



CAMBRIDGE ASSESSMENT

Using data from on-screen marking to consider the difficulty and functioning of mathematics examination questions for weaker readers

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Abstract

The revision of the UK Disability Discrimination Act now requires awarding bodies to ensure that all students have equal access. Researching examination issues for those with disabilities can be challenging because data on learning difficulties is not routinely collected from examination candidates. The recent introduction of on-screen marking of examination scripts in the UK means that data on test takers' scores are more easily available. This research used item level performance data from on-screen marking and linked this to data on access arrangements (i.e. records of candidates who were entitled to particular types of support in their exams). This allowed investigation of question difficulty and question functioning for all candidates and specifically for weaker readers.

Item level performance data were obtained for the 21,000 candidates who took a maths examination paper (for 16 year olds). A sub-group of students who had access to a reader was identified (students with proven difficulties with reading are permitted to have an adult available to read their examination paper). A norm group consisting of randomly-selected students without reader access was also identified. Facility values and correlations of item score with total mark were calculated for all candidates and then for the 'Reader' and 'Norm' groups. Rasch analysis was also conducted. Item difficulty and functioning were compared between groups. On the basis of the statistical analyses, several questions were selected for more detailed analysis of student responses.

The analyses were used to identify the question features likely to have contributed to difficulty and misfit, and features potentially affecting those with reading difficulties differently to others. This can inform future question-writing practice.

The linked use of item level scores from on-screen marking and data on special access arrangements to investigate issues relating to the revised Disability Discrimination Act constitutes an innovative data analysis approach.



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