On-screen exams: what school leaders, teachers and students think

Foreword

In one particular aspect of education, it's already clear that the pandemic will prove to be a watershed: on-screen assessment.

At the start of 2020 you could be confident that politicians and policy-makers in England would have been opposed to digitally-delivered GCSEs and A-levels. Teachers and school leaders would have been broadly sceptical, too – focussed mainly on the perceived barriers rather than the potential benefits.

No longer. This report, commissioned as an independent piece of research into teachers' and school leaders' post-pandemic views on introducing on-screen exams, emphatically demonstrates a profound change: most professionals regard the shift to digital as not only 'inevitable' (a word that frequently came up in research interviews), but also desirable.

Head teachers and multi-academy trust leaders are moving their attention to the gains, and beginning to think practically about what obstacles will need to be overcome. The main reason they give is echoed by students: that digital is how pupils will work beyond school, so why not get on with it now?

Our view at AQA is straightforward. We believe that enabling some topics in some subjects to be examined on-screen creates a real opportunity to extend the range of ways we assess students. However, we do not believe everything should be assessed that way. Indeed, not everything is examined using pen and paper today: art work, drama performance, science practicals, spoken language, are all assessed in other ways already. Digital should be just another tool we add to our bag. Indeed, we don't believe pen and paper should be abandoned wholesale in any foreseeable future.

This move cannot be achieved merely by heaving on a great technological lever that transforms exams overnight. That would be a bad idea, even if it were possible. We need to spend time – several years – trialling and piloting on-screen exams.

We believe the next two to three years could be spent working out the best mode of delivery, which challenges we need to address, and how best to move to national introduction of the first GCSEs and A-levels to be delivered online (although students will in fact probably sit them 'offline'). Then students will need to start their GCSE course knowing that they're going to be examined digitally, so that they and their teachers can prepare accordingly, which adds at least another couple of years.

That way, we can carefully evaluate whether on-screen exams will be more secure, more adaptable, cheaper in the long run, greener, more easily and accurately marked – even fairer. So no 'big bang', nor any misplaced messianic fervour. Instead we should choose certain topics in certain subjects, ones that are particularly amenable to on-screen assessment, and nail down what works, and what doesn't.

To that end, AQA has already begun piloting GCSE on-screen trials in schools: we'll be publishing the outcome of the first round in September, with more trials to follow. For now, this report demonstrates that the time has arrived to begin testing the questions we know will need answering before this exciting evolution of our assessment system can unfold.

Colin Hughes
Chief Executive, AQA

July 2022

Introduction

The digitisation of examinations in England has been in debate for over a decade.

Some countries have already taken the leap. In Finland, examinations have been digital since 2019; in New Zealand schools have the choice of digital or traditional exams; in Wales, key stage tests are digital; countries such as Singapore have conducted trials.

The pandemic made digital technology central to school education in a way that it has never been before. The resulting tech investment combined with rapid changes in the use of digital technology significantly changed the habits and attitudes of senior leaders, teachers, students and parents.

Politicians from all the three main parties have started actively discussing the potential for digital examinations.

It seemed the right time to understand what the education profession, students and parents feel about the possible digitisation of examinations.

So, in 2022, AQA embarked on the research programme that informs this report – interviews with over 120 head teachers, senior leaders, technologists, students and parents across England and around the world. We commissioned a survey of 3,816 secondary teaching professionals with Teacher Tapp to ensure our qualitative findings fit the broader professional view.

We would like to thank everybody who gave up their time to contribute to the project.

We hope they feel that the report is a fair reflection of their views and that it brings fresh, up-to-date insight to inform the policy debate.

6 Key Findings

1

Three quarters of teaching professionals believe the digitisation of examinations would be positive, provided challenges are addressed

A significant majority of teaching professionals are in favour of change. 75% are in favour and 16% against, while 9% don't have an opinion.

81% of Head Teachers surveyed feel that digitisation of examinations is inevitable.

Among Head Teachers and Trust Leaders interviewed in person, 85% consider digital examinations a positive move if implemented effectively.

2

A timescale for implementation of 4 – 5 years

In interviews, senior education leaders feel that a sensible timescale from announcement to implementation of digital GCSEs or A levels would be 4 or 5 years to give sufficient time for effective planning, student preparation and implementation.

Our survey suggests the profession is ready for change over this timescale. 85% of those surveyed believe the first examinations could be successfully implemented in 5 years or less.

3

Infrastructure in schools is a major challenge

Many senior leaders in interviews are positive about digital examinations but concerned about how they could be implemented within the constraints of current school infrastructure, both physical and digital.

In the survey 87% of teaching professionals agree that school infrastructure would need upgrading; 62% strongly agree.

Inequality: home access must be addressed for the change to be fair

Some schools are far better prepared for on-screen examinations than others. If infrastructure issues can be overcome teaching leaders believe digitising examinations will enable considerable positive change within schools.

Equalising home access is a greater concern, particularly among teachers and senior leaders working in schools in the least well-off quartile of schools. 50% strongly agree that their students won't have sufficient home access to technology. This contrasts with 6% of those working in private schools in our survey.

A national project

The digitisation of examinations would be a change programme on a national scale with implications for both home and school learning.

Most senior leaders believe that the project should be a national one, led by government, coordinated to bring benefits to schools and students across the country. Many described this as a project that can and should 'level up' educational opportunity across the country.

Senior leaders cannot see the project being delivered successfully without a mandate from central government and the support of targeted funding.

A staged introduction is the favoured approach

Senior leaders we spoke to suggest five broad approaches to introducing digital examinations. This is not a comprehensive list of options.

However, most are clear that the introduction of digital examinations should be step-by-step to make the risks manageable.

They propose that the first digital examinations should be in subjects with smaller numbers of candidates, in subjects technically easier to deliver. The programme would then be rolled out to include a wider range of subjects as challenges are overcome and the effectiveness of digital examinations is shown.

There is a roughly even split between senior leaders who feel that all examinations could go digital and others who foresee a mixed economy of digital and print and paper examinations.

A Clear Direction of Travel

Is the digitisation of school examinations 'inevitable'?

'Inevitable' or similar words were used, unprompted, by many of the senior leaders interviewed. The more senior, the more likely they are to believe that, despite the challenges, the digitisation of examinations is bound to happen.

The questions they focused on are 'How?' and 'When?'

This view is largely reflected in the quantitative survey of 3,816 secondary school professionals carried out on AQA's behalf by Teacher Tapp.

64% of all teaching professionals and 81% of Head Teachers believe that a move towards digital examinations is inevitable.

"My kids are at university or beginning careers and digital technology is central to their lives and their futures. I can't see how, in say 2030, our education system will ask students to take all their examinations using a pen and paper."

Trust Head

"Like it or not, examinations influence how and what we teach. Schools can't become disconnected from what's happening in the outside world and the world is digital."

Head Teacher, South

"When we introduce our students to examinations and explain they will write continuously for hours on end, they ask us 'Why? When are we going to do that again?' I struggle to answer. I can't remember the last time I wrote with a pen for ten minutes continuously."

Deputy Head, North

Exhibit 1. Do you believe a move towards digital examinations is inevitable in England?
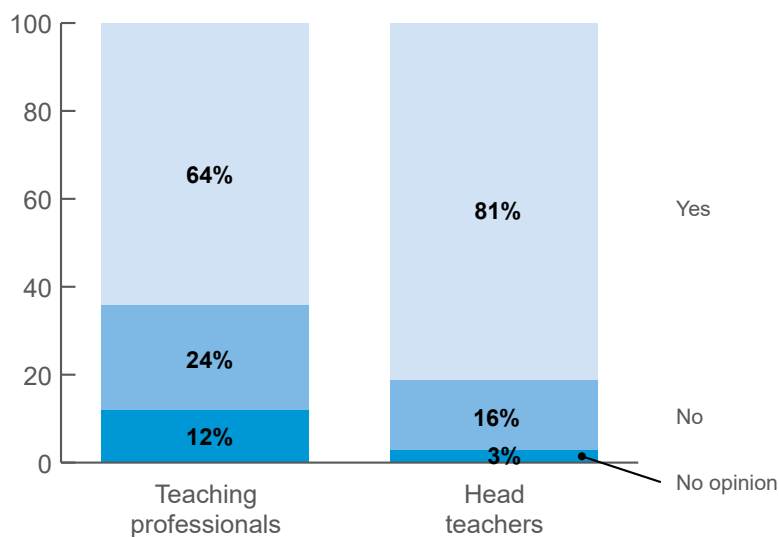
Source: Teacher Tapp 5/5/22 Created with Datawrapper

Our discussions about the digitisation of examinations assumed that paper and pen examinations would be replaced by answers input into a laptop or similar device.

There was a general expectation that the examination experience would evolve to become a richer one with, for example, real archive documents in history, digital mapping in geography and the use of relevant applications.

The focus of examinations and pedagogy would not necessarily change, though there was much discussion over whether evolution would or would not be a good idea.

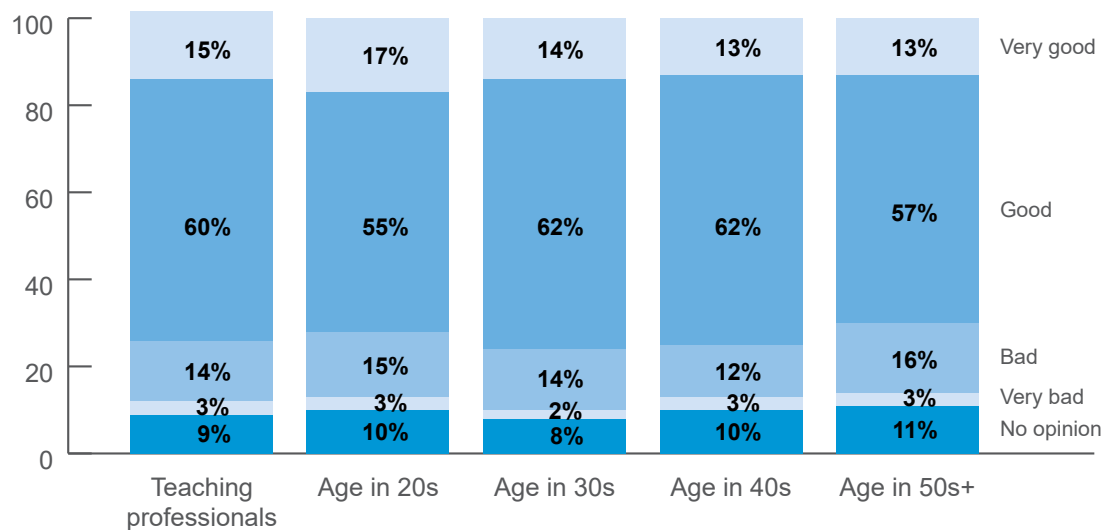Five themes persuade senior leaders of the need to start planning a move towards digitisation of examinations.

1. Flexible digital skills are ever more important in the world of employment. senior leaders referenced several sources: Oxford Economics predicts that advanced digital skills will be required for 75% of jobs by the end of the decade. The OECD stresses the need for digital skills in its Employment Outlook reporting. McKinsey and BCG reports were also referenced.

2. Digital skills are central to higher education courses. Many felt that schools could prepare students better for what is currently a significant leap for many students. There was concern that state funded schools are falling behind private schools in this area.

3. Digital is so central to students' lives, to how they research, learn, and think. Many teaching leaders felt examinations could not remain static amidst such fundamental change and to do so would have a negative effect on the ability of students to demonstrate their abilities in summative assessment.

4. The aspirations of their students are increasingly focused on digitised professions.

5. The digitisation of examinations would be a major change management project that takes several years to be planned and then implemented. Given the timescales of change, it could easily be the end of the decade before digital examinations are being introduced. So, they argued it was important to start the process of change.

If summative examinations remain pen and paper-based leaders did not feel that education standards would be damaged. Their concerns were that school would be perceived less relevant to an increasing number of students, that the education system would become detached from modern realities and that the system would be closing a door to a significant area for education innovation that influences wider teaching behaviours.

In the survey (see exhibit 2) of 3,816 professionals, 75% are positive compared to 17% against.

Senior leaders were concerned that older professionals would be against change but as you can see, there are only small differences by age with 19% of professionals over 50 years of age opposing digitisation and 70% in favour.

Exhibit 2. If the challenges were addressed effectively would introducing digital examinations be...

	Teaching professionals	Age in 20s	Age in 30s	Age in 40s	Age in 50s+	
Very good	15%	17%	14%	13%	13%	
Good	60%	55%	62%	62%	57%	
Bad	14%	15%	14%	12%	16%	
Very bad	3%	3%	2%	3%	3%	
No opinion	9%	10%	8%	10%	11%	

Source: Teacher Tapp 5/5/22 Created with Datawrapper

85% of our interviewees were positive about a move to digital examinations. It is probably inevitable that busy professionals interested enough to give up their time to speak about digitisation tend to be more positive.

4–5 Years from Planning to Introduction

Senior leaders are good at planning.

In interviews they take an analytical approach to deciding what would be a sensible timescale for the implementation of on-screen assessment.

Their thinking is similar across school type and geography. The major differences are defined by the technology and infrastructure readiness of their schools, their level of belief in government planning and confidence in the financial support they felt would be required, including for equalisation of home access.

Most think that 4-5 years from announcement to the first wave of digitised GCSE examinations will allow enough time to:

- Upgrade school infrastructure.
- Implement a programme to ensure acceptable levels of home access for all students.

- Understand the teaching implications of digital examinations and evolve teaching approaches.
- Prepare the first cohort of students for digital examinations – developing typing and editing skills for example – and to normalise the concept.
- Integrate digital examinations into end-of-term school examinations to prepare both students and school staff for the new experience.

Exhibit 3 shows that in our quantitative survey 85% of teaching professionals feel the first digital examinations could be introduced in 5 years or less. In a quantitative survey, respondents have probably not thought through the implications in such detail, but this demonstrates the willingness of the teaching profession to implement change within the 4–5-year timescale.

Case Study: Finland – where examinations have gone digital

"The task took 6 years. It was a big project and a difficult project. There were big dangers that it could go wrong. The project was not just about technology. Half the project was about communications, about training and about involvement. If you are going to do this sort of change, you have to believe in communication."

Kaisa Vähähyyppä, Project Leader

In 2012 the Finnish government took the decision that its examinations should go digital, driven by the government's desire for the population and the education system to embrace digital technology.

A major change management and digital development programme began built around a small, dedicated team combining educationalists and developers.

The team consulted and communicated widely with schools, teachers, students, parents, the public and the media.

The team did not have a set deadline but introduced the first digital exams in 2016 for subjects with lower candidate numbers. They were then extended to more subjects each year until all examinations turned digital in 2019, mathematics being the last to change.

Though there was debate leading up to the introduction, the process seems to have been smooth and on-screen examinations are now the accepted means of assessment.

Finland's examination structure is different from the UK in that examinations only take place at the end of school at the age of 18 and examinations take place in fewer subjects than in the UK. There are no GCSE equivalents.

Exhibit 3. What would you consider a sensible lead time for the introduction of the first digital examinations at GCSE or A level?

	15%	26%	16%	28%	11%	3%
	2	3	4	5	6 or more	No opinion
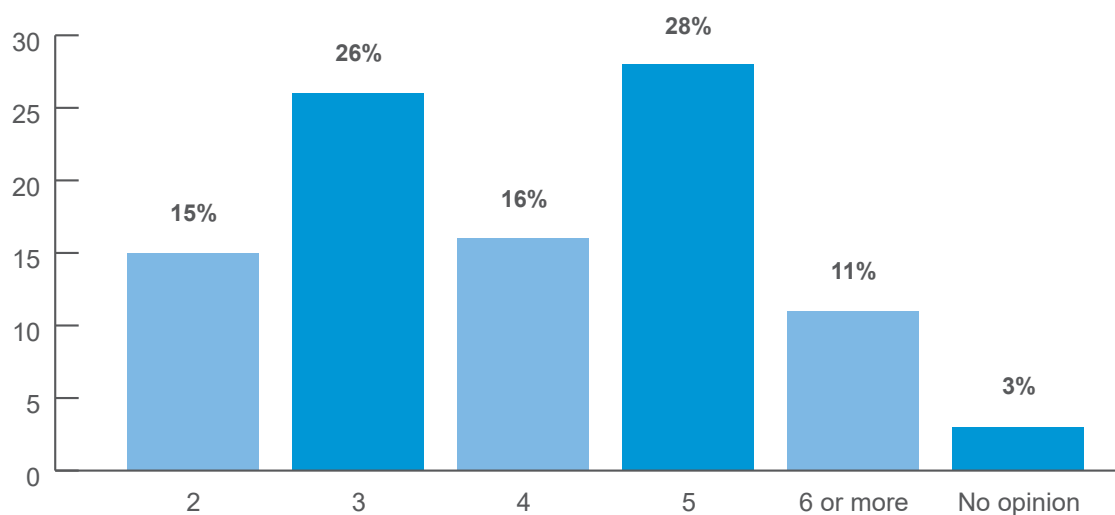
Source: Teacher Tapp 5/5/22 Created with Datawrapper

This can-do attitude echoed through the interviews.

"Change, often in unrealistically short time periods, is what we do. It would be good if this time it could be done with a more sensible timescale since I fear it would be the least advantaged that suffer from rushed change."

Trust Head

The Reasons for Change

"Education, teaching, and assessment must, in time, reflect the rest of life. Without digital change assessment will diverge and examinations have deep influence over what and how we teach."

Deputy Head, South

Alignment with the evolving digital world is the central reason senior leaders give to support the digitisation of examinations.

Many also make a broader point about introducing digital exams: pen and paper creates significant restrictions on the nature of the questions that can be created and means that examinations have not evolved significantly in a generation. A move to digital creates the opportunity for significant innovation to begin.

In the words of one Head Teacher:

"Our school has taken huge strides digitally during the pandemic. What we have learnt materially improves the way our school now operates. I can suggest a few benefits that I would expect from digitising (exams) but I bet there will be many more that will only be discovered by doing."

We asked the views of the wider teacher base about five of the more specific benefits highlighted by teaching professionals in the interviews.

Exhibit 4. Views on potential benefits of digital examinations
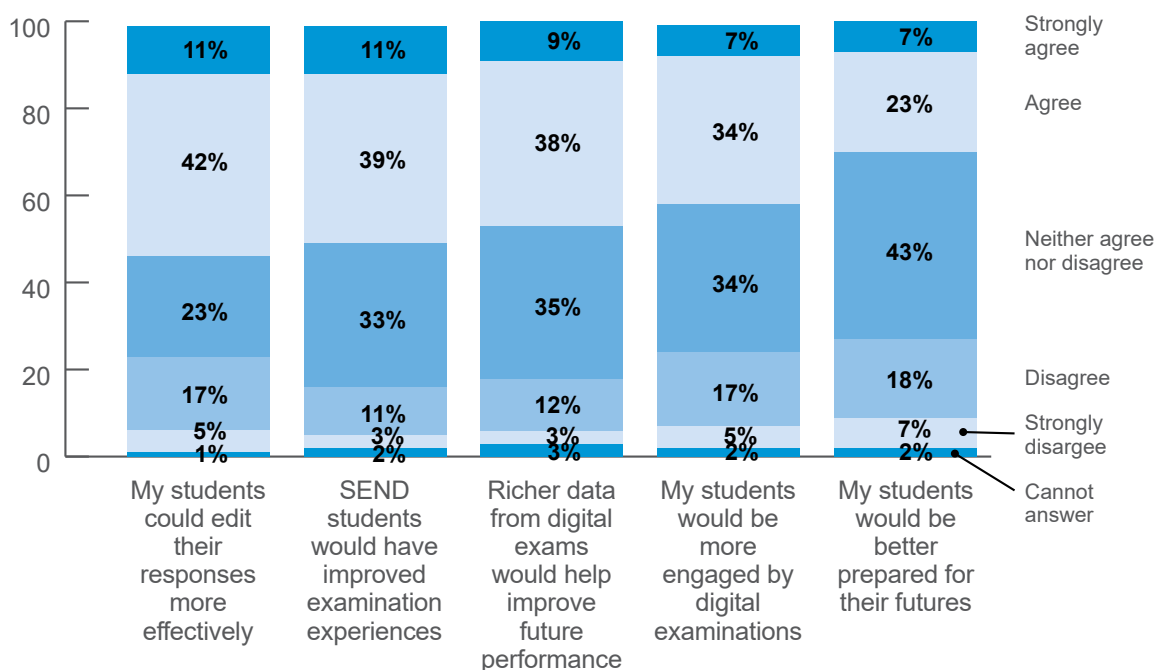
Source: Teacher Tapp 5/5/22 Created with Datawrapper

The two benefits rated highest in the survey – allowing students to edit their answers and improving the exam experiences of SEND students – were also those highlighted most often by senior leaders with experience of digital examinations in New Zealand.

Many students are used to writing and editing on a computer. This is how they structure their thoughts, and their responses tend to be improved as a result. Those who haven't developed these skills understand that they are important ones to have and feel that by learning they will be able to improve their results.

"**I can type a bit and know how to cut and paste but I haven't done it much. It's something I need to learn, and this would make me do it… it will be more useful than writing with a pen for hours.**"

15-year-old student, Yorkshire

The expected benefits for SEND students come in two forms: varied forms of technology enable students to better demonstrate their understanding and learning; and when all students have the choice to take digital examinations as is the case in many New Zealand schools, SEND students are no different from the rest of the cohort.

Improved data feedback was considered equally important in the interview responses. Test data is actively used within many schools to help improve outcomes and most senior leaders interviewed felt data from GCSE and A level examinations would be a powerful factor in targeting improvements.

There is a strong precedent for this sort of data-driven intervention from national examinations. In Massachusetts, data is collected annually in state-wide examinations and made available to schools and academic institutions to support school improvement. These examinations are mostly carried out digitally. Schools use the data to make better decisions and bid for funding. This approach is credited with helping significant performance improvements. Massachusetts now ranks highly in international PISA comparisons, well ahead of the performance of the United States as a whole.

Cost savings and organisational benefits are also expected from digitisation. Examinations are a significant cost for schools and leaders expected savings because of economies from digitisation. Reduced paper usage, lower environmental impact and a smoother, simpler, more secure administrative process were also mentioned.

There are more controversial potential benefits supported by some senior leaders but rejected by others.

Some senior leaders believed on-screen assessment should, in time, enable marking using artificial intelligence. They argued that this could be more accurate and less subject to human biases. Others were against such change.

The most vociferous debate was whether all students should experience the same examinations or whether adaptive examinations might be introduced, intelligently delivering different sets of questions to reflect the ability level of the students taking the exam. Some argued in favour: students could better demonstrate what they can do and avoid the demotivating experience of facing examinations they are unable to deal with. Others rejected this as 'dumbing down', a 'race to the bottom' or impractical in delivering reliable, comparative grades.

The Challenges

"I am positive about the concept... but the practical logistics and the constraints of our buildings swamp my mind."

Assistant Head, South West

"Digitising exams will be a national change management project. It is the next wave of significant change in my opinion but will need some excellent national planning."

Trust Head

"Implemented well, this will be a modernising step that benefits schools and students. But implemented badly it could be very divisive, giving yet greater advantages to the better off and to private schools."
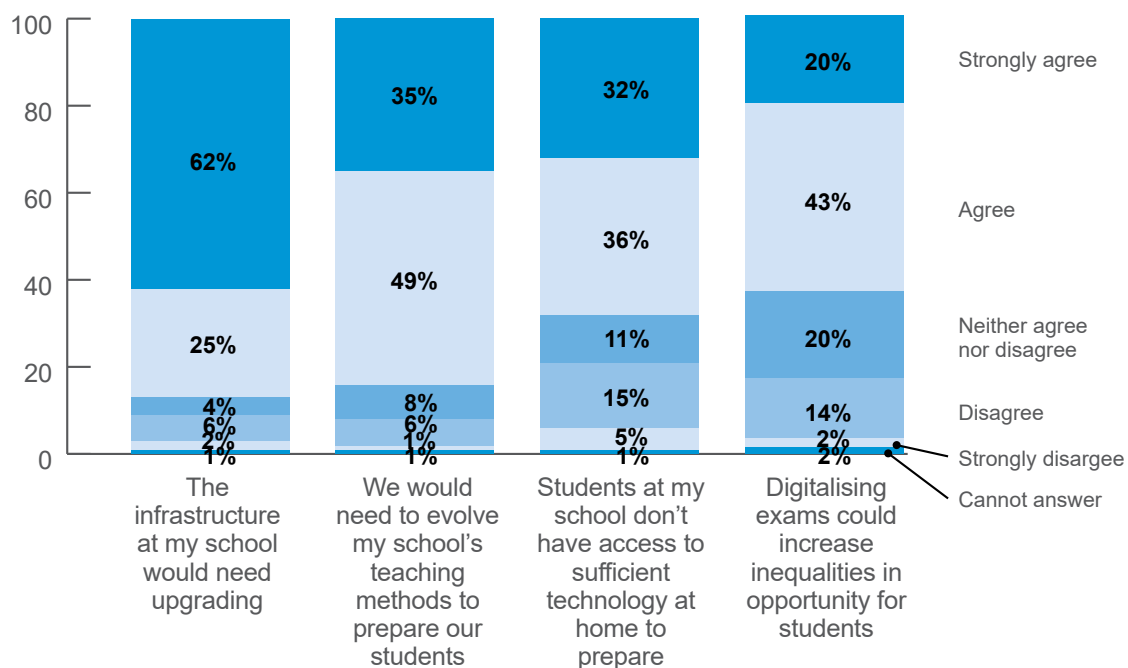**Head Teacher, London**

The challenges to the implementation of digital examinations are significant and cannot be avoided.

Several senior leaders' often-enthusiastic support was dependent upon a clear programme to address the challenges.

Almost universally, senior leaders assumed that this must be a government-led, national project that establishes clear technology standards, expected levels of accessibility and a national programme of implementation supported by targeted funding. Only this way did they feel change could be carried out successfully and fairly.

Exhibit 5. Concerns about digitising examinations

The infrastructure at my school would need upgrading: Strongly agree 62%, Agree 25%, Neither agree nor disagree 4%, Disagree 6%, Strongly disagree 2%, Cannot answer 1%

We would need to evolve my school's teaching methods to prepare our students: Strongly agree 35%, Agree 49%, Neither agree nor disagree 8%, Disagree 6%, Strongly disagree 1%, Cannot answer 1%

Students at my school don't have access to sufficient technology at home to prepare: Strongly agree 32%, Agree 36%, Neither agree nor disagree 11%, Disagree 15%, Strongly disagree 5%, Cannot answer 1%

Digitalising exams could increase inequalities in opportunity for students: Strongly agree 20%, Agree 43%, Neither agree nor disagree 20%, Disagree 14%, Strongly disagree 2%, Cannot answer 2%

Source: Teacher Tapp 5/5/22 Created with Datawrapper

School infrastructure was the biggest concern in the quantitative research, followed by the importance of evolving teaching methods as you can see in exhibit 5. The quantitative questions asked respondents to think about their own school and students so there was a natural bias towards directly personal concerns.

In interviews, the risk that digitisation of examinations would increase inequality held the same level of importance. Overall, 68% of teaching professionals agreed that students don't have sufficient technology at home to prepare for exams.

This is a concern that is accentuated in schools that are in less-well-off areas and in schools that are already performing badly. When responses are split into quartiles by the affluence of their

catchment area, as shown in Exhibit 6, you can see that 86% of professionals working in schools in the lowest quartile in terms of affluence are concerned. Concern is still significant in the most affluent quartile, at 61%.

Teaching professionals made clear that digitisation of examinations could reduce inequality of opportunity if implemented effectively. They felt there is already a digital divide that influences the educational outcomes of students. If technology access and usage in schools and at home become more equal through a national programme, this could be very positive. They sought reassurance that there would be the planning and resources for equalisation of opportunity.

Exhibit 6. Students at my school don't have access to sufficient technology at home to prepare for digital examinations
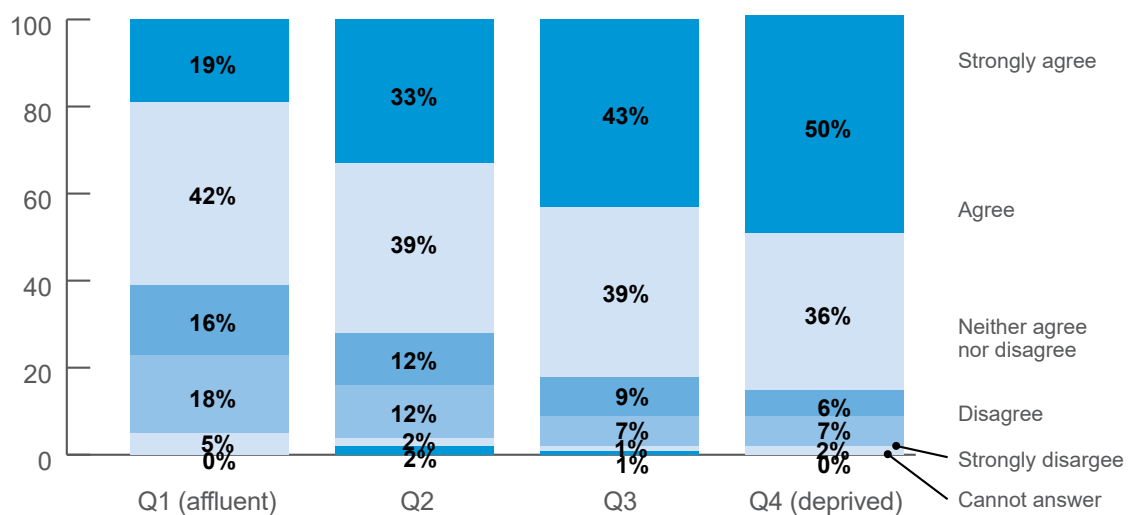
Source: Teacher Tapp 5/5/22 Created with Datawrapper

Let's look at the concerns raised in more detail

School infrastructure

Schools are at very different levels of preparedness in terms of infrastructure and technology. Technology has been a strategic priority for some but not for others.

Senior leaders in some schools have few concerns. They have sufficient physical space, robust, flexible technology infrastructures, and many suitable laptops (even if they would need to

make additions). These schools tend to be more modern, but this is not always the case. They describe practical challenges such as the number of plug sockets and some space challenges but are confident that digital examinations could be implemented with good planning and limited investment.

Other schools and 6th form colleges are in a very different situation.

The logistics of large numbers of candidates (over 500 at one time in some schools and colleges) and limited space are intractable problems for some large schools and colleges. Having sufficient space to avoid cheating and allow acceptable examination supervision are huge challenges for such institutions before the additional issues of plug sockets, laptop availability and reliable wi-fi are faced.

Solutions are suggested. Creating examination banks that allow students to take the same examinations at different times with different questions set at the same level is a possibility. A number of smaller technology work-arounds were also suggested but there isn't a silver bullet solution.

Senior leaders asked for a national programme with clear standards and expectations, a well-communicated change management programme to spread best practice and find common solutions, supported by targeted financial support for the schools facing the greatest challenges.

Equality of opportunity

Establishing and implementing national standards for the technology available in schools required to facilitate digital exams is one element in equalising of opportunity.

The other, emphasised by teaching professionals across public sector schools, is providing equality of access to students in their preparations for examinations.

OFCOM's media usage and attitudes report data (March 2021) suggests that, during the pandemic, 90% of 12–18-year-old school age children had access to an appropriate device in the opinion of their parents. Amongst 12–15-year-olds, 94% had access to a fixed broadband connection but the remainder were reliant upon a mobile signal or did not have access. This data may be skewed positively since it is based on an online survey.

Estimates from teaching professionals interviewed on the proportion of their students without suitable online access and technology ranged from 2% to 15% of their students.

Clear minimum technology standards

To make digital examinations as egalitarian as possible, senior leaders ask that central government should set clear minimum standards for school and home access to technology well in advance so that they can plan effectively.

Communication not just with schools but also with parents and students would be essential, together with a programme to support less-well-off families in accessing the baseline of technology required to prepare effectively for examinations.

Evolving teaching approaches and preparing students

Both students and teachers would need to learn new skills in the preparation for on-screen examinations.

Most senior leaders felt that 4 years from initial announcement to the first digital exams would be required to prepare students effectively, embed new teaching approaches and normalise the concept of digital examinations for students. Support from central government in communicating best practice would improve outcomes.

Banks of test questions in similar formats to the final examinations would need to be available for internal school examinations and other test exams.

These proposals echo the approach taken by Finland during implementation with regular communication to and involvement of school leaders and a programme of education and training across the country led by teacher advocates.
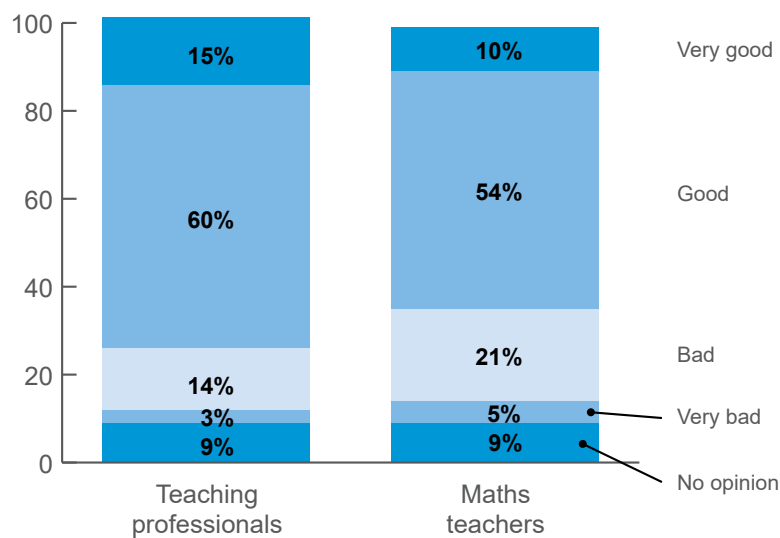
A common delivery platform

Administering exams has many moving parts. It is important to keep the processes as simple as possible.

Senior leaders were keen that there is a single platform and process to follow in the administering of digital examinations.

The maths issue

Across the world, maths teachers tend to be the more sceptical about digitisation. As you can see in exhibit 7, the same is the case in England but seemingly to a lesser extent than in other countries.

Exhibit 7. If Challenges were addressed, would introducing digital examinations be...

	Teaching professionals	Maths teachers	
Very good	15%	10%	
Good	60%	54%	
Bad	14%	21%	
Very bad	3%	5%	
No opinion	9%	9%	

Source: Teacher Tapp 5/5/22 Created with Datawrapper

In Finland, maths exams were the last to be transferred to digital platforms, reflecting both the scepticism of teachers and the increased technical challenges of implementing effective exams. Since implementation, however, digitised maths exams have been accepted and are now uncontroversial.

Several maths and science senior leaders spoken were sceptical that entirely on-screen exams would be effective in their subjects. They were also concerned about the additional cognitive load that might result. This did not turn them against digital examinations but, like many senior leaders, they argued for an evolutionary approach in which digitisation progresses as it shows its efficacy in different subject areas.

The Views of Students and Parents

"Everybody uses computers all the time. It's not like it's a big surprise that we're going to do digital exams in the future."

14-year-old, North West

"My older brother finished uni last year. He does all his work on his laptop and he did all his exams online during the pandemic. I want to do business at uni and all the coursework and exams are bound to be online so it would be good preparation."

17-year-old, Yorkshire

We interviewed students leading up to their GCSEs and A levels in three locations: South London, the North West and Yorkshire. We also interviewed some of their parents.

Of the 47 students interviewed, 43 were in favour of a move to digital examinations. Their reasoning echoed that of their teaching professionals.

Digital technology is what they have grown up with and how they prefer to work. Editing of answers is a clear advantage. Many prefer to type rather than write and few were concerned about typing in an exam situation given enough time to prepare. Typing is seen as an essential skill.

Their concerns were practical. What happens if the computer breaks, or the battery runs out? Won't other candidates be able to see your screen? Will I have my own computer? Will the school Wi-Fi work? Could my answers be hacked?

The four students who were against change felt that change would be a risk for them ("I don't want to be the first to change") and were more confident that they could do well with the current exam approach.

Parents were largely positive about digitisation since they recognise how important digital skills are likely to be in their children's futures.

But they had concerns.

Will my child be well enough prepared? Examinations are high-tension, high-risk experiences and parents expressed all the concerns already described in this report. They do not want their children to be 'guinea pigs' with their chances of success endangered in any way. Lots of clear communication will be required to ensure parents' concerns are allayed if on-screen assessment is embarked upon.

How much time will my child spend in front of a screen? Parents, particularly of boys, were concerned about how much time their children spent online. Some parents thought that making exams digital would make school more relevant to their children but others were concerned that not too much school time becomes screen based.

How do I help my child? Parents with more limited digital skills, often living in less-well-off areas, were worried about their ability to understand or contribute to their children's progress. The digitisation of examinations was linked to the movement of homework and school resources online, which they already find a barrier to involvement. This was an issue for parents of children heading towards GCSEs rather than A levels.

What will this cost me? In a period of fast rising household bills and significant pressure on disposable incomes, this was a major concern for a minority of parents interviewed. Those on benefits and low incomes were particularly concerned – buying a laptop for their children would be impossible.

Five Possible Ways Forward

Five main ways forward were laid out by senior leaders in our interviews.

This is not a comprehensive list of options but Option 2's staged approach was supported by two thirds of school leaders.

Option 1: Big Bang

Approach: All examinations (or the majority of them) are turned digital in a single year, between 4 and 5 years after the initial announcement to allow effective planning and preparation.

Views: Appealing in many ways since a single deadline would focus minds and bring about clear change but the scale of risk is too great for most school leaders. This approach was favoured by leaders in the private sector and schools that are already best prepared for the digitisation of examinations. Some argued for change in 3 or 4 years to keep the momentum of digital change built up during the pandemic.

Option 2: Staged introduction

Approach: Digitised examinations are introduced in waves over several years, beginning with subjects that have smaller numbers of candidates and which are easier to convert to digital. Examples suggested were languages, geography and history. With lessons learnt, digital examinations are extended to more subjects, probably over 3 or 4 years depending on how effectively challenges are overcome.

As lessons are learnt, well-informed decisions can be made on how digital examinations are used most effectively and what the ideal assessment mix should be.

Many senior leaders had concerns about all examinations going digital but this staged process would allow government, schools, teachers, students and parents to learn more and decide with better data how far on-screen assessment should go.

Views: Most senior leaders want a clear deadline for change so that they can plan with confidence. This option provides that deadline without the degree of risk involved in option 1, allows lessons to be learnt and decisions on the best mix of assessment approaches to be made based on experience.

This is the approach favoured by most senior leaders.

Option 3: Voluntary choice

Approach: Digital and pen and paper exams are run in parallel. Schools have the choice when or whether to move over to digital examinations.

Views: This approach was suggested by a handful of senior leaders who are doubtful about exam digitisation or concerned about the ability of their schools to implement them logistically. This is the approach that has been taken in New Zealand.

The problems with this approach, as explained in the New Zealand case study, are that without any deadline, change can be very slow and since the digital and pen and paper exams need to be identical, most of the potential benefits of digital examinations are lost.

Option 4: Generational change

Approach: A few senior leaders endorse change but believe that the change should be a generational one starting in primary schools and evolving through the school system. New approaches to teaching using more digital devices would begin in primary schools at key stage 2, leading to a generation of students well-prepared for digital examinations in 7 or 8 years' time.

Views: This approach was acceptable to most senior leaders, but they also felt that the timescale was too long. If introduced at primary level in, say, 2024, the first digital GCSEs would be taking place in 2030 or later.

Option 5: Build up from Key Stage tests

Approach: Introduce digital key stage tests to begin learning about the effectiveness and impact of digitisation as a bridge to the introduction of digitised GCSEs and A levels.

Views: This approach was integrated by some senior leaders as part of Option 2. They argued that digitisation could bring advantages to Key Stage tests, and these could be introduced more rapidly.

Other leaders considered the digitisation of key stage tests as an integral part of Option 4.

Digital tests have already been introduced in Wales, which some of the senior leaders were aware of.

Case Study: New Zealand – the voluntary approach to change

"I embrace digital and our students like the (social studies) digital exams. But our school is in the top decile (the most affluent 10%) and we can ensure all our students have laptops at home. There are big differences across the country.

The exams themselves are nothing new and change is slow in our school and slower still in less privileged parts of the country."

Head of Faculty, Auckland

New Zealand has taken a voluntary approach to the adoption of digital examinations, reflecting the fact that schools are self-governing. Each subject area in each school makes its own decision on whether to adopt digital examinations or not.

Digital examinations were first introduced in 2015 and now cover 24 subjects. Two thirds of schools are now involved in the programme, but this is only a handful of digital examinations in many schools.

The numbers of schools and students taking digital examinations is rising. Satisfaction levels with digital examinations are high in arts subjects but lower for mathematics and science.

Some are critical of the voluntary approach, arguing that it confers further advantage on the schools and students in the more affluent, urban parts of the country. These schools tend to have been the earliest adopters of digital examinations. They tend to have stronger digital resources and their students generally have ready access to technology at home.

The need to run identical paper-based and screen-based examinations means that digital examinations essentially remain the paper examination behind a glass screen. This means that current digital exams are still defined by analogue structures and habits and digitally-driven assessment innovation is impossible.

Conclusions

Three quarters of senior leaders and teachers are positive about the digitisation of school examinations – provided inevitable challenges can be effectively overcome.

Students are more positive still. Their parents, with reassurances, agree.

They describe clear, coherent reasons for change.

The educational experiences of future generations will better reflect life in a digital world and help students develop integrated digital and academic skills. It will better prepare them both for further academic studies and for working life.

The change will continue the momentum of educational change driven by the pandemic. It is a natural next stage in the evolution of the school system.

They foresee immediate, practical advantages for students – editing answers more effectively and greater flexibility for SEND students.

They look forward to more detailed performance data to help leadership teams target interventions and improve future outcomes.

They are optimistic about wider innovation in examinations as the practical restrictions of pen and paper are lifted. They look forward to innovation in assessment that can only be enabled by digitisation.

Will pen and paper examinations disappear? Maybe, in time, but most argue for a process of evolutionary change with digital examinations extended as they show their effectiveness.

This broad support relies upon on a government-led programme of national change.

The digitisation of examinations is an opportunity to equalise opportunity both in school and at home but there is a risk of greater inequality without intervention.

National technology standards are proposed; 4-5 years of planning and preparation expected before launch; and a degree of government funding required to address inequalities both in schools and at home.

Some of the challenges in schools are gritty ones that will require creative solutions, carefully coordinated planning and targeted funding.

Significant change on this scale will, inevitably, not be easy but it should enable the next wave of school development, allowing students to experience a rich curriculum while also preparing for its application in a digital world.

About the research

Our quantitative survey was carried out through the Teacher Tapp phone app. 3,816 registered teaching professionals were surveyed on 5th May, 2022 and the data has been weighted to provide a representative sample. The margin of error on all sample data is around 1.6%, rising to 4% for quartile-based analysis.

Interviews with teaching professionals, parents and students were carried out between February and April 2022.

Students were interviewed in groups in schools in South London, Yorkshire and Lancashire according to MRS guidelines. Students were a mix of gender, ethnicity and socio-economic group and in either year 10 (pre-GCSE) or year 12 A level students.

One-to-one interviews were conducted with a smaller sample of parents remotely via video-conference.

Most of the teaching professionals were interviewed remotely. The rest were carried out in-person during school visits. Interviews were between 30 and 90 minutes long.

About the author

Tim Ewington is an independent consultant with experience in digital media and education dating back to the development and launch of Bitesize, the digital examination service, for BBC Learning in 1999. Since then Tim has worked on digital transformation projects for many organisations including the science journal Nature, national newspapers and the National Gallery. Tim had hands-on digital experience developing and running the digital operations of Shortlist Media, a business which he co-founded.