
Evaluation of students' and teachers' experiences of remote on-screen GCSE English assessment

Research and Analysis

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Abstract

This report focuses on a study that was carried out in collaboration with Doublestruck, an EdTech company that forms part of the AQA family. AQA's research team was asked to provide an evaluation of an on-screen GCSE English assessment pilot, delivered remotely via Doublestruck's online platform Exampro between January and March 2021. The aim of the trial was to explore the experiences of Key Stage 4 students taking an on-screen paper and their teachers' experiences of marking it. Our findings suggest that, although student experiences have been varied during the Covid-19 pandemic, the impact of school closures has undoubtedly influenced students' perceptions of on-screen assessment (OSA).

Students reported experiencing few technical difficulties during the assessments and the majority appear open to the concept of OSA in high-stakes contexts in the future. However, students could identify advantages and disadvantages with OSA and were also aware of some barriers that may prevent large-scale uptake of this mode of assessment. There was a strong theme within the data that preparation was key for a successful transition to OSA, with students asserting that this should involve gaining experience of OSA from the beginning of secondary school. As few students prior to the pandemic regularly used a laptop or computer, developing keyboard skills in order to improve typing speed, for example, was also cited as important. Similarly, teachers' responses were largely positive but they also identified positive and negative aspects to this mode of assessment. Overall, they expressed a preference for a blended approach with a balance of on-screen and paper-based assessment.

Introduction

While on-screen assessment (OSA) has had a place in some educational contexts for decades, the transition to on-screen, high-stakes assessments in England has been constrained by a number of factors (Ofqual, 2020). Government policy continues to promote the use of EdTech in schools (DfE, 2019), but access to appropriate resources, such as suitable devices and reliable wifi has often been posited as a barrier to digital pedagogy and OSA. However, the recent school closures, due to the Covid-19 pandemic, have led schools nationally and internationally to roll out digital teaching, learning and assessment on an unprecedented scale (Burgess & Siervertsen, 2020). It is within this remote teaching and learning context that the current study is situated.

The main aims of the project were:

- to identify the advantages and disadvantages of on-screen English assessment from the students' perspectives
- to identify the extent to which a student's digital exposure impacts their experience of on-screen English assessment
- to capture teachers' experiences of marking on-screen English assessments

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- to identify any particular factors that might help improve product design.

It should be noted that, while the initial focus of the study was to measure the experiences of classroom-based OSA, the Covid-19 school closures in January 2021 in England led to a remote format being used. This has shaped the students' experiences of this unfamiliar mode of assessment and should be considered when reviewing the findings. In addition, while it was never the focus of this project to make comparisons between the outcomes of the OSA and the paper-based mode of this assessment (PBA), the remote format meant no pupils or their peers sat a PBA. This should also be reflected upon when the findings are considered, as students are not able to make direct comparisons between papers across modes.

The history of digital teaching, learning and assessment in England and the way in which the experience of schools in England relates to international settings provide the initial context for this report. The background of digital pedagogy helps to position current students in England and their experiences, while the international literature highlights some of the alternative approaches taken for integrating digital teaching, learning and assessment into schools. Furthermore, acknowledgement of the impact of the Covid-19 school closures situates the current study in the immediate context.

Digital pedagogy and assessment in England

The use of digital technology as a pedagogical and assessment tool has received ongoing attention in professional and academic literature for decades (Ripley, 2007; Becta, 2008; Wastiau, et al., 2013; DfE, 2019), with the push to embed technology in teaching and learning practices still featuring in recent educational policy (DfE, 2019). Driven by evidence that integrated digital assessment can assist teachers in their tracking of student progression (Kong, 2009), alongside a desire to reduce teacher workload (DfE, 2019) and align digital practices in schools with other areas of modern life (Ofqual, 2020), the focus on a move to digital assessment continues.

Digital assessment began to be widely used in the late 1990s, predominantly taking the form of multiple-choice questions. In the UK, such approaches have been used in post-compulsory education (e.g. Skills for Life and Key Skills) and professional qualifications (e.g. accountancy, medicine and law). By the 2000s, there was considerable focus on the potential avenues for expanding digital learning and e-assessment. Ripley's (2007) review of e-assessment provides an overview of the volume of work carried out during this time in various domains, including the uptake of e-portfolios, classroom assessment and the use of handheld devices, and examinations and psychometric testing. In 2008, the e-Assessment Association was established to promote the positive contributions of digital technology in assessment and highlight best practice in the field. Becta (2008), the government agency responsible for ensuring the effective and innovative use of technology in education, also proposed the need for a technology-related 'digital entitlement' for all pupils, as it outlined a system-wide framework for digital learning in England.

Despite this volume of work and the wide-ranging aspirations for embedding technology into both pedagogy and assessment, England has continued to make limited progress in establishing suitable infrastructure for consistent digital teaching, learning and assessment. Recently, much work has focused on highlighting and responding to the barriers that, prior to the school closures of 2020, may have been impeding this digital transition.

A recent report by Ofqual (2020) outlines some of the potential barriers to the implementation of on-screen and online high-stakes assessments. These include a lack of suitable access to digital devices and limited space within schools to facilitate digital assessment environments for large

cohorts, were OSA to be rolled out nationally. The issue of reliable wifi in schools and concerns around security were also raised. The presence of such obstacles is supported by the work of Male and Burden (2014), which highlights that, for many students, school policies and concerns around e-safety and finances prevent consistent digital access in their schools.

An alternative approach to a national roll-out would be gradual adoption of OSA on a voluntary basis, but this too would present challenges. Administering PBAs and OSAs in tandem may result in an unfair advantage or disadvantage to groups of students. It may also be problematic ensuring assessments are fair for all candidates, as it is more difficult to control for protected characteristics (Ofqual, 2020). Smith's (2017) review of literature on mode effects and the comparability of OSA and PBA highlights that candidate demographics including gender, ethnicity and socio-economic status need to be considered when comparing modes of assessment. This draws on work by Jerrim (2016), examining the impact of gender and socio-economic status (SES) on PISA OSA outcomes; he found that males had an advantage over females in the on-screen format and there was also a narrow difference in outcomes based on SES.

Furthermore, a candidate's digital experience in and outside of the classroom may impact their performance on and preference for OSA. An individual's typing speed could also affect their response to an OSA (Whitehouse, 2012). In addition, the work of Hahnel et al. (2016) found that ICT skills predicted performance on a digital reading task above that of offline reading ability, highlighting the potential validity issues facing the transition to digital assessment. In contrast, however, other studies have found little impact of mode effects. For example, a large-scale study by Choi et al. (2003) found little influence of computer familiarity on OSA performance.

Moreover, comparative work examining the impact of mode effects on different item types in a reading paper (Buerger et al., 2019) raises the challenge of item type suitability; items that involved navigation between screens or selecting from a 'drop-down box' proved more problematic for candidates. This may cause issues for comparability between modes. Although, recent work by Jerrim et al. (2018) has identified ways in which mode effects between paper-based and on-screen versions of a test could be minimised through statistical modelling. Crisp and Shaw (2020) highlighted the challenges that could face item writers when preparing papers directly within the on-screen platform. They found that item writers took longer to create questions and avoided some item types altogether. They proposed that substantial training would be needed to make this transition and ensure a range of well-constructed item types.

A further challenge is highlighted by the exploratory work completed by AQA in 2006, which trialled a computer-delivered GCSE Science paper (Wheadon, 2007). Closed-response items were compiled in an OSA format and compared to PBA. While the findings from this work called for progressive research in the field, there was limited follow-up due to the item types that were used (Ripley, 2007).

International context of digital assessment

It is important to situate the current digital focus on student assessment in England within the international context. Alternative approaches have been adopted with varying degrees of success in countries around the world. Acknowledging these approaches helps to position England's progress in digital assessment and can highlight potential barriers that may be universal or specifically problematic in England. Various on-screen and online assessment platforms have been successfully introduced across international jurisdictions. The option for on-screen assessments in international English language qualifications, such as the International English Language Testing System (IELTS), has been available in a number of countries since 2000. The Educational Testing

Service also launched the online version of the Test of English as a Foreign Language (TOEFL iBT) in 2005. The opportunity for centralised assessments to be distributed internationally and the results to be shared easily prompted this early adoption of the on-screen and online format.

In addition, specific countries became 'early adopters' of the transition to digital assessment. For example, Hong Kong's 1998 strategy *Information Technology for Learning in a New Era* (Education and Manpower Bureau, 1998) laid the foundations for establishing suitable IT infrastructure and professional skills in schools nationally. Further IT-based educational policies in 2004 and 2008 led to the concept of *Twenty First Century Knowledge* being embedded throughout the education system. This included an expectation that all student assessments should be conducted digitally, in order for teachers to identify achievements and document a student's personal growth (Kong, 2009). Governmental support at a policy level appears to have been vital in Hong Kong's successful implementation of digital teaching, learning and assessment. Such backing may well be necessary if England wishes to effectively embed digital assessment into its educational processes.

It is worth noting, however, that the slower pace of technological change in England's education system, in comparison to other countries, has to date been compounded by policy. Prior to 2010, investment in EdTech was driven by central government, but the deregulation of school funding and the disbandment of Becta led to schools making the decision as to whether or not to invest in technology. This lack of investment in technological infrastructure has serious implications for the adoption of digital assessment because, as Paine (2013) concludes, digital assessment offers better alignment between teaching and assessment only where digital learning is involved.

There are international examples of recent shifts to OSA, including Australia's National Assessment Program (NAP) online literacy and numeracy assessments and the reading and numeracy assessments offered by Assessment for Wales, as well as a digital transition of large-scale international assessments such as PIRLS and PISA. The motivation for these conversions to on-screen and online assessment include an alignment to the digital use in other sectors of society and the opportunity to increase assessment validity (Ofqual, 2020). It may be these motivations, together with the impetus and potential public support stemming from the Covid-19 school closures and exam cancellations, that finally drive forward England's transition to digital assessment.

Examiners and marking on screen

In addition to the relatively tentative move towards OSA in recent years, there has been a significant and more notable shift away from paper-based marking to on-screen marking in high-stakes assessments. In the UK and in many other nations, marking of large-scale assessments has migrated to an on-screen format (Johnson et al., 2012). In some countries, such as Hong Kong (which transitioned marking of all public exams to onscreen marking in 2012), students' scripts are digitally scanned as PDFs and examiners can mark them on screen at a dedicated centre (Coniam & Yeung, 2010). Within the UK context, however, it is usual for examiners to mark scanned scripts at home (Johnson et al., 2012). The main issues raised by past research into on-screen marking have centred around marking accuracy, reliability, mode effects, and markers' attitudes, as well as potential demographic differences to working on screen.

In their study on marking public exams in Hong Kong, Coniam and Yeung (2010) found that marking reliability was largely unaffected by the transition to on-screen marking. Similarly, Johnson et al. (2012) found no mode effects on marker accuracy, although this may be due, in part, to the fact that their purposive sample comprised highly experienced examiners. When marking on screen, newer examiners were found to mark more severely and with less accuracy (Yang et al.,

2017). In a three-year study examining the use of digital assessment in Western Australia for practical performance (embedded in all senior school subjects), Newhouse (2015) noted that marking reliability improved over time. At the end of each year, the research findings were used to refine the analytical marking rubrics, which resulted in increasingly reliable scores. Factors identified as potentially reducing marking accuracy included the inability to share scripts with other markers for comparison and the issue of reading on screen for long periods of time, which is more tiring for examiners and might have particular implications for longer, open-ended questions (Yang et al., 2017). Johnson et al. (2012) also noted that marker accuracy was higher on screen when marking essays that were 600 words or fewer.

Demographic factors such as age and gender appear to have little impact on shaping markers' attitudes towards on-screen working. Assuming that older teachers are less 'tech savvy', Coniam and Yeung (2010) had expected to find younger teachers more accepting of on-screen marking; instead they found that older markers demonstrated a higher level of acceptance than their younger counterparts.

The impact of Covid-19 on digital pedagogy and assessment

The Covid-19 school closures of 2020 and 2021 and the subsequent cancellation of high-stakes examinations in many countries has brought the concept of both digital education and digital assessment further to the fore. The rapid transition from classroom-based to remote learning led to initial 'emergency' teaching provision (Bozkurt & Sharma, 2020), which subsequently accelerated the use of digital teaching tools (Burgess & Siervertsen, 2020). Current students and teachers have therefore had unparalleled exposure to EdTech and have greater insight than ever before into the benefits and challenges of digital teaching and learning.

The timing of this project during early 2021 situates the data collection within the Covid-19 setting and the associated remote teaching and learning environment. The findings of this study should therefore be considered within this context. The impact of school closures on students' and teachers' views of on-screen and online assessment is something to be reflected upon. Furthermore, the increased public awareness of digital teaching, learning and assessment due to the Covid-19 pandemic may be pivotal in utilising the findings from this project and pushing forward the use of digital assessment. With parents, teachers and students currently accustomed to digital pedagogies through home learning, an increased use of digital assessment may be less of a transition for all of those involved, compared with previous years.

However, as highlighted in a recent Oxford University Press report (OUP, 2021), there are a number of lessons to be learnt from the events of 2020 and 2021. It is important to consider that while upcoming curricula should develop and provide students with the skills they need to be digitally capable, the individual circumstances of learners ought not be overlooked; the heterogeneity of student experiences needs to be catered for.

Methodology and research design

This study adopted a multi-methods approach to sampling the views and experiences of both teachers and students during the on-screen pilot. The concept of 'student voice' within education and educational research has received increasing attention over recent years (Fielding, 2001; Cook-Sather, 2006; Bell & Aldridge, 2014), as students are asked to help shape their learning experiences. However, as Cook-Sather (2020) highlights, the extent to which the students providing this voice have real agency and influence over their educational experiences varies

considerably. Therefore, ensuring an authentic message is relayed between students and decision makers is key.

Within the field of high-stakes educational assessment, the opportunities for students to feed into the processes and institutions that affect them have been less widespread than in other areas of education (Barrance & Elwood, 2018). Woods et al. (2019) suggest that the many purposes of these assessments, such as school accountability and student selection, create a barrier to student feedback being received in this area. However, when given the opportunity, students have demonstrated great insight into assessment policy and processes (Barrance & Elwood, 2018). Focus group and questionnaire data from 15- and 16-year-olds during assessment reform in Northern Ireland and Wales suggested that not only were students aware of proposed changes, they were keen to express their views and believed their voice should have been incorporated in any consultations. It has also been argued, through a review of formative assessment, that student perspectives are crucial in ensuring fair assessment practices (Aitken, 2012). The use of student voice within this project is therefore a valuable opportunity to gain insight that can help shape future approaches to digital assessment.

In England, large-scale and national consultations, such as the NFER's Teacher Voice Omnibus Survey (DfE, 2016), have been used relatively frequently to obtain teacher feedback on various issues. The large datasets obtained from these surveys can help inform policy, and their use highlights the importance of obtaining teacher responses to key educational issues. Engaging teachers on vital topics and ensuring teacher voice feeds into educational policy can increase the likelihood of policy uptake. The use of teacher questionnaire data within this project ensures that both the completion of the OSA and the marking of it are both evaluated.

Research methods

The aim of this project was to evaluate Exampro's on-screen GCSE English assessment trial and use the findings to inform future development of similar products, which Doublestruck plan to roll out in early 2022. In line with AQA's strategic objective 'to be closer to our customers', the study adopted a mixed-methods approach combining both qualitative and quantitative methods of data collection to gain insights into students' and teachers' experiences of OSA, from a technical and pedagogical perspective. This involved collecting data over three phases of the project.

Phase 1: Completion of student questionnaire post assessment

The student survey (see Appendix A) was administered via the Exampro platform and was completed by 255 students across nine schools, once they had completed the assessment. It took about 10 minutes to complete and teachers were able to set the start and end time. Students had the option of whether or not to complete the survey, so it was entirely voluntary. We made it clear to students on the survey invitation page that, should they choose not to complete it, this would not impact their mark in any way.

To gain a better understanding of the context in which the students were taking the OSA, we wanted to find out their experiences of using digital technology for teaching, learning and assessment pre Covid-19 (in school) and post Covid-19 (remotely at home). As noted above, the trial was originally designed to be undertaken in the classroom, but the second round of school closures meant that it became a trial of remote assessment; it was important to capture this.

Phase 2: Student focus group post assessment

We carried out student focus groups via Zoom in seven schools; each lasted around 45 minutes with group sizes ranging from three to seven. A total number of 37 students participated in this phase of the project, 65% of whom were girls. The focus group topic guide (see Appendix B) replicated the content of the student survey but with greater emphasis on the participants' experiences of digitally mediated teaching and learning. This was to help us gain insights into issues relating to familiarisation of using laptops and PCs for schoolwork and the students' sense of preparedness and prior experience of completing on-screen and online assessments. In addition, we sought their views on which subjects might be better suited to OSA. The survey ended with specific questions about preference for assessment mode and a question around whether participants thought it would be fair if some exam boards offered OSA while others offered the same qualification as a PBA.

Phase 3: Completion of teacher survey post marking

Teachers were given until the beginning of March to complete a 10-minute survey (see Appendix C) via a link to the Exampro platform. The survey was completed anonymously by 22 teachers across nine schools, although we asked teachers to identify their school. The original intention was to see if teachers' attitudes to marking on screen may shape the attitudes of their students. However, we did not pursue this line of enquiry because response rates were too inconsistent and also somewhat limited (ranging from one teacher to four teachers per participating school).

The survey requested some contextual information regarding gender, age and number of years in the teaching profession to see if these demographic variables impacted the participants' experiences of marking on screen pre and post Covid-19 school closures¹. The remainder of the survey focused on the participants' experiences of marking on screen in relation to the length of time it took and the positives and negatives they experienced.

Sampling and participants

All the schools who signed up to take part in the trial of the OSA were given the option to participate in the research project via an invitation posted on the Exampro website; participation was entirely voluntary. In order to encourage take-up of the research component, schools were given the option to participate in two ways:

- by completing the teacher and student surveys post assessment
- by completing the teacher and student surveys and additionally participating in a student focus group.

Initially, 21 schools had agreed to participate and we had planned to select eight schools to contribute to phases 2 and 3 to ensure they were representative in terms of school type, location, school roll, and the percentage of students eligible for free school meals. Due to school closures in January 2021, a number of schools withdrew for a variety of reasons; these included students having insufficient access to IT at home in order to complete the assessment remotely or, in one instance, the students having already sat the paper used for the OSA for an earlier mock assessment. Nine schools remained in the project, seven of which opted to participate in the

¹ Due to the relatively small sample size (n=22), we were unable to discern any particular trends based on this demographic information.

survey and focus group phases (see Table 1); this meant we were unable to control sample composition.

Table 1 Participating focus group schools

School	Location	Age range	School type	Sex	Religion	Free school meals (FSM)	School roll ²
A	Midlands	11–16	Community	Mixed	None	14.5%	1,100
B	Midlands	11–16	Academy	Mixed	None	13.5%	2,200
C	North East	11–18	Voluntary aided	Mixed	Roman Catholic	25.5%	650
D	South	11–19	Independent	Mixed	Anglican	0%	1,300
E	South	11–16	Academy	Mixed	None	17.9%	850
F	South	11–18	Academy	Mixed	None	12.2%	1,600
G	South	11–18	Academy	Single	None	5%	1,200

In order to participate in the phase 2 focus groups, our only criterion was that the students must have taken the assessment. We requested that teachers select equal numbers in terms of gender wherever possible, although nearly twice as many girls as boys participated in this phase of the study.

Gaining consent

All participating schools were sent an information sheet and a permission letter to be signed by the head teacher via the named school contact, usually the Head of English. Once this had been received, we met via Zoom with the named contact and set out the expectations of the project and the ethical requirements. Neither students, teachers nor schools are identified in the study, and we applied pseudonymisation to the school contextual data presented in Table 1. Informed consent was sought from the parents and students taking part in the focus groups. Our nominated contact forwarded participant information sheets to them and collated the signed consent forms and returned them to us electronically. Teachers taking the online survey were also required to complete and return a signed consent form.

² To reduce the possibility of schools being identified, we have rounded down the school roll rather than provide the exact number.

Data Analysis

Coding and analysing the qualitative data

In order to code the qualitative data, the focus group interviews were transcribed verbatim and uploaded to the computer-assisted qualitative data analysis software Quirkos, which provides a graphical interface in which the themes are represented as bubbles called 'quirks'. Deductive codes were generated from the research questions, which meant the two researchers had a shared understanding of these. However, after independently coding the first focus group, we noted some differences in how a theme had been labelled, due to the level of detail each researcher was looking at. For example, one researcher had coded all examples of hardware and software use by students as 'educational digital resources', while the second researcher had broken this down into two separate codes ('hardware' and 'software and apps'). On reflection, we decided not to go into this level of granularity at this stage in order to keep the coding more open. Both researchers then independently coded the complete data set, with researcher A identifying 37 themes, and researcher B identifying 35 themes, combining both deductive and inductive coding. We adopted an iterative set of processes, which Berkowitz (1997) describes as a loop-like pattern involving multiple rounds of examining the data from which 'new connections are unearthed, and more complex formulations develop along with a deepening understanding of the material'. Through a process of discussion and refinement, we revised the codes to ensure consistency across the data set. Performing such a reliability check acts as a quality control (O'Connor & Joffe, 2020), heightens the trustworthiness of the interpretation and ensures the interpretation is not located in a single researcher's imagination (Kurasaki, 2000).

Coding and analysing the survey data

In the teacher survey (see Appendix B), only questions 17, 18 and 19 were open response. For these questions, each point raised in a response was separated out into individual data points. The content of each data point was assigned a code (e.g. 'easier to read'). After the first round of coding, the codes were reviewed for consistency and accuracy. The number of times each code appeared was tabulated and the percentages were calculated from the total number of data points. For all other questions, the number of respondents selecting each response option was tabulated and the percentages were calculated from the total number of respondents.

In the student survey (see Appendix A), questions 15, 19, 22 and 23 were open response. For question 15, the number of participants responding that they used each type of software and the number of different software types listed by each respondent were tallied and tabulated. The same approach was used for question 22. Question 19 was an open-response question about the number of digital items owned. As respondents varied in the level of specificity in their responses, responses were clustered into groups of five and tabulated. For Question 23, each app or website listed in a response was separated out into an individual data point. The number of times each app or website appeared was tallied and tabulated. For all other questions, the number of respondents selecting each response option was tabulated and the percentages were calculated from the total number of respondents.

Research findings

The findings presented in this section draw on both the qualitative and quantitative data. We begin by discussing the students' experiences of in-school and out-of-school digital exposure. We then move on to exploring teaching, learning and assessment pre and post Covid-19, and students'

experiences of taking the GCSE English OSA. Finally, we present the findings from the teacher survey data.

1. Student perspective: prior to assessment

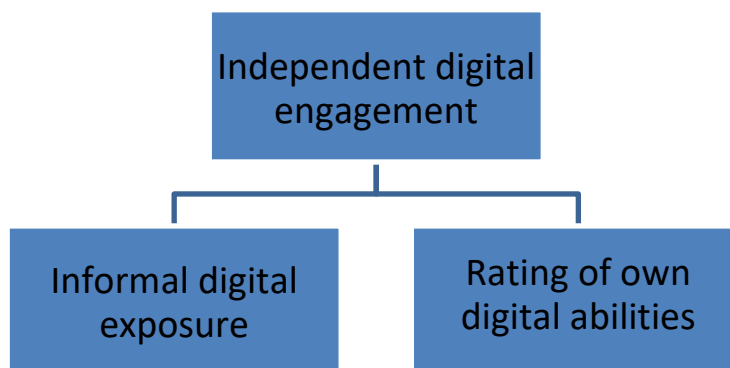
The data from the focus groups and student survey captured students' experiences of their digital usage prior to the OSA. The coding of this data was organised into main themes and sub-themes in order to highlight the granularity and heterogeneity within the lived experience of the students (Braun & Clarke, 2006).

The themes identified from the focus group data cover three main areas:

- independent digital engagement
- the trajectory of digital exposure in education
- factors affecting digital preferences.

These three themes and the associated sub-themes within them are presented with supporting qualitative extracts and reference to the data from the student surveys. These are discussed below in relation to their impact on the student experience of the OSA.

1.1 Independent digital engagement



This theme encompasses students' use of digital devices and resources outside the educational context and also how students rate their own individual digital abilities.

1.1.1 Informal digital exposure

The survey data suggests students use a range of mobile phones, tablets and laptops to engage with digital content in their lives away from school, with 88% using a mobile phone or tablet daily at home and 50% using a laptop. The types of activities that students engage with are also relatively consistent. While there are instances of students having a special interest in coding, for example, the use of social media and video streaming through platforms such as Netflix or YouTube dominate the sample's online activity.

I mainly use my phone for social media and then I'd probably say I watch a lot of Netflix, YouTube, and I do listen to a lot of music. (School B)

Generally I use it [laptop] to play games and maybe watch YouTube and do other non-related school stuff. (School E)

Data from the student survey showed that the most frequently accessed apps and websites across the sample were YouTube (88% of the sample), Instagram (76%) and Snapchat (74%). It is worth noting that the level of digital skill required for the most frequently used activities is relatively low and may be predominantly passive in nature. This suggests that, while students are digitally present, they are not actively engaging in complex digital activity in their everyday life.

1.1.2 Rating of own abilities

When students were asked to rate their own digital abilities, the majority of those in the focus groups judged themselves to have moderate skill. However, it should be noted that students were aware of the relativity of this rating and recognised that their skills may be stronger than the generations before them.

I just have a medium generic knowledge. I'd never really used a laptop to this extent before, so I just have the basic knowledge of Google Meets, Google Classroom and all that, nothing extensive. (School G)

I think it sort of just comes quite naturally. From my experience I'm much better at doing all the stuff than my teachers per se and maybe that's a generational thing. (School D)

This relativity may account for the higher ratings that students attributed themselves when responding to the survey, as opposed to speaking to a researcher in the focus group. Within the survey, 61% rated themselves as having high or very high abilities.

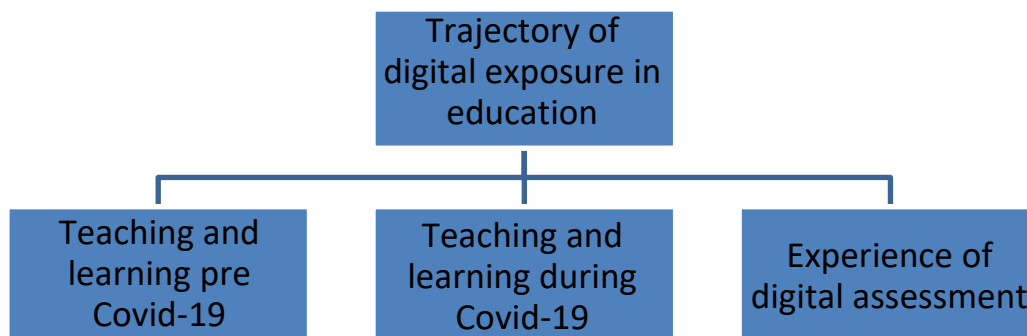
Reference was made in the focus groups, however, to the simplistic nature of the interfaces they usually engage with, as well as the notion that their level of knowledge and skill does not exceed the minimum of what is required.

I feel like most interfaces and websites they're just really user friendly anyway, so it doesn't really require knowing how to use computers. So they're easy enough. (School D)

I know just enough to get by, other than that I don't really know anything else. (School F)

Within the focus group sample, there appeared to be an overall lack of appetite to excel digitally and few students referenced self-educating in order to enhance their digital capabilities above what was required for video streaming and social media use. Therefore, while students may be digitally engaged outside of the classroom, assumptions around the advanced digital capabilities of young people may need to be tapered, and further measurement of these skills may be required in order to help inform the development of digital assessment.

1.2 Trajectory of digital exposure in education



Survey and focus group questions around students' learning and assessment experiences, both pre Covid-19 and since the pandemic school closures, highlighted an increase in digitally enabled education for the whole sample.

1.2.1 Teaching and learning pre Covid-19

Most focus group students across the schools reported receiving little classroom-based input in a digital format before the pandemic and, while some schools had access to digital devices in school, there were inconsistencies between subjects regarding how and when technology was used.

Before lockdown I never used my computer at all, but now I use it a lot more regularly, I use it for school and now a bit after school.... I didn't before. (School G)

Before I used to mainly use GCSEPod for revision, and I didn't really use any other online technologies to learn because I used to learn from school, and then I used to take notes and just go over them at home. (School E)

Last year my English was predominantly hand work and everything was handwritten with, we had our own English book and we didn't actually start using OneNote and the facilities that I would use for maybe other subjects until Covid hit. (School D).

1.2.2 Teaching and learning during Covid-19

The initial school closures in March 2020 highlighted clear inconsistencies between the experiences of those within the focus groups, with some schools in better or worse positions to mobilise online and on-screen teaching and learning. Access to devices as well as school investment in appropriate software appeared to exacerbate these differences.

So that's during the first set of quarantine. At the time the school weren't offering any computers or anything, so I just worked on my phone and I found it really difficult. (School E)

I think at the start, like the first proper lockdown it was really difficult. I don't think anyone really had the proper technology. (School A).

We went straight into remote learning using Showbie and websites online. (School B)

The focus group data suggests that it was not until September 2020 that there was a more universal and consistent experience of digital teaching and learning within the sample, with schools prepared for anticipated closures and delays to students returning to full-time, face-to-face teaching. From this point on, students were aware of the upsurge in screen-based learning; they referred to the improvement in both the consistency of their learning and in their ability to complete work online.

In the first lockdown it varied from teacher to teacher. It's become a much more unified response now. I think it's much more unified. (School G)

I think we're more used to online learning now. And I think me personally I got much better at typing over lockdown, and that's like an advantage to me now because obviously it's quicker to write. (School E)

Greater structure to the school day and increased communication appear to be key themes as the trajectory of digital learning moved upward, with focus group students expressing predominantly positive views on this.

I think it's a lot more structured now and it feels more like an actual school day rather than like just being sort of sent like lots of work... Actually being able to hear your teachers go through a lesson is a lot like more structured and it feels like an actual lesson. (School F)

Now it's definitely more consistent, like we have Microsoft Teams when our lessons were meant to be. I just find it gives a bit more structure, like we actually know what we're doing, we're following a timetable still. (School A)

Now we can actually normally do proper lessons, because the teachers are actually interacting with us and stuff, so it's easier. (School C)

This increased exposure to digital teaching and learning places the current cohort of students in England in a unique situation when evaluating OSA. They have experienced greater online and on-screen education than any previous generation, and this has undoubtedly shaped their response to the GCSE English OSA.

1.2.3 Experience of digital assessment

When asked about previous experience of digital assessment, the responses of focus group students were shaped by their recent home learning; many of them had had little experience prior to this.

I'd never really done anything online before, apart from an assignment on Teams, ...but apart from that I've never really done an assessment. (School A)

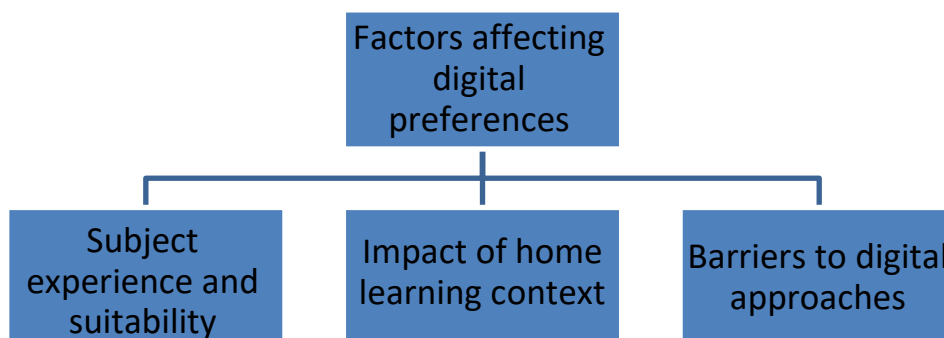
I think we've done little quizzes, but I don't think it's ever been like assessment. (School C)

On-screen and online assessments provided during school closures have varied in their complexity, from emailed Microsoft Word documents to maths quizzes created using specific software. These experiences may have impacted how the students viewed the GCSE English OSA; those who had had some prior exposure could make comparisons between school-based assessment and the GCSE exam provided in the research study.

I'd say every subject we've had has been testing us quite a lot, but none in the same way that we've had for English, like the on-screen test that we just had, that was quite different to anything that we've had before. (School G)

The survey data also highlights a considerable increase in at least some presence of OSA during the Covid-19 school closures, for most students: 63% reported that they had never completed an OSA prior to the pandemic; only 15% reported this to be the case post Covid-19.

1.3 Factors affecting digital preferences



Throughout the focus group data, students expressed views on whether or not they held a preference for the mode of assessment (digital or paper based) or for the mode of learning. This appeared to have been affected by a number of factors including their experience in different subjects, the context of taking the assessment remotely and their perceptions of potential barriers to digital learning and assessment.

1.3.1 Subject experience and suitability

There was frequent reference in the focus groups to specific subject suitability for the adoption of digital approaches. There was no definitive consensus within the sample as to which mode was preferred for which subject.

I think doing history [online] can be quite challenging sometimes due to the fact that some of it's like essay based when you're doing exam questions. And sometimes you just get given a question, but you have no particular guidance on it except for maybe a quick voice note, so it can be quite hard to collect your own ideas together for it. (School B)

I definitely think subjects where you have to write a long answer, like English or history, would be much better suited [to digital assessment] than something like maths where it's a bit more complicated and you need to really write down your answers. (School A)

It appears that the pedagogical experiences a student has had with a subject may impact how they perceive its suitability for digital assessment. If a student had access to specific, well-designed software to engage with a subject digitally during the Covid-19 school closures, this may encourage them to view it as better suited to digital assessment.

I actually find maths really quite easy to do online. And I think it does depend on how good your teacher is at using the resources they're given. (School D)

1.3.2 Impact of home-learning context

Within the focus groups, opinions on digital approaches to pedagogy and assessment were further impacted by the specific experiences of the recent school closures. With students learning and

being assessed in their homes, the preference for school interactions or technology that allows social interaction, collaboration and feedback were mentioned frequently in the data.

I started using Teams as well. Which, as [student X] said, you can obviously communicate more with peers, which is useful because sometimes you don't always want to talk to your teachers and things; sometimes it's just easier to communicate with peers. (School E)

Now we're having a lot of live lessons. Which I think's a lot better because you can actually ask the teacher a question and you get it straightaway instead of waiting like two days or something. (School F)

It is important when interpreting these views to position them within the Covid-19 context. Preferences for digital formats that are suited to home learning may differ from digital resources that would be used in the classroom setting. The desire for face-to-face interaction during periods of relative isolation during the pandemic, for example, may steer students away from some digital formats and towards others that facilitate such interactions.

I prefer doing it in lessons, because I think I can interact more; whereas at home it's more you have to stare at a screen and you just sit down and just look at it, but in the lessons you can interact. (School G)

I don't feel like it's the same and the learning outcome is the same as it would be if it's in person. Obviously it's different, it feels more disconnected. There's no in-person like personal rapport and I think that helps learning when you've got that personal feel to it. (School A).

The experience of Covid-19 and home learning, however, has also signalled to students the possibilities for EdTech; the current context is viewed as a potential catalyst for technological progression.

I think the world always progresses and is progressing at a faster rate than normal currently, especially tech-wise. So I think this kind of thing will begin to happen more, especially because we can now. (School G)

The awareness and experiences of this cohort, and upcoming GCSE learners, is likely to impact how digital platforms for pedagogy and assessment are received in the future.

1.3.3 Barriers to digital approaches

The focus group data also highlighted a number of barriers that students have experienced when accessing digital teaching, learning and assessment. These barriers relate to a number of aspects and include a lack of access to devices and reliable wifi connectivity.

Not everyone has internet, first of all, not everyone has a device they can use it on. (School E)

I think because it's online there's always going to be some sort of difficulty, like someone's wifi's not working or this isn't synching. (School D)

There are also challenges as pupils adapt to new ways of learning online. The use of extended screen time, for example, may create fatigue, and (as mentioned in the previous section) some students find face-to-face teaching more engaging and structured.

You're sat at the same place looking at the same screen all day and then that also means when you do things like watch Netflix or whatever on your computer it feels like you're still kind of, like it's harder to get away from being at school because you can always just go on. (School C)

The potential for fatigue in on-screen learning and assessment is also supported by the survey data, with 26% of respondents reporting tired or very tired eyes during the OSA. This may need to be considered when developing future OSAs.

Again, however, students expressed their views around digital challenges through the lens of recent events and the preferences expressed are specific to the home-learning context, not necessarily digital pedagogy and assessment in schools. It is worth noting that students' experience of remote learning and assessment may have been novel and filled with challenges, but there was an awareness that technology has a place outside of the pandemic context and that a blended approach to education in the future is likely to be less problematic.

When things do go back to normal I think it's trying just to ease back into it, so maybe a little bit more technology but not too much so that we can just balance it out a bit so it's even on both sides. So it helps us progress, but doesn't slow us down either. (School C)

2. Student perspective: experiences of taking an on-screen assessment

2.1 Technical issues

Students were asked to comment on whether, and to what extent, they had experienced any technical issues when completing the OSA. Our analysis of the student survey data shows that the majority responded 'never' or 'rarely'. For example, 75% reported little or no 'glitching', 77% reported they had not experienced any 'slowdown on their device', 69% experienced no 'freezing' and 75% did not experience any 'crashing', while around 15% experienced either glitching or slowdown 'some of the time'.

While only a small percentage of students experienced negative technical issues 'often' or 'very often', the analysis of the focus group data shows that, when such events did occur, this was a source of frustration and anxiety. Examples of issues impacting students' ability to complete the assessment, which made the experience stressful, included the device freezing and being logged out and having to sign in again each time. The fear of not knowing if work was automatically saved when a system crashed was a cause for concern.

When I logged in, I wasn't sure whether it would save my work or not but I managed to fix, I got it to but yeah I was a bit scared that it wasn't going to save it. (School F)

The work was in fact saved, but students had not been told this would be the case prior to taking the assessment. Providing the students with this information beforehand would have alleviated this concern.

Some teachers had set up the assessment so that students would complete it within the allocated time frame but not necessarily in one sitting. However, the lack of information about whether work would automatically save, or how to save it, meant that students felt compelled to complete it in one go.

It's just I was so paranoid that if I was to start it, so that's why I just did it all in one sitting because I was too scared that it wouldn't save. (School F)

There were some functional issues related to teachers' inexperience or unfamiliarity with the system that impacted students' experiences.

Miss set the time for me to do the exam on another day, so I couldn't do the exam during the lesson and then I asked Miss to change the time and she couldn't change the time, so I had to do it another day during one of my maths lessons, so I had to miss that out. (School E)

A weird little technical issue that I didn't predict is because my teacher, she gave us a page with all of our logins and the link, and I just copied mine over because that's what I do when I have assessments and stuff. But I didn't realise, I couldn't get in for the first large section of the test, because you can't copy it over and click the link that you've now copied over, it has to be the link on the original page. And I've literally never had that with any other thing, so I didn't even realise that could be a problem. (School D)

I didn't have any personal issues, but I know of a friend who did have a severe impact. ... I think it was because of a glitch in her iPad, it had basically switched off and then when she went back into it, it timed her out, so she was unable to complete the rest of the question. So then the teacher that she contacted tried to open it again, but they were unable to, so now she's doing it in paper form. (School B)

Overall, it would appear that there were more participants who did not experience any technical issues than those who did. In the main, where issues were highlighted, they often related to a lack of information or awareness of how the system worked.

2.2 Mode of input

This theme covers the students' experiences and opinions about the use of a keyboard to input responses in the OSA. They cited a number of advantages including the ability to effectively edit and restructure text. For many students already confident with typing, the speed and the legibility of using typed responses was also viewed positively, as they could produce longer answers that were still clear and easy to read.

I actually quite preferred using the keyboard, because I think fast but I can't write fast enough, but I can type fast enough. So that was a saving grace for me really, I found it a lot easier than I would in a normal exam. I got everything down that I wanted to and that doesn't usually happen with pen and paper. (School A)

... people were also talking about there was not much hand ache because they were typing and they weren't writing pages upon pages, but I think that some people obviously type faster and slower. So if it was me I would suggest making sure that everyone could type, because obviously we had typing lessons. But I think if you're still typing with one finger, how is that fair in the scheme of things, because someone could type faster and therefore more time to think about what they're doing. (School D)

This is mirrored to some extent in the student survey responses but not entirely. Most of those surveyed (86%) responded that they found it 'very easy', 'easy' or 'neither easy nor difficult' to use the keyboard when typing answers, while 70% thought their writing speed on screen was 'much faster', 'faster', or 'about the same'. Around a quarter felt their writing speed was 'slower' or 'much slower' and, for those less confident and experienced at using a keyboard, their slow typing speed was an impediment during the assessment. These students often cited lower levels of laptop use

or laptop access in the home. Prior to the school closures, some students had either no access or limited access to a laptop, often having to share one with the whole family.

Another issue that students raised was the likelihood of making 'typos', which could be interpreted by the examiner as a spelling or grammatical error. Many of the students did not have spellcheck enabled on their devices for the OSA and were therefore unable to identify if they had made an error.

But the thing is I'm used to writing and then there's an automatic spellcheck, because when I type, and I was like I've definitely spelt that wrong, why has the spellcheck not come up? But obviously it's an exam so it's not going to autocorrect it for me. And definitely a lot of feedback from our class was that they found it quicker but the typos was a massive issue. Because obviously in the real GCSE you want to get your spelling as good as possible because it just makes you sound more intelligent and like you know what's going on. (School D)

Yeah and I kept mistyping, then it autocorrected my words to different words that I didn't want. (School B)

There appeared to be wide variation, with some students having access to autocorrect while others did not; this was a source of stress for some, as they feared losing marks.

2.3 OSA design features impacting the student experience

The data revealed a range of issues inherent in the design and layout of the OSA that elicited both positive and negative responses from the students. These responses have been positioned and evaluated in relation to the students' prior experiences of preparing for and sitting a PBA in school under exam conditions.

2.3.1 Annotating and highlighting text

The issue most frequently mentioned by participants in the student focus groups related to their paper-based experiences of being able to highlight and underline quotes and annotate the source text. This was fundamental to their normal working processes in a PBA and was a source of frustration when undertaking the OSA. The ability to annotate would have alleviated this problem.

Well, in some questions when you have to refer to just a certain part of the text we'd like box it off and stuff. So it's easier to see which section you have to look at and things like that. But if you could do things like that on the computer it would make it a lot easier. (School C)

I wish we could use our pens on the text or something to annotate, because normally in a paper you'd annotate everything to help, but you just can't do that and you just like remember or go back to the text the entire time. (School D)

This issue was not confined to students who did not use or have regular access to an iPad or laptop for in-class work prior to the school closures. Students from School E were given their own iPads in Year 9 and students from School B were provided with laptops for home use when the schools closed, so both had prior experience of writing and annotating using their devices; for School E, in particular, this was a regular feature of how students worked. Nevertheless, students from both schools commented negatively about the inability to annotate during the OSA, suggesting that annotation and highlighting are features of both on-screen and paper-based learning.

In English I've been taught to annotate the text and I couldn't really do that online, so I had to do it on a piece of paper. So generally, I found that quite annoying. (School E)

I think it just made it harder to identify the quotes that I wanted to use as evidence, because it meant that I did lose them and that I would have to try and add in additional effort to try and find them again. And obviously by highlighting them you have an idea of what you can write pre-hand before actually doing it. (School B)

To address this, students adopted various workarounds that sought to replicate their paper-based working methods, the following of which were the most common: opening up a separate Word document or using Post-it notes to note down relevant quotes from the text, having the source text open in a separate document, or printing off a copy of the source text.

I used Post-it notes, so I had each side of my desk was source A or B and just put one either side. (School G)

I actually found it really difficult having it next to the screen so I had to – I copied it and then printed it out because I just couldn't look up at the writing and then write my notes on paper, I had to annotate it on a piece of paper, because I just couldn't get my ideas down from looking at the screen. (School F)

For some students, time lost in this way was made up by being able to type faster than they could write by hand, but this was not the case for all students.

The annotating was a bit more difficult, I opened up a Word document to annotate, which probably wasn't the best idea but that slowed me down quite a bit. So I think some way of annotating it would be good and speed it up a bit. (School F)

The inability to annotate also resulted in students stating that they felt less able to write 'freely' and felt 'restricted' because they had to stop typing and refer back to the source text in order to find a relevant quote. Such interruption meant that they 'lost the flow' or did not have the 'flow' normally associated with writing by hand; this could create particular challenges in creative writing tasks.

It would be the equivalent of flipping a page, I guess, but it was just a little annoying because it broke your typing flow of having to break out of the box to go, because you could scroll down the source while you were typing, which I thought was really useful, as you could go through and you could progress, but then you had to completely break out of the box that you were typing in and then it had to click across the sources. But even then it's such a minor thing, generally it was really, really good. (School G)

I didn't have that flow that I would normally have if I had a pen in my hand. So therefore I found it quite static, like it was very sharp, I was doing one sentence then I was like well what do I write now, I can't refer back to the passage because I've got none of my annotations, and I felt quite lost. (School D)

2.3.2 Structure and planning

Some students found it more difficult to plan and structure their work as there was no facility to draft an essay plan on screen; this problem was most pronounced in the creative writing task. Again, this links to the issue of not being able to replicate on screen familiar and established ways of working. It might seem that an easy workaround would have been to plan on a piece of paper, but students did not report taking this approach. Furthermore, a significant number of students expressed feeling fazed by the blank text box, which they described as 'intimidating' and led some

to panic and 'write whatever came in my head', a problem compounded by the inability to plan on screen.

Maybe a good idea would be giving us space to plan it, because I had no plan or anything, I was just writing whatever came in my head and that's not usually the best. So I think maybe a little area where you could plan or something so I knew what I was about to say (School D)

A place for students to plan on screen would address this issue; one suggestion from the students was to be able to open up an online notepad where ideas could be captured.

2.3.3 Navigating the source text and answer box

In the main, the responses from both the survey data and the focus group data reported positively on the layout of the source text and answer box. The student survey shows that only 4.71% of respondents stated that they found it 'difficult' or 'very difficult' to find the questions, and only 3% said they found it 'difficult' or 'very difficult' to find the answer box.

There were a small number of students in the focus groups who responded negatively to this question for the following reasons:

- they had not realised you could scroll down
- they 'got lost' when reading the source text and had to spend more time rereading it
- some found it harder to read large amounts of text on screen.

There were mixed responses about scrolling through the paper and moving between the source text and the answer box. Some had not noticed that there was a facility to scroll down, saying that it was 'very small and unnoticeable'.

So when I was writing I must have been on question 3, I realised that you could scroll down. I thought that the part that you could see was the only part of the source that you were given – oh no, I was on question 4, I was halfway through question 4 and I didn't realise you could scroll down, so I had to sort of rewrite my structure because you're supposed to do beginning, middle, end and I didn't realise there was more to it because of the scroll feature. (School D)

Especially like how it had two screens and on the left it had the text and on the right you had to write. And, for me, I found it difficult because when I tried to write and I had to refer back to the text or the source, I had to keep scrolling up and down and sometimes the right side went up and down along with it. So yeah it was a bit annoying. (School E).

In contrast, the ease of navigation and the ability to move between sources elicited positive comments, with a few reservations about having to leave the question box (which links to some of the students' observations, mentioned in section 2.3.1, about interruption of 'flow').

I thought the source thing was actually really good. It was one of the big positives of having it on the side is that it sort of set itself when you went into the thing as a split screen, which you could flip between the two sources. And because of the font size you were able to read both at a pretty easy standard, so it was not too squashed or anything, yet still managed to have both on the same thing, which I thought was pretty good. The only thing was you had to completely leave your question box to change between source A and B, which was a bit

of a problem for the comparison thing, but that's such a minor thing that it really, generally it was much better than I expected it was going to be. (School G)

Another issue raised in relation to the text box was not having 'lines on a page', which made it difficult for students to judge how much they had written or how to structure their answers as they normally would. Compared to a traditional lined answer booklet, this unfamiliar text-box layout was off-putting.

I think because we didn't have the lines, we didn't have that natural structure and formation that we're so used to, so I literally probably wrote about two worth of paragraphs, because it's typed out it looks a lot longer than I think you expect it to be. So yeah, like [student Y], the structure just didn't work for me. (School D)

Ultimately, because the OSA did not follow what some described as the 'natural structure' of a PBA, participants either felt that their answers were too short or that they ended up 'rambling'.

2.4 Student preference for OSA or PBA

The results of the student survey showed that 52% expressed a preference for taking this test on screen rather than using pen and paper, around 20% would have preferred to use pen and paper, while around 23% did not express a preference for either mode. Their preferences were often couched in similar terms to their observations about subject suitability (see section 3.1).

I think it depends for the subject. English I wouldn't mind doing it online again. It was something nice and different to try. But, like I said, subjects where you have to work things out, definitely paper. (School A)

It is important to situate the students' comments within the context of them doing the assessment remotely in their home environments, and this may have influenced their interpretation of our questions around which mode would be more preferable, and whether there should be more OSAs. The following reservations, expressed by the participants, seem to reflect this.

- How could you ensure it was under exam conditions?
- How could you ensure people did not cheat?
- Being in an exam hall (irrespective of the mode of assessment) made the experience more serious, and made you concentrate more and get in the right mindset.
- Doing OSAs at home was difficult because there were constant interruptions and distractions.
- There were problems with internet access and connectivity.

Students (and also teachers, as discussed later) saw the move to OSA as inevitable, suggesting that there was a need to 'move with the times' and be more 'modern', using the technology available.

Yeah, I think I can definitely see it becoming a possibility in the future, because it was really easy to use and it was just, I think anyone, like everyone our age knows how to use a computer because we've been growing up around computers and technology. So I think it is something that most people can get access to and can do. (School A)

3. Student perspective: wider perceptions of OSA

3.1 Subject suitability for OSA

Given the context in which the study was carried out, we asked students their views about which subjects were best suited to online teaching and learning. In addition, we sought their views about which subjects would be best and least suited to OSA. Prior to March 2020, the majority of the students' experiences of digitally mediated teaching and learning had been limited to the teacher's use of EdTech in the classroom, with most students having few opportunities to engage with it in the classroom setting. As noted earlier, although online assessments had increased during the school closures, they were often confined to multiple-choice assessments and quizzes. For long-form and essay-type questions, teachers' preferred mode of assessment was for students to write by hand and then upload the work for marking.

Whenever our teachers ask us to do an assessment in RS or in history, my teachers ask me to write it out and then upload it. So I don't think I've ever really typed for an essay-style subject, it's always to write it and then upload it. (School D)

I'd say the closest thing I can think to online assessments would have been the reading age scores that we used to do for the reading comprehension thing on the computers. (School A)

Despite the move to online teaching, teachers did not make full use of the features of EdTech, reverting back to hand-written assessments.

Consequently, the students' responses regarding subject suitability for OSA were grounded in their online learning experiences, and their experience of taking the English OSA, rather than actual experiences of formalised OSA in these subjects. More 'literary' subjects, such as History, English and Religious Studies, were perceived as better suited to OSA, although students thought some Science subjects, such as Biology, might lend themselves to multiple-choice questions or single-sentence answers (they had had some experience of these sorts of assessments during school closures).

Subjects, such as Sciences, Maths, and Design and Technology, requiring drawing or labelling diagrams or graphs, or inserting symbols or equations, were perceived as unsuitable for OSA. The inability to 'show your workings' (which may result in losing marks) or the problems of trying to do so on screen were mentioned most frequently.

Because I think we had one maths, we've had a few online maths exams, not on screen but they've just been on a Google doc and I just know, just writing out my work, we had one, we had to write our workings on the computer and it was, I found it so difficult and I was so stressed the whole time. (School F)

Maths isn't going to work, because you're going to have to do working out and stuff. And you have to check the working out and normally you just put the answer into the, like yesterday we had an online homework thing and so we had to send our working out to the teacher and then it takes time for them to check it as well. So yeah it wouldn't work for all subjects. (School B)

Students also cited difficulties locating (or knowing how to insert) appropriate symbols used for Maths and Science subjects and saw this as an obstacle for OSAs in these subjects. Students

suggested adopting the approach used in the online Maths platform MathsWatch³, which provides shortcuts for writing fractions and powers. This proposal elicited a mixed response, as the following student exchange at School A demonstrates.

If the symbols were put into a toolbar though, like they are on MathsWatch, I think that would be quite nice to do an online maths assessment or something like that. (Student 1)

No, I think maths would, I don't agree, I really struggle using MathsWatch, I think it's really difficult. I think I prefer having a physical copy and doing it using a pen, pencil, ruler, I think it's just way easier. (Student 2)

The students' inability to insert symbols (and their apparent disinclination to find out how to do so) might seem unusual when we consider how young people are perceived as 'natural users' of technology, but, as noted earlier (in section 1.1.1), the digital activities in which the students engage informally and for pleasure do not require high levels of digital literacy⁴. It was interesting to note that some of the students' teachers had addressed this and had taken the time to teach them how to add symbols. This suggests that investing time in developing students' digital literacy could help overcome some of these obstacles.

3.2 Mode of assessment and 'fairness'

In 2009, Kathleen Tattersall (then Chair of Ofqual) argued that it is fairer to test contemporary students on screen because they will have all grown up using digital technology and therefore have the necessary skills and experience to work in this way. More recently, Ofqual's (2020) review found that students appear to have a more positive perception of a move to on screen than other groups, due to their experiences of remote learning during the pandemic. Students were more likely to agree that OSAs would be fairer and more manageable than PBAs.

We wanted to explore this with our student participants, so we asked the following question in the focus groups: 'How would you feel if one exam board offered a qualification in an on-screen format, and another board offered the same qualification in a paper-based 'traditional' format?'

With only a couple of exceptions, in contrast to Ofqual's (2020) findings, all focus group students said they did not think this would be fair; they cited a variety of factors that might result in some students being advantaged or disadvantaged by a certain mode of assessment. The data reveals two dimensions to their arguments: how this might impact them personally, and how this might impact other students.

3.2.1 Personal impact: comparability, grades and grade boundaries

It was interesting to note, across all the schools, that students had different ideas as to whether one or other mode might suggest a student is 'more or less capable' and impact the perception of their grade by potential employers. Some students thought it would be more 'impressive' if they achieved a high grade in a handwritten paper, while others suggested that, as digital skills are

³ MathsWatch is an online maths platform where students can watch videos and also complete work and receive feedback online.

⁴ Digital literacy goes beyond technical know-how: it refers to the knowledge, skills and attitudes that allow children to be both safe and empowered in an increasingly digital world. This encompasses their play, participation, socialising, searching and learning through digital technologies. What constitutes digital literacy will vary according to children's age, local culture and context (UNICEF).

increasingly central to the workplace, doing well in an on-screen exam would work more in their favour.

I think because most companies now are trying to use computers more, they'll probably look, oh, they can do an exam on the computer and get a 9 in it, so then surely they're more capable than someone who's writing and can get an 8. (School D)

Students at School B were especially concerned about grade boundaries, suggesting that they would need to be higher for students taking an OSA⁵ to compensate for some of the issues (highlighted earlier in this report) that they felt might disadvantage them, such as inadvertent typos and spelling errors.

I don't want the possibility of our grades being marked down just because we did it online and there was issues like spellcheck and stuff like that, so I do think doing it handwritten it creates a sense of fairness and you're all going in there to do the same thing all at the same time with the same resources. (School B)

I do feel like also grade boundaries should be higher if you would do it online, because I just think you can write a lot more by typing it. Whereas, in a handwritten exam, there's that challenge to write detailed paragraphs but not go too far or too long with them, and I think when you're typing it that challenge isn't there. (School B)

These are not unreasonable concerns in light of Ofqual's (2020) observation that the most likely way forward for digital assessment in England would be a gradual adoption combining on-screen and paper-based versions. Ofqual acknowledges that running a dual system would have implications for high-stakes testing.

Should a dual paper and on-screen roll out take place in England this may require different grade boundaries, even if identical papers were used. This is because of the potential for each cohort of candidates to find one mode of presentation easier or harder than the other. But having different grade boundaries for two sets of students who answered the same questions is difficult to explain, and may undermine confidence in assessment outcomes. (Ofqual, 2020, p. 14)

This also links to comparability; students raised this issue, asserting that it would not be possible to compare the two modes. This reflects the problems currently being addressed in countries, such as Israel, that are moving towards greater OSA. In an attempt to resolve this issue, they treat the online and paper versions as separate assessments; they share common questions but are not identical (Ofqual, 2020).

Students' perceptions of fairness also related to the level of experience and exposure they had had prior to taking an OSA. This was a key theme that ran through our findings. To address this issue of lack of familiarity and preparedness, students expressed the importance of embedding this mode of assessment at an earlier stage of their educational journey. They thought that it would be unfair if on-screen GCSEs were imposed on students without sufficient prior experience.

⁵ In fact, grade boundaries would need to be lower to compensate for disadvantages, not higher. They would need to be higher if the OSA was easier and advantaged students.

I think that if you're going to do that for GCSE, I think maybe for our year and the year below us you've missed the opportunity, because we are so fine-tuned to writing and that's all we've been doing for the last two years. But I think typing could be a great thing, but definitely if you started it earlier in the school, say, year 7 it's typing and then as soon as the exam rolls around they don't really know anything different. But, for us, definitely the year above, most likely the year below, I do think that it would be a very difficult thing to impose now. (School D)

3.2.2 Impact on other students

In addition to how a different mode of assessment might impact them personally, the students were alive to the barriers created by social factors and how these might affect the experience of others, resulting in unfair advantages or disadvantages for different groups of students. They recognised that students have varied access to computers and resources, and that the issue of familiarity would disadvantage some students and impact their ability to type competently and quickly.

We're in a really privileged position to have these computers and I am pretty used to typing because of my experience this year and last year with the whole online learning, but definitely across the UK there's going to be people that don't have a big experience with typing. And I was like how is this going to be fair on people that haven't had access to computers, you know, we don't all have a computer, so how is it going to be fair basically, because everyone's been educated to read and write, but how can you set a standard with typing speed and stuff like that. (School D)

It's a standardised test, isn't it, so it's got to be standard for everyone. As well as that I think you've got, the reason why I'd choose a paper exam for a standardised exam over a computer one is there's many more variables in a computer on-screen one. So say if someone has a faster computer, a better computer, better wifi, there's so many other variables you've got to take into account; like you could be getting someone that's never used a computer before, even if the school sent them a computer, they're not going to be particularly good. (School G)

Their conceptualisation of 'fairness' incorporated how a dual approach might impact them personally, while recognising that others might be more or less disadvantaged depending on their social and economic circumstances.

4. Teacher perspective

Twenty-two teachers completed the survey, with equal numbers of teachers (n=11) in the age bands 20–39 and 40–59. They represent differing levels of teaching experience, with over half of them having more than 10 years' experience. They rated themselves highly in terms of their computer ability (82% selected a rating of high/very high; the remaining 18% rated their ability as average) and they are frequent users of computers or laptops in a personal context (85% use one daily or several times a week).

Teachers were asked to comment on their past and recent experiences of marking on screen. Prior to the Covid-19 school closures, only one teacher regularly marked on screen. Not surprisingly, there was a significant shift when schools closed, with all but two teachers regularly marking on screen. These two teachers reported that, ordinarily, they would print out student work and mark it by hand. Both teachers came from the same school; we do not know if their mode of marking was due to personal preference or linked in some way to school policy or practices. However, it should be noted that they did mark on screen for the OSA trial.

Overall, teachers' responses to the OSA were positive, with the benefits outweighing perceived negatives.

The pupils generally enjoyed the process and I would be happy to use it again with a few tweaks (ability for students to recall submission for example and maybe a split screen for text and answer sections). (Male teacher, 30–39 years old)

We would really like to use this facility again and roll it out whole school. (Female teacher, 20–29 years old)

I much prefer marking on screen. The ability to dictate feedback as on Teams would be massively useful for speeding up the process. (Male teacher, 30–39 years old)

I can mark in any room, I don't have to carry around hundreds of papers, I can copy and paste comments for students. (Female teacher, 20–29 years old)

4.1 Experience of marking an OSA

In terms of time taken to mark the assessments, the majority of teachers (n=16) took less than 20 minutes to mark the on-screen paper, five took 20–40 minutes, and only one teacher took 50 minutes or more. Just over half the teachers rated their on-screen marking speed to be about the same as when marking by hand, a third thought it was faster, and only two suggested their marking was slower. The issue of reliability was commented on positively, with only one teacher suggesting their marking was less reliable. The majority (n=16) thought the reliability of their marking was roughly the same as when marking by hand, while five teachers said their marking was *more* reliable on screen.

In terms of physical comfort, around half the teachers (n=13) reported that they were as comfortable marking the OSA as they were when marking PBAs, six reported feeling more or much more comfortable marking on screen, while three felt less comfortable. Around half the teachers (n=13) had experienced some eye strain; they said that their eyes felt more tired, and this was exacerbated by online teaching. Eye strain was the most cited disadvantage of on-screen marking.

Eye-strain. However I think this was compounded by the fact that so much time has been spent teaching online too. (Female teacher, 40–49)

4.1.1 Advantages of marking on screen

Teachers identified a number of advantages to marking on screen. Those eliciting the most positive responses were around legibility of the scripts (n=6) and being able to mark more quickly (n=5). Ease of feedback (n=9) was perceived as the greatest advantage both for individual students and for whole class cohorts as it was quicker and more direct, and they liked the ability to generate whole class reports.

Practical management issues were cited as an advantage by five teachers. They referred to not having to carry papers around, which reduces the likelihood of mislaying assessments, and everything being stored in one place.

I would quite like the idea [of marking on screen] given the protocols we are all facing at the moment. At this time, if we want to take marking home it must be quarantined for 72 hours both when taking home and then once back in school so at least online the feedback can be more immediate for the students. (Female teacher, 30–39).

Less fiddly/no need to carry packs of papers home. (Male teacher, 30–39)

Two teachers mentioned that the 'highlight' function was useful, and four teachers stated that they found it easy to navigate the different parts of the paper.

4.1.2 Disadvantages of marking on screen

While a number of disadvantages to on-screen marking were mentioned, they elicited only one or two responses each. The disadvantages included not being able to share the assessments with other markers, making it harder to moderate; not having a dictation option, which would have sped up the process; the problem of student plagiarism as there is no facility for online proctoring; finding it harder to annotate than when marking on paper; and not having enough space for feedback comments. The disadvantage mentioned most frequently was around eye strain and tiredness, experienced by six of the teachers, which also made it harder to concentrate for long periods of time.

Like the students, the teachers were mixed in their responses about navigating their way around the on-screen paper. The issue of having to frequently screen switch (i.e. move between the marking screen and the mark scheme) was highlighted as a drawback, which slowed teachers down.

Needed two screens for mark scheme and work. (Male teacher, 50–59 years old)

The flicking from screen to screen to consult the mark scheme and then going back into the online marking screen. (Female teacher, 30–39 years old)

Two teachers referred to their prior online examining experience and would have liked to have had the same facility to share marking and moderation of the English OSA as they had during a normal exam series when they marked online. Training teachers to mark on screen, particularly those without examining experience, was also deemed useful in order to replicate the practices involved in marking 'real' exams.

I examine so if the process was more like the exam process and we could share marking and moderate, it could be a good move. (Female teacher, 40–49)

It's what we do for the real exam marking so it would make sense to train staff to mark in the same way. (Female teacher, 30–39 years old)

4.2 Looking to the future

Fourteen of the 22 teachers reported feeling positive about more on-screen marking, six expressed that they had mixed feelings, and only one reported feeling negative about the prospect (one did not respond). None of the teachers stated that they would prefer to mark on screen in the future 'mostly or all the time'. The preference was for a balance of on-screen and paper-based marking; only one teacher stated they would prefer to stay with a paper-based approach (the same male teacher who felt negative about assessments moving on screen).

Discussion

OSA: the student perspective

The timing of this study during the 2020/21 academic year situates the data collection within the period of Covid-19 school closures, and this has undoubtedly had an impact on student responses

to the GCSE English OSA given their greater experience of EdTech. Never before has a generation of students been exposed to this level of digital teaching and learning (Burgess & Sievertsen, 2020); it places them in a unique position when evaluating an OSA. However, it should be noted that there is considerable variation in the experiences of the students within the sample, replicating the heterogeneity of experience across the country and indeed internationally (OUP, 2021).

The experience of taking an OSA elicited many positive responses; students found the layout of the source material clear and they liked the ease of navigation as they moved between sources. The issue of legibility was also highlighted as a positive: typing alleviated the problem of students' handwriting deteriorating towards the end of the assessment. While the potential use of digital teaching, learning and assessment has been discussed in previous research (Hammond, 2014), the Covid-19 school closures have solidified in students' minds the inevitability of more exposure to digitally mediated teaching, learning and assessment in the future; it is a case of when, not if, OSA will be introduced.

Interestingly, the students in our study identified the need for 'preparedness': if assessments were to move on screen in the future, students would need to start preparing for this early on in their school careers, at the beginning of Key Stage 3. Schools would need to embed opportunities to develop students' IT skills across the curriculum, increasing their familiarisation with using keyboards and exposing them to a wider range of OSAs both in terms of format and subject.

Some of the perceived disadvantages of OSA included the potential to be marked down for spelling and grammar errors because of 'typos' made due to poor keyboard skills and no access to spellcheck. Students perceived this as unfair and it resulted in increased anxiety levels while doing the assessment. In contrast, students with well-developed keyboard skills were able to overcome these potential obstacles and work more quickly and legibly. This reinforces the importance of regular exposure to using keyboards, as it would enhance the experience for all students and reduce potential inequalities.

Unfamiliarity with reading large amounts of text on screen resulted in students 'getting lost' and spending more time rereading the source text, which slowed them down. In addition, the inability to annotate and highlight the text on screen was a significant drawback. Students had relied on this approach when preparing for paper-based exams and not being able to replicate it in an OSA was a source of frustration and anxiety for some. While there is the potential to address this issue via technological means, it further reinforces the importance of 'preparedness' and knowing what adaptations and modifications teachers and learners might need to successfully transition to OSAs. It is worth noting that, as raised by a small number of participants, students' recent experiences of on-screen and online teaching, learning and assessment have highlighted the ways in which their IT and keyboard skills, or lack of, could impact their performance, thus invoking the potential problem of construct irrelevant variance (Haladyna & Downing, 2004).

Finally, set against this discourse of inevitability, we noted that students are very socially aware; they highlighted a number of barriers that could hinder the successful introduction of OSA, including equal access to suitable resources such as devices and wifi. Given the heterogeneity of their online learning experiences during the pandemic, it is evident that funding at a national level is key to achieving equitable access to these resources, particularly if OSA becomes more widely used for high-stakes testing in the future.

OSA: the teacher perspective

The findings suggest that participating teachers were generally positive about their marking experience of the OSA, although their preference was for a balance of on-screen and paper-based marking; none of the teachers expressed a preference for marking on screen all of the time. In line with recent research (Johnson et al., 2012; Yang et al., 2017), marker reliability was also commented on positively; teachers did not perceive any negative impact to reliability when marking on screen. Teachers, like students, appreciated the legibility of scripts, which helped speed up the marking. They also liked the ease with which they could provide feedback due to the functionality of the OSA. Problems of transporting and managing large numbers of paper scripts were also alleviated by the on-screen format.

We found that teachers with examining experience, who are therefore more accustomed to marking on screen, felt that their experience was an advantage when marking and giving feedback through OSAs. To ensure alignment with other teachers, those who do not have examining experience should be given specific training and have OSA embedded more regularly into their teaching. Even though school closures resulted in an increase in exposure to OSA, the modes of assessment were often quite basic (e.g. quizzes) with no examples of innovative assessment practices. This suggests that teachers are not making full use of the features of the technology, either in the classroom or when working remotely. Invariably, the students reported that teachers reverted to familiar, offline modes of assessment and marking. Therefore, while the unprecedented events since March 2020 have perhaps normalised the use of digital technologies in education and precipitated changes that many teachers would never have envisaged, we cannot assume that teachers will continue to work in this way as students return to the classroom. Nor can we assume that teachers' recent experiences of online learning will result in greater interest or uptake long term, in the post-pandemic era.

Teachers identified a number of issues that raised concern, including the increased likelihood of students cheating if remote proctoring was not in place. They disliked having to constantly switch between the marking screen and the mark scheme; they found that this was inefficient, as it slowed down the process. Teachers also missed not being able to compare papers and share them with colleagues for discussion as they would with PBAs. Functionality that would assist teachers and help remove these barriers would be welcomed and would facilitate the transition to OSAs for markers.

Teachers reported increased eye strain as a result of having to work on screen for long periods; this would need to be factored in when marking the work of large cohorts. They also found working on screen made it harder to concentrate for long periods of time. Given teachers' current workload, this could be an impediment to wider implementation.

As noted earlier, interpretation of the findings should take account of the fact that our sample is a self-selected group, so may not be representative. There is certainly scope for more research into teachers' perspectives, especially as our sample was relatively small.

Product design and development

One of the aims of the study was to identify particular factors that might help product design and inform future development of OSAs. Our findings suggest that the majority of participants experienced relatively little disruption when taking and marking the assessment. However, for the 25% of students who did experience some form of glitching or crashing, this made the experience more stressful. Students were unaware that their work would be automatically saved if their laptop

crashed; providing this information would have alleviated students' concerns that work would be lost.

There were a number of technical aspects of the assessment that materially affected students' experience:

- students felt they suffered from not having the ability to annotate and highlight the text
- while students found the font size easy to read, and it was easy to 'flip' between the two screens, being required to leave the question box to change between sources was cumbersome
- students would have liked to have an on-screen 'note pad' on which to take notes and plan their work. When coupled with the 'intimidating' blank text box, students felt their writing was less structured and there was a tendency to 'ramble'.

The students' lack of familiarity with writing on screen meant that a small minority of students perceived that their creativity and 'flow' (particularly for longer-form, creative writing tasks) was stunted by the OSA mode. Students' lack of experience engaging with complex activities and producing extended text-based content on screen may impact the way certain on-screen item types perform. This again suggests that preparedness for the functional demands of OSA is vital and needs embedding in the student pedagogical experience.

From the teacher perspective, several of the participants found the highlight function useful. Some called for more space for feedback comments; however, others liked the fact that they did not necessarily have to include extended feedback, and therefore did not perceive the lack of space as a limitation. The need to move between the mark scheme and marking screen was perceived negatively by a small number of teachers, who resorted to using two screens to carry out the marking. This solution would not be practical or possible for all teachers, plus it would make the process more cumbersome and may deter teachers from adopting OSA if given the choice. Another issue to arise was around quality assurance of marking. The current setup did not provide teachers the opportunity to compare papers when marking, or to share them with other markers for the purposes of moderation or ensuring consistency across different markers; this was perceived as a significant drawback.

Conclusion

Most of the disadvantages perceived by the participants related to the functionality of the OSA, the unfamiliar layout and navigation issues. As outlined above, these are largely technical issues that can be overcome through the development and design of the OSA and by ensuring that teachers and students have greater exposure and engagement with this mode of assessment. For students, it may be particularly important to embed opportunities for OSA at an earlier stage of their education to ensure they have the opportunity to develop the necessary skills and gain experience of taking exams on screen.

When asked about the possibility of moving to OSAs in the future, both students and teachers thought it was inevitable and that there was a need to move with the times. Teachers' tentativeness about assessment moving on screen was often in relation to how it might impact students. If improvements could be made (e.g. the ability to annotate and highlight, and introducing a plagiarism checker), they were inclined to be more positive.

However, the move to OSA also brings with it issues relating to fairness and validity; these should be given due consideration in all future product development to ensure that no student is disadvantaged due to the mode of assessment.

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Appendices

Appendix A: Student survey

Category 1: Your computer

1. During this test, did your computer:

a) Experience any **glitching**?

(e.g. areas of the screen not showing text, strange colour issues)

1 *Very often*

2 *Often*

3 *Sometimes*

4 *Rarely*

5 *Never*

b) Experience any **slowdown**?

1 *Very often*

2 *Often*

3 *Sometimes*

4 *Rarely*

5 *Never*

c) Experience any **freezing**?

1 *Very often*

2 *Often*

3 *Sometimes*

4 *Rarely*

5 *Never*

d) Experience a **crash**?

(e.g. the program or whole computer broke down or turned off)

1 *Very often*

2 *Often*

3 *Sometimes*

4 *Rarely*

5 *Never*

2. In general, how well did your computer perform?

1 *Very well*

2 *Well*

3 *Neither well nor badly*

4 *Badly*

5 *Very badly*

Category 2: Your experience in the test

3. How easy was the text to read?

1 *Very easy*

2 *Easy*

3 *Neither easy nor difficult*

4 *Difficult*

5 *Very difficult*

4. How easy was it to refer to the source text when you needed it?

1 *Very easy*

2 *Easy*

3 *Neither easy nor difficult*

4 *Difficult*

5 *Very difficult*

5. How tired did your eyes get during the test?

1 *Very tired*

2 *Tired*

3 *Somewhat tired*

4 *Not very tired*

5 *Not tired at all*

6. How easy was it to find the **questions**?

1 *Very easy*

2 *Easy*

3 *Neither easy nor difficult*

4 *Difficult*

5 *Very difficult*

7. How easy was it to find the **answer box**?

1 *Very easy*

2 *Easy*

3 *Neither easy nor difficult*

4 *Difficult*

5 *Very difficult*

8. How easy was it using the keyboard to write your answers?

1 *Very easy*

2 *Easy*

3 *Neither easy nor difficult*

4 *Difficult*

5 *Very difficult*

9. How was your writing speed **during this on-screen test** compared to your writing speed during paper-based tests?

1 *Much faster*

2 *Faster*

3 *About the same*

4 *Slower*

5 *Much slower*

Category 3: Technology at school

10. **Before** the Covid-19 school closures, how often did you complete an on-screen test?

1 *Daily*

2 *Several times a week*

3 *Weekly*

4 *Several times a month*

5 *Monthly*

6 *Less than once a month*

7 *Never*

10. **Since** the Covid-19 school closures, how often do you complete an on-screen test?

1 *Daily*

2 *Several times a week*

3 *Weekly*

4 *Several times a month*

5 *Monthly*

6 *Less than once a month*

7 *Never*

11. How often do you use a computer or laptop **at school**?

1 *Daily*

2 *Several times a week*

3 *Weekly*

4 *Several times a month*

5 *Monthly*

6 *Less than once a month*

7 *Never*

12. How often do you use a mobile phone or tablet **at school**?

1 *Daily*

2 *Several times a week*

3 *Weekly*

4 *Several times a month*

5 *Monthly*

6 *Less than once a month*

7 *Never*

13. Which of the following types of programs or websites do you use **at school**?

(select all that apply)

- **Word processing programs** (e.g. Microsoft Word, Google Documents, etc.)
- **Visual or presentation programs** (e.g. Microsoft PowerPoint/Publisher, Google Slides, Adobe programs, etc.)
- **Spreadsheet programs** (e.g. Microsoft Excel, Google Sheets, etc.)
- **Homework websites** (e.g. Show My Homework, Showbie, BBC Bitesize, etc.)
- **Video websites** (e.g. YouTube)
- **Online group calls** (e.g. Zoom, Skype, Microsoft Teams, etc.)
- **Other** (write a program or website in this box)

Category 4: Technology at home

14. **How many** digital devices are present in your home?

(including all mobile phones, tablets, laptops, computers)

(write number in a box)

15. Do you have access to a computer or laptop at home?

Yes

No

15a) How often do you use a computer or laptop **at home**?

1 *Daily*

2 *Several times a week*

3 *Weekly*

4 *Several times a month*

5 *Monthly*

6 *Less than once a month*

7 *Never*

16. How often do you use a mobile phone or tablet **at home**?

1 *Daily*

2 *Several times a week*

3 *Weekly*

4 *Several times a month*

5 *Monthly*

6 *Less than once a month*

7 *Never*

17. Which of the following apps and websites do you use for personal use?

- *Instagram*
- *TikTok*
- *Snapchat*
- *WhatsApp*
- *YouTube*
- *Twitter*
- *Facebook*
- *Messenger*
- *Tumblr*
- *Discord*
- *Houseparty*
- *Soundcloud*
- *Other: (write an app or website in this box)*

Category 5: Overall views

18. How would you rate your ability with computers?

1 *Very high ability*

2 *High ability*

3 *Neither high nor low ability*

4 *Low ability*

5 *Very low ability*

19. How much did you prefer doing this test compared to if it were with pen and paper?

1 *Much better*

2 *Better*

3 *Neither better nor worse*

4 *Worse*

5 *Much worse*

20. How well do you think you did on this test compared to if it were with pen and paper?

1 *Much better*

2 *Better*

3 *Neither better nor worse*

4 *Worse*

5 *Much worse*

Appendix B: Teacher survey questions

Category 1: Background information

1. What best describes your gender?

Female

Male

Prefer not to say

Prefer to self-describe: (freeform textbox)

2. Which is your age category?

20-29

30-39

40-49

50-59

60 or over

3. How long have you been teaching?

NQT

RQT

2-5 years

5-10 years

10 years or over

4. Have you used an on-screen marking system before?

1 Yes - for both summative and formative work

2 Yes – for summative work only

3 Yes – for formative work only

4 No

Category 2: Marking assessments

5. Before the Covid-19 school closures, how did you most frequently mark student work?

- 1 *On screen*
- 2 *On paper (including on print-out copies)*

6. Since the Covid-19 school closure period, how did you most frequently mark student work?

- 1 *On screen*
- 2 *On paper (including on print-out copies)*

Category 3: Background with computers

7. How would you rate your ability with computers?

- 1 *Very high ability*
- 2 *High ability*
- 3 *Neither high nor low ability*
- 4 *Low ability*
- 5 *Very low ability*

8. How often do you use a computer or laptop in a personal context?

- 1 *Daily*
- 2 *Several times a week*
- 3 *Weekly*
- 4 *Several times a month*
- 5 *Monthly*
- 6 *Less than once a month*
- 7 *Never*

Category 4: Your experience marking the on-screen GCSE English Language assessment

9. Approximately **how long did it take** to mark the on-screen GCSE English Language assessment per paper?

10 minutes or less

10-20 minutes

20-30 minutes

30-40 minutes

40-50 minutes

50 minutes or more

10. How was your **marking speed** when marking the on-screen GCSE English Language assessment compared to when marking paper-based assessments?

1 Much faster

2 Faster

3 Equally as fast as on paper

4 Slower

5 Much slower

11. How **reliable** do you feel your marking is when marking the on-screen GCSE English Language assessment compared to when marking paper-based assessments?

1 Much more reliable

2 More reliable

3 Equally reliable as on paper

4 Less reliable

5 Much less reliable

12. How **tired did your eyes get** when marking the on-screen GCSE English Language assessment compared to when marking paper-based assessments?

1 Much more tired

2 More tired

3 *Equally tired as on paper*

4 *Less tired*

5 *Much less tired*

13. How **physically comfortable** were you when marking the on-screen GCSE English Language assessment compared to when marking paper-based assessments?

1 *Much more comfortable*

2 *More comfortable*

3 *Equally comfortable as on paper*

4 *Less comfortable*

5 *Much less comfortable*

14. How much did you need to **take a break** when marking the on-screen GCSE English Language assessment compared to when marking paper-based assessments?

1 *Much more often*

2 *More often*

3 *Equally often as on paper*

4 *Less often*

5 *Much less often*

15. How **difficult** was marking the on-screen GCSE English Language assessment compared to when marking paper-based assessments?

1 *Much easier*

2 *Easier*

3 *Equally as difficult*

4 *More difficult*

5 *Much more difficult*

16. How much did you **prefer** marking the on-screen GCSE English Language assessment compared to when marking paper-based assessments?

1 *Much more preferable*

2 *More preferable*

3 *Equally preferable as on paper*

4 *Less preferable*

5 *Much less preferable*

Category 5: Overall views

17. What were the **advantages** to marking on screen?

(freetext box)

18. What were the **disadvantages** to marking on screen?

(freetext box)

19. How do you feel about a move from less paper-based to more on-screen marking?

(freetext box)

20. Would you prefer to do future marking on screen?

Yes – all the time

Yes – mostly on screen

Somewhat – around half of the time

Rarely – mostly on paper

Never – all on paper

I don't mind either way

21. Are there any other comments or thoughts you want to share on this marking experience?

(freetext box)

Appendix C: Student focus group topic guide

ON-SCREEN GCSE ENGLISH ASSESSMENT

STUDENT FOCUS GROUP SCHEDULE

WELCOME/INTRODUCTION

Thank you for agreeing to take part in this research project for AQA. As we said in the participant information sheet, we are looking into the ways on-screen assessment could potentially be used in GCSEs. We are interested in your experiences of taking an on-screen assessment and your views more generally about learning online.

Before we begin, although you have already signed your consent forms, I'd just like to remind you that, when we present the findings from our research, neither you nor your school will be identified (we won't use your names), and we won't share the recording or the transcript of this focus group with your teacher or school. We're recording the focus group so that we can transcribe what has been said for the purposes of accuracy. If there are any questions you don't wish to answer, that is fine, and if you wish to withdraw at any point from the focus group you can do so without having to give a reason.

Are there any questions before we begin?

[Introductions – my name is..... If you could please introduce yourselves for the purpose of the person transcribing the focus group]

Section A: Context questions (in-school and out-of-school screen time and digital exposure)

To start with, I'd like to ask you a few general questions about your level of use of technologies and how you would rate your technological abilities.

1. What type of device did you use to complete the on-screen English assessment?

Probe: How much access do you normally have to that device (every day, occasionally because shared etc)?

Did you have this device prior to the most recent school closure or did your school provide it for you?

2. How often do you use a computer or laptop at home for non-school use/activities)

Prompt: daily, several times a week, weekly etc)?

3. Which other sorts of digital devices do you use at home?

Probe: can you give me some examples of what you mainly use them for (socialising, school work, gaming etc)?

4. How would you rate your ability with computers (very high etc)?

Probe: What kind of things did you think about when you rated yourself?

Section B: Use of learning technologies pre and post Covid-19 (experiences of online learning)

I'd now like to ask you to think about your experiences of learning online both before the schools were closed in March 2020 due to Covid-19 and the periods of school closure since then.

1. So, thinking back to before Covid-19, can you describe what types of technologies and software you used in your English lessons?

Follow-up: how often did you use them in class?

2. Since March 2020, can you describe your experiences of online learning since Covid-19?

Probe: can you give me some examples?

Probe: how does that experience compare to your experiences of online learning before the school closures?

Prompt: what sorts of challenges or difficulties have you experienced either accessing or completing these activities and tasks?

3. Were there any subjects which you found worked better than others when learning online?

Probe: Can you explain why?

Section C: The on-screen GCSE English assessment

1. Prior to taking the on-screen GCSE English assessment, what experiences of online/on-screen assessment have you had before?

Probe: Can you please give me some examples (type or assessment, which subjects)?

Probe: Other than the on-screen assessment you recently did and which we're researching, have you done any similar on-screen assessments for English? (e.g. did you do a practice test prior to taking the assessment?)

-
2. Thinking about the actual assessment you've just done, did you experience any issues or problems with your computer during the assessment?

If yes: can you describe them to me? (might need prompt e.g. did your computer freeze or crash?)

3. Did you experience any issues or problems regarding the source text you had to refer to in the assessment?

Probe: can you describe them to me?

4. Can you describe your experience of using a screen and keyboard to input your answers?

Prompt: slowed you down? Was faster? Difficulties finding information or answer boxes?

5. How does taking a paper-based exam or assessment compare to taking an on-screen assessment?

Prompt: can you give me some reasons or examples for your answer?

6. Do you think you did better or worse in the on-screen assessment than if you had completed it using a pen and paper?

Why?

7. From your experience, do you think some subjects are better suited to on-screen assessment formats?

Probe: can you explain why you think that?

8. A question about fairness now. How would you feel if one exam board offered a qualification using an online/on-screen assessment, for example for GCSE English, and another board offered GCSE English in a paper-based traditional format?

Section D: Finishing up

1. Overall, how would you describe your experience of doing the on-screen English assessment?

-
2. If you had a choice, would you prefer to do future exams in a paper-based format or an on-screen format?

Can you please explain the reasons for your answer?

3. How do you see the role of on-screen assessment in the delivery of future exams?

Prompt: more use? Less use? Anticipated issues or challenges?

Thank you very much for your time. I don't have any more questions, but is there anything you would like to add?