Inclusive Assessment and Autistic students in Third Level Education in Ireland

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Abstract

The current third level education system requires a square peg to fit into a round hole when it comes to assessment. Assessments are designed for the majority where students who are autistic or neurodiverse are only provided accommodations to "fit in". These accommodations are usually not fit for purpose e.g. providing a student extra time to complete an assessment could compound their challenges as it increases burden. If we consider a wheelchair user being provided more time to climb the steps compared to others, would this be considered a reasonable accommodation? In our current education system, we expect students with dyslexia to be able to provide written reports to the same level as students without dyslexia.

Autistic people account for approximately 1-2% of the general population, however they form 16% of the student population. Unfortunately, their graduation rates compared to their neurotypical peers is much lower. Success rates at graduation are not solely linked to a student's level of knowledge or understanding but also their ability to demonstrate this knowledge or understanding through assessments. Accommodations are put in place for neurodiverse and autistic students to help them to demonstrate their knowledge within assessments, but as mentioned these accommodations are not always fit for purpose.

Supports need to be integrated at the subject/module level ranging from employing technology aides to techniques such as Universal Design Learning and Inclusive Assessments to assist in achieving positive outcomes.

1. Introduction

There has been an increase in the diagnosis of autism since the 1990's [1] and it is expected that the number of autistic students enrolling in third level will also increase [2].

In 2018, the Department of Health in Ireland issued a report stating that the prevalence of autism in the Irish population ranges from 1 – 1.5 percent [3]. In the UK this number is approximately 1-2 percent according to a 2022 report [4]. The Centre for Disease Control (CDC) in the US identified approximately 2.2 percent of children in the US are diagnosed as being autistic [5]. Australia also showed a similar prevalence estimate for autism of between 1.5 and 2.5 percent [6].

A 2014 report by the CDC identified that 69% of autistic people[1] do not have additional intellectual disabilities. However, a further study revealed that autistic people with no additional intellectual disabilities often have poorer prospects, when compared to autistic people with additional learning needs. For example, autistic people with no intellectual disabilities are three times more likely to have no daytime activities including education or employment [7]. Autistic students in second level education tend to have a desire to progress to third level education [8]. This is further strengthened by research demonstrating that autistic people who have a third level education have better life outcomes [9].

The aim of this research is to identify the challenges faced by autistic students in Higher Education (HE) including a review of educational frameworks such as Universal Design for Learning (UDL) and technological advances in the field of Augmented Reality (AR) and Virtual Reality (VR) to determine if these mechanisms may be a viable route towards bettering outcomes for autistic students in, HE.

2. Challenges Faced by Autistic Students

The number of autistic students reaching third level education is increasing [10], however internationally it has been found that the graduation rate for autistic students is much less than their comparable peers. A study carried out in Australia in 2015 identifies the number as 35% compared to 67% [11]. A study completed at the University of Connecticut in 2015 sees several (39%) when compared with their peers (59%) [12].

The success of autistic students enrolled in third level education can be determined by the support which they received from their Higher Education Institute (HEI) [13]. This represents a challenge for

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[1] Please note the use of the term "autistic people" rather than a "person with autism" to reflect the preference of autistic self-advocates and the neuro-diversity movement [54]

autistic students in third level education as they may be reluctant to disclose their diagnosis to others [14]. These disclosures are made to receive accommodations for exams and for during classroom learning activities [15]. Autistic students choosing not to disclose their diagnosis can potentially lead them to suffer as they don't receive the necessary accommodations which they need to succeed [16].

A study carried out in Ireland in 2019 revealed that large numbers of autistic people are either underemployed or unemployed [17]. In Australia a report identified that just 42% of autistic people are employed compared to 83% of those without a disability [18]. A report released by the Office of National Statistics (ONS) in the United Kingdom in 2021 revealed that just 22% of autistic adults there are in employment [19]. In the US approximately 85% of autistic adults are unemployed [20].

Transitioning from higher education to the workforce can be a particularly challenging period for autistic students [21]. These students often struggle with changes in routine, social interaction, and expectations associated with job searching and maintaining employment. Research shows that schools can play a significant role in helping students navigate this transition by providing career counselling and work-based learning opportunities [22].

2.1. Autistic Students in HE in Ireland

Between April and May 2023, we conducted a survey of students in third level education in Ireland to gain a better understanding of neurodiversity within the third level student population. This survey was distributed to students on 7 different campuses of HEIs i.e., TU Dublin, Technological University of the Shannon, Atlantic Technological University and Dundalk Institute of Technology. A total of 150 responses were received and the primary aim of the survey was to identify challenges within assessments by autistic students.

2.1.1. Demographics. As mentioned, 150 students completed this survey. Figure 1 shows the breakdown of the gender of the respondents. The survey sought to identify what portion of the student population is autistic. There are currently no published reports indicating how many autistic students there are in third level education in Ireland. There are approximately 250,000 students in third level education in Ireland, and assuming the college population reflects the general population there are up to 5000 students currently in third level education that are autistic.

Another method of establishing how many students in third level education are autistic is to review the number of those registered with the disabilities service within each HEI. A challenge with

this data is that many autistic students either do not wish to disclose their formal diagnosis or may not have received one.
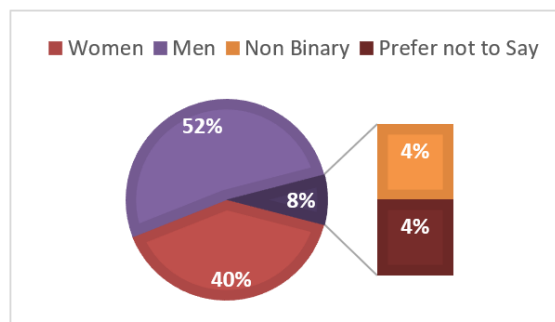

Figure 1. Gender Breakdown of Respondents

Neither of these methods for identifying the number of autistic students is accurate for various reasons i.e., does the college population reflect the general population, what about autistic students not registered with the disabilities service. As a result, we asked participants if they identify or have been diagnosed as being neurodiverse and if so what form of neurodiversity they experience. Self-identification amongst the neurodiverse community is deemed valid.

Our survey revealed that 49% of respondents identify or have been diagnosed as being neurodivergent. Figure 2 shows the breakdown of the forms of neurodiversity experienced by the respondents. Respondents were permitted to select multiple forms of neurodiversity e.g., a respondent may have been autistic and dyslexic.
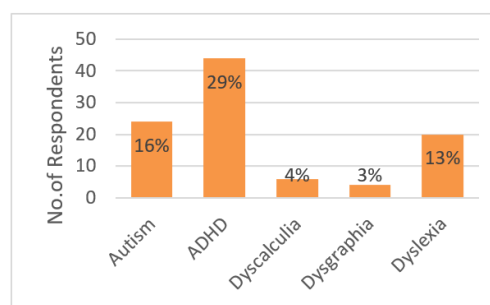

Figure 2. Forms of Neurodiversity Identified

As mentioned previously approximately 1-2% of the general population are diagnosed with autism. However, our research has shown that approximately 16% of the third level student population in Ireland is either diagnosed or self-identifies as being autistic. This could mean there are approximately 40,000 autistic students in third level education in Ireland.

2.1.2. Forms of Assessment. Once we established the demographics, we wanted to identify which forms of assessments that neurodiverse and autistic student preferred. Respondents were provided with a list of the typically used forms of assessments in higher education and asked to strongly disagree, neither agree nor disagree, agree, or strongly agree, with several statements e.g. I like written tests, I like multiple choice tests etc. Figure 3 shows the responses received from these questions.

As shown, there is no single form of assessment which can be discounted. The responses further support the need for inclusive assessment practices as there are no single form of assessment which all students have a preference. This aligns with research into the supports universities can give towards students trying to transition to the workforce [23]
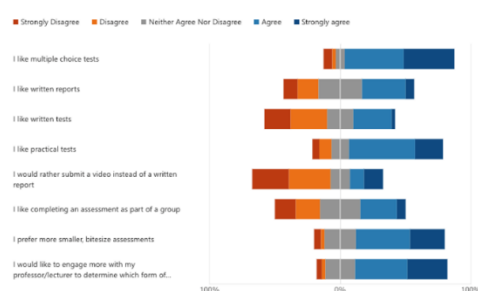

Figure 3. Respondents preference in form of Assessment

3. Assessment

Assessment in third level education has multiple purposes and has a central role in the learning process. Assessment is important for the following reasons:

1. Evaluation of learning
2. Feedback for Improvement
3. Motivation and Engagement
4. Quality Assurance
5. Benchmarking and Comparison
6. Certification and Recognition

Forms of assessments can change across courses and institutes to suit various disciplines including combining multiple forms of assessments such as written reports, class tests, presentations etc. The primary objective of assessments is create a fair evaluation process that supports student learning while also helping them to demonstrate their knowledge of the discipline [24]–[28].

3.1. Inclusive Assessment

Inclusive assessment is defined as the design and use of fair and effective assessment methods and practices that enable all students to demonstrate to their full potential of what they know, understand, and

can do [29]. Current third level assessment practices have largely contributed to the exclusion of students with needs different to that of the dominant societal group [30]. For example, the use of extra time during exams "others" the students who must remain seated when the exam is over. To avail of these accommodations a waiver must be sought putting the onus and responsibility on the student rather than the educational system. This negatively affects autistic students as it fails to identify how these students may learn and interact with the world in ways that differ from the norm. Due to the differing profile for each autistic student assessment practices cause them to underachieve relative to their cognitive ability [31].

Guidelines for the implementation of inclusive assessment exist within teaching resources rather than as peer-reviewed publications. There remains a lack of studies on the design and implementation of inclusive assessment [32]. One key principle of inclusive assessment is to use a variety of methods and tools, rather than relying on a single test or assessment. This allows for a more comprehensive and accurate understanding of the individual's abilities and needs. For example, an assessment might include observation of the individual in a naturalistic setting, such as a classroom or home, as well as more structured tasks such as tests or interviews [33].

Another important aspect of inclusive assessment is to consider the context in which the autistic individual is being evaluated. Factors such as the individual's environment, support system, and access to resources can all impact their performance and should be considered when interpreting assessment results [34].

One of the main benefits of inclusive assessment is that it allows for the development of more tailored and effective interventions and supports. By considering the unique strengths and challenges of the autistic individual, it is possible to design interventions that are more likely to be successful and meet the individual's needs.

Inclusive assessment is an important approach to evaluating that considers their unique abilities and needs. By using a variety of methods and tools, considering the context in which the assessment takes place, and involving a range of professionals, it is possible to gain a more comprehensive and accurate understanding of the individual's abilities and needs, leading to more effective interventions and support. Frameworks such as the Universal Design for Learning create principles that allow us to cater for individualised assessment profiles in the third level setting.

3.2. Universal Design for Learning

Universal Design for Learning (UDL) is a framework for designing instruction and assessment that proactively addresses the diverse needs of all

learners, including those with disabilities [35]. UDL provides a set of guidelines for designing assessments that are flexible, accommodating and provide multiple means of Representation, Action, and Expression (RAE). This approach recognizes that students learn differently and that assessments should be designed to accommodate this diversity. By providing multiple means of representation, action, and expression, UDL assessments allow for different ways to demonstrate learning, giving all students an equal opportunity to succeed[36]. For example, providing visual aids, audio recordings, or alternative response formats for questions can support students with different learning styles, including those with autism. Additionally, UDL assessments can be designed to be more inclusive of the context and environment in which the assessment is taking place, which can positively impact the performance of autistic students[37].

3.3. Inclusive Assessment and Autism

The primary strength of inclusive assessment is that it does not need to focus on an individual learner's needs, rather the learner is provided with multiple forms of assessment which they chose from to support their education journey. Instead, inclusive assessment is cognisant where possible of a group's needs.

Inclusive assessment for autism involves using a range of strategies and accommodations to create a supportive and accessible evaluation environment [38]. These strategies may include providing visual supports, alternative communication methods, flexible testing formats, extended time, and sensory accommodations. By incorporating these adjustments, educators can better identify the true potential and skills of autistic students, ensuring that their unique abilities are not overlooked or underestimated.

3.4. Studies involving Inclusive Assessment

Inclusive assessment is usually enacted as part of a holistic plan of educational inclusion. There is more widespread research in this area at a primary school level, for example a study in Australia found that using an inclusive assessment approach required the needs of the student to be targeted at all levels of the education system through a three tiered model of individual level, class level and whole school level, it recommends the need to identify students, goal setting in conjunction with student input and the translation of goals into key outputs [31].

A large-scale study investigated the inclusive assessment standards and practices in schools across three countries: Ireland, the UK, and the US [39] they created a framework with three core features for their comparison:

1. All students are included and benefit
2. Assessments are accessible
3. The entire curriculum is assessed.

The study found Ireland had a much less accountable process in terms of inclusive education as opposed to the UK and US however it also noted as a result there was a narrowing of the curriculum and accusations of "teaching to the test" in these more accountable models.

As mentioned previously there is a lack of research in inclusive education for autistic students however a study conducted in third level for linguistically diverse learners [40] found that incorporating learners into the design of the assessment elicited positive results where learners found the system fairer, although the learners reported it to be effortful.

Research suggests that inclusive assessment has the potential to be successful for autistic students, as it allows for a more comprehensive and accurate understanding of their abilities and needs, but this area requires further academic rigor and research designs that include the voice of the students themselves to develop more tailored and effective interventions and supports. The next section discusses the importance of technology and how it can be used as an aid to support autistic students.

4. Technology

Technology has the potential to enhance the inclusivity of assessments by providing tools and resources that can support diverse learners. From accessibility features to personalized learning experiences, technology can help create a more equitable and inclusive assessment environment.

4.1. Technology for Autistic Students

Technology provides access to information and resources that can be difficult for autistic students to access in other ways. For example, autistic students may struggle with social interaction, and technology can provide a way for them to communicate with their peers and teachers [41].

It provides a way for autistic students to engage with and learn about new concepts in a way that is more accessible to them. It provides a way for them to practice and develop new skills in a safe and controlled environment. For example, some autistic students may benefit from AR or VR interventions to convey and practice information in a way that is more meaningful to them [42]–[44].

4.2. Technology to overcome the Challenges for Autistic Students

There are a variety of technologies that can be used to support higher level education for autistic students, some examples include:

1. Assistive technology: This refers to technology that is specifically designed to assist individuals in accessing and using educational materials. Examples of assistive technology for autistic students include text-to-speech software, speech-to-text software, and visual scheduling tools [45], [46].
2. Educational software: This refers to software that is specifically designed for educational purposes, such as learning math, science, or language skills. There are many educational software programs available that are designed to be accessible and engaging for autistic students [47], [48].
3. Online courses: Online courses can provide a flexible and accessible way for students with autism to access higher level education. Many online courses are designed to be accessible to students with disabilities and may include features such as text-to-speech, closed captions, and adjustable font sizes. [49], [50]
4. Virtual reality (VR) and Augmented Reality (AR) tools: VR and AR technologies can provide immersive and interactive learning experiences for autistic students. These technologies can be used to teach a variety of subjects, such as science, math, and social studies, in a way that is engaging and accessible [42]–[44].

While there have been many research studies examining the role of technology to improve learning outcomes for autistic students. There is a lack of research specifically examining the role of technology to improve assessment. What is the use of improving our student's learning through technology if our assessment criteria are unable to capture it?

4.3. Prospects with Technology

As we move towards an increasingly digital future, the role of technology in education is set to grow even more central. For autistic students, the prospect of technology-enhanced learning and assessment carries immense potential. Emerging technologies such as Artificial Intelligence (AI) and machine learning can further tailor learning and assessment strategies to individual needs, thereby facilitating a truly inclusive educational experience [51] .

In the realm of assessment, AI-based tools could be designed to understand and adapt to the learning styles and needs of autistic students, providing a more accurate measure of their comprehension and skills [52]. However, the effective integration of these technologies into the educational system requires meticulous research and planning. While aiming for these advancements, it is crucial to consider potential drawbacks, such as data privacy issues and the digital divide, which may further marginalize students lacking access to necessary technology [51] .

The exploration of these facets necessitates further research, bringing together experts from educational, technological, and psychological fields. We can yield the powerful advances in AI technology in order to help with this task [53] with interdisciplinary collaboration, we can ensure that technological progress in education yields benefits for all students, including those with autism.

5. Conclusion

Neurodiverse and autistic students are made to conform to the mainstream education system through the support of assessment accommodations e.g., extra time in an exam, access to a scribe etc. There are several challenges associated with these assessment accommodations; a student must have received disclose a formal diagnosis of being autistic, accommodations are used to "fit" the autistic students into the mainstream education system etc. These accommodations can work were the number of students availing of them is minimum however a tipping point occurs when so many students are requiring accommodations that the whole system of assessment needs to be reconsidered.

The prevalence of neurodiversity and autism in third level education in Ireland has not been studied and students identifying as neurodiverse of autism are supported on a case-by-case basis. However, this research has shown that up to 49% of the student population identify as being neurodiverse with 16% identifying as autistic. This is 8 to 9 times higher than is reported in the general population. The success rates of autistic students in third level education are lower than that of their neurotypical peers.

To address this gap, further research and attention should be given to the area of inclusive assessment, we identified a lack of research specifically addressing autistic students alongside the importance of key frameworks such as UDL for the holistic development of assessment criteria in HE. This holistic development of both teaching and assessment frameworks is crucial. While many autistic students have made disclosures to their higher education institute regarding their diagnosis, a number chose not to, for varying reasons and a holistic approach will benefit both students who have made disclosures and those that have opted not to.

Finally, an overview was provided of the technological interventions that can be employed to assist autistic students in third level recognizing the need for further research to use this technology for inclusive assessment practices in the areas of developing technologies such as virtual reality and artificial intelligence.

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