

Assessments and COVID-19

How remote online exams can support exam and business continuity

This white paper gives advice to those at workplaces and universities and colleges who are considering the need to deliver online assessments to workers and students at home in the face of the COVID-19 challenge. It covers those who are currently delivering tests on paper and also those who currently deliver tests on screen with in-person proctoring.

The coronavirus outbreak will force many organizations to think about how to do things differently. Our experience is that many organizations have already been making the transition to remote online testing. Current events will likely accelerate that progress. This paper outlines some of the lessons in making the transition, making it easier to make the move smoothly.

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Still using “paper and pencil” tests?

The corona virus pandemic is forcing us all to change our behaviors in our professional and personal lives alike. Whether you are required to work from home or need to cancel your family’s holiday plans, the crisis has a massive impact on how we live our lives and conduct business.

There will be many adverse repercussions, some of which we can predict. Others we have no way of foreseeing. There will probably also be some benefits or advancements as a result of being put through this test. We would like to highlight how this crisis has the potential to benefit institutions that provide learning and assessments.

Many educational institutions have chosen to or been forced to shutter their campuses and cease or drastically reduce operations and events, to help stop the spread of the virus.

Many test centers are closing. Many exam bodies are struggling to deliver exams. Universities, schools, training organizations and professional conferences, have cancelled or postponed their in-person classes and events. Some have transitioned these to the internet.

Others are still trying to figure out what to do next and how to maintain the continuity of their respective services. Providing instruction online is likely to play a large role, no matter what the organization decides. And with that instruction comes the need for assessment.

Online testing, e-assessment, computer-based testing, digitized assessment... no matter the name used to describe it, it’s a well-established practice within the education and training industry. Yet some organizations still rely on paper and pencil to administer their tests and exams. Why? These are some of the reasons why paper and pencil still prevail.

1. Lack of access to computers and the internet
2. The need for security and proctoring during test administration
3. Paper and pencil are reliable and familiar. No need for specialized technical knowledge or tools

4. Concerns about the validity and reliability of the test when its delivery format is substantively changed
5. Unwillingness to change

Except for the first, lack of connectivity, none of these reasons for continuing the use of paper and pencil tests is a real barrier. And in certain parts of the world, where the internet is accessible to as high as 94% of the population, even the lack of connectivity is not a real barrier in practice.

Allow us to explain how Questionmark can help you overcome these would-be barriers.

Unwillingness to change

Organizations that are unwilling to change will eventually die due to competition. Consider the case of Blockbuster video, for example. Sometimes, the unwillingness to change stems from fear. Change is scary and risky, especially if you must undergo it alone.

Fortunately, Questionmark helps guide its customers through the transition from paper and pencil to online testing. We offer professional services on how best to use our software, as well as on how to create quality assessments. These assessments that will garner the kinds of data that can be used to make important decisions and conclusions regarding:

- The competency or preparedness of employees to do the job
- The level to which students have mastered the subject matter
- If an individual is qualified for the role or the position
- The level of proficiency the student possesses in the domain, prior to beginning his/her course of instruction

Questionmark understands that not all assessments are created equally, and different assessments can and should be used for different purposes. We run our workshops on

- test blueprint development,
- question writing,

- standard setting and
- validity and test defensibility

In these, we provide our customers with valuable guidance on how they can efficiently and effectively assess, what it is they are trying to measure. These services are delivered to our customers consultatively. We have the experience and expertise to be able to tailor each workshop to meet the customer's unique needs.

Paper and pencil are reliable and familiar. No need for specialized technical knowledge or tools

It's true that pencils, pens and paper are universally familiar and despite being ancient technologies, are extremely reliable. But their familiarity is in fact waning, with the generations of digital natives who are now in school, higher education and workplace settings. Many test-takers are more familiar with computers and mobile devices as their primary medium of communication, than they are with paper and pencil/pen. And there are increasing demands from industry bodies to stop using pen and paper exams. (See, for example, TES on "calls to scrap pen and paper exams by 2025" (February 2020):

<https://www.tes.com/news/calls-scrap-pen-and-paper-exams-2025>.)

Questionmark's authoring tools are all browser-based, so they don't require additional software installations. Moreover, we train our customers on how to use the software. Questionmark also offers in-application help and guided tours. Similarly, test-takers require only a browser to answer questions on the test, and our software can even deliver tests to mobile devices, if required.

Questionmark delivers 10s of millions of tests and exams annually. The platform is enterprise-grade, engineered to scale for thousands of simultaneous users and to be available whenever it's needed. We offer 99.9% uptime.

Even pencils run out of lead and pens out of ink. Not to mention, when was the last time you hand-wrote a letter to a relative or a business colleague?

Concerns about the validity and reliability of the test instrument

Of all the possible barriers, this is the most legitimate. An instrument that is not reliable and valid, yields no useful measurement data.

Adapting your exam from paper delivery to online delivery may in fact, reduce reliability and therefore validity, but the extent of that risk is highly dependent on the subject area domain.

For example, if you are assessing conversational speaking skill in a foreign language, then going online will be a challenge, and you should pay close attention to reliability. While you could use a video conferencing platform to administer the oral exam, you will want to be sure that the technical characteristics of the test environment don't interfere with how well a test-taker performs.

The good news here is that for most subject matter that operates primarily within the cognitive domain, you can reliably adapt the questions presented on the paper form to an online format.

Whether you are using selected-response questions or constructed-response questions on paper, you can adapt those questions to an online format.

Questionmark offers:

- a wide variety of response formats, including the ability to evaluate and score constructed responses,
- capabilities to utilize and embed media into questions for greater fidelity to the performance environment, and
- reports that calculate test and item reliability, among many other item banking and test banking features

By going online with Questionmark, you will also gain the added benefit of being able to provide test-takers with immediate feedback. If you are using tests as formative assessments during a course of instruction, you can display question-

level and topic-level feedback to your learners immediately, upon completion of the test, something that you cannot do with paper.

Additionally, the Questionmark professional services team is adept at helping customers transform their paper and pencil tests to online formats.

As an example, we worked with a medical college in the United Kingdom to adapt their clinical problem-solving skills exam from paper to an online format. The exam was used to select candidates for admission to a prestigious clinical residency. It involved dozens of images of pathological specimens and other illustrations of anatomical traumas and symptoms. The customer was concerned about how those images would translate to the online format. Questionmark adapted the exam and the customer piloted the exam.

We then used the Test Analysis report to inspect the exam's reliability. The reliability coefficient was greater than 0.9, indicating that the change in format did not diminish the exam's ability to consistently measure the target audience's clinical problem-solving skill. This gave the customer confidence to make the leap to online testing.

There is well-cited, peer-reviewed research that suggests that computer-delivered exams perform as well as paper exams, see for instance <https://bmcmmededuc.biomedcentral.com/articles/10.1186/1472-6920-11-89> and <https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0143616&type=printable>

The need for security and proctoring during test administration

Everyone understands the need for test integrity, when it comes to high stake exams. It's essential for face validity and for fairness. Regardless of how a test or exam is administered, some key threats to test security and integrity are:

- Impersonation/proxy testers – the person taking the test is not the one that is supposed to be taking the test

- Content theft – a version of the test or exam is obtained and distributed without authorization
- Cheating/collusion – test takers devise ways to help themselves on the exam, by using prohibited resources or by devising ways to communicate about answers that go undetected

These risks are present when an exam is delivered on paper or when an exam is delivered online. Proctoring (or invigilation) is the primary mitigation strategy employed to prevent or deter these threats. Proctoring is increasingly done online.

Questionmark has offered online proctoring since 2016 and we conduct tens of thousands of online proctored exams per year. We offer live, remote proctors who communicate with test takers and monitor their exams in real-time, using web conferencing tools. The proctor confirms test taker identity and ensures that the test taker behaves appropriately during the exam, ensuring, for example, that no prohibited resources are used or that the test taker is not getting the aid of a friend or colleague. If necessary, the proctor can pause or terminate the exam using controls provided by Questionmark's delivery engine.

Questionmark also offers a record and review style of proctoring. This style of proctoring uses video technology to identify test-takers and records the exam session, while applying software and algorithms to monitor various aspects of the exam and the test-taker. Anomalous and suspicious behavior is detected and flagged, allowing an instructor or test publisher to then review the sessions to determine if they are valid or not.

Beyond these two types of proctoring, Questionmark offers additional software tools to safeguard against content theft and cheating. For example, customers can opt to use Questionmark Secure, a lockdown browser that only permits the test-taker to interact with the exam once it's running. No other applications, processes or tasks are permitted on the test-taker's machine. Another feature that can help prevent against cheating is the use of randomization.

Questionmark offers the ability to generate randomized test forms so no two tests are the same in terms of the questions presented or the sequence in which

they are presented. Additionally, for selected-response questions, the choices can be shuffled.

Lastly, Questionmark offers a data forensics service that analyzes test results data to provide further peace of mind that, despite being administered online, there is no test fraud taking place. Using various statistics, the forensic analysis service can highlight anomalous or suspicious patterns of response or scoring. This way when your testing or certification program requires evidence that security is enough to prevent fraud, the data forensics service can help you supply such evidence.

Suffice it to say, Questionmark can secure your online assessments from fraud. It could even be argued that since online testing is inherently digital, making all these security measures possible, it's more secure than paper and pencil administration.

If any of these barriers to online testing ring true for you, we would be happy to consult with you on how Questionmark can help. This is what we do and have been doing for over 30 years.

While the current global pandemic has spurred the publication of this piece, the truth is that Questionmark would be doing this type of work with and for its customers and prospects anyway. It's what we do. We help our customers create, deliver, and report on tests and exams securely via the internet.

If you usually deliver exams on-screen in a test-center, what do you need to change if delivering at home?

Most test-taking is a solitary activity. The test-taker sits in front of a computer or paper and does his/her best to answer the questions. Most tests and exams don't fundamentally change by taking the test at home instead of in a test center or other college, university or workplace setting. The nature of what is being assessed and the nature of what someone does to respond is unchanged.

There are of course some important exceptions where you do need other people or resources to deliver the test. These include, for example, practical

assessments, group assessments, role play (such as medical objective structured clinical examinations, or OSCEs), observational assessments, but the vast majority of assessments can be delivered at home practically.

Here are a few things to consider if moving to deliver online exams to test-takers at home:

1. Of course, you need to deploy different test security measures as explained in the section above
2. It can be harder for test-takers to focus for a long time at home, and they can have interruptions (e.g. children demanding attention), so if your tests take over two hours, you may want to consider dividing them into shorter segments or helping test-takers allocate sufficient time
3. People taking tests at home may use a variety of equipment, make sure they have an opportunity to try a practice test on that equipment before they have to take the test for real
4. Although many test-takers may have excellent internet bandwidth at home, some may not, and it's possible that the corona virus epidemic will impact speeds of some home internet access as so many people will be working from home. So, if your tests contain video or large graphics, consider if they are necessary, and be tolerant of time limit extensions and the like due to slow connections

For more information

For more information on the Questionmark platform and how it can help organizations set up online assessments that people can do from home, please:

- See our web site: www.questionmark.com
- Contact us directly: sales@questionmark.com

About Questionmark

Questionmark assessment and portal solutions enable organizations to measure knowledge, skills and attitudes for certification, channel expertise, workforce learning and regulatory compliance. Questionmark's assessment management system, available as a cloud-based solution or for on-premise deployment, enables collaborative, multilingual authoring; multiple delivery options including mobile devices; trustable results and comprehensive analytics.

Complete details are available at <https://www.questionmark.com>

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Questionmark provides a secure enterprise-grade assessment platform and professional services to leading organizations around the world, delivered with care and unequalled expertise. Its full-service online assessment tool and professional services help customers to improve their performance and meet their compliance requirements. Questionmark enables organizations to unlock their potential by delivering assessments which are valid, reliable, fair and defensible.

Questionmark offers secure powerful integration with other LMS, LRS and proctoring services making it easy to bring everything together in one place. Questionmark's cloud-based assessment management platform offer rapid deployment, scalability for high- volume test delivery, 24/7 support, and the peace-of-mind of secure, audited U.S., Australian and European-based data centers.

Questionmark has the experience to ensure that its customers get results they can rely on. It has helped its customers deliver more than 95m unique assessments and, since starting, has been trusted by more than 2,500 customers worldwide.

The business has a wide range of expertise across industry sectors, government and academia. These include, but are not confined to, financial services, technology, pharmaceuticals, utilities, retail, public sector and government, awarding bodies and higher education.

Questionmark has achieved authorization from the Federal Risk and Authorization Management Program (FedRAMP). The FedRAMP Authorization means Questionmark is approved to deliver cloud-based assessments for the US government and military organizations.

The business supports the full range of roles within customers' organizations to deliver valid, reliable, fair, and defensible assessments. This includes senior managers and departmental heads, technical assessment teams, and consultants and intermediaries. Questionmark also supports in-house functions such as IT, data, legal and procurement teams.



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