

# Investigating the learning disability dyscalculia in the post primary classroom within numeracy heavy subjects.

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## ABSTRACT

The main focus of this study was to investigate dyscalculia and the associated behaviors in the classroom setting.

The research embarked on investigating said behaviors that the students who have dyscalculia may display in the classroom setting.

The qualitative method of data collection was chosen in order to provide the most effective and useful strategies in aiding students who may display significant mathematical difficulties or perform below age-appropriate level.

It was found that groupwork, pair work and one to one tuition lessons were deemed effective towards helping the dyscalculic student. The researcher also identified the norm behaviors of students who face difficulty when working with numbers.



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## INTRODUCTION

The definition of dyscalculia is very broad but one stated by (Soares and Patel 2015) is as follows, dyscalculia can be defined as a level of math's below average with mathematical concepts and counting ability are impaired.

The rationale for this particular study was derived from the researcher's heavy interest in working with numeracy. This is also supported by the fact that subjects to be taught by the researcher consists of regular engagement with numeracy for students.

Some of the main aims of the investigation was to understand the influences to poor mathematical performance and engagement. As well as discover potential methodologies that may reduce the strenuous experience of working with numeracy.

Another further hope was to identify the key factors to look out for as the teacher that may indicate students are having difficulty to conceptualize the mathematical equation or showing difficulty when working with numbers.

## METHODOLOGY USED TO ACCESS DATA

The methodology chosen was interviews. The original decision to choose this method was supported by the fact that qualitative data would be more effective than quantitative for this study.

The researcher was particularly interested in discovering the interviewees past experience with the learning disabilities and what are the factors that are key to helping to identify.

The justification for this method was that the semi structure interviews allowed the research to have in depth discussions on the methods suggested. And how these are effective when building confidence with numbers.

The profile of candidates were chosen by subjects they currently teach or have experience in teaching previously. These generally consisted of mathematics, economics and business and accounting just like the researcher.

## FINDINGS/ RESULTS

After using thematic analysis to evaluate the key findings from the transcripts, several re-occurring themes were discovered. The themes that derived as a result of the interviews were strongly supported by the literature of several authors who engaged in their own research of dyscalculia.

The first one included the behaviors emitted from pupils when working with numbers. This included a certain phobia of working with numbers/ math's this is declared as "Mathematics anxiety" which can also be defined as the feelings of worry, anguish or frustration (Devine et al 2018).

A second finding as a result of the research was that students emit a certain lack of confidence when working with numbers which again is influenced by Math's anxiety. Some of the findings in this theme included that parents may have not a positive relationship with numbers themselves as well as on the other hand they may be insistent that the child grades at 100% in the subject. These factors all considered were suggested to be impacting a lack of confidence on the students when dealing with numeracy.

Thirdly the researcher saw that there were some methods that were utilized by teachers interviewed in order to reduce stress for students and build a foundation of understanding. One of these critical techniques was to down to the whole school approach. Throughout a range of subjects using the same techniques to calculate percentages and or fractions will help students manage their understanding.

**Finally, the suggested methods for the dyscalculic student or any students facing difficulty included, one to one tuition and pair-work/groupwork. These stated methods were used by the interviewees and deemed to be supportive measures. While, the argument was put forward that placing a student with dyscalculia in a large classroom environment is not effective and/ or supportive as they do not receive the support and attention required.**

## KEY REFERENCES

Devine A, Hill F, Carey E, Szucs D (2018) "Cognitive and Emotional Math Problems Largely Dissociate: Prevalence of Developmental Dyscalculia and Mathematics Anxiety", *Journal of Educational Psychology*, Vol. 110, No. 3, 431-444. <http://dx.doi.org/10.1037/edu0000222>

Williams (2013) A teacher's perspective of dyscalculia: Who counts? An interdisciplinary overview, *Australian Journal of Learning Difficulties*, 18:1, 1-16, DOI: 10.1080/19404158.2012.727840

## DISCUSSION

- A suggestion made to mitigate the effects of math's anxiety included the use of Bibliotherapy. A method whereby students reflect on previous history on Mathematic lessons and unravel their influences that cause stress in working with numeracy..
- Secondly, to reduce a lack of attention regain focus from students reducing the size of classes especially for students with dyscalculia can provide an encouraged learning environment whereby the extra needs and attention can be supported by the teacher.
- A strongly supported solution by the interviewees for students who may have this learning difficulty was to provide one to one or small group tuition. It was also suggested by one interviewee that placing the student in a group whereby they don't "stand out" will not hinder the confidence growth of the individual rather than mixed ability.

## Conclusion

The conclusion to this research indicates that future research is required in order to emulate our understandings that we have of dyslexia. This will in theory provide us with sufficient effective methods that should reduce anxiety when working with numbers as well as build a foundation for future understanding, scaffold prior learnings.

As the understanding is not at full capacity we must argue whether the mentioned techniques can be considered effective or are there unknown or unexperimented techniques that may provide greater success.

Participant	Gender	Subjects taught
1	Female	Mathematics- Third level education
2	Female	Mathematics – up to leaving cert level and geography
3	Male	Mathematics and economics
4	Male	Business studies, Business and economics
5	Female	Business studies, Business and Accounting

