Cambridge Assessment


# Cambridge Assessment *Research*

BERA Annual Conference | 2017

BERA
BRITISH EDUCATIONAL RESEARCH ASSOCIATION

## Cambridge Assessment at BERA 2017 at a *glance*




**BERA Annual Conference 2016**

## *Welcome* from Tom Bramley, Director, Research Division

**Tom Bramley**
**Director, Research Division**

Cambridge Assessment has supported the British Educational Research Association (BERA) Annual Conference for many years and during that time our researchers have presented papers and posters regularly. Like BERA, we believe that educational research plays a vital role in the continuous improvement of educational and assessment policies and practices. Each year the BERA conference provides a valuable opportunity for researchers to come together, to share their work and to discuss and debate across many educational themes. One of the strengths of the conference is that it brings together people from many disciplines.

This year marks a particular milestone as we celebrate the fiftieth anniversary of our Research Division, which is now an integral part of the organisation, carrying out theoretical and applied research into many different aspects of assessment.

**Come and be part of the celebrations at our stand in the exhibition hall.**

Educational assessment continues to attract a great deal of attention and coverage. At Cambridge Assessment we work to inform assessment debates and to influence thinking in many educational contexts. Our aim is to ensure quality through rigorous research so that learners can have confidence in our assessments. At the conference this year, we have a number of Cambridge Assessment colleagues (pages four to six) attending and presenting their papers on various topics, including Carmen Vidal Rodeiro presenting research on 'Education and employment destinations of students in England: the value of 14 – 19 qualifications' and Martin Johnson talking about effective feedback in a professional learning context.

### Ensure *quality* through rigorous research

Our researchers also produce Data Bytes (page nine), which appear in a regular series of graphics on our website (cambridgeassessment.org.uk/data-bytes), highlighting the latest research findings and trends in education and assessment.

In this guide to BERA 2017 there is also a list of recent publications (page 10) from the team as well as upcoming events and a chance to read more about 50 years of our Research Division (page seven).

**We look forward to seeing you either at one of our presentations or at our stand in the exhibition hall.**

# Our *speakers* at BERA 2017

**Gill Elliott**
**Deputy Director**

## Aspects of Writing: challenges and benefits of longitudinal research

**Session: Tuesday, 5 September 2017, 14:10 – 14:40**

Aspects of Writing is a cross-sectional study, investigating features of candidates' written English as seen in examination scripts. Script samples have been amassed from 1980, 1993, 1994, 2004, 2007 and 2014 and major studies completed on three occasions over two decades, the most recent of which was completed between 2014 and 2016 and reported just under a year ago.

This paper focuses upon four key questions surrounding the methodology and the long-term viability of this type of research.

- Why, and to whom, is research over time based upon evidence from examination scripts valuable?
- What are the expected, and the unexpected, hazards of longitudinal research using examination scripts?
- How can a consistent, robust method be ensured at each repetition?
- As researchers, what lessons have we learned from the experience?

This presentation will discuss the history of the project and explain how a one-off study has continued, and expanded, over the years. The provenance of the research method will be described and time will be taken to explore the research issues that threaten to derail longitudinal projects in general, and to consider specific concerns which have impacted upon the planning of this study in particular.

**Ellie Darlington**
**Research Officer**

## What is a non-specialist teacher?

**Session: Wednesday, 6 September 2017, 12:10 – 12:40**

The study was initiated with an online questionnaire which was sent to teachers, heads of departments and participants recruited via Cambridge Assessment's social media platforms and mailing lists to complete. This presentation will present key information on challenges around employing non-specialist teachers, particularly in Physics, Maths, Drama, Computer Science and ICT. It will explore the following topics around non-specialist teaching and recruitment:

- Why have non-specialists begun teaching non-specialist subjects?
- What difficulties do heads of departments face when recruiting non-specialist teachers?
- What benefits do they bring?
- How are they supported?
- What advantages do non-specialist teachers find in teaching their non-specialist subjects?

This presentation will also explore questions on how non-specialist teachers can be best supported to improve the quality of their teaching. It will also provide insight into the impact of increasing proportions of non-specialist teachers on staff and students.

**Nicky Ruston**
**Research Officer**

**Gill Elliott**
**Deputy Director**

## Spelling errors in 16-year-olds' writing

**Session: Wednesday, 6 September 2017, 13:10 – 13:40**

The Aspects of Writing study is a cross-sectional study analysing features of 16-year-old students' writing from samples of narrative writing taken in 1980, 1993, 1994, 2004, 2007 and 2014. Three major studies have been completed using this data. The latest study included samples from 2014, which was the first cohort of students to have experienced the National Literacy Strategy throughout their primary education.

Spelling is an area of the Aspects of Writing study that has attracted attention over the years. Each study has reported the proportion of words that students misspell in a 100-word extract; however, a more detailed analysis was carried out on the 2004 sample. A framework was developed to categorise the spelling errors in a single sentence, which allowed the researchers to define five broad types of error, each consisting of several sub-categories.

This paper will initially investigate whether the framework can be used for larger samples of words, such as the 100-word extract. The second part of the paper will identify the most commonly misspelt words from 2004, 2007 and 2014, and investigate whether the proportions of errors in each category were similar across the 100-word extracts from the three years.

**Carmen Vidal Rodeiro**
**Senior Research Officer**

## Education and employment destinations of students in England: the value of 14 – 19 qualifications

Authors: Carmen Vidal Rodeiro and Joanna Williamson

**Session: Thursday, 7 September 2017, 09:30 – 10:00**

Until recently, school accountability measures in England have focused on assessment results rather than on what students do after they leave school/college. However, destination measures are increasingly being seen as key tools in assessing how schools prepare their students for a successful transition into the next stage of education or training, or into employment.

Recent linked data from the Department for Education offers the opportunity to examine the relationship between students' education and the destinations they progress to. This research investigated, in particular, how different qualifications and pathways support young people's progression.

This presentation will explore our findings on how different qualifications in GCSE, AS and A Levels can influence a student's progression and route to education, training or employment. It will look into how students on vocational-only programmes in Key Stage 5 are more likely to be not in education, employment or training (NEET) than students on other programmes. It will also look into how students with A Levels only are most likely to progress to Higher Education whereas students with applied AS and A Levels choose to complete an apprenticeship programme.

**Martin Johnson**
**Research Officer**

## What is effective feedback in a professional learning context? A study of how examination markers feed back to each other on their marking performance

**Session: Thursday, 7 September 2017, 10:35 – 11:05**

The importance of feedback as a general concept for learning processes has been widely recognised, including professional and work-based contexts. Examiners in large examination boards often work in teams, with a team leader monitoring the quality of the marking performance of examiners in each team. It is also the responsibility of the team leader to give feedback to each examiner on their marking performance. This feedback helps the examiner to align their understanding of how to apply the mark scheme with the practices of senior examiners. Therefore a key aim of feedback is to support the convergence of participants' thinking and practice. In addition to this alignment function, the feedback context implicates professional relationships and the recognition of expertise at a social level.

This presentation will present the key findings from the 991 feedback messages that took place between team leaders and examiners working for a large assessment organisation. It will also look into how sociocultural theory suggests that intrapersonal development is a function of the quality of interpersonal communication.

**Sylvia Vitello**
**Research Officer**

## Foundation or higher tier? Effects of moving from a modular to linear system of GCSE assessment

Authors: Sylvia Vitello and Cara Crawford (the study was completed when Cara was based in the Research Division of Cambridge Assessment)

**Session: Thursday, 7 September 2017, 14:00 – 14:30**

Certain GCSEs are tiered; students take either foundation tier (lower level) or higher tier versions of the exams. The concern is that students may be entered for the wrong tier, which may cap achievement. This study investigated whether tiering decisions may be affected by other reforms taking place in England, specifically by the move to linear assessment. Importantly, this change occurred in 2012 before changes to GCSE content and grading, which provided an opportunity to compare differences in entry patterns that were not confounded by those later reforms. Tier of entry data for the first exam session of the linear system, June 2014, was compared to data for the last summer session of the modular system, June 2013. Six GCSEs were analysed in mathematics, science and languages. Multilevel logistic regression tested whether students' likelihood of being entered for the foundation tier was different in the linear than modular system, after controlling for student characteristics. The analyses also tested for interactions between assessment and student characteristics.

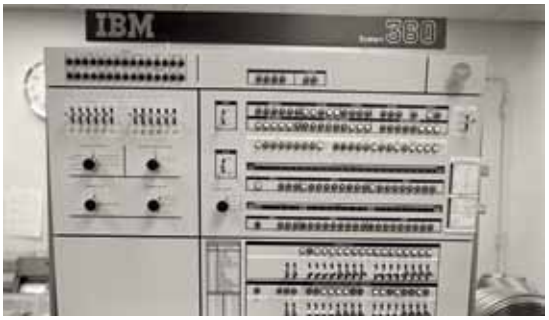
**Meet the rest of our team attending BERA 2017 on page 11.**

# Celebrating *50 years* of our Research Division

2017 marks a particular milestone as the fiftieth anniversary of an established and permanent research unit which is now an integral part of Cambridge Assessment, previously the University of Cambridge Local Examinations Syndicate (UCLES).

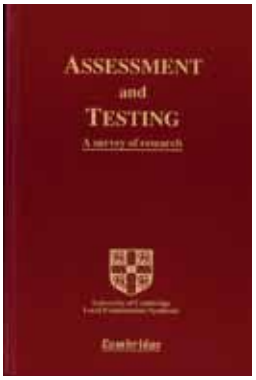
On 1 August 1967 a meeting between representatives of three examination boards, the University of Oxford Delegacy of Local Examinations, UCLES and the Oxford and Cambridge Schools Examination Board, agreed to the joint establishment of a research unit. A Cambridge location was chosen so that the unit could access the Cambridge Syndicate's IBM 360/30 computer – for one hour a day, possibly three, if evening work could be accommodated. The Test Development Research Unit (TDRU) was subsequently installed at 11 Station Road, Cambridge, on a five-year lease.

**Number 11 Station Road, Cambridge in the early 1960s**[1]




**IBM 360/30 computer**

After a great deal of fruitful research, TDRU was disbanded in 1985 as the tension between carrying out test development at speed, and research at a sensible pace, proved too much. However, a new research department was established within UCLES: the Council for Examination Development (CED). CED existed in the




***Assessment and Testing: A survey of research*, by Robert Wood**

heady era of the development of the GCSE (introduced in 1988) and the Cambridge IGCSE (introduced in 1989). Even the CED did not really go far enough in terms of pure research as the organisation wished, so a study into research in assessment was commissioned. The result was a book, *Assessment and Testing: A survey of research*, by Robert Wood, and the establishment of the Research and Evaluation Division (RED) in 1994. RED was followed by its successor, Assessment, Research and Development (ARD) in the mid-2000s which still operates today. This saw the first publication of *Research Matters*, our free biannual publication which allows us to share our research with the wider assessment community. See page 10 for more details.

In 2015 the burgeoning possibilities of 'Big Data' led the division to establish a Data and Analytics team, tasked with operationalising analytics for the Group's exam boards and pioneering new applications of data science within Cambridge Assessment. The team introduced our series of 'Data Bytes' to provide accessible visualisations of research findings to the wider public (see page nine for our latest Data Byte).

**'2017 marks a particular milestone as the fiftieth anniversary of an established and permanent research unit which is now an *integral* part of Cambridge Assessment.'**

Just three years in, the TDRU Director reflected on his aim for 'no innovation without investigation'. It was always a commendable ambition, and what is certain is that it set a strong tradition for research within Cambridge Assessment which has continued ever since.

**Come and be part of the celebrations at our stand in the exhibition hall.**

[1] Cambridge News 1963, Cambridgeshire Collection, Cambridge Central Library

## How UK school students' writing has *changed* since 1980

**'The study gives teachers some real *insights* into their own students' work.'**

At this year's BERA Conference there are two papers (see pages four and five) being presented that are pieces of research that continue on from the latest phase of the 'Variations in aspects of writing in 16+ English examinations between 1980 and 2014'. The study has been carried out approximately every 10 years, having initially used a sample from 1980. This latest phase focuses on scripts from 2014.

Professor Debra Myhill, Pro-Vice-Chancellor of the University of Exeter, who reviewed the study, says it will be valuable to teachers, policymakers and researchers.

"The study gives teachers some real insights into their own students' work. They can look at the findings – say for example how children's punctuation use has changed – and think 'is this true for the children that I teach' and that helps them identify what they might focus on or draw attention to in their own teaching.

"It's important to note that in the key findings, apart from spelling which relates to absolute accuracy, the other findings are value-neutral and need interpreting in the context of actual children's writing. So for example, an increase in other punctuation marks could reflect greater subtlety and sophistication in children's punctuation, or it could reflect over-liberal use of punctuation in response to a greater curriculum emphasis on other punctuation marks. The key thing is it is drawing attention to patterns that teachers may not otherwise notice in their students' writing.

"This study is also important for policy makers. The patterns of change or absence of change over time can indicate issues for curriculum development, or evaluate the success of policy interventions.

**Filio Constantinou, Research Officer, Cambridge Assessment**

**2014 phase of *Variations in aspects of writing in 16+ English examinations between 1980 and 2014***

For researchers, it acts as a springboard, suggesting new questions and new lines of enquiry. For me as a researcher, it highlights all sorts of things that I'd love to pursue. It's very exciting to be involved in a study like this that sets new hares running."

**Gill Elliott, Deputy Director of Research Division, Cambridge Assessment**

Sylvia Green, former Director of our Research Division, said: "It is important to note that we report the findings with little theorising or evaluation of the education context or the reasons for data. Instead, we hope it will provide a stimulus for discussion and extended research."

You can watch the highlights and the full presentation of the study's findings on our website at www.cambridgeassessment.org.uk/aspects-of-writing

Join us at our session on *Aspects of Writing: challenges and benefits of longitudinal research* on Tuesday, 5 September at 14:10 and our session on *Spelling errors in 16-year-olds' writing* on Wednesday, 6 September at 13:10.

**You can pick up a copy of the full report from our stand at the BERA 2017 exhibition.**

# Data Byte: Candidates' *best* GCSE grades

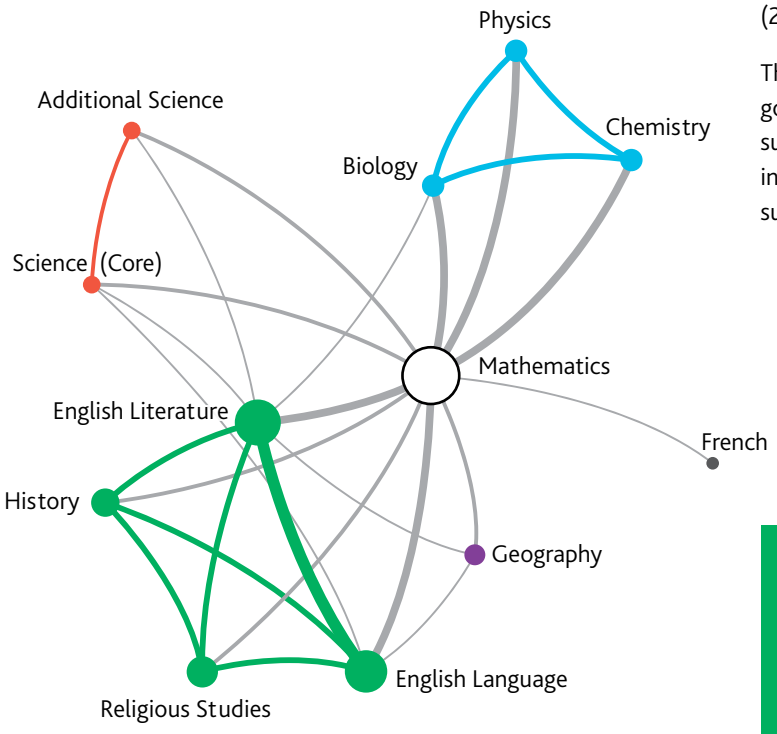

## Summary

In December 2016, we published our Statistics Report which looked at the GCSE subjects in which candidates achieve their best grades. This Data Byte extends this idea slightly by looking at the set of subjects that occurs together in a candidate's best three GCSE grades. The results show that many candidates perform well in clusters of highly related subjects, as well as in English and Mathematics.


## What does the chart show?

The network diagram shows all pairs of subjects that appeared in the top three grades of at least 5000 candidates. There were 238,752 candidates included in the data set. We used data from the National Pupil Database, relating to candidates who took GCSEs in 2013 and went on to take A Levels.

Each node represents a subject and its size corresponds to the number of candidates who had the subject in their top three grades. Subjects that frequently occur together in candidates' top three grades are joined by a line. Thicker lines represent more candidates with this pair of subjects.




**The diagram shows all pairs of subjects that appeared in the top three grades of at least 5000 candidates**

## Why is the chart interesting?

The largest nodes are Mathematics and English Language/ Literature. This is unsurprising because these are the subjects with the highest uptake. Mathematics is also connected together with all of the other subjects shown.

Related subjects commonly occur together in candidates' best subjects and we have coloured groups of subjects that frequently appear together. There are three main subject clusters: the separate sciences, the two combined sciences, and a cluster consisting of humanities subjects (English Language, English Literature, History and Religious Studies). The pair of subjects that appeared together most commonly was English Language and English Literature (27,718 candidates).

The chart supports the intuition that students who are good at one subject are likely to be good at a related subject. The results are also significant as good performance in a GCSE subject is likely to have an influence on the subjects that young people go on to study at A Level.

## About *Data Bytes*

This Data Byte was created by Cambridge Assessment.

Data Bytes is a regular series of graphics from our research team, highlighting the latest research findings and trends in education and assessment.

For more Data Bytes please visit our website at www.cambridgeassessment.org.uk/data-bytes

## Our research *publications* 2017

*Papers and reports from members of our Assessment Research Division are regularly published in a wide range of education and assessment journals. We also produce Research Matters, our free biannual publication, which allows us to share our assessment research, in a range of fields, with the wider assessment community. It features articles, short summaries, research papers and comment on prominent research articles. Opposite is a list of some of our latest publications.*


1. Bowyer, J. and Darlington, E. (2017). **Mathematical struggles and ensuring success: post-compulsory mathematics as preparation for undergraduate bioscience**. Journal of Biological Education (ahead of print). DOI: http://dx.doi.org/10.1080/00219266.2017.1285803
2. Bramley, T. and Crisp, V. (2017). **Spoilt for choice? Issues around the use and comparability of optional exam questions.** Assessment in Education: Principles, Policy & Practice (ahead of print). DOI: http://dx.doi.org/10.1080/0969594X.2017.1287662
3. Crawford, C. and Benton, T. (2017). **Volatility happens: Understanding variation in schools' GCSE results**. Cambridge Assessment Research Report. Cambridge, UK: Cambridge Assessment. http://www.cambridgeassessment.org.uk/Images/372751-volatility-happens-understanding-variation-in-schools-gcse-results.pdf
4. Crisp, V. (2017). **The judgement processes involved in the moderation of teacher-assessed projects**. Oxford Review of Education 43(1), 19–37.
5. Darlington, E. and Bowyer, J. (2017). **Decision Mathematics as Preparation for Undergraduate Computer Science**. International Journal of Modern Education and Computer Science, 9(4), 1–11.
6. Darlington, E. and Bowyer, J. (2017). **The role of 'extension papers' in preparation for undergraduate mathematics: students' views of the MAT, AEA and STEP**. Teaching Mathematics and its Applications (ahead of print). DOI: https://doi.org/10.1093/teamat/hrx009
7. Gill, T. (2017). **Preparing students for university study: a statistical comparison of different post-16 qualifications**. Research Papers in Education (ahead of print). DOI: http://dx.doi.org/10.1080/02671522.2017.1302498
8. Gill, T. (2017). **Ranking of candidates' best GCSE grades by subject in 2015**. Statistics Report Series No. 112. http://www.cambridgeassessment.org.uk/Images/352253-ranking-of-candidates-best-gcse-grades-by-subject-in-2015.pdf
9. Gill, T. (2017). **Candidates awarded A* and A grades at GCSE in 2015**. Statistics Report Series No. 111. http://www.cambridgeassessment.org.uk/Images/352252-candidates-awarded-a-and-a-grades-at-gcse-in-2015.pdf
10. Gill, T., Vidal Rodeiro, C. and Zanini, N. (2017). **Higher Education choices of secondary school graduates with a Science, Technology, Engineering or Mathematics (STEM) background**. Journal of Further and Higher Education. DOI: http://dx.doi.org/10.1080/0309877X.2017.1332358
11. Vidal Rodeiro, C.L. (2017). **The study of foreign languages in England: uptake in secondary school and progression to higher education**. Language, Culture and Curriculum. DOI: http://dx.doi.org/10.1080/07908318.2017.1306069
12. Vitello, S. and Williamson, J. (2017). **Internal versus external assessment in vocational qualifications: a commentary on the government's reforms in England**. London Review of Education. http://www.cambridgeassessment.org.uk/Images/Internal-versus-external-assessment-in-vocational-qualifications.pdf
13. Zanini, N. and Williamson, J. (2017). **Learning aims: A preliminary exploration to monitor A/AS level reform**. Cambridge Assessment Research Report. Cambridge, UK: Cambridge Assessment. http://www.cambridgeassessment.org.uk/Images/360511-learning-aims-a-preliminary-exploration-to-monitor-a-as-level-reform.pdf

Research Matters is available here:
www.cambridgeassessment.org.uk/news/our-publications/research-matters

## Meet the rest of our team attending *BERA 2017*

**David Beauchamp,**
*Research Assistant*

**Matthew Carroll,**
*Research Officer*

**Victoria Coleman,**
*Research Assistant*

**Meet all our team at our stand in the exhibition hall.**

## *Forthcoming* events

Throughout the year we run a programme of conferences, seminars and courses providing thought leadership and unique assessment development training.

**23 November 2017 | London**
**Cambridge Assessment conference: Questioning questions**
"Good assessment is about helping students to learn" is what the Chief Executive of Cambridge International Examinations, Michael O'Sullivan, said to the world's education ministers gathered at this year's Education World Forum. This one-day conference will expand and explore this statement further.

**12 October 2017 | Cambridge**
**Seminar: Assessing the world – visiting Cleverlands**
Lucy Crehan, education explorer and international education consultant will be talking about her research into the 'top-performing' education systems in six countries on four continents; the basis for her book, 'Cleverlands: the secrets behind the success of the world's education superpowers'.

Email: thenetwork@cambridgeassessment.org.uk to register to attend.

**06 November 2017 | Cambridge**
**Training: Question writing**
Are you involved in setting, editing or evaluating question papers and assessment tasks? This one-day course provides the theoretical background to some of the principles of question writing, accompanied by practical tasks to reinforce learning.

**21 November 2017 | Cambridge**
**Training: Principles of mark scheme design**
This interactive session will describe the different approaches to mark schemes, provide some practical guidance on how mark schemes can be optimised, and will allow attendees to reflect on their own practice of mark scheme design.

**Early 2018 | Online course**
**A101: Introducing the principles of assessment**
In 2018 Cambridge Assessment Network will be launching a new online course to provide a thorough but accessible grounding in the principles of assessment. A101 is a nine-week course that covers validity, reliability, fairness, standards, comparability, practicality and manageability of assessment. To register your interest for this learning opportunity, please email: thenetwork@cambridgeassessment.org.uk

Visit www.cambridgeassessment.org.uk for more information about our events, and to register.

Cambridge Assessment Network

Cambridge Assessment Network provides professional development for the assessment community in the UK and internationally.

We equip education professionals with the tools, knowledge and understanding to be confident and capable assessment practitioners.

www.canetwork.org.uk | join our mailing list: **thenetwork@cambridgeassessment.org.uk**

Every year eight million learners take our exams in 170 countries, and with 160 years' experience and the largest research facility of its kind in Europe, the Cambridge Assessment Group is chosen to be a key education partner to governments across the globe.

We are committed to education excellence and are trusted by universities, colleges, employers and governments, and are proud of the relationships we build and partnerships we form around the world.

At Cambridge Assessment, the reliability of our assessments stems from evidence-based and research-led approaches to all products, services and new developments. We have the largest research capability of its kind in Europe with more than 110 researchers across the Group.

Our researchers conduct and publish authoritative research in order to validate, improve and develop our assessments and services, and to influence thinking and policy on educational assessment nationally and internationally.


Cambridge Assessment
1 Hills Road
Cambridge CB1 2EU
United Kingdom
Tel +44 (0) 1223 553311
Fax +44 (0) 1223 460278

cambridgeassessment.org.uk

Follow us
T: @Cam_Assessment
F: @CambridgeAssessment