Pearson

Assessment MicroAnalytics™

The Accessibility and User Experience of a Pearson Digital Assessment Platform for GCSE Learners with Special Education Needs and Disabilities (SEND)

A Summary Report
February 2022

Overview

This is a short report detailing a small-scale study that explored the accessibility and user experience of a digital assessment platform used by secondary-aged learners with mild to moderate SEND (Special Educational Needs and Disabilities) conditions. The study, conducted in June 2021, was a collaboration between Pearson and Assessment MicroAnalytics™.

We were interested in collecting data on student experiences to inform how platform and item design can best meet the needs of test takers with SEND that are diverse and scalar.

SEND Conditions of the Student Sample

- Dyslexia
- Social, Emotional and Mental Health (SEMH)
- Processing Difficulties
- Autism Spectrum Disorder (ASD)
- Visual Impairment
- Dyspraxia
- Attention Deficit Hyperactivity Disorder (ADHD)
- Learning Delays

In 2021,

15.5%

of all pupils in England either have an EHC (education, health and care) plan (294,800) or receive SEN support without an EHC plan (1,079,000).[1]

This report highlights the potential of digital assessments to significantly improve the accessibility and user experience of large-scale examinations through the combination of universal design and personalisation (accessibility preferences) to accommodate the diverse needs of learners with SEND.

6%

of children in the UK have a disability.[2]

Overview continued

Background

Students with SEND are more vulnerable to under-performing in examinations due to multiple factors, which include impaired executive function and information processing difficulties.[3] As a group, SEND learners are more prone to construct irrelevant errors – such as misunderstanding questions, partially reading instructions, navigation errors, difficulties with handwriting, and stress related responses such as rushing or skipping questions.

More accessible examinations will therefore provide students with SEND better opportunities to demonstrate their abilities. They will also help students and schools to avoid the lottery of inequitable access that is caused by inaccurately diagnosed SEND conditions, resource constraints and stigma. Furthermore, inclusive design and good user experience are likely to benefit the entire tested population, because of undiagnosed SEND conditions, the prevalence of stress and anxiety related responses, and unforced processing errors particularly prevalent in the teenage years.

Project team

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Methodology

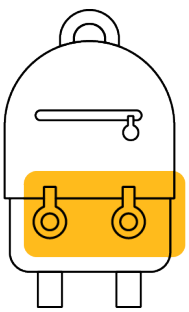
Students completed a testlet containing 12 GCSE examination items accessed via a digital assessment platform. The selection of items was designed to explore a range of item response types and incorporated different multimedia. It is worth noting that whilst the platform had some in-built accessibility tools, there was no assumption that the content was fully accessible to all students within the sample.

This study is part of a programme of work that helps us understand the detailed and nuanced interactions of test-takers, allowing us to embed the principles of user-led design into our development of digital assessments and, ultimately, improve the experience for users with a range of needs.

Who was involved?

27

Students aged 13-15



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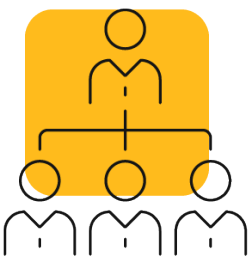
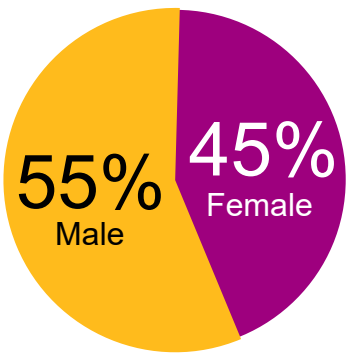
Mainstream Secondary Schools

8

SEND Specialist Teaching Staff





Methodology continued

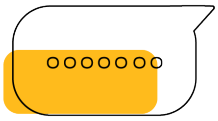
How did we collect the data?

Eye movement data with eye trackers

Webcams to capture facial expressions, verbal interaction and gestures

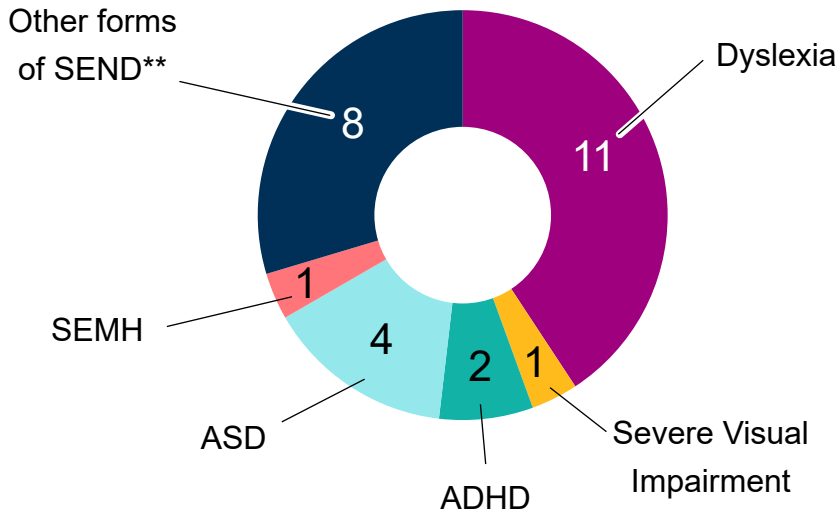
Student think aloud testimonies as they completed the test

Retrospective interviews with students to discuss items



Informal interviews and focus groups with SEND specialists

Student sample: Breakdown of SEND conditions*



*Out of the 27 students, nine had a comorbidity with an additional SEND condition. In those cases, their primary diagnosis has been listed in this report. For example, two students presented with SEMH as a secondary characteristic.

** 'Other' forms of SEND included mild learning delay, processing difficulties or forms of SEND that had not yet been fully diagnosed.

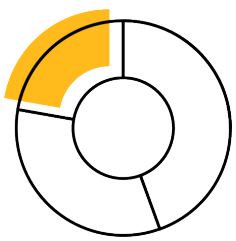
Findings

Student Preference for Digital Assessment

Students expressed a strong preference for, and enjoyment of, the digital assessment in comparison to their experiences of paper-based examinations. In particular, students liked items that involved multi-modal interactive designs. Even though the students experienced some challenges with the accessibility and user experience of some of the items and tools, they maintained a clear preference for digital assessment. Their preference for digital assessment also held across each of the SEND categories.

However, student preferences and enjoyment did not necessarily result in good accessibility, user experience and item performance. The eye tracking data identified some difficulties that students with SEND experienced as they accessed and processed information in the exam questions. Students with information processing difficulties, those with SEMH, ASD, ADHD, may be prone to misunderstanding the purpose of the question and did not always understand what they were expected to do. This suggests further scope to refine the on-screen item design. Despite this, some students said that they liked the on-screen accessibility features, and that they found the alternative reliance on human helpers to be a source of stigma and a cause of anxiety.

- Of the 27 students in the study, all but one expressed a clear preference for the digital assessment.
- Of the 8 teachers interviewed in the study, all but one expressed a clear view that the digital mode would be highly beneficial for learners with SEND.

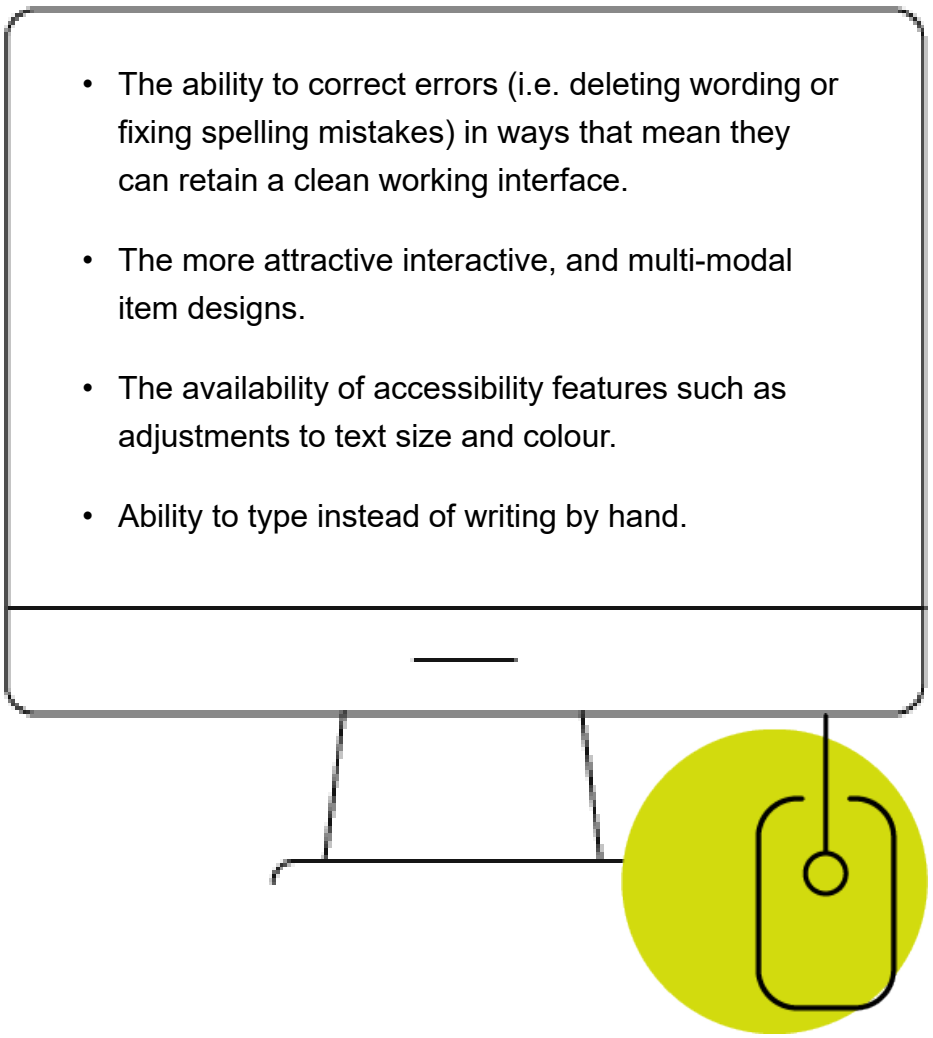


Findings continued

Additionally, while students enjoyed using the digital tools available on the assessment platform (such as the drawing tools), some of these were not accessible for learners with SEND. These are all aspects that need careful consideration as we transition towards more digital forms of assessment and highlights the importance of studies such as this where we attempt to better understand the test-taker experience.

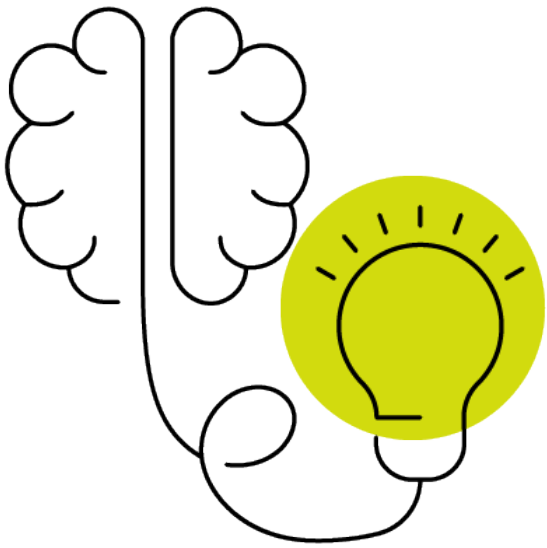
Why did students prefer digital assessment?

- The ability to correct errors (i.e. deleting wording or fixing spelling mistakes) in ways that mean they can retain a clean working interface.
- The more attractive interactive, and multi-modal item designs.
- The availability of accessibility features such as adjustments to text size and colour.
- Ability to type instead of writing by hand.



Personalisation

SEND conditions are multi-dimensional and scalar, resulting in two people with the same diagnosis presenting with different needs at different times. We saw this emerge in our findings, where learners used different and varied strategies to answer the digital questions and that these strategies diverged among learners drawn from the same SEND category. For example, some students with dyslexia were able to compensate for their dyslexia by highlighting key words. Others were more likely to skim the questions and use an intuitive approach to the questions, but this often resulted in them losing marks.



We found that the personalisation options were used widely by the students. Just over half of the students changed the font size and overlay colour options when taking the test. Using larger text sizes, however, proved to be quite problematic for students as it meant scrolling was required. Scrolling can often cause students difficulty, as it requires the ability to retain information while needing to read another part of the item. As a result, in our findings, this led to observable errors as students either failed to see essential item content or placed increased demands on their working memory.

Resource Paradox

This study suggests that the provision of digital examinations is likely to shift the resource burden in schools. The adjustments will be available for all students who use the platform. This includes students who have diagnosed SEND conditions and other students, who either do not have a diagnosis, or whose condition is not serious enough to access the support of a reader/helper or specialist accessibility software. The digital examination platform with built-in accessibility features would therefore be of significant benefit to all of these students.

However, it would increase the resource burden on schools to provide computer access to their students. In the three schools that took part, none of the learners with SEND had access to specialist accessibility software. Teachers also highlighted the challenges associated with the current level of IT infrastructure and hardware resource provision in schools.

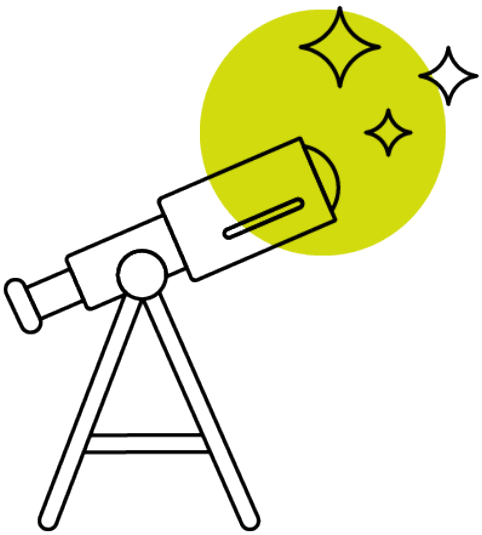
This suggests that resourcing issues might create inequalities between and within schools, which may limit the digital transition unless there is high level policy and financial support for the change.

> “We could not give a whole school, a whole year group, IT facilities at the same time. That’s where we would struggle if this all went online.”
>
> *SENDCo Teacher*

> “Sometimes with the learners with SEND, we even struggle to get headphones for them.”
>
> *SENDCo Teacher*

What’s Next?

It was clear from the findings of the study that while the platform design works well, there are changes that can be made to improve the accessibility, user experience and performance for learners with SEND. Aspects detailed in the feedback from students, such as increasing the default text size and reducing the need for scrolling in test items, are important pieces of practical feedback for how we can improve our digital assessments. Equally, the difficulties many students had in using the digital tools available within the assessment platform have highlighted areas of improvement to increase accessibility.



We recognise that the findings and recommendations of this study may not be representative for students with more severe SEND conditions, or for SEND conditions and disabilities that were not included in our sample. Most notably, it was not possible to include students with physical impairments, hearing impairments, chronic illness, more severe intellectual impairments and learning delays. Therefore, we are interested in exploring this work further and extending our research to include a wider sample of SEND conditions, as part of Pearson's commitment to understanding how we can make digital assessments more accessible to as many learners as possible.

What's Next? continued

This study starts to unpick some of the potential advantages and barriers for SEND students through the use of technology enabled assessment. However, this is one part of a complex set of interconnected strands that need to be considered in the rollout of high-stakes digital assessment in the UK context (or in any jurisdiction). These include: government policy, funding, infrastructure within schools and colleges, appetite for risk and stakeholder engagement, as well as education, support and training for colleagues in the community involved in teaching and supporting learners. These strands need to be addressed cohesively in order to offer equitable digital assessment for those learners for whom it has the potential to benefit most.

References

[1] Special educational needs in England, Academic Year 2020/21 https://explore-education-statistics.service.gov.uk/find-statistics/special-educational-needs-in-england

[2] Facts and Figures About Disabled People in the UK https://www.disabilitysport.org.uk/facts-and-figures-about-disabled-people-in-the-uk.html

[3] Schwartz, R., G. 2017. Handbook of Child Language Disorders: Second Edition, London, Routledge.