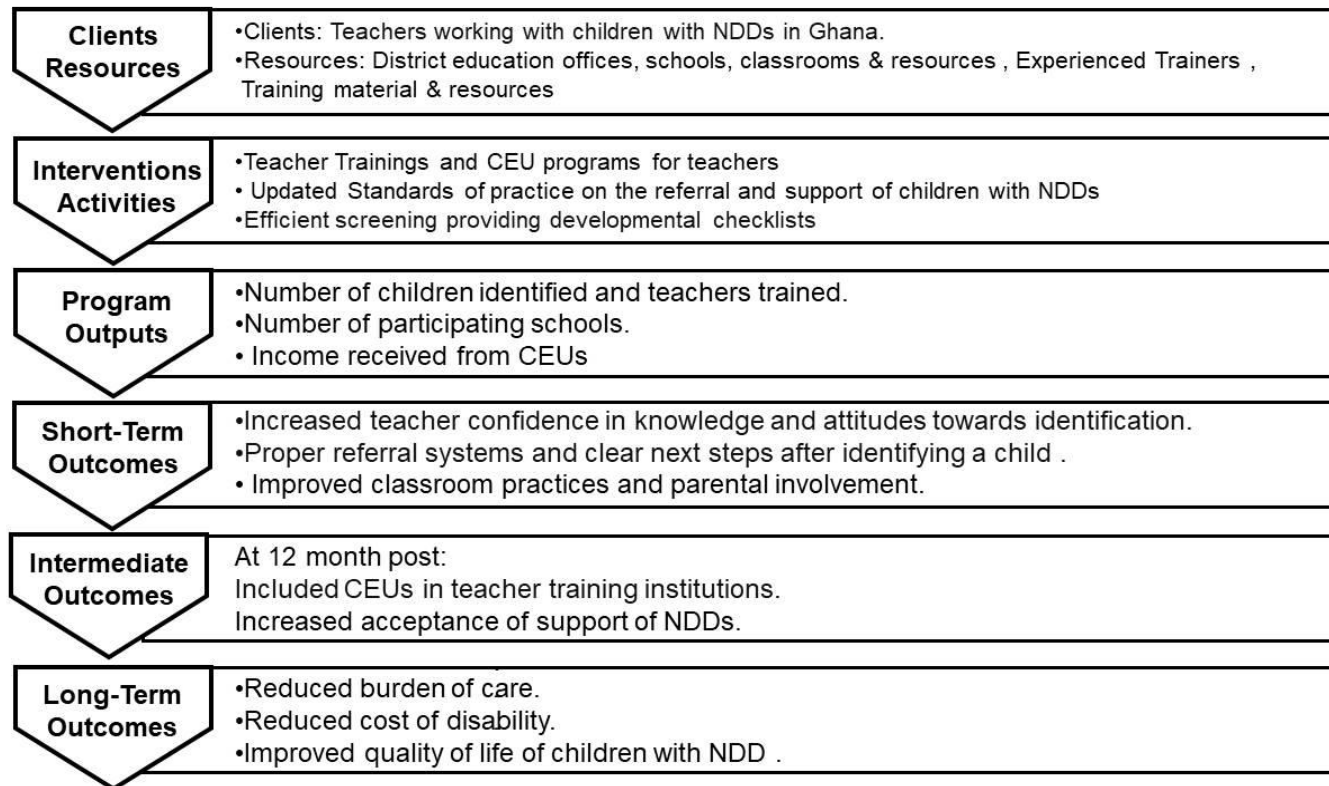
Introduction

The purpose of this chapter is to describe the evaluation plan for the See Something Do Something (SSDS) teacher-training program aimed at equipping Ghanaian teachers with the skills needed to identify and support children with neurodevelopmental disorders (NDDs). The SSDS is a 6-week training program designed to empower Ghanaian teachers with the necessary skills to identify and support children with NDDs within their classrooms.

The program aims to not only enhance the capacity of teachers but also position them as advocates for the awareness and support of children with NDDs in Ghana. It serves to promote inclusion and participation among children with NDDs, reducing caregiver burden and empowering teachers to support the learning needs of all students. By expanding support services within communities and leveraging the expertise of trained teachers, the SSDS program aims to enhance the overall educational experience and outcomes for children with NDDs and their families. Figure 5.1 presents the simplified logic model of the SSDS program.

Figure 5.1

Simplified Logic Model of the See Something Do Something Program



Note. The See Something Do Something program is aimed at equipping teachers to identify and support children with NDDs in Ghana. This model outlines the program’s client resources, some intervention activities, program outputs, and the main outcomes.

CEU = continuing education unit; NDD = neurodevelopmental disorder.

The chapter presents a detailed plan for a comprehensive evaluation study for the intervention program proposed in Chapter Four; it establishes a clear connection between the program and expected outcomes. Readers will gain insight into the scientific rationale, primary goals, stakeholder involvement, methods, intervention strategies, data analysis, and communication of results. This comprehensive plan aims to assess the program's effectiveness in advancing inclusive practices for children with NDDs in Ghanaian schools.

Scientific Background and Rationale for the Program

The SSDS program's theoretical and scientific foundation is built upon research evidence highlighting the prevalence of NDDs among Ghanaian children and the challenges faced in addressing their needs effectively within the health care and education systems. Studies by Bello et al. (2013) and Ruparelia et al. (2016) underscore the urgent need for early identification and support for children with NDDs. Additionally, existing educational challenges, including the lack of trained teachers in pedagogy for children with disabilities, as evidenced by Kuyini et al. (2016) and Kuyini and Mangope (2011), emphasize the necessity of empowering teachers to create inclusive learning environments. The program aligns with the principles of inclusive education outlined in the Salamanca Statement (United Nations Educational Scientific and Cultural Organization, 1994) and aims to bridge the developmental gap by equipping teachers with the skills necessary to foster the holistic development of children with NDDs.

Primary Program Goals

The primary goal of the SSDS program is to promote occupational justice by fostering the inclusion of children with NDDs in schools and providing tailored support for their holistic development. Through education and training, the program seeks to empower teachers to identify children with NDDs, refer them appropriately, and create meaningful learning experiences conducive to their diverse neurodevelopmental profiles. Collaboration among stakeholders, including educators, policymakers, and clinicians, is essential for comprehensively addressing the challenges faced by children with NDDs in the educational setting.

Evaluation Plan Purpose, Objectives, and Research Question

The purpose of this evaluation plan is to measure the effectiveness of the SSDS program to enhance Ghanaian teachers' knowledge, skills, and confidence to effectively identify and support children with NDDs within the inclusive education framework. The study findings will contribute to the ongoing efforts in Ghana to equip teachers to provide quality inclusive education for all, including children with disabilities. The research question posed is whether a targeted training program equips teachers with the necessary tools to identify and support students with NDDs.

Main Research Question

How does the SSDS training program affect Ghanaian mainstream basic schoolteachers' ability and confidence to identify, refer, and support students with NDDs in a school setting?

Specific Objectives

- Assess knowledge of NDDs, including signs and symptoms, contextually relevant screening tools, appropriate referral facilities and professionals, and strategies to make the teaching of such children relevant and meaningful
- Assess changes in identification and referral of students
- Assess changes in teachers' confidence in identifying and referring students
- Assess changes in supports offered to students
- Assess satisfaction with the training via formative assessment to enhance the means of delivering this training to teachers, which will make it relevant and not overburdening.

All this data will be used to further improve the training content and delivery.

Improvements will include creating a continuing professional development program from this project, as well as virtual options that will bring the education into the teachers' homes and workplaces.

Key Stakeholders' Involvement Plan

The study and its findings will be valuable for a large and diverse group of stakeholders. The author will contact representatives of organizations anticipated to have active interest in the project, such as the Ministry of Health, Ministry of Education, Ministry of Gender and Social Protection, and other relevant governmental departments. Other interested stakeholders are expected to be health care professionals, including occupational therapists, pediatricians, child psychologists, and specialists in NDDs. Educational professionals, including teachers, special education experts, and school

administrators will be included, as well as nongovernmental organizations, parents and caregivers, researchers, and academicians. Engaging community leaders and community mothers who can help facilitate the program's acceptance at the community level and funding partners will be vital. Table 5.1 outlines the stakeholder group, type of involvement, possible roles, and specific interests.

Table 5.1
Stakeholders' Involvement, Roles, and Interests

Stakeholder/stakeholder group	Involvement type: P = planning I = implementing R = reflecting	Possible role	Specific interest
Program lead, occupational therapists, pediatricians, child psychologists, and experts in neurodevelopmental disorders (NDDs)	P, I, R	Oversee and coordinate logistics	Successful implementation, usable data
Education professionals, teachers, special education experts, teaching staff, and school administrators	I, R	Administer program activities and data collection	Successful implementation, satisfaction
Researchers and academics	P, I, R	Consult on methodology, analysis, logistics	Design rigor, robust outcomes
Parents and caregivers, community leaders and community mothers	R	Facilitate program acceptance	Providing feedback, satisfaction level
Ministry of Health, Ministry of Education, Ministry of Gender and Social Protection, funding agencies	R	Consult on possible dissemination	Research quality stands up to scrutiny and can be used to inform policymaking

The initial project launching phase can serve as an opportunity for one larger, inclusive meeting where all stakeholders can come together to share insights and build a collective vision for the project. Given the potential geographic dispersion of stakeholders, meetings will be held virtually. Virtual meetings can be cost-effective and accessible; however meeting government and ministry officials in-person may foster stronger connections and interactions.

Stakeholder meetings will be led by a neutral facilitator to encourage active participation and discussion. This would also help promote focus on common goals and shared values emphasizing the positive impact the project can have on children with NDDs and the broader community. Extensive information will be provided through the comprehensive package of background information and supporting documentation prior to or at the initial stakeholder meetings. The package elaborates on the logic model outlining the project's objectives, activities, outputs, and intended outcomes. Relevant research articles and studies on NDDs, early identification, and support strategies. Strategic plans and policies related to child development, education, and health in Ghana as well as budget estimates and funding sources for the proposed project.

A consensus will be fostered by addressing concerns and finding compromises where necessary with preparations to make adjustments to the research questions, study design, or methods based on input from stakeholders, such as other researchers and academics. Continuous involvement of stakeholders in project planning, implementation, and evaluation and maintenance of detailed records of meetings, including minutes, action items, and agreements reached with regular updates. Specific research questions

for each stakeholder group are outlined in Table 5.2.

Table 5.2

Stakeholder Program Evaluation Research Questions

Stakeholder/ stakeholder group	Type of program evaluation research questions
Program lead, occupational therapists, pediatricians, child psychologists, and experts in neurodevelopmental disorders (NDDs)	<p>Formative:</p> <ul style="list-style-type: none"> ○ Was the program content and delivery sufficient for the participating education professionals to begin using the skills that were taught? <p>Summative:</p> <ul style="list-style-type: none"> ○ Will the program participants report increased perceived confidence in using the skills they have gained?
Education professionals: teachers, special education experts, teaching staff and school administrators	<p>Formative:</p> <ul style="list-style-type: none"> ○ Was the information presented relevant? ○ Was the information presented too easy or too complicated? ○ Was teaching delivered at an optimal pace for learning? ○ Was the instruction sufficient for the participants to begin using it with clients? ○ Was the program duration adequate, or should it be shorter or longer? ○ Were some aspects of the program more versus less useful or effective? ○ Is there anything that should be changed to improve program content or delivery? ○ What other key issues or problems faced by participants were not addressed in the program? <p>Summative:</p> <ul style="list-style-type: none"> ○ Did participants gain needed knowledge consistent with program goals? ○ Did participants gain needed skills consistent with program goals? ○ Did participants gain perceived confidence in their ability to identify and support children with NDDs? ○ Did participants gain perceived competence with regard to identification and support of children with NDDs? ○ Did recipients of the intervention improve in terms of desired performance consistent with program goals?

Stakeholder/ stakeholder group	Type of program evaluation research questions
	<ul style="list-style-type: none"> ○ Did undesirable behaviors or other characteristics in recipients of the intervention decrease consistent with program goals?
Researchers and academicians	<p>Formative:</p> <ul style="list-style-type: none"> ○ Were program participants sufficiently prepared to apply the learning content in their clinical practice?
Parents and caregivers, community leaders, and community mothers	<ul style="list-style-type: none"> ○ Were any problems or issues reported? ○ Did external factors impede execution of the research methodology? ○ Did recipients of the intervention and family members report a favorable experience with the care received? <p>Summative:</p> <ul style="list-style-type: none"> ○ Will the research data show that the training program led to desired change in dependent variables of interest? ○ Can the research data be used to demonstrate improved quality of care provided to recipients of the intervention? ○ Are outcomes consistent with the proposed theoretical justification? ○ What were the rates of program withdrawal?
Ministry of Health, Ministry of Education, Ministry of Gender and Social Protection, funding agencies	<p>Formative:</p> <ul style="list-style-type: none"> ○ Are participants confident they will be able to advocate, support, identify, and serve as change agents for children with NDDs? ○ Are the long-term goals of the project realistic and achievable? ○ Will the project increase awareness of developments in the field? <p>Summative:</p> <ul style="list-style-type: none"> ○ Is delivery of the program more costly than other means of delivery? ○ Can the research data be used to demonstrate desired change in identifying and supporting of children with NDDs as a result of the project? ○ Will the research data demonstrate the importance of teachers' roles in providing identification and support services relevant to the project? ○ In light of Ghana's health care systems and educational policies, is the program justified based on study findings? ○ Will findings demonstrate that the course content matches the knowledge needed to close the clinical gap the project is addressing?

Methods

Research Design

The pilot study will use a pre–post quasi-experimental design with one group, where each subject serves as their own control. A planned mixed-methods approach to data collection will combine qualitative and quantitative data collection methods, allowing a comprehensive understanding of the training program’s effectiveness and the teachers’ experiences.

Participants for the pilot launch will include in-service teachers currently working in Ghanaian schools within the Ablekuma South District. These teachers will be from diverse educational backgrounds and represent different levels of basic education. They have expressed interest in or demonstrated a need for additional training in supporting students with special needs and a willingness to commit to the training program.

Principals, head teachers, or other school administrators with influence over the implementation of inclusive education practices in schools will also be involved to provide support and resources for the training program. The recruitment process will be carried out in collaboration with schools, educational institutions, and education authorities to identify and recruit teachers and administrators and advertise through parents of children with NDDs to invite teachers who express interest or volunteer to participate. The training program purposes and participant roles will be communicated and informed consent obtained. The program designer will ensure diversity in participant selection, considering factors such as geographical location, school size, education level, and socioeconomic status, among other demographic factors, to capture a representative

sample. The aim is for a cohort that is diverse, motivated, and representative of the target audience for the training program.

Teachers involved in the training will be selected based on volition and availability to enter the program. It is not feasible to randomly assign teachers or schools to different conditions due to logistical and ethical reasons. Existing groups or naturally occurring conditions will be used to group teachers who would undergo the training.

Measures

Quantitative Measures. Pre- and posttraining mixed-methods surveys were developed for this study (Appendix B). The survey goals are to assess

- knowledge of NDDs, including signs and symptoms, contextually relevant screening tools, appropriate referral facilities and professionals, and strategies to make the teaching of such children relevant and meaningful;
- changes in identification and referral of students;
- changes in teachers' confidence in identifying and referring students; and
- changes in the supports offered to students.

The posttest also includes questions to assess satisfaction with the training.

Qualitative Measures. Qualitative measures include in-depth interview and focus group discussions.

In-Depth Interviews. In-depth interviews will be used to explore and understand teachers' experiences with the training, perceived benefits, and challenges in implementation.

Focus Group Discussions. Focus group discussions with teachers will explore collective perspectives, group dynamics, and classroom observations to gain qualitative insights into changes in teaching practices and student interactions posttraining.

Procedure

The SSDS program will be piloted through a series of six weekly in-person training sessions. A select group of teachers and schools within the Ablekuma South District will participate in the pilot launch and evaluation research, providing valuable feedback to inform future in-person or virtual training. In-person sessions will be conducted at district education offices, and virtual sessions will use platforms such as Zoom and Microsoft Teams to reach teachers across locations.

Data will be collected pretraining, during program implementation, and upon program completion for continuous feedback mechanisms to gather input from the learners throughout the intervention. These mechanisms will include opportunities to provide feedback on the program's content, delivery, and effectiveness.

Intervention

The intervention is a comprehensive training program designed to equip teachers in Ghana with the knowledge, skills, and strategies needed to effectively identify and support children with NDDs in a classroom setting. The program aims to enhance teacher competencies and create an inclusive learning environment. This intervention is designed to be dynamic, participant-centered, and responsive to the specific needs of teachers in Ghana, fostering a sustainable impact on teacher practices and student outcomes in the realm of NDDs.

Using adult learning approaches, the intervention will be delivered through 6 weeks of in-person training, interactive sessions, practical training, resource sharing, and collaborative learning. It encourages teachers to work together, share insights, and collectively solve challenges. Experts in the field, practitioners, and professionals with relevant expertise will be invited to share insights, case studies, and best practices. Manuals, guides, and tools will be distributed to support ongoing reference and application of learned strategies.

Intervention Fidelity

Comprehensive training will be provided for facilitators delivering the workshops and seminars to ensure they understand the goals, content, and methods of the training program. In addition, checklists and protocols will be provided to serve as guide for all facilitators each session, continuous monitoring and supervision and a feedback mechanism will be established (see the full Leaders' Manual at Appendix A).

Data Analysis

Quantitative Statistical Testing

The author will use descriptive statistics to calculate means and standard deviations for a clear overview of central tendencies and variability in the measured outcomes. She will use MANOVA, multivariate analysis of variance, testing with effect size (eta squared) calculations to assess whether there is a statistically significant difference between the group means same pre- and posttraining.

Qualitative Coding

The NVivo software, version 14 (Lumivivo, 2023) will be used for qualitative coding. Audio- or videorecorded interviews and focus groups will be transcribed into text format and imported into NVivo, followed by initial manual coding by reading through the material and identifying meaningful units. The NVivo software will be used to apply codes to identified units of meaning, create and manage a coding system, and generate reports and summaries to document coded findings.

Data Collection and Storage Protocols

All data will be collected electronically and entered into a secure electronic database with built-in validation checks to minimize errors during the entry process. Access would be restricted to authorized personnel only and secure passcodes, authentication mechanisms, and regular backups will be in place.

Controls and Ethical Considerations

Confidentiality and Informed Consent

Participants will be assigned identifiers to replace identifiable information, and personally identifiable information will be securely stored separate from the research data. Specifically, all participant data will be stored in secure, password-protected databases with access to participant data limited to authorized personnel only. Approval for the study will be sought from an Ethical Review Board, ensuring that the research design and confidentiality measures meet ethical standards. Participants can withdraw from the program at any time without consequences, and comprehensive consent forms detailing all relevant information, including researcher information, will be provided.

Threats to Internal Validity

Over time, maturation and changes in participants unrelated to the treatment—but a natural part of development—may occur. Additional factors such as testing effects and instrumentation may impact internal validity.

Potential Sources of Bias

Sampling bias, reporting and attrition biases, and cultural biases also may occur. *Sampling bias* can occur when selected participants do not represent the broader educator population. *Reporting bias* can distort outcomes when positive aspects of the training are selectively highlighted and challenges overlooked. *Attrition bias* can affect results if teachers facing difficulties are more likely to drop out, skewing perceptions of the SSDS program’s effectiveness. *Cultural biases* may arise if the training lacks sensitivity, limiting its applicability in diverse educational settings. Addressing these biases will require diverse participant selection, transparent reporting, efforts to minimize attrition, and cultural relevance in the training program.

Communicating Evaluation Results

Evaluation results will be communicated to the various stakeholders primarily the teachers, parents, caregivers, community mothers and leaders, and government agencies. Communication with parents and community leaders will emphasize the positive impact of the teacher-training program on their children. Messages will highlight improved support and understanding for students with NDDs, fostering a more inclusive and supportive learning environment. It will also promote wide household acceptance and understanding of supported children with NDDs. Reporting methods will include parent-

friendly materials, such as the mom-test summaries, pamphlets, and newsletters showcasing real-life examples of how the training positively influenced their children's educational experiences.

When communicating with government agencies and officials, the emphasis will be on the societal importance of investing in teacher training for NDDs. Messages will underscore the potential long-term benefits, including improved educational outcomes, reduced societal stigma, and enhanced inclusivity. Reporting methods will involve detailed reports, policy briefs (including a two-page executive summary), and presentations at relevant government meetings, providing evidence-based insights that can inform educational policies and funding decisions.

In all communications, a consistent theme will highlight the collaborative efforts between teachers, parents, communities, and government entities to create a more inclusive and supportive educational system. The goal will be to present the evaluation results in a manner that resonates with each stakeholder group and encourages continued support and investment in teacher training for NDDs.

Summary and Conclusions

This chapter provided a detailed evaluation plan aimed at measuring the effectiveness of the SSDS teacher-training program, which focuses on empowering Ghanaian teachers to identify and support children with NDDs. It outlined the scientific rationale behind the program, its primary goals, stakeholder involvement strategies, research methods, intervention details, data collection and analysis procedures, and communication of evaluation results. The evaluation plan in this chapter laid the

foundation for rigorously assessing the impact and effectiveness of the SSDS teacher-training program. It underscores the importance of robust evaluation strategies in the educational interventions aimed at enhancing support for children with NDDs, ultimately contributing to the advancement of inclusive education practices in Ghanaian schools.

CHAPTER SIX – Dissemination Plan

Introduction

The See Something Do Something (SSDS) program is an innovative and comprehensive teacher-training program designed to empower educators with the skills and knowledge necessary to identify and support students with neurodevelopmental disorders (NDDs). This evidence-based program draws from the latest research in fields such as occupational therapy to provide a robust framework for an inclusive learning environment.

The SSDS program spans 6 weeks and combines 2 hours of in-person training sessions, weekly readings, and activities in each of the six learning modules. Each week, participants engage in interactive sessions that cover a range of topics from understanding the basics of NDDs to implementing effective classroom strategies and collaborating with parents and specialists. The six learning modules include an overview of common NDDs, recognizing early signs and symptoms, and using screening tools.

Participants then learn strategies for creating inclusive classrooms, including multisensory learning approaches. They explore managing challenging behaviors, positive behavior support strategies that embrace neurodiversity, and building attention and participation. Teachers are guided on developing and implementing individualized education programs, integrating assistive technologies, and analyzing case studies. Additionally, the SSDS program addresses managing burnout, building resilience, communicating concerns sensitively, and involving parents. The final sessions focus on legal policies related to inclusive education, continuing professional development, and

practical next steps for sustaining inclusive practices. The program emphasizes practical application, ensuring that teachers can immediately integrate what they learn into their daily teaching practices.

In-person workshops begin with activities designed to foster self-reflection and empathy, followed by detailed presentations and group discussions on key aspects of supporting students with NDDs. These sessions are enriched with case studies, role-playing exercises, and opportunities for teachers to share their experiences and insights. Additionally, participants are provided with comprehensive training materials, including printed manuals and interactive workbooks, which serve as valuable resources during and after the training.

To reinforce learning and ensure continuity, the SSDS program also includes online components where teachers can access additional resources and receive ongoing support from trainers. This blended approach not only enhances the learning experience but also builds a supportive community of educators dedicated to fostering inclusive environments. The SSDS program is committed to creating lasting change by equipping teachers with the tools they need to see and do something proactive for every student's success.

Dissemination Goals

This dissemination plan focuses on achieving immediate- and long-term impacts through strategic dissemination of key messages to relevant stakeholders.

Long-Term Goal

The ultimate objective is to achieve policy changes that mandate comprehensive teacher-training programs on NDDs across all educational institutions in Ghana. This policy would include initial training for new teachers and continuing professional development for current teachers to ensure they are consistently updating their knowledge and skills. Such policies would guarantee that all teachers are equipped to effectively support students with NDDs.

Short-Term Goals

One short-term goal for the SSDS program is implementation in select schools and districts to demonstrate its effectiveness, thereby laying the groundwork for broader adoption. Another goal is to increase awareness among educators of the importance of early identification and intervention for NDDs, fostering a more inclusive and supportive learning environment for all students.

Primary Target Audience

Teachers and school staff in mainstream education form the primary audience for the SSDS program. This group includes classroom teachers, educators, district education coordinators, school principals, and school support staff. These individuals are among the people who engage with children the most and are directly responsible for their care. They play a critical role in the day-to-day care of children and are often the earliest to observe developmental differences among school children. By identifying and supporting students with NDDs early, they can significantly impact the students' educational experiences and outcomes.

Secondary Target Audience

The secondary audience for the SSDS program comprises entities that significantly influence educational policies and practices. This group includes government officials from the Ministry of Education, the Ghana Education Service, and the National Teaching Council of Ghana, as well as principals and directors of various teacher-training schools across the country. Their involvement is crucial to achieving the policy change needed in the long-term goal of mandating comprehensive teacher training programs on NDDs across educational institutions in Ghana.

Key Messages for Primary Audience

Message 1

Early identification of NDDs is crucial for effective intervention. The SSDS program empowers teachers to play a pivotal role in recognizing signs early and implementing timely support, which can significantly optimize their potential and reduce the long-term impact of disabilities.

Message 2

Implementing inclusive education practices through the SSDS program creates a learning environment that fosters empathy, collaboration, and mutual respect. This inclusive approach is a fundamental human right. It aligns with the UN's Sustainable Development Goal 4, which aims to ensure quality education for all. Inclusive classrooms enhance social integration and equality, allowing all children to learn and grow together, regardless of their abilities. The SSDS program equips educators with practical strategies to integrate these inclusive practices effectively, fulfilling children's rights and

contributing to the global goal of quality education.”

Message 3

The SSDS program provides access to a network of professionals dedicated to supporting every child’s unique needs. The SSDS program emphasizes the importance of this collaboration by providing training on how to effectively communicate and partner with occupational therapists, psychologists, speech and language therapists, and other professionals. This holistic approach ensures that children receive consistent, well-rounded, and evidence-based interventions at school and in their communities.

Key Messages for Secondary Audience

Message 1

Investing in teacher training for NDDs leads to better educational outcomes. The SSDS program is a proven model that can be scaled nationwide, ensuring educational practices evolve with the latest research and methodologies, equipping educators with the skills needed to support all students effectively, and creating a more inclusive educational system.

Message 2

Supporting inclusive education is a policy imperative. The SSDS program aligns with global best practices and can position Ghana as a leader in educational inclusion, ensuring that every child receives the support they need to succeed in a diverse learning environment.

Message 3

Policy changes to mandate NDD training for all teachers will ensure early detection and intervention, reducing long-term educational and disability-related costs. Prioritizing comprehensive teacher training on NDDs can foster a more inclusive, equitable, and effective educational system for all students.

Spokespersons for Primary Audience

The developer of the SSDS program holds a distinct position as a spokesperson. The deep knowledge of the program's design, objectives, and evidence-based foundation allows the communication of its value with unparalleled expertise. Sharing the vision and research behind the SSDS program can inspire confidence and commitment among educators and school administrators.

Another impactful spokesperson for the primary audience is a respected educator who has completed the program. These individuals bring firsthand experience and a deep understanding of the program's benefits. Their journey through the SSDS training program provides authentic and relatable testimony, illustrating how the program has transformed their teaching practices and positively impacted their students. When these educators share their experiences, compelling evidence of the program's effectiveness is offered, making them powerful advocates for the SSDS program initiative.

Spokespersons for Secondary Audience

The spokesperson for policymakers would be education policy experts and advocates for inclusive education. These individuals possess extensive knowledge of educational systems, policy formulation, and the importance of inclusive practices. Their

expertise enables them to effectively communicate the necessity and benefits of integrating comprehensive teacher training programs on NDDs into national education policies.

High-ranking officials from the Ministry of Education can be influential messengers and advocates for the SSDS program among their colleagues at the Ministry of Education and all relevant subsidiaries, the National Teaching Council, and accompanying institutions for teacher training. These officials, including ministers, deputy ministers, and directors, play a critical role in shaping educational policies, allocating resources, and driving national initiatives. Their endorsement can facilitate the integration of comprehensive teacher training on NDDs into the national curriculum, raise awareness about the importance of early identification and support for students with NDDs, and align the program with global best practices. Their support is essential for creating sustainable and inclusive educational environments, ensuring that all students receive the support they need.

Dissemination Activities, Timing, and Budget

The proposed dissemination activities for the SSDS program are strategically timed within a 3-month period before the trainings to ensure comprehensive outreach and engagement with the audience, consisting of teachers and school staff, policymakers, education experts, and officials from the Ministry of Education. These activities aim to maximize awareness, understanding, and adoption of the SSDS program by leveraging various communication channels and interactive formats.

The chosen dissemination methods include electronic media, in-person presentations, brochures, a dedicated website, podcasts, media house visits, and videos. These diverse approaches are designed to accommodate different preferences and access levels, ensuring that the audience, including those in rural areas, receives the necessary information and training. The responsibility for these activities is distributed among the program developer, media specialists, and program coordinators, ensuring expert handling and execution. Table 6.1 details the dissemination activities, timing and budget.

Table 6.1*Dissemination Activities, Timing, and Budget*

Target audience		Activity	Description	Related cost	Total cost (\$US)
Primary	Teachers and school staff in mainstream education	1. Electronic media	Program developer will send an introductory email presenting the program and requesting a meeting with school staff.	\$0	\$0
		2. In-person presentation by the program developer	Program developer will present a PowerPoint briefing with program details, expected outcomes, needed resources, and costs and distribute informational handouts with program details.	Transportation to meetings/ handout copies	\$50
		3. Videos	Support staff led by media personnel will create and distribute testimonial videos of respected educators and families sharing their experiences and impact of the SSDS program.	Video production	\$50
		4. Media visits	Program coordinator and experts will appear on TV/radio shows to discuss SSDS program and impact.	Transportation and coordination	\$20

Target audience	Activity	Description	Related cost	Total cost (\$US)
Secondary Officials from the Ministry of Education, policymakers, and education stakeholders	1. Electronic media	Program developer will send an introductory email presenting the program and requesting a meeting.		\$50
	2. In-person meeting	Program developer will present a PowerPoint briefing with program details, expected outcomes, needed resources, and costs.	Transportation to meetings	\$10
	3. Website	Create a dedicated SSDS program website with resources and testimonials.	Website developer's consultation and service fees	\$200
	3. Written information	Distribute handouts and brochures with details about the program and contact information to relevant government offices and educational bodies.	Transportation for distribution \$20; hard copies \$50	\$70
Total cost				\$450

Evaluation of the Dissemination Plan

For the primary audience, comprising teachers and school staff, the evaluation will focus on the effectiveness of electronic media, in-person presentations, testimonial videos, and media house visits. The success of the introductory email campaign will be measured by tracking the number of emails opened, responses received, and meetings scheduled with school staff. This count will help gauge the initial awareness and engagement levels.

In-person presentations will be evaluated based on the number of presentations conducted, attendee counts, and feedback scores from participants, providing insights into the program's reception and the educators' commitment to implementing it. Testimonial videos featuring respected educators and families will be assessed by monitoring views, shares, likes, and qualitative feedback on social media platforms, indicating the reach and impact of these videos in raising awareness and interest. Media house visits, including TV and radio appearances, will be evaluated through audience reach metrics and feedback, determining their effectiveness in increasing public understanding and interest in the SSDS program.

For the secondary audience, which includes officials from the Ministry of Education, policymakers, and education stakeholders, the evaluation will involve electronic media, in-person meetings, a dedicated website, and the distribution of written information. As with the primary audience, the introductory emails sent to these officials will be evaluated by tracking the number of emails opened, responses received, and meetings scheduled, providing insight into the engagement level from policymakers. In-

person meetings will be assessed by the number of meetings held, participant counts, and feedback scores, which will help in understanding the policymakers' interests and willingness to support the program.

The dedicated SSDS program website will be monitored for traffic, including visitor numbers, pages viewed, duration of visits, and resource downloads, indicating ongoing interest and engagement. Lastly, the distribution of handouts and brochures will be evaluated by tracking the number of materials distributed, follow-up inquiries received, and recipient feedback, measuring the effectiveness of these materials in raising awareness and understanding among policymakers and stakeholders.

Conclusion

The SSDS program dissemination plan aims to raise awareness, drive implementation, and influence policy changes to support inclusive education for children with NDDs. By targeting key audiences with tailored messages and leveraging a mix of dissemination activities, the program seeks to create a lasting impact and ensure that educators are equipped with the necessary tools to support all learners effectively.

CHAPTER SEVEN – Funding Plan

Introduction

This chapter presents the See Something Do Something (SSDS) program funding plan. The SSDS program is a 6-week transformative teacher-training program focused on enhancing educators' abilities to identify and support children with neurodevelopmental disorders (NDDs) in Ghana. The program's core mission is to empower teachers with the knowledge and tools necessary to recognize early signs of NDDs, collaborate effectively with stakeholders for referral and implement tailored interventions in the classroom.

This theory-driven, evidence-based project features interactive workshops, practical case studies, expert insights, and comprehensive resources. The robust project equips teachers with evidence-based strategies to create inclusive learning environments that nurture the academic, social, and emotional development of children with NDDs (Coutinho et al., 2022; Dickson et al., 2020). The program's effectiveness will be tested using pre- and posttraining surveys to measure participants' knowledge, confidence, and implementation of learned skills in their classrooms. Ultimately, the SSDS program strives to be a catalyst for positive change in educational practices, promoting equity, access, and excellence for all students, including those with NDDs.

Target Audience

The SSDS program's target audiences are mainstream teachers, school administrators, and support staff in general education in Ghana. The training will leverage collaborations with educational institutions and networking events with professional associations such as the Ghana Education Service, Ministry of Education,

and local occupational therapy associations to amplify program visibility and credibility.

Local Resources

The Ghanaian education system is fortunate to have a wealth of local resources deeply rooted in the community and ready to support the program. Volunteers, including students' parents, professionals, and educators passionate about the SSDS program mission, generously donate their time and expertise to enhance this initiative. Local businesses are willing to contribute materials, such as stationery, printed materials, and classroom supplies, easing the logistical burden. The education system also has access to local NDD specialists to offer invaluable advice and guidance, and colleagues and friends in the occupational, physical, and speech therapy professions willing to lend their expertise to the program's success. The Ghana Education Service also agreed to provide a training space within each district education office to support the program's efforts. These in-kind resources highlight the strong community support underpinning the efforts.

Budget for Needed Resources

Table 7.1 outlines the SSDS program's anticipated budget for its first 2 years. Each budget category is justified by the project's specific needs to ensure educators are effectively trained to identify and support children with NDDs. The budget includes personnel stipends, costs for developing and delivering training sessions, equipment purchases, supplies, travel expenses, evaluation costs, and miscellaneous expenses. The increase in the budget from Year 1 to Year 2 accounts for rising costs and a possible expansion from one training to three trainings at the indicated cost per training.

Table 7.1*Anticipated Budget for Years 1 and 2*

Category	Justification	Budget in Ghanaian cedi (\$US): one training	
		Year 1	Year 2
Personnel (team of 10)	Stipend for a team of occupational therapists, neurodevelopmental pediatricians, speech and language therapists and assistants, psychologists and behavior specialists, special education coordinators, and administrative staff conducting the training as supporting trainers, guest speakers, and panelists for Q&A sessions. Each will receive an average GH200/hour, 2 hours/week for 6 weeks/training.	24,000 (1,660)	25,000 (1,720)
Instruction/material preparation	Funds for the program developer (author) to develop/deliver training sessions: cost of research, curriculum design, creating interactive digital content, training materials, resources, intellectual efforts.	120,000 (8,300)	140,000 (9,700)
Equipment	Purchase/maintain laptops, projectors, screens, microphones, and other training equipment for training activities, storage, and develop and disseminate training resources.	15,000 (1,030)	20,000 (1,375)
Supplies	Printing costs, stationery, classroom supplies including training manuals, handouts, pens, notepads, and folders, vital for taking notes and organizing learning materials. Refreshments provided as a gesture of hospitality and appreciation for the teachers' time and effort in attending the program: 30 teachers @ Ghanaian cedi 60/person for 6 weeks	10,800 (745)	12,000 (825)
Travel	Transportation for trainers, consultants, and staff delivering sessions across district education offices over 6 weeks. Includes expenses for moving training materials and equipment between locations. The increased budget for Year 2 accounts for potential program expansion and rising transportation costs.	10,000 (690)	12,000 (825)
Evaluation	Covers developing/administering pre- and posttest surveys essential for measuring participants' knowledge, confidence, and implementation of learned skills. Includes expenses for secure data storage to ensure confidentiality/integrity and a comprehensive data analysis of collected information. The increased Year 2 budget accounts for expanded data collection efforts.	10,000 (690)	20,000 (1,375)
Other expenses	Miscellaneous expenses and contingencies	10,000 (690)	12,000 (825)
Dissemination plan	Electronic media, in-person presentations, brochures, website development, podcasts, media visits, videos (Table 6.1)	6,900 (450)	7,700 (500)
Total		206,700 (14,255)	248,700 (17,145)

Potential Funding Sources

The SSDS program will consider a diverse range of funding sources to ensure the successful implementation of the project. These sources have a proven record of supporting educational initiatives both internationally and in Ghana and can provide the necessary financial backing to achieve the program’s objectives (Table 7.2).

Table 7.2

Proposed Funding Source Details

Funding source	Details
Ghana Education Trust Fund (GETFund)	Established in 2000, the GETFund is financed by a 2.5% value-added tax paid by Ghanaians. It focuses primarily on providing educational infrastructure and facilities within the public sector. Known for undertaking numerous educational projects, GETFund has previously funded reading and literacy initiatives, the of classroom block construction, and educational materials. GETFund allocated Ghanaian cedi (GH¢)3.94 billion (US\$20 million) to various educational projects in March 2024.
Ministry of Education	The Ministry of Education launched the Ghana Education Outcomes Project (GEOP) to help out-of-school children reintegrate into Ghana’s formal education system and to improve learning outcomes in primary schools. This US\$30 million project is funded by a \$25.5 million grant from the United Kingdom’s Foreign, Commonwealth, and Development Office and a \$4.5 million contribution from the Government of Ghana. The GEOP builds on the work of the World Bank’s International Development Association-financed Ghana Accountability for Learning Outcomes Project, focused on strengthening teaching and learning by providing support and resources for teachers. The initiative aims to enhance the quality of education in Ghana by bolstering teaching and learning efforts.
United Nations Children’s Fund (UNICEF)	UNICEF works to ensure children with disabilities and their families can access necessary services and support within their communities. They advocate for disability-inclusive policies and legislation and the necessary investments to implement them. From 2019 to 2021, in partnership with the Ghana Education Service, UNICEF piloted a similar training program in the Ada West and West Gonja Districts of Ghana, involving 15 first-grade teachers, headteachers, and district-level staff. Based on universal design for learning principles, the project aimed to improve teachers’ knowledge of inclusive practices and enhance support for all early grade learners, particularly those with disabilities. They invested approximately \$400,000 in this formative research. The See Something Do Something (SSDS) program will be a fitting continuation for this initiative and provide much-needed skills to support learners.
United States Agency for International	USAID has shown significant commitment to supporting educational projects in Ghana. The Strengthening Accountability in Ghana’s Education System (SAGES) activity, launched in 2023, is a \$60 million investment aimed at improving primary

Funding source	Details
Development (USAID)	education in 17 districts across four regions. This initiative underscores USAID’s dedication to enhancing educational accountability and learning outcomes by working closely with Ghanaian agencies and providing financial and technical assistance. Their investments in projects like SAGES highlight their interest in improving educational quality and outcomes, which aligns well with the SSDS program goals.
Rotary International	Rotary International is renowned for its global humanitarian efforts. The organization’s focus on education and literacy aligns with the SSDS program’s goal of training teachers to identify and support children with neurodevelopmental disorders (NDDs). Their contributions to educational initiatives, such as funding literacy programs and supporting teacher training, make it a suitable partner. Rotary’s local clubs in Ghana and worldwide can provide funding, volunteers, educational materials, and advocacy to enhance the SSDS program’s impact. Rotary International has previously funded numerous educational projects, with individual grants often exceeding \$100,000, demonstrating their capacity to support large-scale initiatives like the SSDS program.
Crowdfunding through religious groups	Religious groups can be a powerful avenue for raising funds. These groups are often deeply rooted in local contexts, possess strong networks, and understand the local communities’ customs, tradition, and living conditions. Ghanaians can contribute to the SSDS program by donating through their religious organizations or receiving funding from outreach and charitable organizations associated with religious bodies such, as the Catholic Relief Services and Methodist Development and Relief Services.
Private schools and educational facilities	Private schools and facilities can pay their staff to receive specialized training, ensuring their educators are equipped to identify and support students with NDDs. By investing in their staff’s professional development, private schools can enhance educational offerings and create more inclusive learning environments. This benefits the students and strengthens the schools’ reputations as leaders in inclusive education.

Conclusion

The funding plan for the SSDS program outlines the resources needed for successful program implementation, including personnel, materials, equipment, and facilities. By leveraging available local resources and exploring diverse funding sources, the program aims to secure the necessary financial support to deliver high-quality training and support for teachers in identifying and supporting students with NDDs.

CHAPTER EIGHT – Conclusion

This doctoral paper presents the See Something Do Something (SSDS) program, a comprehensive training program aimed at equipping teachers with the necessary skills to identify, refer, and provide adapted support for children with neurodevelopmental disorders (NDDs) in mainstream schools. The program encompasses an in-depth understanding of the challenges that children with NDDs face, particularly the barriers to early identification and effective intervention within educational settings. Additionally, the program involves systematically evaluating existing solutions and developing an innovative training program that integrates the most effective evidence-based curriculum content and design to address these challenges. The proposed SSDS program seeks to make teacher training and its associated benefits accessible and practical, utilizing occupational therapy (OT) frameworks and evidence-based methodologies to enhance learning and skill application in the classroom.

The SSDS program addresses critical challenges that children with NDDs in Ghana face, including such as attention-deficit/hyperactivity, autism spectrum, and communication disorders. These challenges significantly affect their ability to participate in school and daily activities. The SSDS program aims to equip educators with the skills to recognize early signs of NDDs, refer appropriately, and provide adapted support, thus enhancing the children's health, participation, and developmental potential. Grounded in Bronfenbrenner's ecological systems theory and Bandura's social cognitive theory, the SSDS program addresses the impact of poverty, marginalization, and illiteracy on children's development. It incorporates andragogy principles for training materials and

teaching plans, focusing on best practices in teacher training, such as active learning, school-based collaboration, tailored coaching, and continuous feedback. The 6-week teacher training program includes modules on understanding NDDs, early recognition, inclusive classroom strategies, managing challenging behaviors, and developing individualized education programs.

The program emphasizes practical application through self-reflection, empathy-building activities, presentations, group discussions, case studies, and role-playing. Expected short-term outcomes include increased teacher confidence, knowledge, and skills; intermediate outcomes aim at integrating NDD content into teacher training curricula and enhancing societal acceptance of NDDs; and long-term goals focus on reducing the families' burden of care, decreasing disability-related costs, and improving the quality of life for children with NDDs.

A mixed-methods pre–post quasi-experimental design will measure changes in teachers' knowledge, skills, and confidence. The dissemination plan targeting teachers, school staff, policymakers, and education stakeholders includes electronic media, in-person presentations, testimonial videos, media house visits, a dedicated website, and printed materials. The funding plan includes personnel stipends, material preparation, equipment, supplies, travel, evaluation, and miscellaneous expenses. Potential funding sources include the Ghana Education Trust Fund, the Ministry of Education, the United Nations Children's Fund, United States Agency for International Development, Rotary International, religious groups, and private schools. The successful implementation of the SSDS program is expected to drive systemic changes toward inclusive education

practices in Ghana, ultimately improving the quality of life for children with NDDs and their families.

A profound commitment to improving the lives of children with developmental challenges drove my journey into this field. Witnessing firsthand the struggles of children with NDDs and their families in my daily practice motivated me to seek practical, impactful solutions that could make a significant difference in their daily lives. The SSDS program initiative emerged from this passion and commitment, which helped me develop a deep understanding of the barriers to early identification and support for children with NDDs, particularly in Ghana, where factors such as poverty, marginalization, and illiteracy significantly impact children's development.

Throughout the development of the SSDS program, I gained invaluable insights into the multifaceted challenges and opportunities associated with supporting children with NDDs. Key lessons include understanding the complex interplay between socioeconomic factors and developmental outcomes and recognizing poverty, marginalization, and illiteracy as critical barriers to development and ultimately to NDD care and support. Additionally, I learned the importance of equipping educators with theoretical knowledge and, most importantly, practical skills through structured training and continuous support.

I understood the need for low- and middle-income countries to establish collaborations and necessary partnerships between schools, health care providers, families, and community organizations to create a comprehensive support network toward early identification and intervention. The SSDS program has taught me the

importance of context-sensitive, collaborative, and evidence-based approaches in addressing the needs of children with NDDs. Looking ahead, the SSDS program holds significant potential for local and global expansion. Future directions include developing additional programs tailored to advancing NDD care in Ghana and beyond. Implementing the program's training in other countries facing similar challenges would broaden its impact.

Designing a comprehensive referral system that provides clear pathways for schools, families, and health care providers is a key program focus to ensure that children with NDDs receive timely and appropriate support. The SSDS teacher-training program aspires to be the first of six comprehensive programs addressing different aspects of NDD care. By scaling its impact and refining its approach, the SSDS program seeks to drive systemic changes toward inclusive educational and health care practices ensuring that every child, regardless of their developmental challenges, has the opportunity to thrive.

The SSDS program represents a transformative journey aimed at enhancing inclusive education practices, increasing community awareness, and advocating for children NDDs. It emphasizes the critical role of OT in school-based settings and underscores the essence of OT in championing fundamental human rights, equitable access, and meaningful engagement for children with NDDs.

The comprehensive training programs will play a pivotal role in reshaping inclusive education practices. Teachers will be equipped with the necessary knowledge, skills, and confidence to identify, refer, and support students with NDDs. Community

awareness and advocacy are integral components of the SSDS program. By raising awareness about NDDs, the program will contribute to reducing stigma and promoting acceptance within the community. Advocacy efforts will also focus on securing essential resources and support for children with NDDs and their families. Outreach activities, including workshops, seminars, and public campaigns, will empower community members to become advocates for inclusive education and the rights of these children. The program highlights the importance of OT in supporting children with NDDs within school-based settings: OT practitioners will work closely with teachers, parents, and other stakeholders to support each child's unique needs. This collaboration will ensure that children with NDDs can fully engage in their educational experiences, promoting functional independence and enhancing participation in school activities.

The SSDS program supports Ghana's efforts toward early identification and intervention, which is crucial for improving outcomes for children with NDDs. It embodies OT core values by advocating for fundamental human rights, equitable access, and meaningful engagement for children with NDDs. Occupational therapy practitioners involved in the project will champion these children's rights to participate fully in their educational and community lives.

The SSDS program represents a beacon of hope for children with NDDs and their families. Improving inclusive education practices, enhancing community awareness, and advocating for early identification and intervention set the stage for a more inclusive and supportive society to ensure that every child has the chance to achieve their full potential and lead a meaningful, fulfilling life. I call on all stakeholders, educators, parents, health

care professionals, policymakers, and the community to join in and support this mission, whether through funding, advocacy, or partnership, to expand the reach and deepen the impact of the SSDS program.

APPENDIX A – Leaders’ Manual

See Something Do Something Project:

Leaders’ Manual



An initiative aimed at equipping teachers with the skills to identify and support children with neurodevelopmental disorders

Manual created by: Lady Elizabeth M Oti, OTR/L

Introduction

This manual is designed for leaders who will guide the initiative aimed at empowering teachers with the knowledge and skills necessary to identify and support children with neurodevelopmental disorders (NDDs) in educational settings. The purpose of this manual is to provide comprehensive guidance and resources to leaders who will oversee the implementation of the training program, ensuring its effectiveness and success in addressing the unique needs of children with NDDs. The leaders will be responsible for orchestrating the delivery of the program, facilitating discussions, providing guidance, and fostering an environment conducive to learning and collaboration among participating teachers ultimately contributing to the creation of more inclusive and supportive educational environments for children with NDDs.

Health and Wellness Issues

According to the United Nations Sustainable Development Goal 4 on access to quality education for all, this initiative seeks to promote health and wellness needs by addressing the educational and developmental needs of children with NDDs. It mostly targets primary prevention by equipping teachers with the skills to identify and support children with NDDs early, thereby preventing further debilitation challenges in their educational journey (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2015). The program addresses various dimensions of health and wellness, including emotional, by supporting children's emotional development and well-being; intellectual, by facilitating their learning and cognitive development; and socially, through promoting inclusion and social interactions (UNESCO, 2016). The "See Something Do Something" (SSDS) initiative also promotes occupational engagement and justice by advocating for equitable access to education for all children, regardless of their developmental differences.

- Approximately 52.9 million children under 5 years old are affected by developmental disabilities, with 95% in low- and middle-income countries (LMIC).
- Disability-related costs can amount to 1.88% to 3.39% of gross domestic product in LMIC.

The severity of occupational injustices faced by children with NDDs, coupled with the high prevalence and incidence rates and substantial economic burden, emphasizes the need to advocate to support teacher training. It highlights the long-term economic implications and the potential of its implementation for the health and well-being of children with NDDs.

Priority Population

The primary participants in this initiative are the teachers who receive the training. The beneficiaries will include children with NDDs, who will benefit from early identification and support, leading to improved educational outcomes and overall well-being. Their parents and caregivers will also benefit from a reduced burden of care and increased awareness and acceptance of NDDs, fostering a more inclusive and supportive environment.

The training targets teachers, principals, head teachers, and other school administrators with influence over the implementation of inclusive education practices in schools from diverse educational backgrounds and represent different levels of basic education. Diverse participants will be recruited through collaboration with educational institutions and authorities and through the parents of children with NDDs to invite teachers who express interest to participate.

Additional environmental factors to consider while working with this population includes:

- Policies and regulations governing inclusive education and support services for children with NDDs, as well as religious and superstitious beliefs about NDDs in Ghana
- Limited accessibility and availability of inclusive schools and sensory-friendly classrooms and resources for children with NDDs
- Limited availability of professional development opportunities and ongoing support for teachers in addressing the needs of children with NDDs

Desired/Intended Outcomes

The primary desired outcome of the SSDS program is to equip teachers as major stakeholders in the journey toward NDD advocacy, including identification, support, awareness, and acceptance. These outcomes will ultimately result in improved quality of life and support for children with NDDs. The outcomes are expressed as short-, intermediate-, and long-term:

- Increased teacher confidence, knowledge, and skills
- Improved identification and support for children with NDDs
- Establishment of efficient referral systems and appropriate next steps
- Enhanced classroom practices and educational environments
- Integration of NDD content into teacher-training institutions' curricula
- Enhanced societal acceptance of NDDs

Measurable Objectives

1. Within 1 year of program initiation, commitments from the Ghana Education Service to advocate for policy changes and allocation of additional resources will be secured, demonstrated by the inclusion of quotas in upcoming education policy proposals and budgets.
2. Within 6 months of the awareness initiative, at least 70% of surveyed colleagues, administrators, and educators will report increased willingness to support children with NDDs in schools.
3. By the end of the 6-week training, 80% of participating teachers will demonstrate improved understanding and acceptance of NDDs, as evidenced by a 20% increase in correct responses on a pre–post knowledge assessment.

Program Theories

The SSDS program draws from two central theories: Bronfenbrenner’s (1979) ecological systems theory is essential to understand the nature of NDDs, as well as the potential influence of the training, and Bandura’s (1986, 2002) social cognitive theory, which provides the basis to promote teachers’ skills and efficacy. Both theories recognize the intricate interplay between individual, environmental, and societal factors in shaping teachers’ ability to identify and support children with NDDs.

Bronfenbrenner’s Ecological Systems Theory

Bronfenbrenner’s (1979) ecological systems theory is a theoretical framework that underscores the multifaceted layers influencing development. Spanning from immediate settings to broader societal contexts, it highlights the dynamic interplay between individuals and their surrounding environments, emphasizing the influence of various environmental systems on an individual’s development. This theory categorizes these environmental systems into microsystems, mesosystems, exosystems, macrosystems, and chronosystems.

Within the context of teacher training, this theory translates to addressing specific layers of influence. The SSDS training program will be offered directly within the teachers’ microsystem, which influences the teachers’ knowledge, skills, and confidence. The *microsystem* pertains to the immediate educational environment, encompassing teacher–student interactions, classroom practices, and school policies, which significantly impact training outcomes. The *mesosystem* involves interactions between different elements within the school setting, including management, district education offices, and school personnel, which may influence the implementation of the training program.

The *exosystem* encompasses broader institutional factors such as educational policies and community resources, which can shape the program's effectiveness. The SSDS training program aims to align with and influence these external elements, fostering an inclusive educational environment. The *macrosystem* refers to cultural and societal norms, including the overall lack of awareness about NDDs, which may impact the program's reception and implementation. Last, *the chronosystem* acknowledges the dynamic nature of the educational landscape, recognizing changes over time. The SSDS teacher-training program is designed to include feedback mechanisms that allow for adaptation and evolution over time, ensuring its continued relevance in the ever-changing educational context of Ghana.

Bandura's Social Cognitive Theory

Bandura's (1986, 2002) social cognitive theory focuses on understanding how individuals learn and develop by observing others within their social environment. The principles of this theory will inform strategies for shaping teacher behavior, building confidence, and promoting effective strategies for identifying and supporting children with NDDs. The central concept of Bandura's theory is observational learning or modeling, emphasizing that individuals learn by observing others and imitating their behaviors. This is a core approach employed in the SSDS teacher-training program, where educators can observe and learn from experienced trainers and personnel. Through workshops, demonstrations, and hands-on activities, teachers are exposed to effective strategies for identification and support, enhancing their observational learning experiences.

Another key concept in this theory is self-efficacy and reciprocal determinism. These concepts will be used for instilling confidence in teachers regarding their ability to identify and support children with NDDs and for creating a positive feedback loop, where teachers gain confidence and skills through both personal experiences and external feedback, enhancing the effectiveness of their teaching practices.

Role of Personnel

The SSDS team is small and diverse with important relationships with various experts in Ghana ready to provide support with knowledge and expertise. The team is led by a Ghanaian trained occupational therapist. Other key members are occupational therapy assistants and research assistants, one of whom is a teacher, special education teachers, pediatricians, child psychologists, related service providers, and experts in the fields of NDDs and education. Table A1 provides an overview of the personnel and their roles.

Table A1*Overview of Personnel and Roles*

Personnel	Role
Occupational therapist	<ul style="list-style-type: none"> • Serve as the lead trainer and facilitator of the program • Design and deliver training sessions, provide guidance on effective strategies for identifying and supporting children with neurodevelopmental disorders (NDDs), offer expertise on occupational therapy interventions, and oversee the overall implementation of the program
Experts in the NDD field and related service providers (neurodevelopmental pediatricians, speech and language therapists, psychologists, and behavior specialists)	<ul style="list-style-type: none"> • Provide specialized knowledge and insights on NDDs • Contribute to the training curriculum by sharing expertise on the medical/psychological aspects of NDDs, offer guidance on early identification techniques, and provide support in addressing the unique needs of children with NDDs • Facilitate small group discussions and area-specific content.
Special education teachers and coordinators	<ul style="list-style-type: none"> • Assist in developing tailored educational approaches and interventions for children with NDDs • Share practical strategies for creating inclusive learning environments, offer insights into individualized education programs and accommodations, and provide guidance on adapting teaching methods to meet the diverse needs of students with NDDs
Occupational therapy assistants	<ul style="list-style-type: none"> • Support the occupational therapist in delivering training sessions and providing hands-on assistance

Personnel	Role
	<ul style="list-style-type: none"> • Assist in organizing training materials, facilitate small group activities, and provide one-on-one support.
Research assistants	<ul style="list-style-type: none"> • Assist in data collection and evaluation processes, support program’s logistical aspects, and contribute to the initiative’s research component. • Conduct pre- and posttraining assessments, compile feedback from participants, assist in analyzing training outcomes, and help prepare reports or publications documenting the program’s effectiveness
Administrative staff	<ul style="list-style-type: none"> • Provide logistical support and coordination for the training sessions • Manage registration and enrollment processes, handle communication with participants, arrange venue logistics, coordinate scheduling of training sessions, and ensure the smooth operation of the training program
External consultants: Ghana Education Service, Ministry of Education	<ul style="list-style-type: none"> • Offer guidance on best practices in inclusive education practices and policy and contribute through advocacy and collaboration the overall enrichment of the training program

Table A2 offers an overview of the course syllabus.

Table A2*Course Syllabus Overview*

Initiative component, module, topic	Content	Activity	Research evidence/theory application
Module One: Understanding neurodevelopmental disorders (NDDs) and early identification	<ul style="list-style-type: none"> • Overview of common NDDs, such as ADHD, autism spectrum disorders, and learning disabilities • Recognizing early signs and symptoms • Introduction to screening tools and techniques 	<ul style="list-style-type: none"> • Welcome • Distribute training materials/ schedule • Present on NDDs with case examples • Group discussions on early signs and symptoms • Demonstrate and practice of how to administer/interpret screening tools 	<p>Dickson et al. (2020) Squires & Bricker (2009) Washington-Nortey et al. (2023)</p> <p>Social cognitive theory (SCT): observational learning</p>
Module Two: Creating inclusive learning spaces for all students	<ul style="list-style-type: none"> • Strategies for creating an inclusive classroom environment • Multisensory learning approaches to accommodate diverse learning styles 	<ul style="list-style-type: none"> • Ice breaker/group introductions • Group discussion using case scenario to brainstorm ideas for an inclusive classroom environment • Role-play using visual, auditory, kinesthetic, and tactile approaches to support different learning styles. • Make DIY classroom supplies with everyday materials • Reflective activity 	<p>Al Hamdani (2015) Nilholm & Alm (2010) Penner (2018)</p> <p>SCT: self-efficacy</p>
Module Three: Managing challenging behaviors in children with NDDs: Strategies for positive behavior support	<ul style="list-style-type: none"> • Understanding challenging behaviors associated with NDDs • Positive behavior support strategies • Building attention and participation 	<ul style="list-style-type: none"> • Recap and questions • Present on common challenging behaviors, differentiating between sensory and behavioral issues • Role-play scenarios to practice implementing positive behavior support techniques • Build an attention toolbox: eight simple activities to keep children engaged 	<p>Ben-Sasson et al. (2007) Kaur et al. (2021) Leader et al. (2020)</p> <p>SCT: self-regulation Bronfenbrenner's (1979) ecological systems theory (EST)</p>
Module Four: Basics of individualized education program	<ul style="list-style-type: none"> • Basics of IEP development and implementation • Effective communication with children 	<ul style="list-style-type: none"> • Lecture on the components and importance of IEPs • Role-play exercises to practice effective communication DOs and DON'Ts. 	<p>Ariwijaya (2020) Yell et al. (2020)</p>

Initiative component, module, topic	Content	Activity	Research evidence/theory application
(IEP) development and implementation	with NDDs <ul style="list-style-type: none"> Integrating assistive technologies for children with NDDs 	<ul style="list-style-type: none"> Hands-on training on the picture exchange communication systems Small group facilitation by special education coordinators 	SCT: self-efficacy, social learning EST
Module Five: Supporting parent–teacher collaboration and self-care	<ul style="list-style-type: none"> Managing burnout and building resilience in difficult situations Communicating concerns sensitively Building partnerships with parents 	<ul style="list-style-type: none"> Role-play scenarios to practice sensitive communication with parents Group discussion on building effective partnerships with parents Self-care workshop on mindfulness with strategies to maintain well-being 	Dye et al. (2020) Lobato et al. (2023) Wilson et al. (2021) SCT: self-efficacy, social learning
Module Six: Legal policies and professional development	<ul style="list-style-type: none"> Discuss legal policies on inclusive education Continuing professional development and resource sharing Summary and practical next steps 	<ul style="list-style-type: none"> Present legal policies related to inclusive education Resource-sharing session with materials for ongoing support Summary and action planning Reflective activity 	Opoku et al. (2021) SCT: observational learning, self-efficacy, social learning EST

Administrative Assessment

Table A3 identifies resources needed for the SSDS teacher-training.

Table A3

Needed Resources

Resource/need	Description
Materials	<ul style="list-style-type: none"> • Printed or digital copies of training manuals, handouts, presentations, and visual aids for each module • Laptops, projectors, screens, microphones • Refreshments, pens, notepads, folders, feedback forms or surveys, registration forms and name tags
Educational resources	<ul style="list-style-type: none"> • Visual aids, educational videos, interactive materials for group discussions • Handouts, worksheets • Access to online platforms for additional resources and up-to-date research
Timeframe	The modules will be conducted over a span of 6 weeks, with sessions held once a week and each session lasting 2 hours.
Budget	<ul style="list-style-type: none"> • Procure funding for training materials, follow-up support, and facilitator fees • Consider funding sources, such as grants or partnerships with educational institutions or organizations focused on NDDs
Physical space	<ul style="list-style-type: none"> • Classroom or training space with adequate seating for about 30 people • Breakout rooms for group activities • Access to outdoor spaces for practical demonstrations.

Evaluation Plan

Summative and Formative Approaches

For pre- and postprogram summative data collection, team members will be trained on how to use the software and administer surveys to teachers with Likert-style, numerically rated questions about perceived knowledge, competence, and confidence. To determine changes in knowledge and skills from pre- to postprogram, numerically scored assessments will include quizzes and ratings by trained observers skilled in identifying and supporting children with NDDs.

Formative aspects of the program evaluation will include a postprogram survey using open-ended questions to learn about areas of satisfaction, dissatisfaction, and suggested for improvement.

Also following program completion, in-depth interviews with teachers will be used to understand their experiences with the training, perceived benefits, and challenges in implementation. The study will also employ focus group discussions with teachers to explore collective perspectives and group dynamics. Classroom observations will provide qualitative insights into changes in teaching practices and student interactions posttraining. Finally, interviews or discussions with parents will be used to gather qualitative feedback to determine the impact of the training on their children.

Critical Review

Strengths of Evidence Base and Theoretical Grounding of the Initiative

- Draws from recent research articles and studies relevant to NDDs.
- Utilizes various research sources, enhancing the comprehensiveness and validity of the content
- Incorporates social cognitive theory, which emphasizes observational learning, self-efficacy, and social learning as mechanisms for behavior change required throughout the training
- Bronfenbrenner's (1979) ecological systems theory shows the complex interactions between individuals and their environments, including the classroom environment

Limitations of Evidence Base and Theoretical Grounding of the Initiative

- Evidence base may not cover emerging trends to ensure alignment with latest research on NDDs

- Social cognitive theory involves many constructs, which could result in difficulty maintaining validity due to many pieces needing to fit together

Potential Barriers and Challenges for Implementing the Initiative

- Limited budget and access to necessary materials and resources
- Resistance from educators or stakeholders hesitant to adopt new practices
- Ensuring the sustainability of the training program beyond its initial implementation phase may be challenging without ongoing support or institutional buy-in
- Diverse cultural beliefs, attitudes, and contextual factors related to NDDs

Summary/Conclusion

In summary, this manual provides comprehensive guidance for leaders tasked with implementing a training program aimed at equipping teachers to identify and support children with NDDs. The content covers various modules, including understanding NDDs, creating inclusive learning environments, managing challenging behaviors, supporting parent–teacher collaboration, and discussing legal policies. The purpose of the manual is to empower program leaders with the necessary resources to effectively guide the training program, ultimately contributing to the creation of inclusive educational environments for children with NDDs.

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APPENDIX B – Pre- and Posttraining Surveys

Section 1: Personal Information

1. Full name:
2. Your year of birth _____
3. Name of school you work with:
4. Educational background:
 - Highest qualification:
 - Field of study:
5. Years of teaching experience:
6. Where did you receive your teacher training?
7. Where do you live? Please specify region:
8. Have you received any previous training or professional development related to neurodevelopmental disorders (NDDs)?
 - Yes
 - No

Pretraining Survey

1. How would you rate your current knowledge on NDDs?
 - Very low
 - Low
 - Moderate
 - High
 - Very high

2. Dan is a 7-year-old boy in your class who frequently struggles to stay focused during lessons. He often fidgets in his seat, interrupts others, and has difficulty following instructions. Despite your repeated reminders, he tends to lose his belongings and often forgets to turn in his homework. During group activities, Dan often appears restless and has trouble waiting for his turn. What could be Dan's condition?
 - Naughty child
 - Low intelligence
 - Attention disorder
 - Cerebral palsy

3. Are you aware of any screening tools used to identify NDDs in students?
 - Yes
 - NoIf yes, please write which: _____

4. What resources or facilities do you currently have access to for referring students suspected of having an NDD? (Open-ended)

5. How confident are you in your ability to recognize early signs and symptoms of NDDs in students?
 - Not confident at all
 - Somewhat confident
 - Moderately confident
 - Very confident
 - Extremely confident

6. How confident are you in referring students with potential NDDs?

- Not confident at all
- Somewhat confident
- Moderately confident
- Very confident
- Extremely confident

7. How often do you currently refer students suspected of having an NDD for further assessment or support?

- Never
- Rarely
- Sometimes
- Often
- Always

8. What challenges do you currently face in identifying and referring students with NDDs in your classroom? (Open-ended)

9. How often do you adapt teaching strategies to accommodate students with NDDs in your classroom?

- Never
- Rarely
- Sometimes
- Often
- Always

10. What support measures do you currently offer to students with NDDs in your classroom? (Open-ended)

Posttraining Survey

1. How would you rate your knowledge on neurodevelopmental disorders (NDDs) after completing this training?

- Very low
- Low
- Moderate
- High
- Very high

2. Dan is a 7-year-old boy in your class who frequently struggles to stay focused during lessons. He often fidgets in his seat, interrupts others, and has difficulty following instructions. Despite your repeated reminders, he tends to lose his belongings and often forgets to turn in his homework. During group activities, Dan often appears restless and has trouble waiting for his turn. What could be Dan's condition?

- Naughty child
- Low intelligence
- Attention disorder
- Cerebral palsy

3. Are you aware of any screening tools used to identify NDD in students?

- Yes
- No

If yes, please write which: _____

4. What resources or facilities do you currently have access to for referring students suspected of having NDD? (Open-ended)

5. How confident are you in your ability to recognize early signs and symptoms of NDDs in students?

- Not confident at all
- Somewhat confident
- Moderately confident
- Very confident
- Extremely confident

6. How confident are you in referring students with potential NDDs?

- Not confident at all
- Somewhat confident
- Moderately confident
- Very confident
- Extremely confident

7. How often do you currently refer students suspected of having an NDD for further assessment or support?

- Never
- Rarely
- Sometimes
- Often
- Always

8. What strategies do you currently use for identifying and referring students with NDDs in your classroom? (Open-ended)

9. How frequently do you now adapt teaching strategies to accommodate students with NDDs in your classroom?

- Never
- Rarely
- Sometimes
- Often
- Always

10. What additional supports or strategies have you implemented in your classroom for students with NDDs since completing the training? (Open-ended)

11. Please rate your satisfaction with the training program:

- Very Dissatisfied
- Dissatisfied
- Neutral
- Satisfied
- Very Satisfied

12. How relevant was the training program's content to your role as an educator in Ghana? (Open-ended)

13. Can you describe specific skills or knowledge that the training program strengthened or enhanced? (Open-ended)

14. Are there specific areas or topics related to NDDs that should be addressed in more detail or included in future training sessions? (Open-ended)

APPENDIX C – Executive Summary

Introduction

Neurodevelopmental disorders (NDDs) such as attention-deficit/hyperactivity disorder, autism spectrum disorder, specific learning disabilities, intellectual disability, communication disorders, motor disorders, and other specified and unspecified NDDs result in significant functional impairments (American Psychiatric Association, 2013). Children with NDDs often struggle to fully engage in their daily tasks, such as school participation, personal independence, productivity, and leisure activities. The NDDs often lead to marginalization, low self-esteem, and a diminished quality of life for the children and their families (Liefler et al., 2022). In Ghana, approximately 45% of children under 5 years from rural areas exhibit some form of NDD (Bello et al., 2013). In Ghanaian culture, children with NDDs are often mischaracterized as lazy, cursed, or bewitched. This perception stems from deep-rooted cultural and spiritual beliefs that view disabilities through a supernatural lens. As a result, parents and caregivers frequently avoid seeking medical assistance, opting instead for spiritual interventions. This cultural backdrop, combined with an ineffective system for identifying NDDs, leads to late or missed diagnoses and inadequate support for these children (Dickson et al., 2020)

Early identification and intervention are critical for optimizing the social, emotional, and intellectual development of children with NDDs (Coutinho et al., 2022; Dickson et al., 2020). However, several factors hinder the effective identification and support of children with NDDs in Ghana, including a lack of awareness among caregivers, particularly educators; insufficient teacher training; and inadequate

collaboration between schools, health care providers, and families, which all negatively impact the developmental and educational outcomes of these children.

The See Something Do Something (SSDS) program aims to enhance the health, participation, and developmental potential of children with NDDs by training teachers to recognize early signs of NDDs, refer appropriately, and ensure timely support. This project aligns with the United Nations Sustainable Development Goal 4 on inclusive and quality education for all and aims to integrate more students with NDDs into mainstream schools (Florian, 2014). It further highlights the role of occupational therapy in enhancing the participation of children with NDDs in daily activities, engaging in their learning environment, addressing issues of occupational justice, and improving their overall health and well-being (Novak & Honan, 2019).

Project Theoretical and Evidence Base

The SSDS program is based on several theoretical foundations and evidence bases. Bronfenbrenner's (1979) ecological systems theory was used to map the factors leading to the problem with early intervention and treatment of children in Ghana. Based on the theory and findings from the relevant literature, the author identified several key causal factors that influence a child's developmental capacities, health, and participation. The author focused on the effects of poverty, marginalization, and illiteracy and access to education and developmental environments of children. The evidence consistently demonstrated that the impact of poverty, marginalization, and illiteracy on the developmental environments of children is profound, influencing children's education, health, socioemotional development, and social cohesion (Pérez Alonso-Castrillo, 2021).

Limited access to quality education significantly affects cognitive development. Many children from low-income backgrounds fail to reach their full cognitive potential due to inadequate nurturing environments (Danaei et al., 2016). Illiterate parents often lack the necessary guidance and resources and struggle to support their children's cognitive development (K. A. Clark et al., 2020). It is important to note the crucial role of teachers as agents of change, mainly in identifying and intervening for children with NDDs and serving as primary stakeholders in their education and well-being (Arcangeli et al., 2020; Christopoulos & Kean, 2020; McGregor, 2020; Taneja-Johansson et al., 2021; Taresh et al., 2020; Tryfon et al., 2021).

The theoretical and evidence base that shaped the solution includes Bandura's (1986, 2002) social cognitive theory, which provides the foundation to promote teachers' skills, efficacy, and the andragogy principles (Hartree, 1984) used to design the training materials and teaching plans. Evidence about best practices to promote teachers' ability to identify and intervene with NDDs includes acquiring specific knowledge, skills, and confidence; classroom practices; and parental involvement (Taresh et al., 2020). In Ghana, additional aspects include changing societal beliefs, lack of resources, and limited professional development opportunities (Dickson et al., 2020). Collaborative efforts with parents and community stakeholders are also essential to improve identification and intervention, particularly in resource-limited settings.

Overview of Current Approaches and Methods

Effective teacher training content described in the literature outlines the importance of three main aspects: (a) teaching screening skills and assessment procedures

to identify special needs, (b) providing specialized student support via lesson organization, instructional strategies, and individualized education program (IEP) implementation, and (c) addressing the greater needs of the families and community by establishing collaborations with stakeholders, communicating effectively with parents/caregivers, and understanding diversity and the legal aspects of inclusive education (J. Chitiyo et al., 2019; Gyimah & Amoako, 2016; Kuyini & Mangope, 2011). Best practices in curriculum design include active learning, school-based collaboration, effective practice demonstrations, tailored coaching, continuous feedback, and prolonged engagement (Darling-Hammond et al., 2017; Hill et al., 2013).

Proposed Program

The SSDS program was developed to equip educators in Ghana with the skills to identify and support students with NDDs. This 6-week teacher-training program combines evidence and theory about NDDs and teacher competencies. Each week, a module is delivered in 2 hours of in-person training with readings and activities covering topics such as understanding NDDs, early recognition, inclusive classroom strategies, managing challenging behaviors, and developing IEPs. Additionally, the program addresses teacher burnout, resilience, effective communication, legal policies, and continuing professional development.

Interactive sessions include self-reflection, empathy-building activities, presentations, group discussions, case studies, and role-playing. Participants receive comprehensive training materials and have access to online resources and ongoing support. The SSDS program emphasizes practical application, ensuring teachers can

integrate their learning into daily practices to identify, refer, and provide adapted classroom supports, creating inclusive and supportive learning environments for all students.

The program aims for several outcomes. In the short term, it seeks to increase teacher confidence, knowledge, and skills, establish efficient referral systems, and improve classroom practices. Intermediate outcomes, expected 12 months postprogram, include integrating NDD content into teacher-training curricula and enhanced societal acceptance of NDDs. Long-term outcomes focus on reducing the burden of care for families, decreasing disability-related costs, and improving the quality of life for children with NDDs.

Program Evaluation Research Plan

The effectiveness of the SSDS program will be tested using a mixed-methods pre–post quasi-experimental design. The research aims are to measure changes in teachers' knowledge, skills, and confidence in identifying and responding to the needs of children with NDDs. The pilot study will involve in-service teachers and school administrators in the Ablekuma South District of Ghana. Quantitative measures will assess changes in knowledge, identification, referral practices, and teacher confidence, while qualitative measures will explore teachers' experiences and challenges. Data analysis will involve descriptive statistics and multivariate analysis of variance for quantitative data, and qualitative coding with NVivo.

The study takes great precautions to ensure all ethical considerations, including confidentiality, and means to mitigate potential threats to internal validity. The design

includes a plan for stakeholder involvement in all stages of the study, including disseminating results for positive impact on children with NDDs and the broader community. Detailed reports will be provided to government agencies to inform educational policies and funding decisions.

Dissemination Plan

The dissemination plan for SSDS outlines strategic methods to raise awareness, enhance program implementation, and ultimately inform policy changes that mandate comprehensive training on NDDs across all educational institutions in Ghana. The plan targets teachers and school staff (primary audience) and policymakers and education stakeholders (secondary audiences) with tailored messages to achieve short- and long-term goals. The dissemination strategies include electronic media, in-person presentations, testimonial videos, media house visits, a dedicated website, and distribution of printed materials. The evaluation of the dissemination activities will focus on tracking engagement metrics, such as email-open rates, meeting attendance, feedback scores, video views, social media interactions, website traffic, and the effectiveness of distributed materials. These measures will assess the reach and impact of the dissemination efforts, ensuring that the SSDS program is effectively communicated and adopted.

Funding Plan

The funding plan for the SSDS program outlines the necessary resources and strategies for securing financial support for this transformative teacher training program. The budget plan includes personnel stipends, material preparation, equipment, supplies,

travel, evaluation, and miscellaneous expenses, with provisions for potential expansion in the second year. Local resources, including volunteers, local businesses, and specialists, provide essential support, highlighting the community's commitment to the program's success. Potential funding sources include the Ghana Education Trust Fund, the Ghana Ministry of Education, United Nations Children's Fund, United States Agency for International Development, Rotary International, religious groups, and private schools. These sources have a proven track record of supporting educational initiatives in Ghana and can provide the necessary financial backing to achieve the program's objectives.

Summary and Conclusion

The SSDS program addresses the critical need for early identification, referral, and adapted supports of children with NDDs in Ghana. This theory-driven, evidence-based training prepares teachers to recognize and respond to early signs of NDDs and promotes an inclusive educational and developmental environment. The program includes interactive training sessions, practical activities, and ongoing support to ensure teachers can effectively apply their learning in classrooms. The SSDS program uses a rigorous evaluation plan with mixed-methods data collection to assess its impact on teachers' knowledge, practices, and confidence. Ultimately, the SSDS program advocates for equity, access, and excellence in education, promoting timely interventions for children with NDDs. The successful implementation of the SSDS program will enhance the educational experiences of these children and drive systemic changes toward inclusive education practices in Ghana.

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APPENDIX D – Fact Sheet



**BOSTON
UNIVERSITY**

**See Something Do Something
Project: Empowering Teachers
for Early Identification and
Support Strategies for Children
with Neurodevelopmental
Disorders**

Elizabeth M. Oti, OTR/L

Approximately 45% of children under five in rural Ghana exhibit some form of neurodevelopmental disorder (NDD) (Bello et al., 2013). Poverty, marginalization, illiteracy, and cultural beliefs are key factors affecting children's referral and access to early identification and intervention. Outside of clinical settings, children with NDDs receive minimal support due to a lack of resources, trained personnel, and community awareness. The delayed or absent care is detrimental for the children's cognitive, motor, and socio-emotional developmental capacities, influencing their potential to thrive and participate in meaningful occupations. The See Something Do Something (SSDS) project was designed to address teachers' crucial role in identifying and intervening with children with NDDs, as primary stakeholders in the educational and developmental well-being of the children.






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The SSDS Project aims to enhance the health, participation, and developmental potential of children with neurodevelopmental disorders (NDDs) by training teachers in Ghana to recognize early signs of NDDs, refer appropriately, and ensure timely support.

Theoretical Foundations

The SSDS Project is grounded in several key theories and models

- 
 Bronfenbrenner's Ecological Systems Theory (1979): Maps the multiple environmental factors influencing a child's development, leading to the identification of the effects of systems in the child's home, school, and broader policies.
- 
 Bandura's Social Cognitive Theory (1986): provides the foundations for the training process by emphasizing developing teacher skills and efficacy through observational learning, modeling, and hands-on activities with a meaningful social group.
- 
 Andragogy (Knowles, 1984): Applies adult learning principles to ensure the training is relevant, problem-centered, and experiential to engage teachers through practical activities and real-world problem-solving ensuring that the learning process is meaningful and directly applicable to their work.

THE PROPOSED SOLUTIONS

The SSDS project was developed to equip educators in Ghana with the skills to identify and support students with NDDs. This six-week teacher training program combines evidence and theory about NDDs and teacher competencies. Participants receive comprehensive training materials and have access to online resources and ongoing support ensuring teachers can integrate their learning into daily practices to identify, refer, and support all students. Each week a module is delivered in a two hour in-person training with readings and activities.



Program Outcomes

Short-term

Increased teacher confidence, knowledge, and skills; efficient referral systems; improved classroom practices.

Intermediate

(12 months)
 Integration of NDD content into teacher training curricula; enhanced advocacy for societal acceptance of NDDs.

Long-term

Reduced burden of care for families; decreased disability-related costs; improved quality of life for children with NDDs.

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Implications for Occupational Therapy

1	Occupational therapists play an important role in educating and training teachers on ways to identify, refer, and support children with NDDs.
2	Advocacy for school-based OT services in Ghana, highlighting the importance of integrating OT into educational settings.
3	Increased early identification of developmental needs, leading to timely intervention and better therapy outcomes.
4	Promotion of occupational justice through equitable access to support services for children with neurodevelopmental disorders.

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