**Inclusive Assessment to Support First Year Students on Third Level Computer Science Courses**

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# 1. Introduction

Approximately 20% of the general population can be defined as neurodiverse, with 10% being dyslexic, 4-5% with Attention Deficit Hyperactivity Disorder (ADHD) and 1-2% being autistic[1]. Typically, neurodiverse adults in third level education will register with the support services of a college to avail of accommodations such as early access to notes, extra time to complete exams etc to support them throughout their educational journey. However, many of these accommodations are done to “fit” a neurodiverse student into the education system designed for neurotypical students. This has been shown to be ineffective as the graduation rates of neurodiverse students compared to neurotypical peers are lower.

# 2. Challenges

Although there are a growing number of neurodiverse students enrolling in higher education, it has been observed that globally, these students graduate at a substantially lower rate than their comparable peers. According to a 2015 Australian study, 35% of neurodiverse students graduated compared to 67% of neurotypical students. [2]. A further study in the University of Connecticut, revealed only 39% of neurodiverse students graduate compared 59% neurotypical students [3].

The assistance and support that neurodiverse student in third-level education received from their Higher Education Institute (HEI) was a key factor in their success. To receive these supports students must have a formal diagnosis which they must then disclose to their HEI. These supports typically include accommodations for assessments and additional aids for in-class learning activities. Students who choose not to disclose that they are neurodiverse or have difficulties obtaining a formal diagnosis may suffer as a result as they may not receive these supports.

There is increasing acceptance within the neurodiverse community to self-diagnose or self-identify. As most HEI require a formal diagnosis to be considered for accommodations, those who self-identify as being neurodiverse will not be able to avail of accommodations.

# 3. Project Aim

The primary objective of this project is to conduct a comprehensive investigation and thorough evaluation of a wide range of assessment methods suitable for use within first-year computer science modules. The aim is to provide extensive support to cater to the diverse needs of all learners.

This project places great emphasis on the design and proposal of assessments that that are universal, capable of accommodating the individual requirements of these students. Such assessments must be flexible and adaptable to encompass a broad spectrum of learning styles, and preferences. The goal is to ensure that every student, is afforded equal opportunities.

By exploring and analysing the potential of various assessment methods, this project aims to promote an inclusive learning environment that fosters the development of strengths and abilities in all students; empowering them to reach their fullest potential.

# 3.1. Engagement with Project

Neurodiverse students can be categorised into two groups, those that have and have not disclosed their diagnosis. We can further group those that haven’t disclosed their diagnosis into those that have received a formal diagnosis and those that self-identify. This recognition of the different types of neurodiverse students is critical as it will inform the mechanisms used to both identify and engage with these students as part of this project.

For example, if we only look at students who have disclosed their diagnosis then we would be missing a considerable cohort who, for various reasons have decided not to disclose. One further consideration to be made as part of this project is that females who are neurodiverse are typically diagnosed much later in life, when compared to males. This could create a bias towards male neurodiverse students.

To ensure adequate representation we plan to contact all students on several first-year computing courses and ask them do they wish to be involved in this project. This approach will help mitigate against the possibility of missing key participants.

# 4. Project Impact

The impact of this project is expected to be significant. As discussed, neurodiverse students have a lower graduation rate when compared to their neurotypical peers. Through teaching and assessment these students are expected to conform to a system designed primarily for neurotypical students and which fails to account for the strengths of neurodiverse students.

While various accommodations are available to neurodiverse students, these accommodations often fail to embrace the strengths of neurodiversity and are seen as tools to fit a square peg into a round hole. Inclusive assessment considers the needs of all types of learners, allows for a menu of assessment types which assist students in demonstrating their knowledge within a module. This will allow the round peg to find a round hole.

Success for this project will be measured by the student satisfaction of the new forms of assessment. When students are comfortable with the form of assessment, they tend to succeed as they can better communicate and demonstrate their knowledge. We will perform a comparison of the findings of a satisfaction survey prior to change and after to quantify the impact.

To this point we have discussed the impact of the project on the student experience and of course this is crucial, however for the changes to be sustainable beyond the 23/24 academic year they must be done with support from the lecturers. The newly adopted forms of assessments will not only need to consider the diverse needs of the students but also the additional effort and workload on the lecturer.

# 5. Methodology

This research consists of multiple phases, some of which have been completed to date, with others still outstanding. These phases include; Data Collection, Recommendations, and Review.

**5.1. Data Collection (complete)**

In April and May 2023, we conducted a survey amongst students in 5 HEI in Ireland. This survey initially sought to identify neurodiverse students. As discussed, not all students disclose a diagnose of being neurodiverse and quite often students may not have a formal diagnosis. As a result, participants were asked if they identify as being neurodiverse either through formal diagnosis or as self-identification. Based on the responses, 45% of the participants identified as being neuro diverse with 64% of those identifying as having ADHD, 35% identifying as autistic and 29% identifying as being dyslexic. From these results, we can see that there is a higher prevalence of neurodiversity in third level education when compared to the general population i.e., 45% compared to 20%.

The survey also sought to identify which modes of assessments students “preferred”. The results revealed that while there was greater preference for some forms of assessment modes when compared to others e.g., multiple choice tests compared to written test, no single assessment mode could be discounted, as this project aims to create recommendations to support all students not only the majority.

**5.2. Recommendations (ongoing)**

Based upon research conducted into inclusive assessment together with the findings of the survey mentioned previously recommendations will be made by this project team to lecturers of first year computing modules.

For example, in the survey conducted, 60% of students would prefer a written report and 25% would prefer to submit a video. This would mean that if we offered just one form of assessment mode i.e., written report, we could be disenfranchising a considerable number of students, so one recommendation could be to allow students to submit either a written report or a video to demonstrate their knowledge.

**5.3 Review (ongoing)**

In January 2024 we will conduct surveys and focus groups of both staff and students on the first-year computing courses where recommendations in terms of assessment modes where adopted. The objective of these will be to determine firstly if the students felt that having the choice of assessment mode supported their learning, and secondly if the additional workload on the lecturers was not significantly burdensome.

# 6. References

1. Joel Montvelisky, “Neurodiversity As A Strengthening Point For Your Team And Our Society,” *Frobes*, 2021.
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3. L. A. Newman and J. W. Madaus, “An analysis of factors related to receipt of accommodations and services by postsecondary students with disabilities,” *Remedial and Special Education*, vol. 36, no. 4, pp. 208–219, 2015.