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# CURRICULUM MODIFICATIONS TO CREATE AN INCLUSIVE LEARNING ENVIRONMENT IN A REGULAR CLASSROOM FOR STUDENTS WITH DYSTONIC CEREBRAL PALSY AND CHOREOATHETOSIS: A CASE STUDY

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**Abstract:** This case study investigates curriculum modifications designed to foster an inclusive learning environment for students with dystonic cerebral palsy and choreoathetosis, focusing on a 10-year-old student, "Ali" (a pseudonym), in a mainstream classroom in Sharjah, UAE. The study employs a qualitative methodology involving observations, interviews, and document analysis to understand how tailored educational strategies address Ali's academic, social-emotional, and motor development needs. Key interventions include leveraging assistive technologies, adapting teaching methods, and implementing individualized educational plans (IEPs) aligned with the UAE's inclusive education policies. While Ali benefited from social inclusion and personalized learning support, challenges emerged, including teachers' limited training in inclusive practices, inconsistent curriculum adjustments, and resource constraints. Observations revealed that while technology integration in English and mathematics enhanced learning, activities requiring prolonged writing posed difficulties. Despite these hurdles, Ali progressed in social interaction, group participation, and specific academic tasks. The study emphasizes the need for professional development to equip teachers with the skills to deliver inclusive education effectively. Recommendations include further customization of curricula, increased use of assistive technology, and fostering collaborative partnerships among educators, parents, and inclusion specialists. This research underscores the importance of aligning educational practices with legal mandates and addressing the unique needs of students with disabilities to ensure equitable learning opportunities.

**Keywords**: inclusive education, curriculum modifications, dystonic cerebral palsy, assistive technology, individualized educational plans (IEPS), social integration

## Introduction

The UAE has advanced inclusive education through initiatives like Federal Law No. 29 of 2006 and the "School for All" guidelines, which emphasize equal educational opportunities for students with disabilities (United Arab Emirates Ministry of Education, 2006; Arif & Gaad, 2008). However, implementing inclusive practices for students with complex conditions like Ali, a 10-year-old with dystonic cerebral palsy and choreoathetosis, remains challenging. These conditions, characterized by involuntary muscle contractions, writhing movements, and speech difficulties, significantly impact motor skills, sensory integration, and learning (Stewart, Harvey, & Johnston, 2017).

### Background

Ali's case (Pseudonym name) highlights the practical barriers educators face in mainstream schools, such as limited resources, insufficient training for educators, and the need for individualized curriculum modifications. Despite efforts to include Ali in regular classes, activities are not always tailored to his needs, and long writing tasks often overwhelm him. While the integration of technology and support

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from peers has facilitated his progress, the lack of consistent adaptations hinders his academic and social development. Addressing these challenges through assistive technology, targeted curriculum adjustments, and collaborative planning between teachers, the inclusion department, and Ali's family aligns with the UAE's commitment to fostering an inclusive and supportive learning environment (McGlynn & Kelly, 2019; Lindner, Schwab, Emara, & Avramidis, 2023).

While the UAE's Federal Law No. 29 of 2006 aimed to safeguard the rights of children and adults with disabilities, along with ensuring equal educational opportunities for all (Article 12). The "School for All" guidelines were designed and published to promote inclusive education (Arif & Gaad, 2008). Despite increased access, educators faced challenges in controlling teaching and learning in diverse cases (Nfor, 2017). This study established to delves into effective teaching strategies and accommodations for students with dystonic cerebral palsy and choreoathetosis, addressing their unique needs, what dystonic cerebral palsy is, and what kind of disability it causes.

Dystonic cerebral palsy

Dyskinetic cerebral palsy (CP) is a debilitating motor disorder, involving changes in muscle posture and tone. It includes simultaneous dystonia and choreoathetosis, with classification based on dominance. Dystonia, marked by involuntary muscle contractions, is commonly linked to hypoxic-ischemic injury. Choreoathetosis combines random movements (chorea) and writhing motions (athetosis), associated with thalamus and basal ganglia lesions (Stewart, Harvey, & Johnston, 2017).

Inclusive for students with dystonic cerebral palsy

The introduction of students with conditions such as dystonic cerebral palsy and choreoathetosis into mainstream educational settings may pose challenges to their motor skills development, sensory integration, and learning abilities, and it might also underscore the imperative need for inclusive practices.

While the strides toward inclusive education are commendable, concerns and opposing viewpoints persist. Critics contend that the integration of students with special needs into regular classrooms may present challenges for both students and educators, the potential strain on teachers who may lack the professional training or support, or enough experience to meet the diverse needs of Special needs students as dystonic cerebral palsy and choreoathetosis. The poor in experience with a lack of resources and support can result in difficulties addressing the inclusion learning requirements of these students within a mainstream educational setting. (Lindner, Schwab, Emara, & Avramidis, 2023)

Moreover, critics argue that the emphasis on inclusive education might compromise the overall quality of education for all students. They express concerns that the focus on accommodating students with special needs may divert attention and resources, potentially affecting the learning outcomes for the entire class. (Lindner, Schwab, Emara,& Avramidis, 2023)

Social dynamics within the classroom also evoke concerns. Critics highlight potential challenges for both students with special needs and their classmates in terms of social integration and effective

participation in group activities and discussions. Such challenges can give rise to feelings of exclusion and frustration among all students involved.

Attitudes, resources, and curricula are vital to implementing successful inclusion for SEN students (Bricker, 1995, as referenced in Nfor, 2017). In activity-based courses, the emphasis should be on encouraging positive viewpoints, cooperative planning, and interaction.

Enhancing educational resources is also essential, and this includes hiring competent educators and pr oviding technological supports (Nfor, 2017).
Curriculum modifications integrating subject matter and competency adjustments are crucial for stude nts with dystonic cerebral palsy, and teachers may benefit from further professional development (Mc Glynn & Kelly, 2019).To address this issue, it is important to utilize online platforms for teaching students with dystonic cerebral palsy and choreoathetosis, taking into consideration their unique needs and abilities, teachers tends to use technology while covid 19 pendamic (Abuzaid, 2021) which means they can use it to make the learning journey easier for this students, there a lot of strategies to make it effective teaching for students with dystonic cerebral palsy and choreoathetosis by using online platforms.

Additionally, fostering open communication with the students and their parents is crucial. Understanding their specific abilities and challenges can guide the creation of personalized learning plans and appropriate modifications to ensure their success in the learning environment.

Furthermore, maintaining flexibility is essential when teaching students with dystonic cerebral palsy and choreoathetosis to modify the curriculum to meet their unique needs and providing additional support when necessary can make a significant difference in their educational journey.

Implementing Inclusive Practices

In line with the UAE's commitment to inclusive education, educators can implement a range of inclusive practices to support students with dystonic cerebral palsy and choreoathetosis. This may involve the proactive use of assistive technology, fostering open communication with parents, and adapting the curriculum where necessary to meet the unique needs of each student. (Greer et al., 2014).

Leveraging Assistive Technology

Building on the effective use of assistive technology, educators can leverage a variety of tools and resources to enhance students' access to the curriculum and learning materials. This may include utilizing specialized software, interactive digital resources, and accessible platforms that accommodate students with motor difficulties; on other hand if the interface is complicated, it will not be helpful as expected. (Karlsson, Shepherd, & Honan, 2024)

Customizing Learning Experiences

Customizing the learning experiences for students with dystonic cerebral palsy and choreoathetosis involves adapting teaching methods, materials, and assessments to cater to their unique abilities and challenges. By tailoring the IEP.

In summary, aligning instructional practices and support strategies with the UAE's legal provisions and inclusive education guidelines can enable educators to create an inclusive learning environment that caters to the needs of students with dystonic cerebral palsy and choreoathetosis in different educational settings.

Identification

Schools in Sharjah, UAE, adhere to the 2017 inclusion policy framework, relying on the definition from the School for All (2006) framework. Students with cerebral palsy, such as Ali, are identified through formal medical reports from authorized health centers, aligning with criteria for physical and health-related disabilities outlined in the policy

Background and context

Ali (fictitious name) 10 years old, 2 months, was diagnosed with developmental delay, cerebral palsy, and choreoathetosis. He is enrolled in an American school in Sharjah UAE, in the Boys' section, he is completely included in the school mainstream, he is studying a modified curriculum done by his teachers and the inclusion department in cooperation with his family, a fully included student without any pull-out sessions during the school days.

Student with development delay, cerebral palsy, and choreoathetosis

Ali (fictitious name) 10 years old, 2 months, was diagnosed with development delay, cerebral palsy, and choreoathetosis at age 6, he had physiotherapy, occupational therapy and speech therapy from accredited centres. In addition, he expresses himself using short sentences, he has trouble coordinating movements, his hands have a slow rhythm and the stiffness of his limbs, twisting on walking, he makes an effort to hold a pencil and tries to write and draw, he could be able to write his name, make circles and man face, he is apparently comprehensive, oriented, alert, answer simple questions when asked, hearing and vision apparently normal, he has good social interaction and communication and likes to play with peers, he is talkative but has difficulty in controlling the tongue and vocal cord, his speech is disarticulated and not clear when talks fast speech.

Abilities for Ali

- Respond to physical reinforcement.

- like video games

- likes using technology.

- He can produce a large number of speech sounds and letters of the alphabet

- socialised and like to work in groups,

- can recognize a large number of animals and colours (monkey - cat - bird) (yellow-red).

- can match some pictures of animals - fruits**.**

Areas need focus for Ali's development.

In the following points, the particular areas that need to be focused on for Ali in the short term and for the long term to ensure his development, areas extracted from his medical report along with the educational psychological report.

Academic development

According to the internal Baseline Summary and standrized test (CAT4), Ali can recognize letters and may blend two letters with frequent assistance. He is able to meaningfully count to ten in math. Since his conceptual comprehension is below grade level, He can trace and write simple sentences with assistance.
He can write his name, a few letters, and numbers on his own. He still hasn't developed his writing abilities and needs guidance to improve his handwriting.

Social and emotional development

Ali has speech and language difficulties; which make him a passive participant in the class. He can carry out his daily life activities with minimal assistance. He uses nonverbal/murmuring language when it comes to expressing his needs and desires. Hence, the adults find it difficult to figure out what he intends to say at times. He is a social child who plays with his peers with good behaviour. His active class participation is to be developed and focused upon, He can carry out his daily life activities with minimal assistance.

Motor development

Ali has a stubborn nature in class and feels bored easily. While walking, he shows some balance. He is weak in nature which makes it challenging for him to carry his bag around, and to bring his own staff, like books, notebooks.

In fine motor skills, his writing needs more practice, and hence, focus on the formation of letters and numbers.

Challenges in the Gulf area for students with dystonic cerebral palsy and choreoathetosis

In the Gulf area, establishing an inclusive learning environment for students with dystonic cerebral palsy and choreoathetosis poses challenges, notably due to teachers' limited understanding and

struggles with inclusive pedagogical practices (Sousa, 2021). Addressing this requires open curricula, teacher training (Vieira, 2018), and a pedagogical project founded on inclusive education principles (Melo, 2007). Practical strategies emphasizing individuality and participation are crucial (Franco, 2016), emphasizing the necessity for comprehensive teacher support and training.

**Methodology**

This case study uses an instrumental, flexible, qualitative, case study approach to investigate the curriculum modification of students with dystonic cerebral palsy, so data collection was focused on observation, interviews and document analysis.

Research questions

It becomes necessary to obtain meaningful answers and to pose clear and specific research questions.

- How has Ali's curriculum been adjusted to meet the educational requirements associated with dystonic cerebral palsy, choreoathetosis, and developmental delay?

- What suggestions may be made to establish an inclusive learning environment that works wel l for Ali and other students who have comparable circumstances?

Observation in Mathematics class

During a mathematics lesson about fraction division, the teacher's collective explanation is met with a passive student response. After 10 minutes without change, signs of boredom emerge. Task allocation follows, with Ali encountering difficulty accessing his notebook. Despite seeking assistance, Ali engages in simpler exercises focused on number differentiation and counting objects, diverging from the class's primary focus on fraction division and fractional numbers.

Observation in English class

In an English language class focusing on oral communication, students designed vehicles for lunar exploration. Ali attentively listened to his colleagues' presentations but refrained from asking questions during the Q&A time. At the final assessment, Ali received a standard worksheet, lacking consideration for his needs. However, the support from friends started without any sense of segregation.

Observation in playing time

Teachers unanimously have chosen Ali as the line leader for school assemblies and breaks, slightly unsteady walk is the reason behind that and to priorities his safety. During breaks, Ali engages with friends, they consider his preferences in choosing activities, they were avoiding games with fast movements. Ali's robust social and emotional skills foster a sense of belonging, supporting his seamless integration into school life.

Ali IEP

The collaboratively developed (IEP) in Appendix 1 outlines academic, social-emotional, and motor skill objectives for Ali. Aligned with SMART criteria, it adopts a push-in approach in the regular classes, featuring a tailored curriculum. Challenges in objective implementation by some teachers will be analyzed in the following chapter.

Analyzing The IEP and the provision presented

The main points were need to be focused on are the way of phrasing the IEP objectives, and Procedures for intervening and assessing students in the classroom, the Accessibility of resources for customization, as well as the usage of supportive technology, and the involvement and contribution in non-academic activities.

To show Ali's progress, it's important to set clear goals, with wide usage of technology; Specify the number and time for reading tasks, define proficiency levels in math, outline social-emotional requirements, and detail motor skill development criteria. These adjustments will make Ali's IEP more effective and precise. For specific Critique, look at Appendix B.

**Discussion, conclusion and recommendation**

This study was aiming to investigate the curriculum modification to create an inclusive learning environment for students with dystonic cerebral palsy, choreoathetosis, and developmental delay by answering the study's main question and the question: What recommendations can be suggested to implement an inclusive learning environment sufficiently for Ali and other students with similar conditions?

The curriculum was modified for Ali, and subject teachers and, SEN teacher were informed about his requirements. However, not all activities were specifically tailored to his needs. Some activities designed for him were occasionally it was overwhelming, particularly those involving long writing tasks. Nevertheless, the integration of technology in English, math, and even art lessons was facilitating his progress. Despite the academic challenges, Ali actively participated in non-academic activities with support from his best friends and teachers.

Recommendations for optimizing Ali's educational experience include:

Implementation of the modified curriculum, especially in English classes, needs to meet individual needs in the classroom.

Encouraging the usage of technology, particularly the school platforms, is easily accessible to all students.

Recommending the use of calculators in mathematics classes to enhance Ali's progress in multiplying and dividing numbers.

Emphasizing the development of handwriting skills through a constructive and systematic process, starting from tracing to word formation, and establishing a consistent routine in language classes.

Extend the time for speaking tasks to foster his speech growth.

Professional development is needed for subject teachers to ensure the quality for delivering the modified curriculum.

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## Appendices

## Appendix A

| | Target (Specific, Measurable, Achievable, Realistic, Timed) | Steps to achieve it | Success criteria | Review Tick the appropriate box |
|---|---|---|---|---|
| Academics | **READING**<br>**Short term:**<br>Read CVC words with short Vowel sounds<br>**Long term:**<br>By June 2024, Ali will be able to read<br>The Sight words. and CVC Words<br>He will be able to answer simple comprehension passage questions with minimal support. And read a short level 1 story. | The SEN teacher will conduct intervention sessions using **picture flashcards** to encourage Ali to practice sight word reading.<br>The class teacher will encourage Ali to use and repeat words and simple sentences. | Ali will identify the Sight words introduced To him.<br>He will receive positive reinforcements and rewards on completing the task during each sessions. | Short Term<br>Long Term<br>Exceeded<br>Fully met<br>Partially met<br>Not met |
| | **MATH**<br>**Short term:**<br>After Numbers till 50.<br>Use of Number line for addition.<br>Ones, Tens, and Hundred<br>**Long term:**<br>By June 2024, Ali will be able to do simple addition and subtraction. | • Support team will use **manipulatives, picture cards and number line** and introduce the lessons.<br>• Assistive technologies, apps related to curriculum will be used for the same. | • Ali will do random after numbers.<br>• He will do simple addition using pictures, manipulatives and number line.<br>• Using Technology, he will be able to do basicmath problems. | Short Term<br>Long Term<br>Exceeded<br>Fully met<br>Partially met<br>Not met |
| SOCIAL&EMOTIONAL | • Ali will be encouraged to participate inthe class activities.<br>• He will be motivated to take turns whenplaying with peers.<br>• He will be encouraged to initiate interactionswith his peer group. | • SEN teacher will use social stories to encourage Social and Emotional skills.<br>• The class teacher will encourage Ali in active classroom participation and peer interactions. | • He will be able to develop his social and emotional skills to his potential. | Short Term<br>Long Term<br>Exceed ed Fully met<br>Partially metNot met |
| MOTOR SKILS | • Ali will be guided and encouraged to carry out physical activities such as basic drill exercises during PE lessons to gross motor skills.<br>• Ali will be constantly redirected and guided in developing a tripod grip while using the pencil. He will be constantly encouragedto develop writing skills. | • The class teacher and PE teacher will encourageAli in physical activities and participation.<br>• He will practise following letter and number formation patterns to develop a better writingskill.<br>• He will be provided with printed or photocopied class notes if needed. | • He will be able to carry out physical activities atPE classes with minimal assistance.<br>• He will start to writefollowing the basic handwriting rules. | Short Term<br>Long Term<br>Exceed ed Fully met<br>Partially metNot met |

| | | | |
|---|---|---|---|
| IEP Meeting date; | Comment ; | Parent sign: | SEN Teacher sign:<br>Class teacher sign:<br>HOD sign;<br>Principal sign: |

**Appendix B**

# Specific Critique for the IEP Objectives

## Reading Short-Term Objectives

The goal is specific but lacks measurability.
Recommendation: The document should detail expected levels of assistance and skills (e.g., handwriting and motor coordination), with measurable indicators and timelines.

## Reading Long Term

The goal is somewhat specific but could be more measurable and time-bound.
Recommendation: The document should detail expected levels of assistance and skills (e.g., handwriting and motor coordination), with measurable indicators and timelines.

## Math Short Term

Specific and measurable, but lacking a time frame.
Recommendation: The document should detail expected levels of assistance and skills (e.g., handwriting and motor coordination), with measurable indicators and timelines.

## Math Long Term

Somewhat specific, but could be more measurable and time-bound.
Recommendation: The document should detail expected levels of assistance and skills (e.g., handwriting and motor coordination), with measurable indicators and timelines.

## Social & Emotional Short Term

Vague and lacking measurable criteria.
Recommendation: The document should detail expected levels of assistance and skills (e.g., handwriting and motor coordination), with measurable indicators and timelines.

## Social & Emotional Long Term

Vague and lacks specific goals.
Recommendation: The document should detail expected levels of assistance and skills (e.g., handwriting and motor coordination), with measurable indicators and timelines.

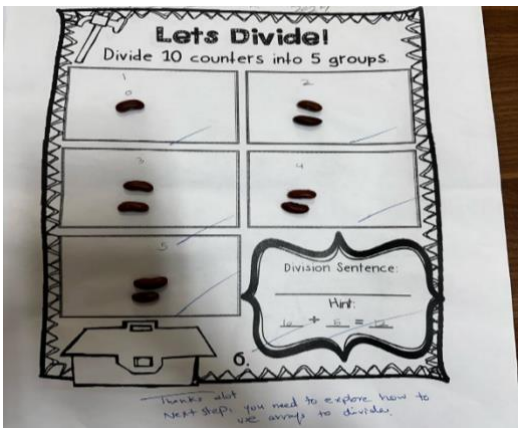
## Motor Skills Short Term

Specific but not fully measurable.
Recommendation: The document should detail expected levels of assistance and skills (e.g., handwriting and motor coordination), with measurable indicators and timelines.

## Motor Skills Long Term

Somewhat specific, but could be more measurable and time-bound.
Recommendation: The document should detail expected levels of assistance and skills (e.g., handwriting and motor coordination), with measurable indicators and timelines.

**Appendix C**


Lets Divide!
Divide 10 counters into 5 groups.
Division Sentence:
Hint:
6.
Think what next step you need to explore how to use arrays to divide.