Integrating Educational and Therapeutic Support for Neurodiverse Learners: Evidence from the AL-TAHADI Association at Atlas Primary School, Kenitra, Morocco

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Abstract

This article presents a qualitative case study exploring the implementation of comprehensive educational and therapeutic approaches for neurodiverse learners, specifically individuals with Trisomy 21 (Down syndrome) and specific learning difficulties, within an inclusive school setting in Kenitra, Morocco. Drawing on observational data from the AL-TAHADI Association's programs at Atlas Primary School and a detailed speech therapy assessment, this research employs Braun and Clarke's (2006) thematic analysis to identify and analyze key themes in pedagogical practice and intervention. The analysis reveals three central themes: 1) Differentiated Pedagogical Frameworks as a Catalyst for Engagement, 2) The Interplay of Cognitive-Linguistic Domains in Learning, and 3) Holistic Development as a Pathway to Social Integration. The findings underscore the critical importance of multi-faceted, individualized approaches that integrate academic, therapeutic, and psychosocial support. The study concludes that such integrative models are essential for fostering autonomy, modifying behavior, and facilitating meaningful inclusion for individuals with special needs, offering a replicable framework for similar educational contexts.

Keywords: Inclusive Education, Trisomy 21, Thematic Analysis, Speech Therapy, Differentiated Instruction, Neurodiversity, Morocco

1. Introduction

The global shift towards inclusive education necessitates the development and critical examination of pedagogical models that effectively cater to neurodiverse learners. This is particularly salient in contexts supporting individuals with genetic intellectual disabilities, such as Trisomy 21 (Down syndrome), and those with specific learning difficulties. These individuals often present with unique cognitive, linguistic, and psychosocial profiles requiring tailored educational strategies (Buckley, 2000). This paper investigates the operationalization of such strategies within AL-TAHADI Association for the Rehabilitation of People with Special Needs at Atlas Primary School in Kenitra, Morocco.

Through an in-depth observational analysis of the Association's pedagogical structure for learners with Trisomy and a concomitant speech therapy assessment of a learner with specific learning challenges, this study seeks to illuminate the principles underpinning effective intervention. The research is guided by the following question: What are the core thematic elements of the educational and therapeutic approaches employed, and how do they converge to support the development of neurodiverse learners?

2. Literature Review

Inclusive education has emerged as a transformative approach to ensuring equal access to learning opportunities for all students, particularly those with neurodivergent conditions, such as autism spectrum disorder (ASD), attention deficit hyperactivity disorder (ADHD), dyslexia, and others. For marginalized or underserved communities, the implementation of inclusive practices requires innovative interventions tailored to enhance accessibility and relevance. Within the context of the AL-TAHADI Association operating in Atlas Primary School in Kenitra, Morocco, there are notable efforts to advance therapeutic and pedagogical frameworks that cater to neurodiverse learners.

2.1 Background of Inclusive Education and Neurodiversity

Neurodiversity recognizes that neurological differences are natural variations of human development, not deficits. Within classrooms, neurodivergent learners often face challenges including sensory sensitivities, social exclusion, and systemic barriers embedded in rigid curricula (OECD, 2017). Global initiatives have emphasized the adoption of inclusive educational policies to foster accessibility, equity, and belonging. While high-income countries have advanced adaptive technologies and frameworks for inclusivity (Harrison, et al., 2024), nations like Morocco, classified as a lower-middle-income country, continue to grapple with contextual challenges such as insufficient resources, societal stigma, and a lack of structured intervention programs (Ibourk & Raoui, 2024).

2.2 The Moroccan Context: Inclusion and AL-TAHADI Association

In Morocco, inclusive education is aligned with global Sustainable Development Goals (SDG 4) aimed at ensuring inclusive and equitable quality education for all. Morocco made significant commitments to expanding inclusive education, but structural impediments, including inadequate teacher training and uneven resource distribution, have hindered effective implementation (El Habchi et al., 2024). The AL-TAHADI Association has contributed to addressing these gaps by implementing community-centric strategies in schools such as Atlas Primary School in Kenitra—an urban context with diverse socio-economic challenges. Their objective is to create an ecosystem where neurodivergent learners can thrive cognitively, socially, and emotionally.

2.3 Therapeutic Interventions in Inclusive Education

Therapeutic interventions, such as music therapy, play therapy, and cognitive-behavioral therapy (CBT), have gained traction as valuable tools to support neurodiverse learners. Music therapy, for instance, facilitates sensory integration and self-regulation in children with ASD and ADHD (Moya-Pérez, Hernández-Flórez, & Lara Posada, 2024). Studies have demonstrated that participatory music groups foster language acquisition and social interaction while reducing anxiety among neurodivergent students.

In Morocco, therapeutic patient education (TPE) has traditionally focused on chronic illnesses; however, adaptation of TPE principles to educational settings offers significant potential (El Habchi et al., 2024). The AL-TAHADI Association integrates tailored therapeutic activities, involving parents in the intervention process to ensure continuity of support at home and beyond

the classroom. Such initiatives also address stigma by fostering community awareness and helping parents recognize the strengths of neurodivergent traits (Stein et al., 2024).

2.4 Teacher Training for Inclusion

Educator preparedness is central to the success of inclusive education. Teachers at Atlas Primary School are engaged in professional development programs modeled on collaborative approaches like peer co-teaching and reflective practice. These pedagogical strategies mirror findings from global studies emphasizing the role of teacher collaboration in scaffolding learning for students with disabilities (Rytivaara et al., 2024). Moreover, training initiatives emphasize Universal Design for Learning (UDL), promoting flexible curricula that accommodate varied learning styles, including visual, auditory, and kinesthetic modalities (Harrison et al., 2024). In low-resource contexts such as Kenitra, however, the lack of widespread UDL implementation underscores the necessity for capacity-building programs among educators (Belay, 2025).

2.5 Addressing Educational Exclusion

Research indicates a clear relationship between geographical access, resource availability, and school dropouts among students with disabilities in Morocco. Findings by Ibourk and Raoui (2024) reveal spatial inequities in educational access, with rural areas disproportionately under resourced. Furthermore, a pilot analysis of dropout rates in inclusive classrooms revealed a marked reduction when interventions are paired with adequate teacher support, structured Individual Education Plans (IEPs), and targeted community engagement. These strategies align with global best practices, as noted in Mendoza and Heymann's (2022) synthesis of inclusive interventions in low to-middle-income countries.

2.6 Policy Implications and Recommendations

The AL-TAHADI model underscores the importance of aligning local educational policies with inclusive frameworks that cater to both individual and systemic needs. Promoting networks of inclusive practice requires cooperation among policymakers, educators, researchers, and non-governmental organizations. Additionally, embedding neurodiverse perspectives within policy design and evaluation, as highlighted in Salisbury et al.'s analysis (2024), enables sustainable gains in education systems.

The case of the AL-TAHADI Association in Atlas Primary School illustrates the transformative potential of inclusive education when therapeutic interventions, educator development, and community engagement are approached holistically. While Morocco continues to address systemic barriers to inclusion, initiatives like these highlight the benefits of localized, culturally responsive solutions for neurodiverse learners. Further research on long-term impacts and scaling mechanisms will be crucial in extending these benefits to other under-resourced regions globally.

3. Methodology

This study adopts a qualitative case study design, utilizing existing observational and diagnostic data to conduct a secondary analysis. The data comprises two primary sources: 1) a comprehensive descriptive account of AL-TAHADI Association’s educational policies and tiered group structure for its Trisomy class, and 2) a detailed speech therapy assessment report for a single case, "Aya," a learner exhibiting specific learning difficulties.

The following sections below will state and describe the observational steps that were observed with AL-TAHADI Association in Atlas Inclusive School in Kenitra city during the year 2022:

3.1 - Innovative Pedagogical Initiatives Observed at AL-TAHADI Association

The Trisomy class at the AL-TAHADI Association begins the academic year with an innovative, participatory pedagogical initiative modeled on the approach used in the mental–motor retardation

program and organized into three groups according to learners' individual absorptive capacities. Group A, composed of students with relatively strong assimilation, communication, and interpersonal skills, concentrates on foundational academic instruction, with only a small subset requiring additional support—reflecting the association's commitment to differentiated, inclusive teaching. Group B, whose members exhibit more moderate levels of comprehension and communication, engages in activities designed to build recognition of letters, numbers, colors, and to develop memorization and fine motor abilities. Group C, comprising learners with limited concentration and reduced communicative capacities, participates in exercises that strengthen fine motor coordination, support respiratory development, enhance linguistic competencies, and promote social autonomy, including the acquisition of essential self-care skills such as appropriate restroom use.

3.2 - Educational Policies and Objectives Observed at AL-TAHADI Association

Each group is assigned a set of instructional tasks adapted to its developmental profile. Group A engages in activities that reinforce recognition of letters, numbers, and colors, as well as introductory Quranic comprehension, cognitive pathway development, time management, and participation in educational songs. Group B undertakes exercises aimed at reinforcing early literacy and numeracy through exposure to letters and guided reading and writing of numbers, alongside structured coloring tasks, adherence to planned routines, and involvement in educational songs. Group C focuses on activities that cultivate fine motor coordination, support respiratory and pronunciation development, foster social autonomy, and promote engagement in chanting, interactive learning experiences, and the consolidation of general knowledge.

3.3 - Prioritized Objectives Observed at AL-TAHADI Association

The overarching objective of the program is to reshape students' behavior and classroom engagement through strategies that promote the acquisition of new, constructive behaviors, reduce inappropriate actions, encourage socially acceptable conduct, and support learners' integration into their local, social, and academic environments, while also alleviating fears and frustrations. Collectively, AL-TAHADI Association's comprehensive educational practices for individuals with Trisomy at Atlas Inclusive School demonstrate a sustained commitment to personalized, inclusive, and developmentally responsive learning. By recognizing learners' diverse needs, implementing differentiated curricula across groups, and prioritizing holistic growth, the association affirms its dedication to fostering autonomy, competence, and meaningful social participation for individuals with special needs.

3.4 - Case Study of Aya- Speech and Learning Difficulties Assessment at AL-TAHADI Association in Atlas School

In the case study of AYA, a comprehensive speech therapy assessment was conducted on January 28, 2022, to address concerns related to her academic struggles. AYA, a right-handed student in the school, presented a background characterized by a planned and well-monitored pregnancy, culminating in an unplanned cesarean section delivery at full term. The absence of consanguinity and a pathological family history underscored the significance of exploring AYA's developmental trajectory.

The assessment encompassed various domains, including psychomotor development, behavior, perceptual abilities, orofacial praxies, and cognitive functions. Notably, AYA exhibited early achievements in standing and walking, indicating typical developmental milestones. While initial shyness was observed, her positive social behavior suggested a willingness to engage in the assessment process.

AYA's perceptual abilities, marked by smooth eye tracking and well-developed auditory capacities, aligned with expected norms. Orofacial praxies were unremarkable, with AYA successfully completing tasks, demonstrating proficient verbal command execution, and coordination in imitation exercises.

Cognitively, concerns arose regarding AYA's immediate memory, with a digit span forward score below average. The auditory working memory, assessed through digit span backward, further indicated potential inefficiencies in this cognitive domain. However, AYA displayed proficiency in numerical knowledge and mathematical operations.

The examination of AYA's language skills revealed commendable performance in phonemic perception, lexical evocation, and oral comprehension. Reading proficiency extended to irregular words, non-words, and regular words, although challenges were noted in dictation and writing tasks, marked by errors in phonemic discrimination.

Visuo-attentional capacities were highlighted during the "bell" test, where AYA exhibited an inadequate visual scanning strategy. Despite this, her rhythmic reproductions were proficient, suggesting a nuanced profile in attentional processes.

Finally, AYA 's case underscores the importance of a nuanced and comprehensive assessment in identifying her strengths and challenges. The findings point towards difficulties in learning, particularly in working memory, visuo-attentional capacities, and concentration. Consequently, a tailored speech therapy intervention is strongly recommended to enhance AYA's cognitive and linguistic abilities. Regular follow-up assessments will be crucial for monitoring progress and adjusting intervention strategies. The collaborative involvement of educators, parents, and speech therapists is deemed essential for fostering AYA 's holistic development and academic success.

4. Analytical Framework: Thematic Analysis

The data were analyzed using Braun and Clarke’s (2006) six-phase framework for thematic analysis, which provides a systematic method for identifying, analyzing, and reporting patterns (themes) within qualitative data. The process was conducted as follows:

1- **Familiarization:** The provided data sources were thoroughly read and re-read to ensure deep immersion.
2- **Generating Initial Codes:** Significant features of the data were systematically coded across the entire dataset (e.g., "tiered grouping," "memory deficits," "behavior modification," "visuo-attentional capacity").
3- **Searching for Themes:** The initial codes were collated into potential themes, gathering all data relevant to each potential theme.
4- **Reviewing Themes:** The candidate themes were checked against the coded extracts and the entire dataset to ensure they formed a coherent pattern and accurately reflected the data set.
5- **Defining and Naming Themes:** The essence of each theme was refined, and clear definitions and names were generated for each.
6- **Producing the Report:** The final analysis was woven into a scholarly narrative, selecting vivid, compelling extract examples from the data.

This process ensured a rigorous and transparent identification of the central themes that capture the essence of the educational and therapeutic practices observed.

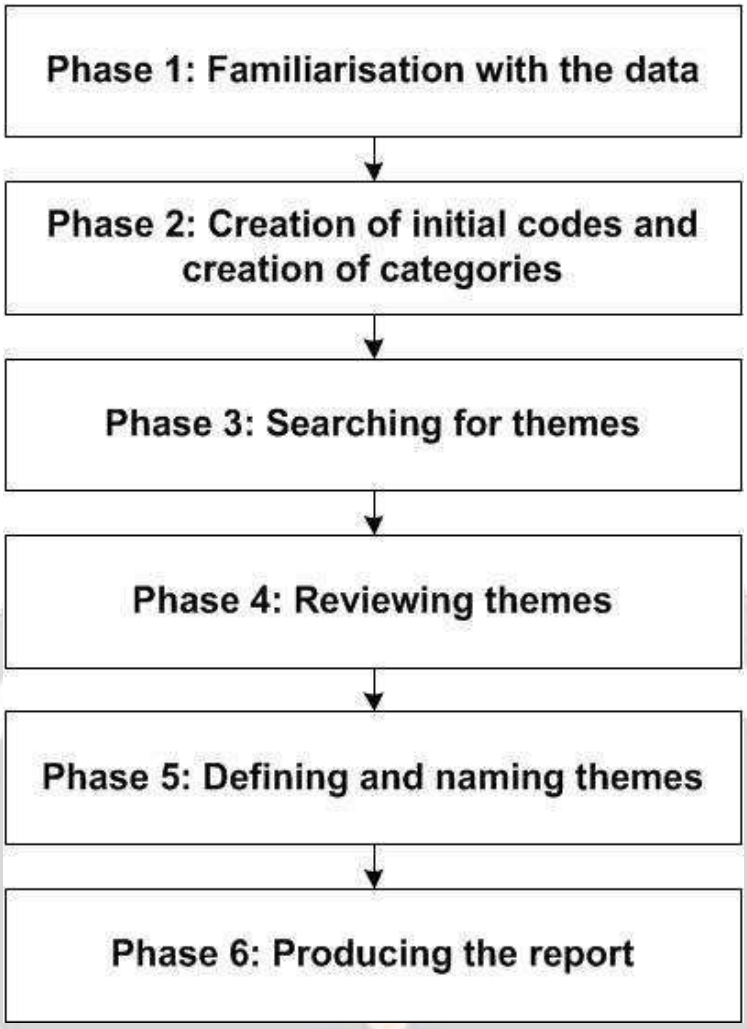

Figure 1. Thematic analysis phases (adapted from Braun and Clarke, 2006)

5. Findings: Thematic Analysis

The analysis yielded three central themes that encapsulate the core strategies and challenges within the inclusive setting.

5.1 Theme 1: Differentiated Pedagogical Frameworks as a Catalyst for Engagement

A prominent theme evident in the observational data is the intentional and systematic application of differentiated instruction. The AL-TAHADI Association's pedagogical model is structured around a tiered system that groups learners according to their "individual absorptive capacities," functioning not as a static tracking mechanism but as a dynamic means of aligning instruction with developmental readiness. For Group A, whose members demonstrate high levels of assimilation, the curriculum emphasizes fundamental academic learning with minimal support, extending to more complex cognitive tasks such as Quranic interpretation and the cultivation of advanced mental processes. Group B, representing students with moderate assimilation abilities, engages in instruction centered on recognition, memorization, and consolidation of basic academic concepts—including letters, numbers, and colors—reinforced by structured activities that strengthen executive functioning. Group C, comprising learners with significant support needs,

focuses on foundational and functional capabilities, including fine motor development, respiratory and phonetic exercises, and essential life skills that foster social autonomy, such as appropriate restroom use. Collectively, this instructional design underscores a clear departure from uniform pedagogical expectations, advancing an approach where individualized progression is prioritized and learning is facilitated through tasks calibrated to each learner's zone of proximal development.

5.2 Theme 2: The Interplay of Cognitive-Linguistic Domains in Learning

The speech therapy assessment of Aya offers a detailed micro-level example of the intricate interdependence among cognitive, linguistic, and attentional processes—an insight central to understanding the nature of learning difficulties. The results delineate a profile marked by both notable strengths and significant vulnerabilities. On the strengths side, Aya displays robust phonemic perception, a well-developed lexical repertoire, and solid numerical competencies, including effective execution of mathematical operations; her orofacial praxis and rhythmic reproduction abilities are similarly preserved. In contrast, the assessment identifies weaknesses in working memory—illustrated by a low forward digit span score—as well as compromised visuo-attentional functioning, reflected in her inefficient visual scanning strategy on the bell test, alongside broader challenges in sustaining concentration. These cognitive limitations surface academically in her written production, where errors such as confusion between voiced and voiceless phonemes, omissions, and additions are evident. Overall, Aya's profile underscores that learning is multifaceted: strong linguistic and numerical foundations can coexist with specific cognitive constraints that hinder the automatization of writing skills and impede higher-order comprehension.

5.3 Theme 3: Holistic Development as a Pathway to Social Integration

A unifying theme across both the Association's pedagogical framework and Aya's individualized therapeutic assessment is the sustained emphasis on holistic development that transcends traditional academic goals. The association explicitly situates its mission in fostering behavioral adjustment and facilitating learners' integration into social and academic environments, prioritizing psychosocial objectives such as reducing fear and frustration, promoting socially appropriate behavior, and minimizing maladaptive actions. This whole-child orientation is equally visible in the focus on functional autonomy—central in the curriculum for Group C and reflected in Aya's documented progress in feeding, dressing, and early toilet training, all of which are treated as essential components of her developmental trajectory. Moreover, the recommended speech therapy for Aya is framed not as a narrow academic intervention but as a means of enhancing her broader academic and social functioning, recognizing the interconnectedness of cognitive-linguistic competencies with classroom engagement and social participation. Collectively, this theme affirms that effective education for neurodiverse learners requires the integration of academic instruction with social–emotional development and practical life-skills training in order to realize meaningful inclusion.

6. Discussion

The findings of this thematic analysis resonate with established literature on inclusive education and special needs pedagogy. The tiered differentiation model (Theme 1) aligns with Tomlinson's (2001) concept of differentiated instruction, which advocates for modifying content, process, and product based on learner readiness. AL-TAHADI Association's model operationalizes this by creating distinct yet fluid learning trajectories, thereby acknowledging the spectrum of ability even within a specific condition like Trisomy 21.

The nuanced profile revealed in Aya's assessment (Theme 2) underscores the necessity of comprehensive diagnostics. The dissociation between her strong linguistic-phonological skills and her weak working memory and visuo-attentional capacities is classic of certain learning profiles (Gathercole & Alloway, 2008). This reinforces the argument that educational interventions must be informed by a detailed understanding of underlying cognitive processes, and that speech-language pathologists play a critical role in identifying these discrete deficits.

Finally, the emphasis on holistic development (Theme 3) reflects a bio-psycho-social model of disability (Engel, 1977). By targeting behavior, emotional well-being, and social independence alongside academic goals, the program addresses the whole child. This approach is fundamental for moving beyond mere mainstreaming—where a child is physically placed in a general education setting—towards genuine inclusion, where they are emotionally and socially accepted and supported.

7. Conclusion

This thematic analysis, grounded in the real-world practices of AL-TAHADI Association and the clinical data from a speech therapy assessment, elucidates a robust framework for inclusive education. The identified themes—Differentiated Pedagogical Frameworks, The Interplay of Cognitive-Linguistic Domains, and Holistic Development—are not isolated concepts but are deeply interwoven in practice. They collectively argue for an educational ethos that is responsive, diagnostically informed, and committed to the overall well-being and social integration of the learner.

While this study is based on a specific context and a single case, the themes offer valuable insights for educators, therapists, and policymakers. Future research should involve longitudinal studies to measure the long-term efficacy of such integrated models and explore the perspectives of the learners and their families. Nonetheless, this analysis demonstrates that when pedagogical strategies are thoughtfully aligned with therapeutic insights and a holistic vision of growth, inclusive education can become a powerful vehicle for empowering neurodiverse individuals.

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