SHIFT INSIGHT

RM IAEA INTERNATIONAL ASSOCIATION FOR EDUCATIONAL ASSESSMENT

The international digital assessment landscape

Report by: Lisa Mai, Octavia Browett, Apara Behar

WWW.SHIFT-LEARNING.CO.UK

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Table of contents

Context, objectives, methodology	3
Profile of respondents	9
Industry insights	13
Market insights	27
Organisational insights	48
Summary & main themes	51
Appendix	54

CONTEXT, OBJECTIVES, METHODOLOGY

Study context

The COVID-19 pandemic has made a huge impact on education systems across the globe.

A small number of countries were able to capitalise on their strong and positive position having already started pilots or programmes to move towards digital assessment. Other countries, which relied mostly on paper-based approaches for assessment, found it harder to switch to digital technologies for assessment during the pandemic and have resorted to other models, such as teacher assessed grading.

But how assessment will be handled going forward – whether countries will go back to the old ways or embrace the new – remains unclear.

This is what RM, in association with the International Association for Educational Assessment (IAEA), and the research expertise of Shift Insight, wanted to explore.

In other words:

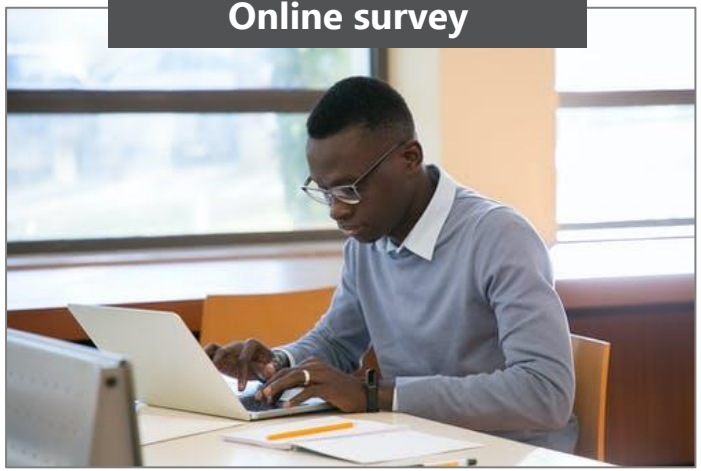
(How) have attitudes towards moving to digital assessment globally changed?

Overview of research methods used

Desk research

Based on conversations with RM and IAEA about market differences and developments, and aiming for a balanced spread, we chose **12 countries** across continents to research. We used credible sources, ranging from academic papers to news reports, in order to explore the scope of use of technology-enabled assessments, both for end-of-year/final school exams as well as national education and other types of assessment, where information was found and relevant to painting a picture of the market status quo.

Online survey

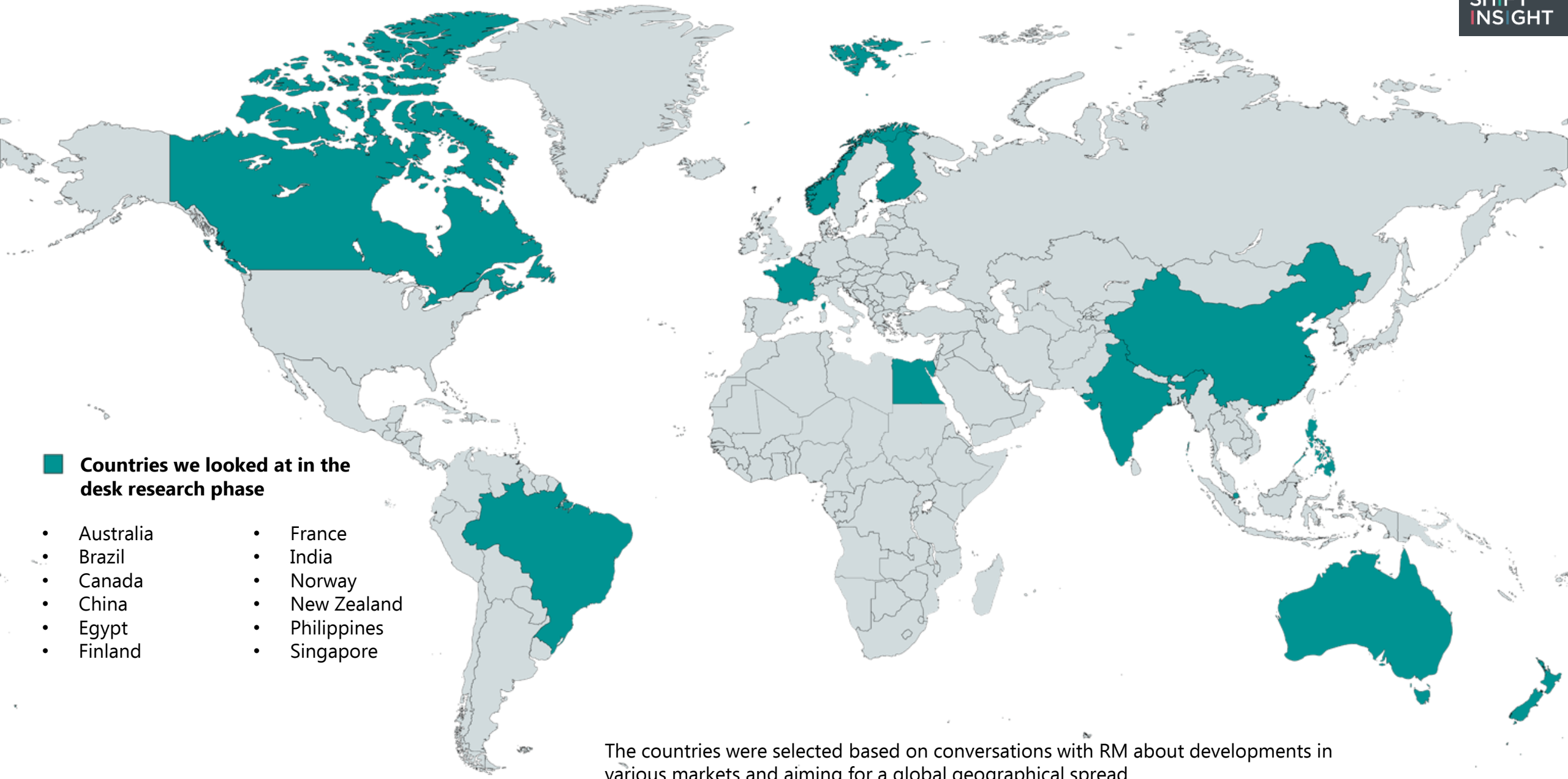


Based on the desk research, and again guided by RM's industry knowledge, we designed an online survey that was sent to **100+ relevant contacts from both RM and IAEA** who had various touchpoints with digital assessments – from test creation to regulation and policy. **40 respondents** took the survey and, whilst this is a small sample, it provided indicative insights into barriers/drivers towards greater adoption of digital assessments that could be further explored and validated in the interview phase of this project.

Online interviews

We conducted **10 qualitative interviews** to sense check, validate and further explore the findings of the desk research and online survey. We asked open questions about the general strengths/weaknesses of digital assessments and the status quo of digital adoption in interviewees' countries – including barriers/drivers and the impact of the COVID-19 pandemic. Also, we explored where interviewees' organisations/institutions were in their transformation and did a scenario/ future-gazing exercise.

Desk research – The markets



Countries we looked at in the desk research phase

- Australia
- Brazil
- Canada
- China
- Egypt
- Finland
- France
- India
- Norway
- New Zealand
- Philippines
- Singapore

The countries were selected based on conversations with RM about developments in various markets and aiming for a global geographical spread.

Survey and interview details

Online survey | n=40 respondents

- **Target audience:** Those who were involved in online assessments, specifically Assessment Heads, but also people from educational institutions, and learning providers.
- **Sampling**: A non-random convenience sampling approach was used, given the small and niche target audience and various channels used for outreach:
  - Database: RM and IAEA contacts
  - LinkedIn direct mailing
  - Targeted sponsored tweet on Twitter
  - The project was also promoted on the websites of RM and IAEA and in a webinar that included a link to the survey.
- **Questions:** The questionnaire was developed by Shift in collaboration with RM and covered questions around respondent's involvement in digital assessment, barriers to and drivers of digital assessment, the impact of the COVID-19 pandemic on school assessment and organisational practices. Some questions/items were informed by the previous desk research phase.
- **Completion time:** 6-8 minutes.
- **Live period:** Mid-December 2021–end of February 2022.

Purpose: Given the small and niche potential sample, the aim was to collect top-level data to complement the desk research and interviews.

Online interviews | n=10 interviewees

- **Target audience:** Those who were involved in online assessments, specifically Assessment Heads, but also people from educational institutions, and learning providers.
- **Sampling**: Those who had taken part in the survey and given consent to be re-contacted for the interviews, plus wider outreach:
  - Survey re-contact
  - LinkedIn
  - Snowballing
- **Questions:** The interview guide was developed by Shift in collaboration with RM and covered questions around better understanding interviewees' involvement in (digital) assessments, views regarding strengths/weaknesses of digital assessments, the state of digital assessments in countries or regions as well as in interviewees' organisations.
- **Interview length:** 40 minutes.
- **Field period:** Mid-January–mid-March 2022.

Purpose: The interviews aimed at sense-checking, validating and further exploring the findings of the desk research and survey.

Study limitations and merit

(Potential) Limitations of the study

- **Niche population and small accessible audience:** Students and teachers aside, those professionally involved in digital assessment are a very niche audience that's hard to recruit. We were initially able to tap into this audience via RM and IAEA databases (ca. 150 people).
- **Diverse audience mix:** Although this turned out to be of advantage for this study, as we were able to capture a variety of perspectives, we were initially hoping to research people in very specific roles within (digital) assessment, e.g. Assessment Directors. However, to get a sufficient sample, we opened up the research and needed to explore various recruitment avenues, resulting in a final sample with a mix of people from various backgrounds in the education and assessment space.
- **Diverse recruitment channels:** We had very few survey responses from the IAEA mailing list, which is why we decided to explore other recruitment avenues (e.g. LinkedIn direct mailing).
- **Small final sample:** The number of surveys completed (n=40) and interviews conducted (n=10) don't allow to draw definitive conclusions about the entire population and digital assessment space itself.
- **Changing landscape:** Findings extracted at the time of the desk research could be somewhat outdated at the time this report is being circulated. That's why the desk research findings were all checked and any latest news/insights incorporated in this report.

The merit of the study

The response rate (n=40 survey completes, n=10 interviews conducted) has been rather encouraging, given the niche that we focused this research on (general qualifications / high stakes exams) and the small audience that was accessible.

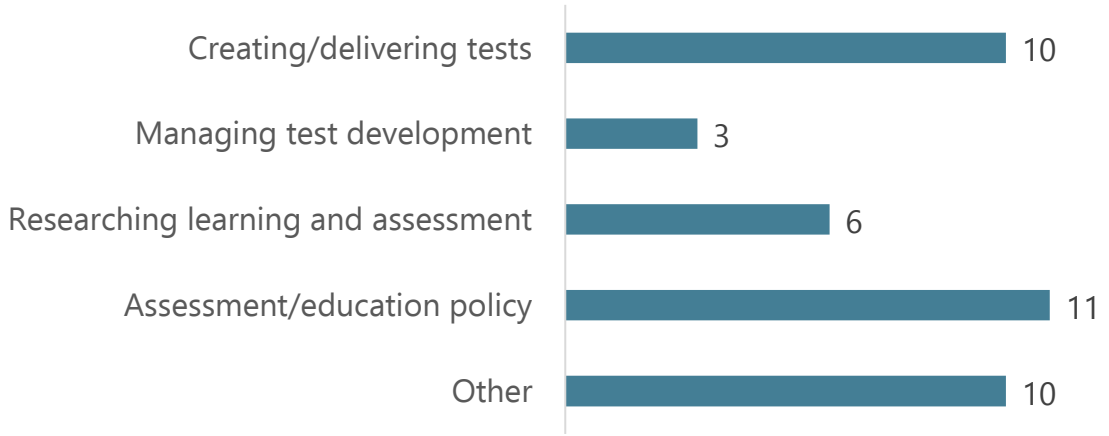
Although the sample is not representative of the digital assessment community, the research is – to the best of our knowledge – the first attempt to combine insights from various angles: Desk research, online survey and follow-up interviews. Also, the research was endorsed and supported by the Association for Educational Assessment (IAEA).

Most importantly, despite its (potential) limitations, the themes that emerged from the study are consistent and pronounced across the different research strands, giving us confidence in the results and what they indicate.

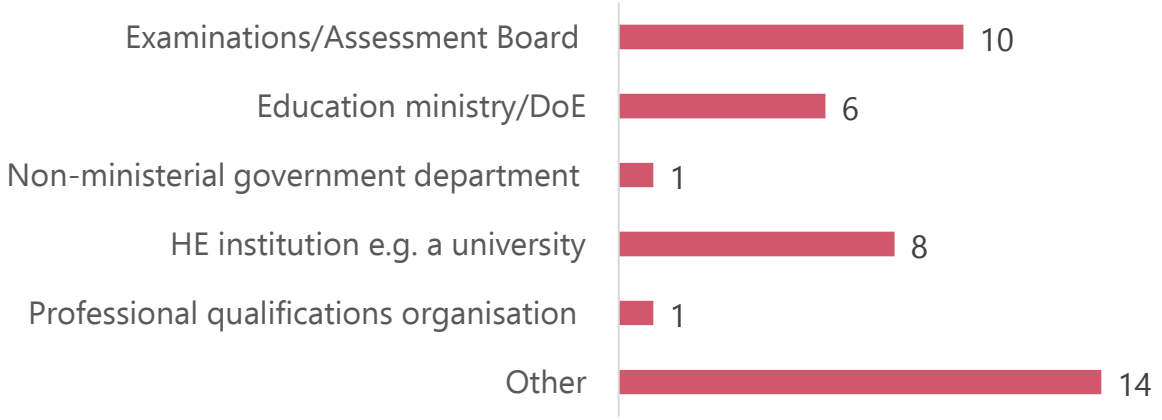
PROFILE OF RESPONDENTS

Respondent profile – Survey (n=40)

Job role

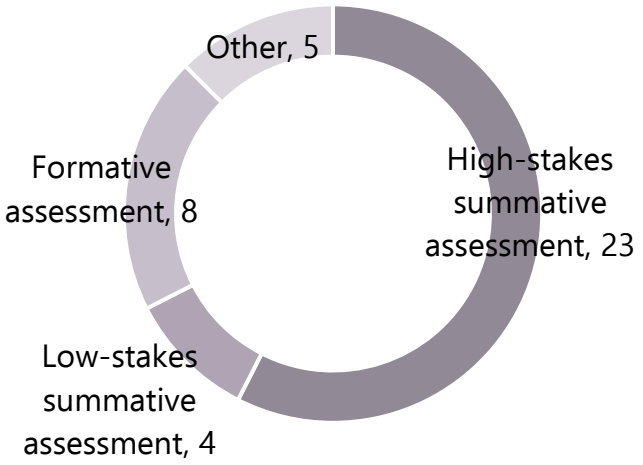


Organisation type

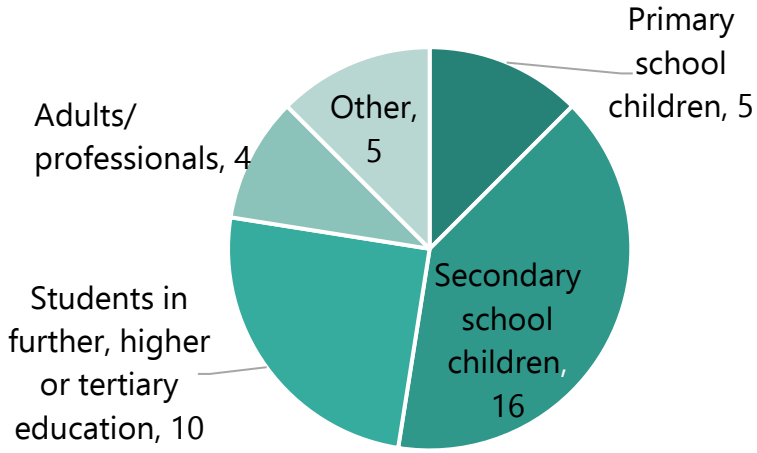


Location

Level of assessment



Candidates of assessment



Respondent profile – Interviews (n=10)

Location

UK – 3

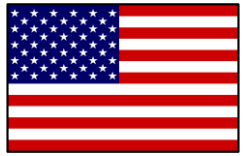
India – 2

Australia – 1

Canada – 1

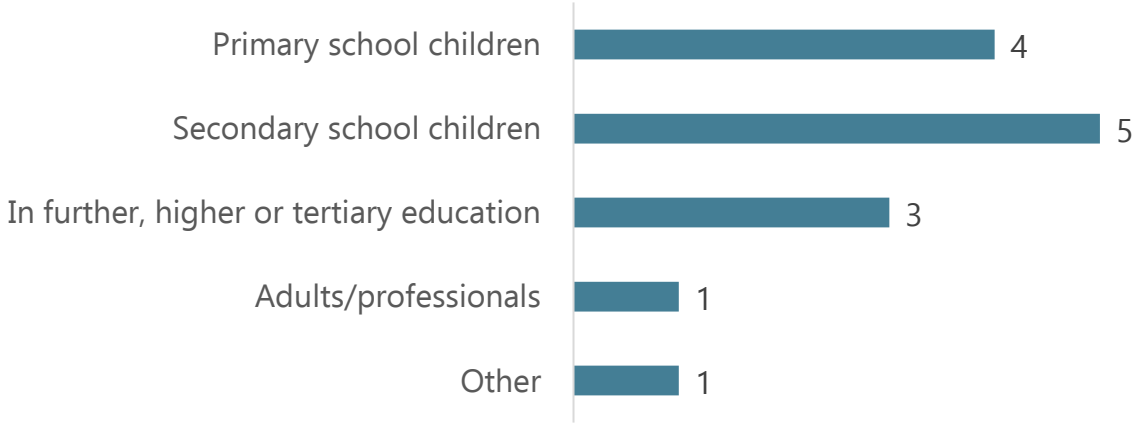
Estonia – 1

Nigeria – 1

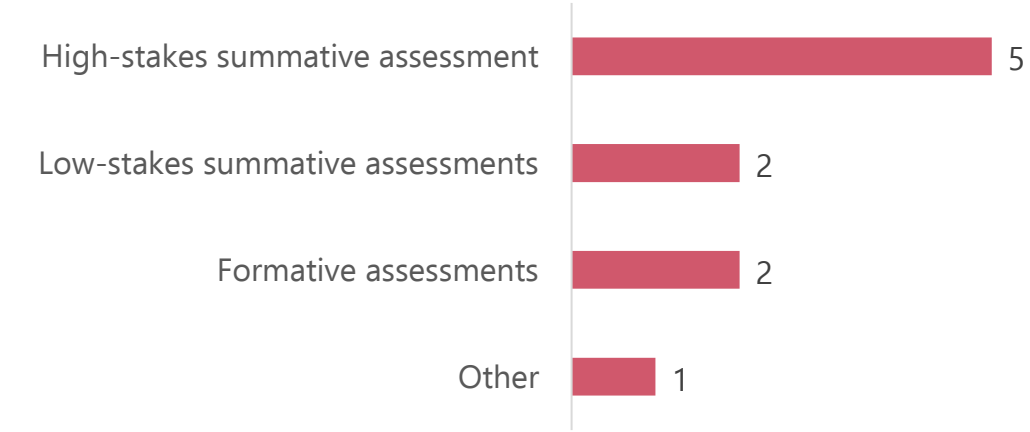


US – 1

Candidates of assessments



Level of assessments



RESEARCH FINDINGS

INDUSTRY INSIGHTS:
Strengths & weaknesses of digital assessments

Strengths of digital assessment

Ease & efficiency	Most interviewees agreed that digital exams were easy to use/execute, reducing administrative burden and, overall, making the assessment process leaner.
Speed of results	Again, the majority of interviewees thought the much faster turnaround of results compared to paper-based assessments was an advantage.
Data collection	Many interviewees highlighted that more and better data could be collected quicker, helping to find out what test takers were truly capable of.
Accessibility	Also, two interviewees explained that digital assessment removes barriers (e.g. for people with dyslexia) and generally makes exams more accessible.
Test possibilities	Two interviewees pointed out that digital exams allow for more varied forms of testing and can be more easily tailored to the test takers.
Authenticity	Two interviewees discussed that today's students are much more accustomed to digital technologies, making digital assessments more relevant for them.
Asynchronicity	One interviewee also pointed out that digital exams reduce the need for all students to be in the same physical space at the same time.
Test security	Finally, one interviewee pointed out advancements in real-time forensics and post-test forensics as a strength.

> *"I think the biggest advantage of using a digital assessment is the ease with which it can be done."*
>
> **Indian respondent**

> *"One of the obvious strengths is that we get our results much, much faster."*
>
> **Canadian respondent**

> *"More valid forms of measurement that potentially reflect more closely the learning journey."*
>
> **UK respondent**

> *"The most important strength is that increasingly, for the cohort of students that we're assessing, they are much more familiar with online as a mode of working than with pen and paper."*
>
> **Australian respondent**

> *"Digital data collection is even more efficient. It is also less costly."*
>
> **Nigerian respondent**

Weaknesses of digital assessment

Infrastructure	Lack of devices, internet connectivity and access issues were seen as the key hurdle to overcome by the majority of interviewees.
Lack of IT staff	One interviewee also pointed out that schools don't have enough IT staff to ensure a smooth delivery of digital exams should there be any tech issues.
Data security	Another one spoke of a conflict between collecting data on test takers and data security issues, which could result in sensitive data being leaked or misused.
Validity	It's hard to link poor results to poor performance or lack of preparedness, when it could also be the result of students not being familiar with digital test formats.
Fairness	Different levels of familiarity/experience with digital tools, which are also linked to students' ability to cheat, raise the question of fairness of digital exams.
Cheating	Two interviewees mentioned that existing proctoring solutions for digital assessments were not able to fully rule out cheating in exams.

"Schools will never have the right level of IT to deliver onscreen assessments, there will always be weaknesses, availability of devices, internet connectivity and everything else…"

UK respondent

"There is a problem of access. At least in our context we cannot assume that all households or all schools are connected in a way that they have access to digital devices or even digital infrastructure in the sense that there are still several areas in the country where you don't have internet or broadband connection."

Indian respondent

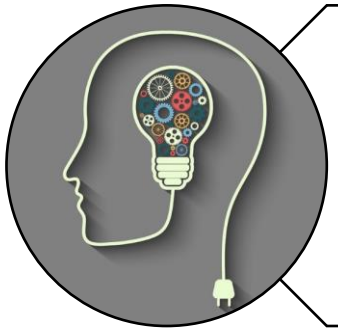
"The biggest disadvantage of a digital form of this is how am I sure that the exams are being fair? […] I think we are still not there to ensure that security and the fairness […] Even if one or two people are able to use unfair means it is a disadvantage to those who are not equipped to do that."

Indian respondent

Barriers and opportunities

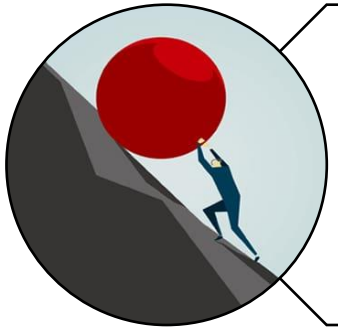
Digital assessments and skills testing

- Most interviewees thought that digital assessment formats had the potential of testing all skills equally well. However, this was dependent on the quality of the exams and how they had been developed.
- One interviewee suggested that, currently, most digital assessments were attempting to directly translate paper tests to digital formats and even though providers are developing various assessment formats, better suited to testing skills digitally, multiple choice questions remain the most used assessment method.



Opportunities

- It was suggested that we are still in the infancy of digital assessments and new innovations are constantly occurring. This leaves room for the opportunity in the coming years for innovations to allow for the development of digital assessments that will test all necessary skills.
- For example, adapting practical exams to digital formats has been a struggle, but in recent years several solutions to this have been achieved, including the use of digital badges and VR technology.



Barriers

- According to one interviewee, a major challenge will be getting to a point where innovative digital assessments (e.g. VR practical tests) are cost effective enough to warrant widespread use.
- Another interviewee suggested that, due to the novelty of digital assessments, there is comparatively little research demonstrating their efficacy at testing various skills. Digital assessments lack the same depth of research and legacy that pen-and-paper assessments have, making it more difficult to advocate on their behalf.

Spotlight: Remote proctored exams

- During the interviews, one participant brought up the difference between digital exams taken in test centres against remote proctored exams, commenting that, in their personal experience, there was a big difference between the two.
- They suggested that some of the security at test centres leaves room for improvement, which has implications in terms of the validity of test results.
- From their experience of a math placement test, most students went from falling approximately within the 30th percentile before the pandemic to being near the 78th percentile when exams were remotely proctored.
- However, they also acknowledged that there are some advantages to remote proctored exams. For example, they provide students with more flexibility in terms of when and where to take the exams, they are more appropriate for online classes and they increase accessibility for students with mobility issues, anxiety disorders, etc.

Pros of remote proctored exams

"...that silver lining in remote proctoring, clearly student feedback has been, if I'm taking an online class, it is super important for me to be able to remotely proctor a digital assessment and it works better because I can work in transportation, I could work in logistics and I'm taking that test on my schedule, which is probably 1 o'clock or 2 o'clock in the morning, it is super beneficial there."

US respondent

Cons of remote proctored exams

"However how do we now know who these individuals are? We found out very quickly that the curve on both ends went very quickly. Individuals found out overnight that they actually didn't have to take their own test. So without a proper test security tool in the toolkit of the individual providing the assessment there was no validity at that point of the assessments because we didn't know who was taking it. [...] delivered remotely it is a challenge, a) because it is not seen, and this is coming back from student self-report research that I was just reading yesterday, where students don't see it as high stakes. Then b) depending on what proctoring solution is used the ability to catch things that typically you could see in a testing center is frankly very limited."

US respondent

INDUSTRY INSIGHTS:
Big picture thoughts

What are the big themes and trends with regard to digital assessment? (I)

The interviews discussed some meta-level ideas about the current state and potential future of digital assessment:

Transforming paper to digital

Many interviewees stressed the importance of transforming from traditional to digital exams in the 'right way'. They noted that currently the practice seems to be 'rubberstamping' and simply translating existing paper tests into a digital format. Whilst this was appreciated as a step in the right direction, it was also seen as limiting and not going far enough. Two interviewees concluded that digital assessment is currently still in its infancy and suggested that the whole system of testing needs to be reinvented to be fit for purpose in a digital context.

Technological determinism

One interviewee explained that many people see technology itself as a fundamental influencer of the ways in which a society exists and that changes in technology are the primary driver for social change. This concept of 'technological determinism' has also been discussed in an educational context[1], [2], [3] and, according to the interviewee, many EdTech providers are making bold claims that technology itself has the ability to 'solve problems' and positively influence education and assessments. However, the interviewee thought these claims should at least be second-guessed.

"A lot of what we see in the field is basically a paper test that has been put onto screen. Whilst that can work and helps, especially in places that have limited connectivity, where you're able to deliver paper and onscreen in parallel, it can be quite limiting in certain respects."

UK respondent

"What is happening today is we are trying to take what we used to do face-to-face and create it into a digital format which may be creating a problem."

Indian respondent

"Technological determinism, it's the idea that the tech itself is going to solve problems and improve outcomes [...] there are plenty of those in the world of EdTech and, as I said before, the people who make bold claims about how the tech itself can solve problems, and I think we should be suspicious of people who make very bold claims about the tech itself as opposed to the collaborative nature of working with educators and helping pupils develop their own confidence and skill set and so on."

UK respondent

What are the big themes and trends with regard to digital assessment? (II)

The interviews discussed some meta-level ideas about the current state and potential future of digital assessment:

Exams or no exams

One interviewee envisaged the future provision of assessments, specifically in the UK, but applicable to the international system, as a mixed economy, a combination of the traditional paper-based exams with pockets of high-stakes digital offerings. However, another doubted the role of high-stakes summative assessments altogether, wondering if it was necessary to put students through the stress and pressure, since the COVID-19 pandemic has proven they can also be graded through continuous assessments.

A flawed system

This was specifically discussed in the context of the UK education and assessment system, by the same interviewee who brought up the 'exams or no exams' question. However, to some extent, this can also be applied on an international level. They argued that assessments are unnecessarily complicated and complex, for example, using difficult language and 'trick questions', which makes it hard for students even to fully understand the criteria they are being assessed against.

> *"With high stakes tests you're being assessed against a series of Rubrics. They've been assigned by the exam boards, they're written in arguably deliberately difficult language. Will the students understand that language? Will they understand the criteria against which they're assessed? It's unlikely that they will, so what's the point of them then? How can that possibly be fair that the success criteria, the assessment objectives, are not clear? They are obfuscated if you like by design by the exam boards and obviously backed up by the government. Why should that be the case? [...] Also things like, for example, if in English only 65% of people can actually pass [...] Why is it that there's a ceiling on that? When you're doing a driving test you're not told well I'm afraid you can't pass because X number of people have passed this year so you're not allowed to pass even though you're very, very good. I think failure is actually written into, there are private companies who own the exam boards, who actually write failure into the results."*
>
> **UK respondent**

What are the big themes and trends with regard to digital assessment? (III)

The interviews discussed some meta-level ideas about the current state and potential future of digital assessment:

What's fair?

This question was discussed in one way or another by the majority of interviewees. They were worried about the (increasing) digital divide if assessments become more digitised. Apart from access to devices, the level of familiarity with technology that follows from (a lack of) access to digital infrastructure also creates disparities and issues of inequity. One interviewee also questioned the fairness of high-stakes summative tests, noting that, during the pandemic, some teachers felt continuous assessments were a fairer way of determining what students were actually capable of.

Practical considerations

Two interviewees in particular wondered how a successful transition to digital exams would be organised. They noted that most people in the industry are focused on the operational advantages it will bring, whilst not considering concrete financial, supply chain and procurement implications – for example, how the funding would be distributed if the decision was made to invest in school laptops so exams could be taken on those rather than students' private laptops.

> *"There is still this question of if you have not used it extensively is it fair and is it valid to assess them using technology?"*
>
> **Indian respondent**

> *"Have an algorithm working out the continuous assessments last year [...] I think it was encouraging because [...] the pupils could be rewarded in a way that their teachers felt was fairer and there wasn't a great deal resting on this exam."*
>
> **UK respondent**

> *"Would the students sit there on their own laptops, would they be on school laptops? If they're on school laptops, what would be the procurement process? How would the money be allocated to those schools? How equitable would the distribution of that funding be?"*
>
> **UK respondent**

> *"Nobody will talk about, 'If we do this what will happen there?' The impact on if we do have to deliver outside schools then what does that mean for headteachers who would previously just write a cheque to the awarding body and say, 'We have so many exams and this is what we are paying', and use the exam hall for free, who is going to pay for those offsite exam halls?"*
>
> **UK respondent**

INDUSTRY INSIGHTS:
Drivers & barriers towards digital assessment

What's driving the move to digital assessments?

Thinking about this specific assessment again, what do you think are currently the key drivers towards greater adoption of technology-enabled assessment? [Ranking, top 5]	**Count of ranked most important (top 1)**	**Cumulative count of ranked in top 5**
Responding to the COVID-19 pandemic	**7**	**18**
Future-proofing of the education system	5	11
Planned/ongoing reform of the education system as a whole	4	11
Collecting more and better assessment data	3	16
Faster results processing	3	16
Hopes for higher quality assessments	3	12
Greater education/assessment data security	3	9
Authentic assessment	3	8
Improving administration efficiency	**2**	**21**
Improving accessibility of exams	2	13
Higher equity in assessment	1	9
Reduction of use of paper in assessment delivery	0	17
Planned/ongoing reform of the educational assessment system	0	10
More efficient marking	0	10

COVID-19 was ranked as the most important driver in the survey and was top of mind for all interviewees when they were asked about key drivers towards digital assessment.

- In terms of ranking the most important drivers, reforming and future-proofing the education system ranked second and third, after the pandemic.
- When looking at the cumulative counts, respondents ranked improving administration efficiency and the reduction of paper use as important. This theme was also discussed in some of the interviews.

> *"With onscreen assessment a lot of that responsibility can be taken outside the school […] it seems a lot of work to store exam papers. This long, multi-vendor supply chain as well from a papermill to a certificate is a lot of risk that needs to be mitigated."*
>
> **UK respondent**

> *"[If all exams were digital] […] this should get rid of some of the burdens away from them executing the exams at school level."*
>
> **Estonian respondent**

What's hindering the move to digital assessments?

And what are key barriers ...? [Ranking, top 5]	**Count of ranked most important (top 1)**	**Cumulative count of ranked in top 5**
Lack of access to suitable devices	**8**	**24**
Existing assessment structure	6	17
Concerns about the digital divide and inequality issues	**5**	**26**
Issues with internet access	**5**	**25**
Concerns about poor quality exams	3	10
Concerns about data (e.g. security, data loss)	2	11
Learners' lack of ICT skills	2	10
Existing education system structure	1	12
Additional administrative burden	1	8
Staff's lack of ICT skills	**1**	**15**
Lack of access to suitable test spaces	1	12
Concerns over invigilation	1	11
Concerns about regulation of digital exams	0	7

Lack of teachers' ICT skills was mentioned as a an issue in the interviews as well (see next slide).

Digital infrastructure and inequality issues were seen as the main barriers in the survey and interviews. All interviewees mentioned insufficient internet connectivity, lack of devices and socioeconomic inequality as issues slowing down the digital transition of assessments in their market.

"There are absolutely drawbacks around the investment in the infrastructure requirements. That might be software, that might be hardware."

UK respondent

"This digital divide that is present in India may actually slow down the application of the digital format of assessment."

Indian respondent

"I think the biggest hurdle in the school system [is] a lack of screens, they don't have the sufficient number of screens in the building, or the most updated screens that would perform well with an online assessment."

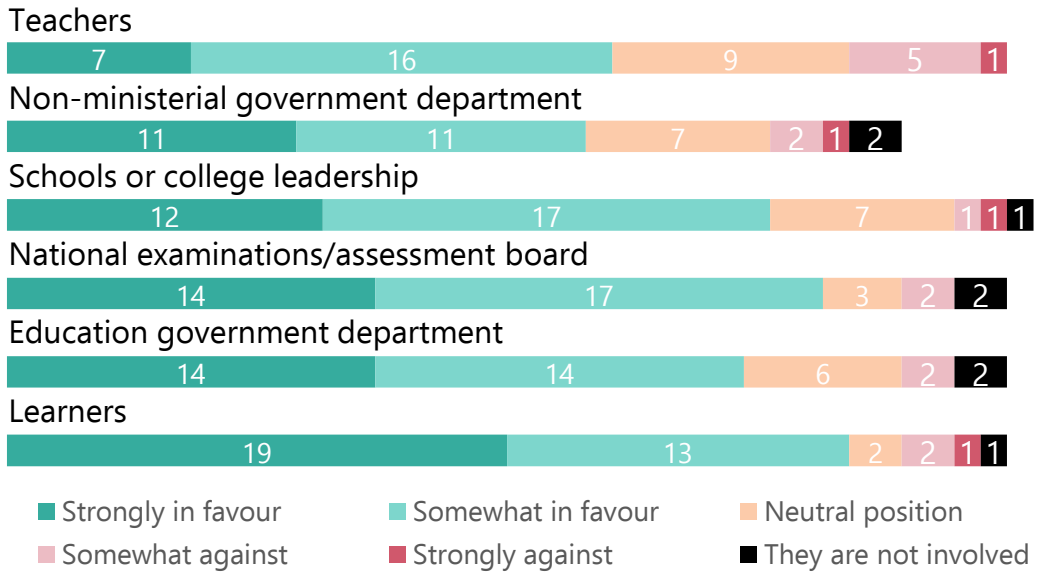
Canadian respondent

"In terms of delivery, schools will never have the right level of IT to deliver onscreen assessments, there will always be weaknesses, availability of devices, internet connectivity."

UK respondent

Which stakeholders might not be on board with digital assessments?

Q9 Thinking about the specific type of assessment you are most involved in, where do the following stakeholders stand with regard to the (potential) transition to technology-enabled assessment? [Grid question]



The survey showed that, on one end of the spectrum, learners were seen as most strongly in favour of the transition to digital exams (followed by government departments and assessment boards). On the other end, teachers were seen as the group most likely to be 'somewhat against' this transition. The interviews indicated that this resistance is likely to be linked to a lack of digital experience:

- One interviewee suggested that – particularly older and less tech-savvy – teachers, might be reluctant because they are *less* experienced than their students in the use of digital technologies, which they argued poses a 'threat' to them.
- Another suggested that it's not merely the lack of digital experience and skills, but the low level of confidence resulting from that, which makes teachers resistant to embracing digital exams.
- Against this background, a third interviewee pointed out there is a strong need for teacher training to close this experience-comfort gap.

"Sometimes, teachers can also be on the cautious side of things because it depends on how they are coming to terms with the opportunity or threat that their students know more about IT than them. Particularly if you've got ageing teachers."
Australian respondent

"[Another hurdle] is just teacher comfort level. […] there are teachers out there who just aren't comfortable at presenting an online assessment to their students because they don't feel they have the skills."
Canadian respondent

"[Teachers] have to be the drivers for the digital assessment. […] I think that a lot of things have to do with beliefs and attitudes when you don't use the digital solutions for teaching then the digital assessment might not be very appealing."
Estonian respondent

What could go wrong if exams went all digital in the next 5 years?

INTERVIEW SCENARIO:
Your country [or alternatively: your region] wants to embark on a massive national project, and convert all paper-based exams to on-screen assessments in the next 5 years. Now let's skip to 2027, it's been five years and the project has happened. However, it was only partially successful and some things went wrong … What are the things you think went wrong?

Now imagine the project was totally successful and in 2027 all assessments are in fact converted to on-screen. Who are the 'winners' of this? And who are the 'losers'?

Potential pitfalls

The transition to a digital assessment system was seen as the key potential issue: Interviewees were worried that simply transferring existing test formats from paper to digital would not fully capture what students were capable of. They suggested that, in a digital exams system, new formats would have to be developed. Other things assumed to go wrong in a 'too much too fast' digitisation process included:

- **Lack of readiness of teaching staff:** Teaching practices might not be fully adapted and educators might not be able to prepare learners for digital exams.
- **Lack of readiness of infrastructure:** A transition to digital exams in 5 years would require massive infrastructure investment. Even if that were to happen, some interviewees worried about digital divide issues, e.g. rural areas not having equal access. Also, there could be significant technological glitches during the administration of tests, such as WiFi outages during massive country-wide synchronous exams.
- **Loss of momentum in case of failure:** One interviewee was worried that, if things went wrong during test administration, it would ruin trust and be a major setback for digital exams for years to come.
- **Financial issues:** One interviewee doubted whether people would think of the practical financial implications, such as 'who is going to pay for the offsite exam halls'?
- **Stakeholder relationship issues:** Finally, one interviewee also flagged that a fast transition to digital which is not properly thought through could result in problems between different stakeholders, e.g. government and third-party providers on national and regional levels, if their relationships and ways of working together were unclear.

> *"My fear is that if it [the administration of tests] was to go wrong [due to a technical issue […] this would set us back 10 or so years."*
>
> **UK respondent**

> *"Has the transition to digital assessment taken place at a pace where teaching practices weren't taken to prepare learners adequately, and therefore, have we impacted on learners' life chances?"*
>
> **UK respondent**

Who would be the winners and losers if exams went all digital?

Winners

- **The digitally literate:** One interviewee pointed out that only those with digital skills would be winners.
- **City population:** One interviewee stressed that this is where the infrastructure is most advanced, hence people in metropolitan regions would be at an advantage.
- **Learners:** They would benefit thanks to better feedback and because digital assessments would be more convenient.
- **Teachers**: Less administrative burden would allow teachers to focus more on teaching and assessments.
- **University admissions staff:** One interviewee also argued that the richer data on students' achievements would make it easier to match them with university courses.
- **Providers:** Big tech companies, and generally providers of digital assessment solutions, would be able to expand their operations and get a reputational boost.
- **Employers:** One person mentioned they could benefit from a better understanding of what employees were capable of.

INTERVIEW SCENARIO:

Now imagine the project was totally successful and in 2027 all assessments are in fact converted to on-screen. Who are the 'winners' of this? And who are the 'losers'?

Losers

- **Paper industry:** Many interviewees saw these companies as the obvious losers because they'd essentially be forced out of business by the transition to digital exams if they didn't go with the change.
- **The digitally illiterate:** One interviewee pointed out that unless training was offered to those not familiar with digital technology, some groups were likely to be left behind, albeit they assumed the digital divide overall would grow smaller.
- **Rural population:** Related to digital (il)literacy, this group might have less awareness of digital tools.
- **Special education students:** One interviewee raised the point that, unless simplified and adapted to their needs, digital exams might not work (well) for this group.

Finally, three interviewees had a very optimistic view given this scenario and struggled to think of any losers.

"All of the people who are involved in the engagement: Students are the winners for having a much more convenient way for being able to conduct assessment, teachers would be the winners for being able to deliver more relevant assessments to schools, the government agencies, the third-party commercial contracts."

Australian respondent

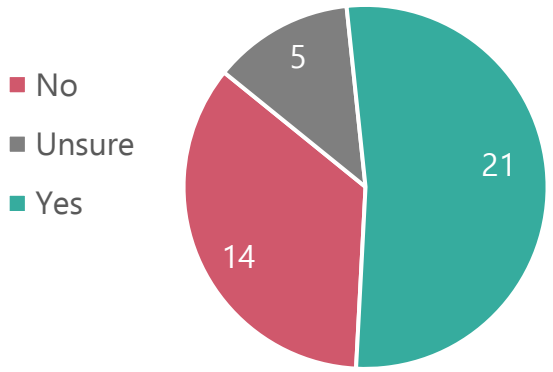
"I honestly could not think of any losers unless I see that some children or test takers were left out, so if there were equity issues. The only losers could be that maybe some test takers from the lower [end of] society [...] whether there was no awareness about it or they did not have enough practice [...] or language was a barrier."

Nigerian respondent

MARKET INSIGHTS:
COVID-19 changes to assessment

How has COVID-19 changed assessments?

In your country, has the way students at secondary school are being awarded their final end of school grades changed during the pandemic? [Single choice]

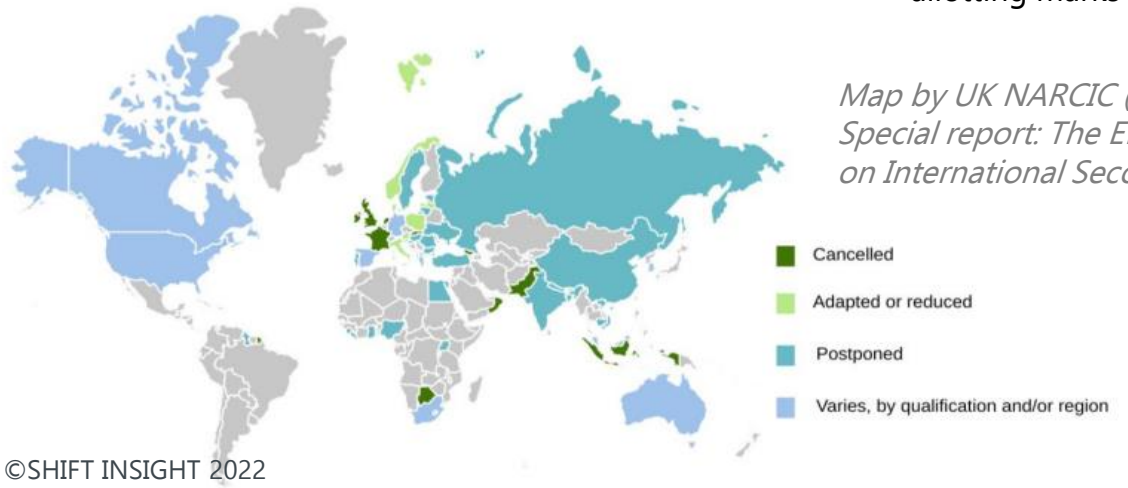


The below changes were identified through interview feedback and backed up by additional desk research.

Australia: Many states seem to have applied a 'consideration for educational disadvantage' rule, according to which students who live/go to school in an area affected by stage 4 lockdowns would be able to apply for this if their oral, performance exam, or major project was impacted by the pandemic. How exactly this consideration worked/works is unclear, although one article states that 'detailed evidence is not required'. In Victoria, teachers had to essentially determine what a student's expected score or grade would be if they had not been impacted by the pandemic (or bushfires).[1]

New Zealand: They used and seemingly still use a mix of 'unexpected event grades' and 'additional learner credits'. The former are to be used instead of an examination result if an unexpected event is declared. The grades are derived from authentic, standard-specific school-based evidence gathered during the year.[2] These are essentially additional credits awarded on top of gained credits and capped depending on education level.[2],[3],[4]

India: A grading scheme was created with marks based on previous achievements. However, how this works is unclear. One article reports that, for the 2021 school year, the Central Board of Secondary Education (CBSE) was considering to grade students in class 12 i.e. la terminale (age 17-18) instead of allotting marks'.[5]

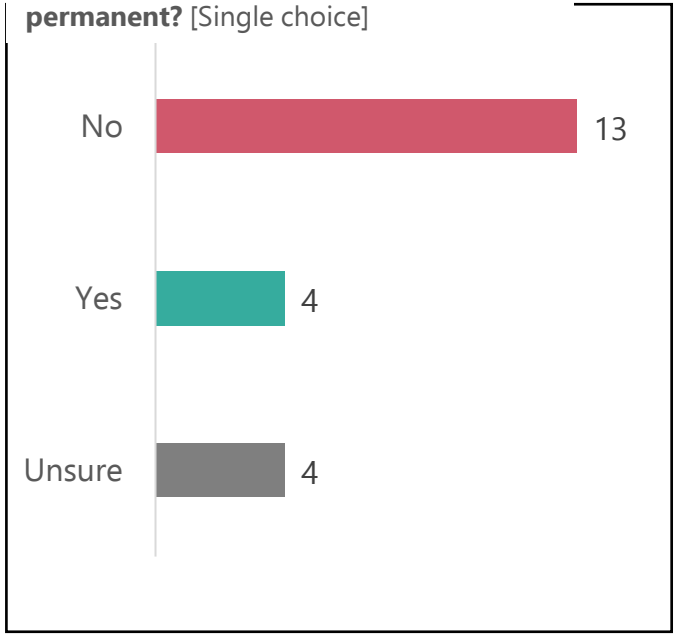


Map by UK NARCIC (2020) [6]
Special report: The Effects of COVID-19 on International Secondary Assessment

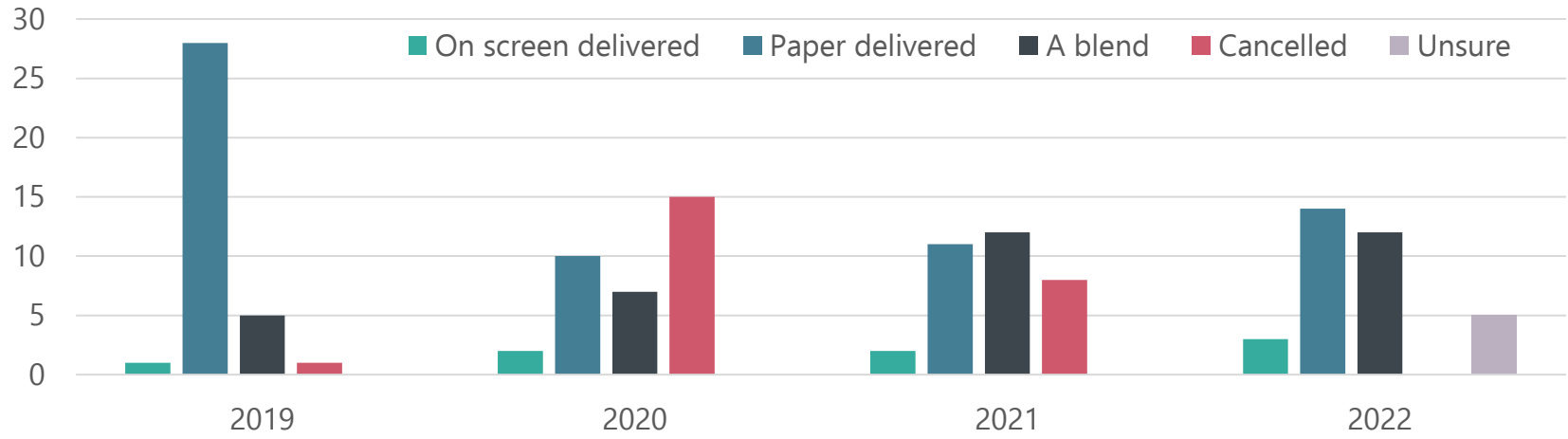
France: In 2020, students' grades were based on continuous assessment throughout their final year. Grades achieved in the first year exams still counted towards the final grade. Assessments carried out during the lockdown period were not taken into account. Grades were moderated and reviewed by an examination panel. A 0-20 scale was used, where 10 reflected the pass mark.[6]

How permanent might be the changes brought on by COVID-19?

Do you think that these changes will be permanent? [Single choice]



How were final end of school grades at the end of compulsory schooling mainly worked out between 2019 and 2021 – and how do you predict this will be handled in the coming year? [Grid]



When asking those survey respondents who had indicated that COVID-19 changed the way that students were awarded grades in their country, most of them assumed that those changes wouldn't be permanent…

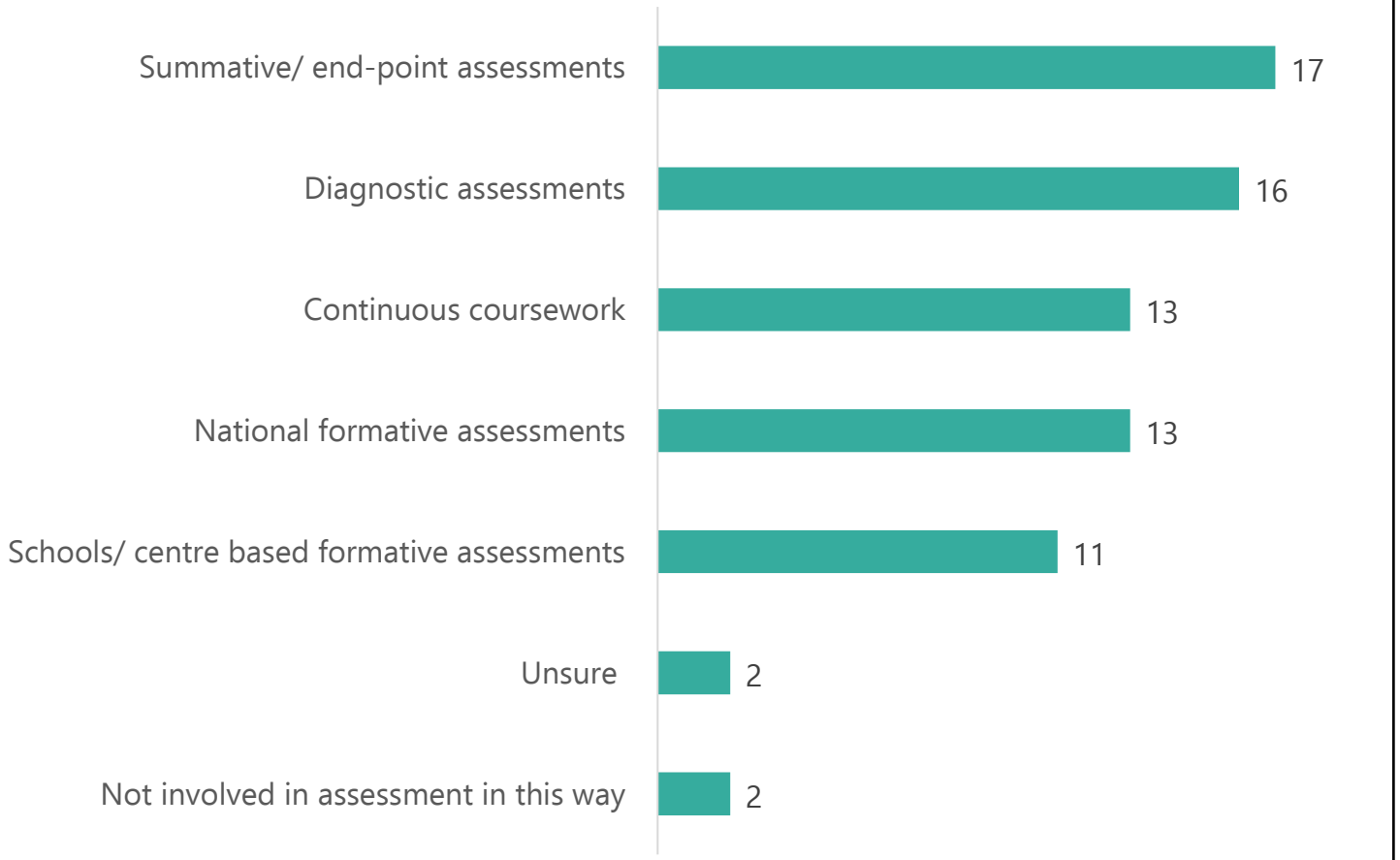
The changes that potentially remain were assumed to be elements of teacher-driven assessment of students' achievements throughout the year.

From the data collected, bearing in mind the small sample, it's not possible to draw any conclusions about possible trends in the way exams are delivered. Yet, the survey responses indicate the following:

- On one hand, as would be expected, final end of school exams in the respondents' countries were largely paper delivered before the pandemic and pure on-screen delivery is still the exception to the rule.
- However, there has been a small increase in a blended approach of on-screen and paper delivery since before the pandemic.

In what areas of assessment might more technology be used post COVID-19?

Following the pandemic, in which areas do you think your organisation might particularly use more technology? [Multiple choice, max 3]



Status quo of digital assessment in specific markets

Country findings mapping

SHIFT INSIGHT

NATIONAL PROGRESS

China
1.44 bn; 149/km²
GII rank: 12

France
65.3M; 118/km²
GII rank: 11

Norway
5.4M; 16/km²
GII rank: 6

Philippines
109.6M; 356/km²
GII rank: 51

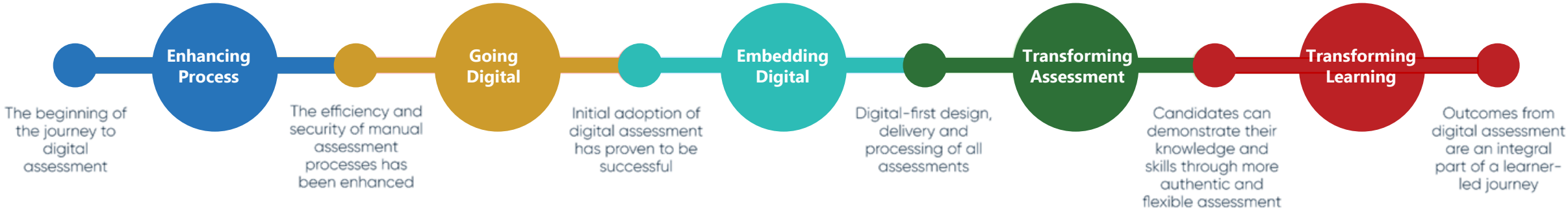
Singapore
5.9M; 8,041/km²
GII rank: 8

Brazil
212.6M; 25/km²
GII rank: 57

New Zealand
4.8M; 18/km²
GII rank: 26

Egypt
102.3M; 98/km²
GII rank: 94

Finland
5.5M; 16/km²
GII rank: 7



REGIONAL PROGRESS

India
1.38 bn; 441/km²
GII rank: 46

Canada
37.7M; 4/km²
GII rank: 16

Australia
25.5M; 3/km²
GII rank: 25

Data sources
Population - https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2021.pdf
Density – https://en.wikipedia.org/wiki/List_of_countries_and_dependencies_by_population_density
GII (Global Innovation Index) - https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2021.pdf

Australia – Desk research findings

End of year/final school exams

The approach and progress appears to be different in different states:

- Across Sydney (New South Wales), Higher School Certificate (HSC) trial exams were conducted online in 2021, as authorities barred areas worst-hit by the COVID-19 outbreak from classrooms. This seems to be the first time that the exams were held online.[1]
- In South Australia, e-exams appear to have been introduced in 2018, i.e. the digitisation process started before the pandemic.[2] In 2022, paper resources will not be provided in e-exams for Tourism, Modern History and English Literary Studies.[3]

National education assessments

- The Australian Government is working with states, territories and non-government education authorities to implement national assessments online, including the National Assessment Program Literacy and Numeracy (NAPLAN) test, which is an annual test of students in Years 3, 5, 7 and 9 (Year 3 students are 8-9 years old, those in Year 9 are 14-15 years old). $24.7 million has been invested to develop a national platform that will enable students to take the NAPLAN test online.[4]
- The first NAPLAN online tests were successfully delivered in schools in May 2018 with the aim for all schools to undertake NAPLAN online by 2022.[4],[5]
- NAPLAN is delivered by Janison.[6] To ensure test security and to prevent student access to the internet and spell-check applications during NAPLAN Online, a locked-down browser is installed to each student's device by schools prior to the tests.[7].

The computer medium for writing is something we're a lot more used to.

I found it quite easy because I've become accustomed to writing up assignments on my laptop. I was used to forming ideas on the spot with a screen in front of me as opposed to with paper and pen.

Other types of assessment

- PISA for Schools is also delivered by Janison, who in 2021 became accredited by the OECD as the National Service Provider of this test in Australia.[8] It is administered through online or offline digital delivery.[9]

Australia – Interview findings

Status quo

- Based on the interview findings, the transition to digital assessments in Australia can best be described as slow.
- While South Australia is attempting to move to online assessments for senior qualifications, the rest of the country still relies mainly on pen and paper assessments.
- However, often the process of marking is online.

Drivers

- The main suggested driver for moving to digital assessments is suggested to be students.
- Students are now more familiar with digital environments than pen and paper exams, so digital assessments would be far more relevant to them and their lives.

Barriers

- One of the primary barriers suggested was the organisation of the school system in Australia. Education funding and organisation is done at the state level, hence there is a lack of coordination across the country making a centralised effort to transition to digital assessments difficult.
- Another key barrier in Australia is the narrative created by the media. According to the interview findings, the media in Australia can potentially be very hostile, adding to the fear around transitioning to digital assessments.
- Finally, not technically a barrier but an issue that was identified is resistance from teachers. It was argued that they can often be behind their students in terms of digital literacy, making them more cautious about any potential transition.

Influence of the media in Australia

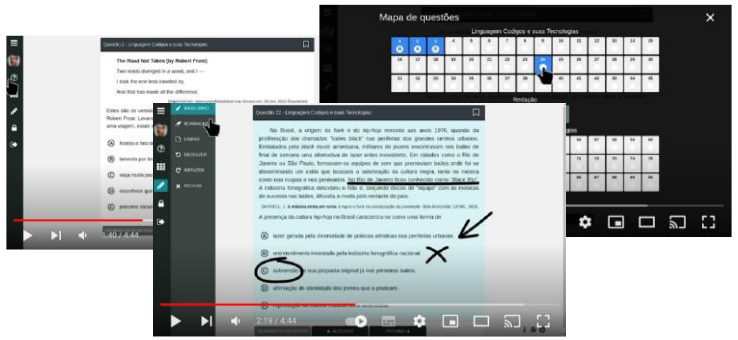
"I think the media in Australia is quite aggressive and there is quite a bit of an antagonistic relationship with the media. You don't have to put much of a foot wrong in IT for something to go wrong and it's all the way through the papers… Suddenly, it's a catastrophe on the front page."

Australian respondent

Brazil – Desk research findings

End of year/final school exams

- In 2020, the high school national Exam ENEM allowed students to opt for an online version of the test for the first time.[1] This transition to a digital test appears to have been planned pre-pandemic and the pilot set out to let 50,000 students in 15 capitals of the country take the test in its digital version.[2]
- In 2021, it appears that about 93,000 students from 104 cities took the Digital ENEM by computer – but they still had to attend the test locations. The essay was still handwritten.[3]
- By 2026, it is planned to no longer have a paper version of the ENEM.[4]
- A tutorial for how to perform the ENEM online can be found on YouTube.[5]



- The digital version of ENEM in 2021 had 71.3% abstentions on the second day of exams. On the first day, abstention was 68%. Even so, the National Institute of Educational Studies and Research (INEP) said that the result was satisfactory:[6]

"The future is ENEM Digital. With this, you do not have the impression of proof, as in the paper version. In addition, this allows us a much greater speed to receive the results, with agility and flexibility." [3]

Alexandre Lopes, president of INEP

National education assessments

- The current national assessment of basic education, called SAEB, includes background questionnaires that school directors and secretaries of education can complete electronically, but the assessment itself and associated questionnaires for teachers and students are paper-based.[7]
- The 2019-20 reform plan aims to deliver SAEB digitally by 2024 from Year 5 (age10-11) to Grade 3 (High School, age 17-18). Under this plan, tests were supposed to be administered through tablet-based software, with test questions and responses stored on the devices before being transmitted via the internet at a later time. However, it is unclear if the federal government still plans to use tablets for this. The long-term plan is to move towards computer adaptive testing (CAT) for at least some elements of the 'future' SAEB.[7]
- In 2017, for the national literacy assessment (ANA), assessments of reading fluency used smartphones to record students' voices alongside a web application for marking and result generation and digital apps for parents and teachers.[8]

Brazil – Desk research findings

The state of digital education

Brazil seems to be facing systemic issues in its transition to digital education.

- In a 2019 study, the Regional Center for Studies on the Development of the Information Society (Cetic) found a lack of infrastructure, particularly in certain rural areas of Brazil.[1] Lack of devices and internet access in students' homes was a challenge for 93% of the schools (94,000 institutions nationwide).[2] It also found that:
    - …31% of private and 58% of public schools in urban areas did not have a computer lab structure.
    - …72% of private school students in urban areas had a laptop computer compared to only 38% among public school students.
    - …45% of private schools in a rural context had some infrastructure and computers available for student use, but only 18% of public schools.
- Additionally, the study points out a lack of technical skills among teachers, which 63% of public schools reported.

These issues of inequity and digital divide seem to have been further magnified by the COVID-19 pandemic. Another report states that, while students from higher socioeconomic status backgrounds were able to follow 89% of remote learning, students with lower backgrounds could only follow 71% of it.[3]

The report concludes that:

"Problems with connectivity are long-standing, and the social and economic crisis, intensified by the COVID-19 pandemic, is unlikely to be solved quickly. Thus, there is an urgent need for concrete and longitudinal action." [3]

Canada – Desk research findings

End of year/final school exams

- There does not seem to be a national approach to (online assessment in) high-stake exams. It looks as though different jurisdictions and even schools have different systems in place.[1],[2]

- As for Ontario, there is some evidence from the Ontario eSecondary (OES) High School website that suggests the transition to digital exams is a reaction to the pandemic and is happening rather slowly. Whilst they are providing 'flexible accommodations', unit tests and final exams at the end of each course are still hard-copy and must be written in the presence of an approved proctor either in-person or online.

"The reason why OES has chosen this approach is that without a proctor there are limited ways to control time limits, the use of notes, online tools and help from other individuals. Further, with university admissions more competitive than ever, preparing students for post-secondary is of utmost importance. Adhering to these standards also allows us to maintain good standing with the Ministry of Education and post-secondary institutions."[3]

National education assessments

- The Pan-Canadian Assessment Program (PCAP) tests achievements in reading, mathematics and science every 3 years. The next iteration of the assessment was postponed by one year from 2022 to 2023 due to the global COVID-19 pandemic.[4]

- For the 2023 test, students will complete a 90-minute online assessment.[5]

Other types of assessments

- Looking at Higher Education, there have been some concerns about cheating in online exams. CBC reported rising cases of academic misconduct, as well as students raising the alarm about the software being used to assess them.[6]

"We're being monitored way more intently than ever before on our exams, and our overall mental health is degrading."

David Draper, vice-president academic of the University of Alberta Students' Union

"What a student should be focusing on during an examination is demonstrating their knowledge, not ... having this anxiety about whether they're going to be flagged."

Kristin Smith, vice-president advocacy of the University of Manitoba Students' Union

Canada – Interview findings

Status quo

- It appears to be difficult to comment on transition to digital assessments in Canada as a whole since each province is a separate entity.
- Quebec was one of the first provinces to embrace digital assessments and as a result it was one of the few provinces able to conduct some exams during the first year of the pandemic.

Drivers

- Currently, the primary drivers are connected to the general strengths of digital assessments, such as the speed at which results can be obtained.
- Other drivers include the general digitisation of the world and the pandemic.
- It was suggested that, in the future, the main driver will have to be at the province department level, as it is unlikely to start at the school level.

Barriers

- Across all provinces, the main barrier currently appears to be a lack of access to enough devices.
- Although technically not a barrier, it was also suggested that there may be some reluctance from teachers. As teachers are often very busy, they may be hesitant about anything new since the transition would add to their workload. However, it was argued that the impact of this is likely to decrease as familiarity with digital assessments increases.

Familiarity with the platform and attitudes towards digital assessments

"When we ran the high school assessment last year for the first time before we went live with it we opened it up, I think we had about 250 or 300 paper booklet requests for the entire province out of about 7,500 students who wrote last year … Then we released the practice assessment so the students could get comfortable with the online platform and all but 12 of those 250 requests for paper booklets were cancelled … I think that goes to show that some of the fears once they get into the platform are going to be okay…."

Canadian respondent

China – Desk research findings

End of year/final school exams

- In the Gaokao (the National College Entrance Examination), all tests have been marked using onscreen technology since 2010.[1],[2]
- There has been an enormous increase in Gaokao test-takers from 3.75 million in 2000 to 10.78 registering in 2021, an all-time high.[3],[4]
- In the Gaokao, candidates sit a series of essay-type and limited-response tests. Prior to the use of onscreen marking (OSM,) the Gaokao was single-marked, with the raw scores from even subjective test items used to rank students for university admission purposes. The application of OSM to the marking of test items brought about a double-blind marking procedure that enhanced the monitoring process and contributed to a reduction of variance in marking the subjective exam parts.[3] Please note that, in China, unlike many Western countries, subjective questions are always used to assess students.[5]
- One paper claims that the success of the Gaokao examinations also spurred the adoption of OSM technology for other high-stakes examinations, however, it doesn't clarify which ones.[2]

AI trends and other developments

- As early as 2016, there have been reports that high-tech measures, such as face recognition and fingerprint verification systems, were used for the first time in many places for the Gaokao.[1] In 2020 it was reported that Northeast China's Liaoning province was employing artificial intelligence to catch those trying to cheat in the Gaokao. Reports said AI was used to analyse live feeds relayed from examination rooms and then alert on-site monitors, mostly teachers, to check if any candidate's body movements aroused suspicion.[6]
- China is also developing AI grading systems designed to evaluate essays and other written responses. More than a spellchecker, the software considers structure, style and overall theme. Then it assigns a grade and offers recommendations for improvement. The AI software used for grading in China supposedly has an accuracy rate of 92%, but there is a scepticismlevel of accuracy.[7]
- In terms of grading essays, almost a quarter of the country's schools are also testing 'thinking' technology designed to assess everything from an essay's style and structure to its logic and remove human error.[8]
- Whilst, in higher grades, tests remain key and Chinese education is often described as 'exam obsessed', the government ordered schools to drastically cut the number of exams in 2021, as part of the state's reform to ease the burden on students. Primary school students should not be asked to take written exams in the first and second grades, while older pupils could be given only one exam at the end of every semester.[9]

Egypt – Desk research findings

End of year/final school exams

- For the first time in 2021,[1] the Thanaweya Amma, thee final high school exam of grade 12 students (aged 16-17) was held online. However, this was in schools and not remotely. Grading was also entirely electronic.[1],[2],[3]
- Three mock exams were done, testing for WiFi capabilities at schools and other technical difficulties.[1] Prior to the actual exam, students had to go with their tablets to the school in which they took the exams to adjust devices and connect them with the school's server in order to avoid problems on exam day. Also, as a backup on exam day, there was a printed question paper available in case of technical issues.[3]
- Questions on the 2021 online Thanaweya Amma, which was an open-book exam, were all multiple-choice and did not contain writing sections. However, students appear to have had concerns about how they would perform:

Education and exams reform

- To decrease the importance of final exams, the Ministry of Education is implementing a new testing system that will feature 12 exams dispersed over the entire three-year upper-secondary cycle (four each year), with the final GPA calculated on the basis of the four highest scored exams. Students are now allowed to bring textbooks and tablets into test centres/schools. Tablets are expected to be given to all students free of charge in an attempt to increase students' exposure to technology.[4]
- The new system is designed by Pearson, which has introduced online tests that cover all 13 subjects of the Egyptian curriculum.[5]
- Egypt's Education Minister, Tarek Shawki, commented that: *"The new digital content system enables students to take the exam wherever they are, with access to all materials, representing a major departure from the previous system where answers were memorized, and questions were leaked in advance"*.[6]
- Despite the online Thanaweya Amma being an open-book exam, test takers in 2021 appear to have had concerns about how they would perform in this new version of the exam:

Student 1: *"The only positive thing in the new system is that we do not need to memorise the subjects [...] [but] I must fully understand the subjects with its minutest details and this is really very difficult as we are not used to these kinds of exams."*

Student 2 said that during the two trials of Thanaweya Amma exams the teachers themselves were providing students with answers that were different from the ministry's mark scheme booklets. *"Each of us answered the questions according to the way we understood the question, and it was not always correct."*

Finland – Desk research findings

End of year/final school exams

- In Finland, there are no exams before school leaving[1]. The 'Matriculation examination', the national test at the end of upper secondary education, has been gradually digitised since autumn 2016.[2]
- The first digital tests were held in the autumn of 2016 in geography, philosophy and the German language. The last test to become digital was the mathematics test in spring 2019. Currently, the test is fully digital nationwide and for all subjects.[3]
- In order to help upper secondary schools to practise for the digital exam, the Matriculation Examination Board has developed a digital course exam system, Abitti. It offers a complete process for arranging a course exam: creating the USB sticks for students and servers, authoring test items, carrying out the course exam on the local network and assessing the students' answers.[3]

National education assessments

- All of the national language tests have been administered online since 2019. Teachers can access them through a password-protected online portal.[4]

Abitti

The system is based on a Linux-based Digabi OS operating system. The teacher creates the exam on a web server (run by Digabi) and the answers are evaluated in the same place too. The teacher downloads and installs Abitti on the server and the students' client version on USB memory sticks. Before the test, the teacher boots their computer (server) with the USB and the students start their computers with the client USB. The student computer finds the server via ethernet/WiFi and students can answer the test questions. The teacher then collects the answers on a USB stick.[5]

Other trends

- In Finland, teachers can measure and analyse their use of information and communication technologies in teaching through the online self-assessment tool Opeka.[6]
- From 2016 to March 2019, around EUR23.8 million has been spent on 'tutor teachers'. The action plan aims to provide each comprehensive school (142) with competent tutor teachers. The main role of a tutor teacher is to support teachers in using digital technologies in teaching and promoting new pedagogical approaches.[6]
- Students report a higher use of their own digital devices (in general, not (just) for testing), particularly their own smartphone, compared to using computers provided by the school.[6]

France – Desk research findings

National education assessments

- No information was found about end of year/final school exams per se. However, at the beginning of the 6th grade (age 11-12) students are required to sit a series of standardised tests in French and maths, each lasting 60 minutes. These tests are online and adaptive.[1]

- Moreover, according to a National Foundation for Education Research (NFER) report, the transition to computer-based assessment (CBA) for national assessments appears to have begun in 2015 and, by 2018, the majority of primary/secondary tests were administered in this way (except primary science). The approach to marking depends on the type of assessment that has been administered:[1]

    - Sample-based national assessments use human (constructed response items) and machine marking (selected response items).
    - Full cohort national assessments use machine marking, as they only contain selected response items.

- Due to resourcing and infrastructure issues, two differing CBA solutions are being used: an offline model where tablets are taken into classrooms, assessments are taken offline and responses uploaded later (used in primary schools) and an online solution (used in secondary schools) where assessments are taken on school computers with responses uploaded instantaneously.[2]

- The NFER report also mentions that, in 2017, there was a large-scale pilot of an adaptive, onscreen French and mathematics assessment for grade 6 (age 11-12) pupils using the TAO platform. An extension was planned to grade 10 ('Seconde' age 15-16) in 2018. There is an additional focus on the use of Technology-Enhanced Items (TEIs), for example, items involving animations and simulations, and there is a collaboration with Luxembourg on TEIs in mathematics.[2]

- The literacy and numeracy part of the 'Positioning Test' appears to be digital. This is a standardised assessment at the beginning of the school year in the lycée [upper secondary school], which all students in the first year of the Certificate d'Aptitude Professionelle (CAP) and grade 10 ('Seconde', age 15-16) students of vocational training are taking. It is administered on a digital platform and consists of two 40-minute tests.[3]

Assessment records

- All pupils in France receive a *livret scolaire unique* – a school booklet – at the start of primary education (age 6), which is used to record two types of assessments:
    - Les Bilans Périodiques: Assessments of performance in each subject each term.
    - Les Bilans de Fin de Cycle: End of cycle (key stage) assessments.

- It follows the child through education and will pass from school to school. The assessments help to determine whether the child can move to the next cycle and ultimately contribute to the final qualification at age 15 (Troisième grade in college).

- The book has moved to a digital format on a national platform, which will be accessible by parents and guardians.[3],[4]

India – Desk research findings

End of year/final school exams

- Despite the pandemic, the 2021-22 exams for classes 10 (age 14-15) and 12 (age 16-17) were supposed to be held offline/on site. Students moved to the Supreme Court of India against this decision, arguing that the exams should be conducted in a hybrid mode – both online and offline.[1] The plea was later rejected by the Supreme Court.[2]
- In the end, however, class 12 (age 16-17) exams were cancelled, for the first time, due to COVID,[3], [4] and the Central Board of Secondary Education (CBSE) allowed schools to complete the pending practicals and internal assessments in online mode.
- This move to online seems to have been quite ad-hoc and not sophisticated. Schools were asked to take an on-screen photograph of the online meeting with the student, external and internal examiner as part of documentation.[4]
- As for class 10 (age 14-15), CBSE reportedly allowed schools to hold a one-to-one telephonic assessment with students who could not appear for any exams throughout the year.[5]

Other types of assessments

- As for the National Eligibility Entrance Test (NEET) for admission into the medical and dental university programmes, and the entrance test to Technology Institutes (IITs) across India, more than 1.9 million candidates downloaded e-admit-cards for online testing. The NEET and JEE exams consist of multiple-choice questions as well as open-ended questions.[6] Exams like the JEE have been offered online twice a year since 2019.[7]
- In general, the transition to digital exams at Higher Education institutions in India seems to have accelerated throughout the pandemic:

"At the beginning of the pandemic, institutes were doubtful about managing remote exams for students. Gradually, however, many institutes have quickly adopted the viable option of AI-enabled remote proctored exams to assess students. […] The most important improvement we have observed is quick result processing and flexibility in defining exam patterns with technology-driven exams."[8]

Niranjan Hiranandani, Provost, HSNC Uni

Barriers to Digital

- News articles discussing digital exams with people from the education sector mention the following, which are barriers particularly in rural areas of India:[9],[10]
  - Less connectivity.
  - Less devices.
  - Less awareness among teachers and students of how to use the technology.
  - Resistance to change among teachers.

"Our system has been comfortable with the traditional model of learning and evaluation, and are resistant to change. Another major challenge is that of infrastructure. Many schools and colleges do not have the infrastructure required to conduct online classes. It is imperative that investments are made to ensure a standard infrastructure is provided to institutions across the country. Finally, it is crucial that teachers and students are trained in using digital tools and platforms available to them to help them thrive in this constantly evolving world."[10]

Overall, the conclusion is that online exams are currently more possible in university than in the school setting.

India – Interview findings

Status quo

- India appears to be at the early stages of transitioning to digital assessments. They are still just beginning to buy/adopt digital technologies.
- They have also recently developed a new education policy, which allows 25-30% of classes to be delivered and assessed online.

Drivers

- The government of India seems to be a strong driver for transitioning to digital assessments.
- The Prime Minister is strongly in favour of digitisation and the government has even organised programmes/seminars between regulatory bodies and universities/schools to help address resistance to it.

Barriers

- The barriers suggested during the interviews reflected those identified during the desk research phase of the project, with the lack of digital infrastructure coming out as the biggest challenge.

Lack of digital infrastructure and the digital divide in India

"On a country level I think digital assessments are going to be extensively used in major cities but I think once we move away from big cities to smaller cities and towns it is going to become more and more difficult because of the extent of the penetration of the digital formats, the broadband and the tools and all the equipments that are required for that are not available every day. A big chunk of the population does not have access to even a laptop, only 11% of the students in India have access to a laptop … It is also a question of affordability, in some parts of India there may be students who don't even have a laptop but have a smart phone but the problem is there are four kids and there is one smart phone."*

Indian respondent

* This figure was fact checked. There is a 2020 opinion piece about the state of online education in India referring to Ministry of Statistics figures according to which "only 11% of households possess any type of computer, which could include desktop computers, laptops, notebooks, netbooks, palmtops or tablets".[1]

New Zealand – Desk research findings

Digital Assessment Transformation

- New Zealand is the only country researched for this report with a dedicated webpage detailing a 'digital assessment vision'.[1] This details 6 principles of this transformation, which are assessment integrity, accessibility and usability, adaptability, digital first, data as an asset, as well as Te ao Māori, the last of which seeks to establish the equity of national certificate of educational achievement (NCEA) outcomes for Māori and Pasifika students.

End of year/final school exams

- After completing multiple trials and pilots between 2015 and 2018 to gain better insight into how to transition to digital assessment, the New Zealand Qualifications Authority (NZQA) began a strategic partnership with RM to realise their digital assessment vision for moving the NCEA online. In the first two years of partnership, two-thirds of the NCEA exams were delivered digitally and marked online.[2]

Government support was offered for the following areas:[3]

- Practice activities showing students and teachers the features of NCEA Online.
- Digital device check for student compatibility.
- Digitised exam papers from 2020 – for the subjects available in 2021.
- Working with school leaders to help them assess their readiness for NCEA Online.
- Working to help school leaders and their IT support people to assess their readiness.
- Providing Exam Centre Managers and Supervisors with the knowledge and skills to administer digital exam sessions.

Literacy & Numeracy digital evidence tool

- In April and May 2017, NZQA piloted the Literacy and Numeracy Digital Evidence Tool (LiNDET). The intention of this was to provide information on the effectiveness (validity and usability for assessors) and scalability of online assessment for the literacy and numeracy unit standards with the ultimate aim of implementing a fit-for-purpose online tool towards the National Certificate of Educational Achievement (NCEA).[3]

- Results show, among other things, that over 90% of assessors reported taking the same time or less for collecting learner evidence, making assessment judgements and for internal/ external moderation processes.[4]

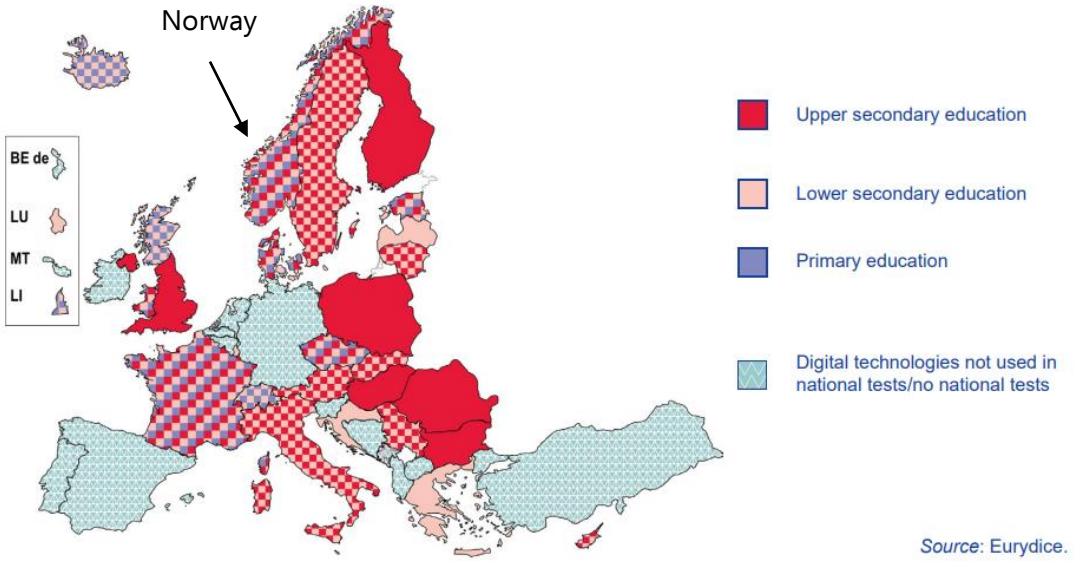
Norway – Desk research findings

End of year/final school exams

- No information based on country-specific sources was found about high stakes exams at the school level. However, an EU report from 2019, comparing digital education in schools across Europe, suggests the following:

- Technology-supported national tests for the assessment of individual students are administered across all education systems and for a wide range of subjects. According to this report, it seems that only on-screen testing is used for this, not adaptive testing.[1]

Figure 3: Use of digital technologies in national tests, primary and general secondary education (ISCED 1-3), 2018/19



Source: Eurydice.

Latest news

- In February 2022, the authorities decided to cancel written and oral spring exams again in junior high schools and upper secondary high schools – due to the COVID-19 pandemic. The government decided to follow the recommendation from the Directorate of Education.[2]

- Also, exams could become a thing of the past for Norwegian pupils after the country's education directorate said that it would assess the current system and explore the possibility of alternatives.[3]

Other findings

- In Norway, specific digital competence tests are administered. However, these are not compulsory and schools decide whether their pupils participate. Moreover, the testing does not have implications for students' future schooling and is generally considered to serve only as an indication of students' digital competences and as a source of information for teachers, parents and the children themselves.[1]

- Norway's Directorate for Education and Training cooperates with initial teacher education institutions to ensure the relevance of teachers' competences, and it manages online platforms, providing tests, exams and digital learning resources, among other responsibilities in the field.[1]

Philippines

End of year/final school exams

- From the information found it appears that these have not moved online yet.
- An online article suggests that this has to do with a lack of digital infrastructure and concerns about digital assessment. Schools are still facing problems such as insufficient equipment or connectivity and inadequate technology training of staff. It is also reported that there is some resistance to change and fear of technology.[1]
- A 2021 study with college students about problems encountered in online assessments during the COVID-19 pandemic seems to confirm these reports. It found six themes of problems encountered:[2]
    - Incompatibility of browsers.
    - Anxiety over tracking tools.
    - Unstable internet connections.
    - Electric power interruptions.
    - Distractions in the environment.
    - Unknown accessibility issues.

Other types of assessments

- Philippines digitised their Bar exam for the first time in 2021. According to an online article, exam applications were accepted via an online application system and exam takers were able to download the computer software to be used during the exams. However, the exams were not taken remotely. It is reported that surveillance cameras were supposed to be installed in all testing rooms.[3]
- After this first attempt, Chief Justice Alexander Gesmundo said that the Supreme Court would pursue a computerised format for all subsequent Bar exams.[4]
- Apart from the Bar exam, the National Medical Admission Test (NMAT) was also digitised during the pandemic. The Center for Educational Measurement (CEM), which administers this test, worked with Mercer | Mettl to transition the test to an online platform.[5],[6]
- In a YouTube video by Mercer | Mettl, a representative of CEM explained more about the process of putting the NMAT online:

Singapore

End of year/final school exams

- In 2018, on-screen marking was implemented for the written papers of 4,261 students sitting the GCE N(T)-Level Basic Mother Tongue Language (MTL); for 2,162 students sitting the GCE O-Level MTL Syllabus B (Mid-Year & Year-End); for 533 students sitting the GCE O-Level MTL Literature; and for 369 students sitting the GCE A-Level MTL Syllabus B (Mid-Year & Year-End).[1] GCE A-Levels are for students aged 17 and GCE O –Levels translate to grades 7-10 (ages 14-17).

- According to a National Foundation for Educational Research (NFER) report, the Singapore Examinations and Assessment Board (SEAB) was planning to extend use of computer-based assessment to GCS N-Level English in 2019 and O-Level English in 2020, with some piloting having taken place. However, there was no further information found as to whether the extension plans have fully materialised.[2] Meanwhile, feedback from students in the initial pilots has been positive, particularly emphasising student enjoyment of the 'authentic nature' of the examination.[2]

- SEAB has worked with Cambridge Assessment since 2015 on the transition to e-Marking; previously hard-copy examination scripts were sent to the UK for marking. In 2018, approximately 65% of all GCS-level scripts were marked by human graders onscreen.[2]

- There are plans for coursework also to be digitised. There will also be developments to include more in-depth information about the implementation of on-screen marking for high-stakes assessments. Implementation for maths, science, mother-tongue languages and social studies is mentioned specifically.[3]

- Research suggests schools and students are not ready for this change yet, largely due to concerns over disadvantaging students with less access to technology.[4]

Feedback from teachers using online marking

"The wow factors include onscreen annotations, The best part is that it is easier to mark this way, as compared to previous years where a lot of scripts have to be passed on from one marker to another, which results in a lot of waiting time. Everything from the reference materials to standardization scripts can be easily accessed in one portal, which is very impressive. It is a really unique experience and I am happy to participate in it." [3]

Marker for SPLE Higher Chinese

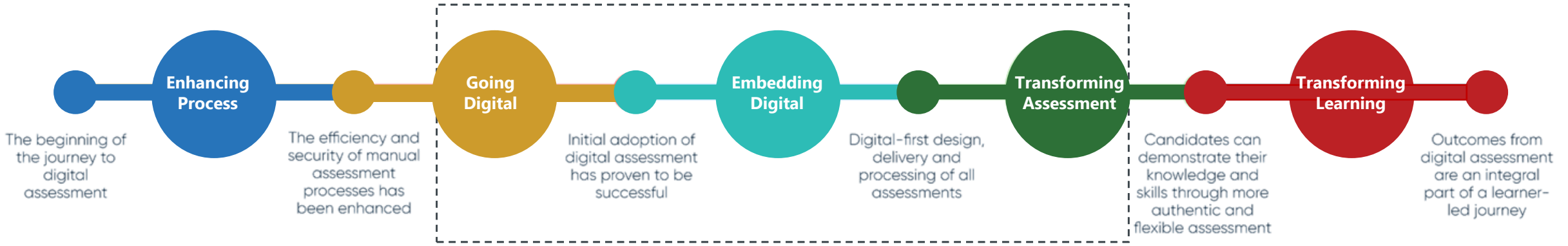
The following shows the implementation progress of onscreen marking locally since 2017.

ORGANISATIONAL INSIGHTS:

The journey towards digital assessment

Where are organisations on their journey towards digital assessment?

As part of the interview, we presented a stimulus that tried to break down the journey towards digital assessment and asked interviewees to pinpoint where their organisation and/or the organisations they're working with were located.



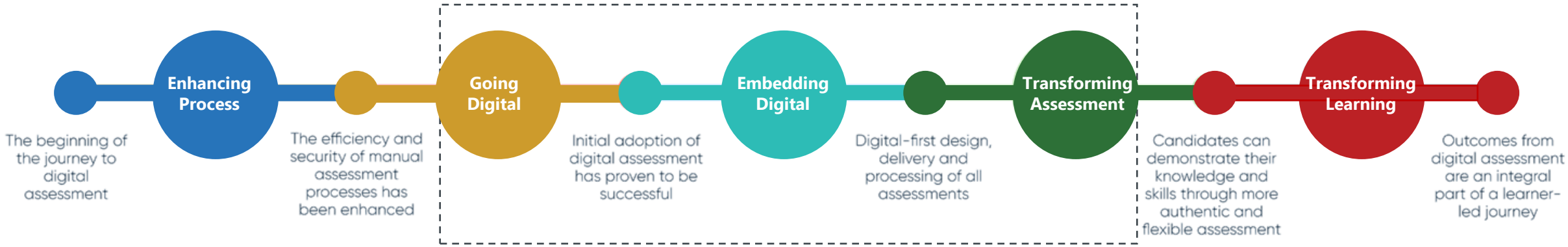
Some interviewees struggled to pinpoint their organisation on this diagram. They liked the idea of distilling and simplifying the journey towards digital assessment into different phases, but noted that this classification into phases is quite artificial given the complexity of most businesses. For example, an organisation might be quite far along the journey towards transforming assessments or even learning with one part of their offer, but only in the process of embedding digital for another.

4 interviewees said their organisations were in the embedding digital (Blue) stage, 2 said that they were in between that and transforming assessment (Green), and 1 was a bit more conservative, stating that their organisation was just starting to go digital (Red).

> *"I like the representation of it, but [it's tricky]. The reason being that we already have onscreen marking of paper exams, but because of the nature of the environment within which we work, we have learning management systems that we use, so we're definitely beyond the beginning of it. We are piloting digital content creation in a variety of subjects, using a digital first approach."*
>
> **UK respondent**

> *"I work with a number of organisations and for me they are probably between the blue and the green, so they have already trialled something [...] and they may be on their second or third supplier at this stage, so they have already embedded but the debate that they're having with people like me is to say, 'That's fine as far as it goes but we want a greater understanding of our learner population, we want to understand how it segments, not just across our qualifications, but what does it look like per country, regions in that country, within cities?"*
>
> **UK respondent**

Where are organisations on their journey towards digital assessment?



Proctoring remotely & building a larger item bank

"So until just recently we only had a test centre certification, so that was the certification from the actual centre itself, and that right now is a 100% paper based process that takes about nine months. We started a person based assessment and given the fact that we're all proctors and across the globe that will be only digital assessment ***and it will be delivered remotely. As far as the test itself it is going to have a larger item bank but it is not going to be computer adaptive at this point."***

US respondent

Doing synchronous high-stakes assessments online

"For high stakes, we definitely are in an ***evaluation phase for wanting to consider going online****. We've looked at what other jurisdictions are doing, and one of the big challenges for Victoria is that it is a large jurisdiction dealing with a large cohort of students. For our high stakes, we're still dedicated to doing synchronous assessments, so all of the kids in the state sitting them at the same time."*

Australian respondent

Getting more creative with different question types

"Then we would hope to start changing the types of questions and the specific outcomes that we can assess through the online platform and get a little more creative with it. ***Right now we feel like we are only scratching the surface of what a digital platform can provide for our students*** *and what types of questions and what types of outcomes we can address."*

Canadian respondent

SUMMARY & MAIN THEMES

COVID is a driver of change .. but this is just the beginning

"The … thing that happened because of the pandemic is the process of digitisation itself came very, very fast and everybody was trying to find ways of doing it digitally."

Indian respondent

"I really think that we are so frankly in the infancy of digital assessments."

USA respondent

"We have just dipped our toes in easily and essentially created a digital version of our paper assessment."

Indian respondent

Summary / main themes

- Although there are **pockets of progress** which are either influenced by culture, immediate necessity or desire for efficiency, there doesn't appear to be a drive to breakout of the typical assessment cycle unless there are easy wins.
- **Infrastructure or a lack thereof** was most often cited as the biggest barrier towards full digital assessment – from reliable connectivity in more rural areas to having sufficient devices assuming candidates would still need to sit digital exams concurrently.

- Whilst some interviewed gave examples of the potential for digital to transform assessment – such as through asynchronicity or ultimately replacing the need for high stakes summative exams altogether – there was a common assumption that, at least initially, a move to digital assessment would **simply involve 'lifting and shifting'** current processes and practices from paper to digital.

- The fact that this lifting and shifting, as well as the digital divide and ICT skills were concerns suggest that there is both a **lack of awareness for the potential for digital assessment and potentially a lack of will to start the process of change/ transformation.**

- Overall, from what the research can gather, the digital assessment landscape is a **patchwork quilt**. Nothing can be generalised and everything is very specific to countries or even regions and education stages (depending on the way in which individual education systems work). But it seems clear that digital assessment **requires the right culture, opportunity, lack of resistance**, and determination.

THANK YOU