

Exploring Dyscalculia and Its Impact on Student Performance

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Abstract:

Sometimes, it happens that a student may appear physically fit, but their performance in mathematics is poor. It is due to dyscalculia. It is a learning disorder that can hinder the ability to comprehend and perform mathematical operations. This paper attempts to present signs and symptoms of dyscalculia among students of primary classes. This will help the parents and teachers in the early diagnosis of this disorder. This paper also identifies the challenges and barriers faced by the students having dyscalculia. Further, this paper emphasises the significance of early identification, interventions, and strategies for supporting students with dyscalculia. Through strategies and reviewing previous researches, this paper aims to raise awareness about dyscalculia in common people and propose solutions to help students succeed in mathematics despite their difficulties.

Keywords: Dyscalculia, impact, student, performance

Introduction

Sometimes, it happens that a student may appear physically fit, but their performance in mathematics is poor. If a teacher diagnoses this issue, they may discover that the student has difficulty recognizing numbers in their correct form. This condition is known as *dyscalculia*. It refers to a disorder where an individual struggles to correctly interpret and understand numbers, mathematical symbols, and their shapes. It is a type of learning disorder that affects the ability of a student to understand numbers, accomplish calculations, and understand concepts related to mathematics. Dyscalculia is not just an inability to do mathematical operations but involves the disruption of cognitive processes related to numerical understanding. It also develops the fear of mathematics concepts and calculations.

Reading and language processing are primarily affected by the dyslexia, dyscalculia specifically targets abilities of mathematical operations. It is very common in children of primary classes but teachers and parents doesn't know that symptoms of Dyscalculia. Without knowing the main cause of falling performance of student, teachers and parents are unable to rectify their problem with effective way.. The main purpose of this paper is to explore identification of dyscalculia, the challenges they face, and strategies that will support students in overcoming their difficulties of dyscalculia.

Lack of Awareness of Dyscalculia:

Dyscalculia remains undiagnosed due to the lack of knowledge among society members and parents. 5-7% of the population, affected from Dyscalculia, but most of the people doesn't know that they have Dyscalculia due to inadequate awareness and recognition of the disorder. Early detection of any disorder is crucial for effective treatment and also providing appropriate support, as undiagnosed dyscalculia disorder often leads to long-term academic struggles. Review of related researches reveals that dyscalculia is a learning disorder as common as other learning disorders but problem is that it is less frequently recognized by educators and parents.

The difficulty in diagnosing dyscalculia disorder rises from the fact that its signs overlap with other learning difficulties. So it is very difficult to understand the symptoms of dyscalculia until a student is exposed to more complex operations of mathematics. By the time it is realized that a student is unable to perform regular mathematical operations, this disorder may have already increased.

There are so many factors affects in barrier of early identification of dyscalculia. Attention deficit hyperactivity disorder (ADHD) also possessed similar symptoms, so sometimes some students are misdiagnosed that they have attention deficit hyperactivity disorder (ADHD) instead of Dyscalculia.

Parents and teachers may think that a student has Attention deficit hyperactivity disorder (ADHD), but in reality, they may be dealing with dyscalculia. If students suffer from Dyscalculia, it means they are unable to understand the concept of mathematics, it will lead to Attention deficit hyperactivity disorder (ADHD).

Signs and Symptoms of Dyscalculia

The students of primary classes exhibit a range of signs and symptoms of dyscalculia which hinders the learning process of students. The academic performances of those students are significantly goes down due to the improper understanding of numbers, arithmetic and mathematics operations. Common difficulties of that students associated with dyscalculia include:

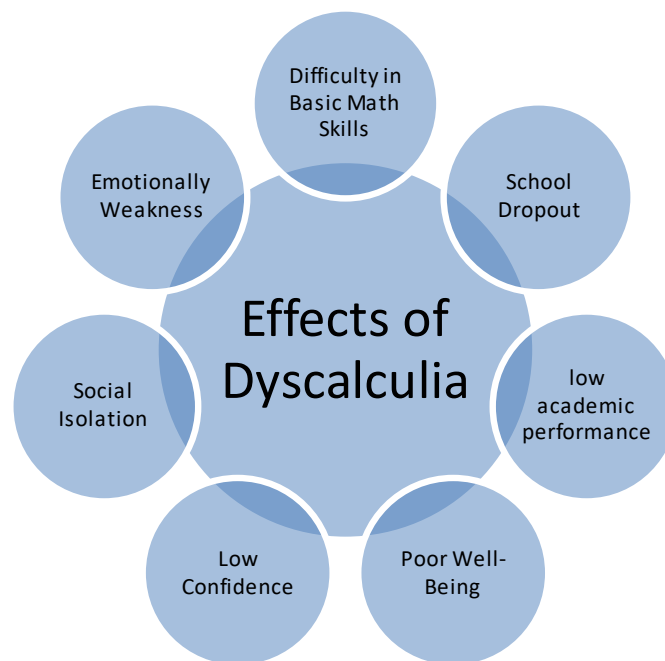
1. **Number Wisdom:** Students feel uncomfortable in making distinct between number stoichiometric, sizes, shape, structure or also confused in recognizing the value of different digits. It means if students show confusion in number sense, then they should be under observation of teachers and parents.
2. **Mathematical Operations:** If students are unable to do simple operations like totalling, subtraction, multiplication, and division. It means students should be carefully observed by teachers and parents to diagnose the real fact.
3. **Ineffective Organization:** Dyscalculia effected students' shows problem in scheduling simple tasks, reading clocks, and also show difficulty in managing time effectively.
4. **Struggling Patterns and Sequences:** It is difficult to understand the different geometrical patterns, spatial relationships, and sequences
5. **Retention Problem:** Students who are suffering from Dyscalculia shows problem in understanding and remembering formulas, facts, signs and steps involved in solving problems.
6. **Weak in Calculation skills:** Dyscalculia effected students are unable to estimate quantities, like estimating how much modification to suppose when making a purchase.

All above signs and symptoms are not due to poor intelligence of students, but it is due the comprehension of spatial arrangement of symbols, letters, alphabets in reading and writing of mathematics concepts. They can be very good in communication and speaking skills. If in early stage it is identified by parents and teachers then dyscalculia can be cured in its early stage. They struggle significantly in maths related tasks, when it is not identified and cured in early stage.

Impact of Dyscalculia on Students' Academic Performance

In our daily life and in school system mathematics plays an important role. Without calculations a common people are unable to perform daily routine activities of life, because they have to do purchase of various articles and compel to do calculation. So in school system mathematics subject is core subject for every student. Students with dyscalculia are unable to do mathematical operations due to this they lose their interest in mathematics and scores poor marks which lead failure in mathematics subject.

As a result, they may experience:



- **Difficulty in Basic Math Skills:** If student suffer from dyscalculia then he/she feel difficulty in doing simple mathematics calculations like addition, subtraction, multiplication and divisions. Due to this, he/she loses interest in their study and lead to struggle in academic endeavours.
- **Low Confidence:** When student faces struggle in understanding of mathematic concept and doesn't acquire mastery in basic math skills, it makes it harder for students to progress in academic endeavours, leading to low confidence and poor grades. A negative self-image is developing because they recognize themselves as less capable than their class fellows, leading to lack of confidence in their abilities.
- **Social Isolation:** A negative self-image can lead student to social isolation, because students feel ashamed in front of other person, group and peers.

- **Emotionally Weakness:** When student doesn't perform basic math skills, it makes frustration within and it harder for students to confront the problems of daily life which leads to weakness in emotions. A negative emotion is developing because they feel that they can't do anything.
- **Poor Well-Being:** when student socially isolated and having low confidence, these all affect negatively on their physical, mental health and overall well-being.
- **School Dropout:** Initially students with dyscalculia avoid math classes due their inability to do mathematical operations, leading to disengagement from the all classes and eventually, dropping out school.
- **Low academic performance:** frustration, losing interest in learning process, low self-esteem, isolation and poor well-being of students affects significantly negative on academic performance of students.

BARRIERS & CHALLENGES OF STUDENTS WITH DYSCALCULIA

There are so many challenges and barriers for students with dyscalculia in traditional educational settings. They are as follows:

1. **Inadequate trained teachers:** In our schools, so many teachers are not aware and trained to identify students with learning disabilities like dyslexia and dyscalculia. Without proper training and awareness, teachers may be incorrectly labelled student as lazy or inattentive.
2. **Absence of Personalized Approach:** Generally in school "One Size fit all" principle is followed in teaching-learning process of school. Common teaching methods can't be appropriate or effective for students with dyscalculia. Classroom is full of diverse needs of learners, so teacher should adopt modern teaching method for fulfilling the needs of diverse learners.
3. **Stigma:** Peers, School Administration, Parents and Teachers are not widely understood the Dyscalculia and its effects. Due to misunderstanding, students with the dyscalculia may face stigmatization by teachers, parents and peers, which can compound their difficulties.
4. **Inadequate Resources:** In many schools inadequate resources are found to provide purposed interventions, such as focused teaching like extra time for identification and remedial teaching. Teachers are packed through various paper and committee work, so they don't provide special time for students of special need.

SUGGESTIONS FOR OVERCOMING THE CHALLENGES OF STUDENTS WITH DYSCALCULIA

There are so many challenges of students with dyscalculia, here author provide suggestions, strategies and interventions that provide support to overcome these challenges. These include:

1. **Early Recognition:** Identification of dyscalculia among students should be done as early as possible, because timely support and intervention will be given and student with dyscalculia will be treated and cured timely. Intervention should be planned and include specific mathematical difficulties treatment phases.
2. **Personalized Instruction:** Teachers should plan personalised or individualised or tailored or differentiated teaching approaches to accomplishment of the diverse needs of diverse students. Multimedia resources, visual aids, real-life applications and practical learning experiences of math should be integrated in daily teaching-learning process of students, it provide support students with dyscalculia to engage and learn mathematical concepts in a more easy and accessible way.
3. **Technology Integration:** Now we are living in era of technology, various software, apps and programmes are designed and available to support students with dyscalculia by provided diagrammatic, more clear, interactive, one by one, direction for better understanding of concepts.
4. **Personalized Attention:** Personalized attention and tailored strategies should be implemented according to learning disabilities of particular student. This approach is very significant for overcoming mathematical difficulties among students.
5. **Flexibility:** School system should provide flexibility to student with dyscalculia like extra time given for completing assignments and exams, arrangements of oral presentations instead of written tests.

Conclusion

Dyscalculia is a significant disorder in students but often overlooked learning disorder that impact academic and emotional well-being of students. Dyscalculia affects the efficiency of student in performance of basic mathematic skill; also develop low confidence among them. Negative self-image, isolation friendly, emotionally poor, poor well-being, low academic performance and drop school in mid are main characteristics of students with Dyscalculia.

Inadequate trained teachers, absence of Personalized Approach, Stigma of Peers, School Administration, Parents and Teachers, Inadequate Resources are the main barriers in academic journey of Student Dyscalculia because all of these barriers, students with dyscalculia are not identified in their early stage.

Initial recognition and intervention are playing an important role in overcoming the effects of dyscalculia. With exposure of appropriate intervention, support, and teaching approaches, students with dyscalculia can overcome their difficulties and challenges and acquire better performance in mathematic subject.

It is crucial for teachers, school manager, parents, and community members to elevate awareness of dyscalculia and ensure the early recognition of students with dyscalculia because timely intervention will receive by students with dyscalculia. Through interventions students receive the support they need to thrive academically.

By adopting a more inclusive approach in teaching-learning process and nurturing a better understanding of learning disabilities, teachers and parents can provide help students with dyscalculia to achieve their full potential in academic endeavours. It is the duty of administrators and Principals of schools is to create congenial environment that not only recognize the encounters of dyscalculia but also provide training of dealing the strategies and tools that are needed to overcome the barriers and support in success of their educational journey.

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