What is the context of these perspectives?

• I am an education technology advocate, with 15+ years of experience in global digital assessment, teacher support as well as operational services
• I have worked with schools, assessment organisations and ministries in many of the 170+ countries in which Cambridge Assessment operates
• I certainly haven’t visited all of them!
Covid has highlighted the digital divide

- Covid has forced us all to work more digitally
- For many of us in the workplace, this has involved taking our laptops home
- For schools and learners, things have been more complex...
Specifically in the UK…

Coronavirus: A third of pupils 'not engaging with work'

By KatBarker SeBreeze
Family & Education reporter
16 June

Limited or no access to technology was a problem for around a quarter (23%) of pupils, school leaders told the NFER.

https://www.bbc.co.uk/news/education-53049127
Global percentage of students that use tech in the classroom

- Desktop: 48%
- Tablet: 20%
- Smartphone: 42%

“I study chemistry, English language, English literature, physics and maths at school in Surat. I use pen and paper during classes, and there are blackboards in the classroom at school – but at home, I use a smartphone with pen and paper to complete my homework, which takes about an hour each day and 1–2 hours at the weekend. I attend school six days each week.”

Student, 16, India

Ensuring comparable, reliable assessment

..and even a single device can be used in different ways. An equivalent candidate experience?
Paper vs Digital Maths and Science test feedback (ca 12 year old learners)

Thinking about your experiences of both paper and on-screen tests, which do you prefer?

“...I am really used to doing workings like the calculations and everything on paper so doing that on a screen wasn't as easy as I thought it would be.”

“...it was easier [on screen] especially because I don’t have to worry about my handwriting.”
Paper vs Digital Maths and Science test feedback (ca 12 year old learners)

Typing ordinary text responses and typing workings

- 70% of students agreed that it easy to type answers on screen (25% disagreed)
- 31% reported that it was easy to do workings on screen (60% disagreed)
- Responses and observations show learners use mixed modes for jotting and working
- They often still wanted paper to do rough work
Paper vs Digital Maths and Science test feedback (ca 12 year old learners)

**Perceived advantages**
- Progress overview
- Can track progress through test
- Clarity of appearance
- **Faster to type**
- More structured questions
- Increase computer skills

**Perceived disadvantages**
- Inputting working
- Cannot draw or sketch
- Lack of flexibility
- **Typing takes longer**
- Concerns about technology failure
- More opportunities for plagiarism
Example Science test analytics (ca 12 year old learners)

**Facility**
Essentially, a measure of how easy or difficult a question is

**Discrimination**
Whether higher scoring test takers performed better, worse or the same as lower scoring test takers on a particular question
Example Maths test analytics (ca 12 year old learners)

**Facility**
Essentially, a measure of how easy or difficult a question is

**Discrimination**
Whether higher scoring test takers performed better, worse or the same as lower scoring test takers on a particular question
Paper vs Digital General paper test feedback (ca 12/13 year old learners)

Before typing your on-screen essay did you make a plan?
- 45% I did not write a plan
- 55% I did write a plan

Before writing your paper-based essay did you make a plan?
- 30% I did not write a plan
- 70% I did write a plan
Paper vs Digital General paper test feedback (ca 12/13 year old learners)
Paper vs Digital General paper test feedback (ca 12/13 year old learners)

- Having the word count on the computer helped me out because I didn't have to waste my time counting all the words.
- I use the italics/bolding to emphasize a word or phrase more.
- Writing an essay on computer is slower for me because I don't normally type as fast as others.
- With the computer I felt more comfortable when writing my essay being that my school is digital.
- The typing of other people bothered me.
- On paper I was more organized whereas on the computer I was less organized and more all over the place.
- I have more time to go back and review my work. I also type better than write because my handwriting is bad.
Paper vs Digital General paper test feedback (ca 12/13 year old learners)

Was the test easier to do on paper or on computer?

- Easier on-screen: 86%
- Easier on-paper: 9%
- About the Same: 5%
Paper vs Digital General paper: Comparability of outcomes

- PB mean = 12.6
- CB mean = 13.1
- \( R^2 = 0.3726 \)
Paper vs Digital General paper test Examiner feedback

**Legibility** – “Although there is an individuality about handwriting, online scripts tended to remove such a barrier and allow a fairer assessment of writing quality”

**Structure** – On-screen tests generally better structured

**SPAG** – Problem to differentiate *typos* for on-screen tests

**Length** – On-screen tests were generally much longer

**Toolbar** – No evidence of distracting candidates

**Discrimination** – On-screen tests appear to benefit the weaker candidate
Exploiting richer assessment data: Identifying problems with items
Does default number of rows provided impact time taken?

\[ R^2 = 0.04603 \]
Do learners spend a lot of time writing longer responses?

R² = 0.13807
Examples of questions that were quick to answer…

5. Vinegar contains a substance with the formula C₂H₄O₂. Name the three elements in vinegar.

16.8 seconds per mark

1(a). The diagram shows a flowering plant. Name parts A and B.

16.9 seconds per mark
…and questions that took more time

4(a)
Calcium carbonate reacts with hydrochloric acid.
Calcium chloride, carbon dioxide and water are the products of this reaction.
Type in a word equation for this reaction in the space below.

126.8 seconds per mark

17(a)
Usman makes a prediction about the planets in the Solar system.
"The time to orbit the Sun increases the further away the planet is from the Sun"
To find evidence to support his prediction he uses the internet.
The table shows the information he finds.

Does the information in the table support this prediction?
Explain your answer.

131.9 seconds per mark
Pupils 'losing marks in exams due to poor handwriting'

The rise of digital technology is having a major impact on pupils' handwriting skills, with teachers unable to read exam scripts and emoticons creeping into students' work, research finds
So, top recap…

• Learners around the world do not have equivalent access to technology
• Approaches to using technology in assessment are still emerging
• Learner experience of technology and the way they are taught can influence their attitudes towards digital assessment
• As assessors, we have to be vigilant to ensuring inclusivity
• Digital standards are an essential part of this alignment