



The Ultimate Guide to Online Testing

A COMPREHENSIVE RESOURCE FOR BEGINNERS AND PROS



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Introduction

Internet-based testing has been used by credentialing organizations and higher education institutions for years, and remote proctoring has existed since around 2008. However, once a mere alternative to paper-based and in-person testing, online testing is now the dominant form of assessment.

That shift isn't surprising, given the recent changes we've witnessed in professional credentialing, higher education, and assessment. With these changes, those involved have begun to see online testing not just as an option but as an expectation—drawn to its flexibility, accessibility, and opportunities for greater reach.

Note: When we use the term “online testing” in this e-book, we’re referring to the combination of internet-based testing (IBT) and remote delivery.

Why Read This E-Book Now?

We've entered an era where understanding online testing is non-negotiable, but mastering its nuances is what will ultimately set you apart. Whether you're a beginner looking to grasp the fundamentals of online testing or a seasoned professional aiming to stay at the forefront, there's a lot to consider—and even more to learn.

We designed this e-book to be a valuable, impartial resource for exploring the future impacts and advantages of online assessment. It was **not** written to sell you any services or products. Rather, we hope to provide you with an objective view of the online testing landscape. Our goal is to help you—regardless of your role in the assessment industry—make well-informed decisions.

How Will It Benefit You?

This e-book explores the current state of online testing and the direction it's heading. You'll gain practical advice for harnessing the benefits of online testing and solutions for overcoming potential challenges. With scenarios to consider and a comprehensive list of resources to support your assessment endeavors, this e-book will ensure you're not just keeping pace but ahead of the curve.

LEARN THE LINGO

- **Paper-based testing (PBT):**
The use of paper and pen to deliver tests
- **Computer-based testing (CBT):**
The use of technology to deliver exams as an alternative to paper-based testing
- **Internet-based testing (IBT):**
The administration of an assessment online, where test-takers complete it via an online application or platform
- **In-person proctoring:**
The supervision of a test by a proctor who is physically present in the same location as the test-taker
- **Online proctoring:**
The remote supervision, either synchronously or asynchronously, of tests delivered online
- **In-person delivery:**
The administration of a test at a physical, brick-and-mortar location
- **Remote delivery:**
The administration of assessments through online technology, allowing test-takers to participate from disparate locations





CHAPTER ONE

The Benefits of Online Testing

Developing, delivering, and proctoring an online test has many advantages, including additional security measures and greater test-taker convenience. Online testing can also save time and resources for administrators and provide a level of exam-related data that's impossible with paper-based tests and in-person delivery.

This chapter describes the benefits of designing, building, and delivering online tests. We also share insights into how remote delivery is different from in-person delivery—and how it provides value to test-takers, administrators, and program managers.

Note: When we use the term “online testing” in this e-book, we’re referring to the combination of internet-based testing (IBT) and remote delivery.

Advantages of Online Testing Over Paper-Based Testing

Security

Credentialing programs and higher-ed institutions face increasingly sophisticated cheating and collusion tactics that can compromise test security and program integrity. In addition to negatively affecting program reputation and brand equity, these tactics can erode confidence in test-taker competence. That's why it's critical for every program—regardless of exam format—to prioritize security. Both online testing and paper-based testing support stringent security measures, but online testing offers several unique security advantages over its paper-based counterpart.

Let's explore a few of them.

Test Development Security Measures

Due to their static and fixed nature, paper-based tests are more vulnerable to cheating, content theft, and content exposure. While some argue that they're less vulnerable to tampering because test-takers can employ sophisticated methods to compromise online assessments, this perspective doesn't account for the advanced security measures available in online testing. Online exams have the advantage of leveraging technology to implement various test development tactics that mitigate security risks.

For example, online testing platforms are more efficient at randomizing items and creating multiple versions or forms. During the online test development stage, techniques such as computerized adaptive testing (CAT) and linear on-the-fly testing (LOFT) can be used to protect exam content while creating a unique experience for each test-taker. While it's possible to randomize items and use multiple forms in paper-based testing, it requires more manual effort and planning, not only for effective execution but also for scoring and reporting.

RELATED RESOURCE

WEBINAR: [New Advances in Exam Security: How to Safeguard Your Program](#)



THE MORE YOU KNOW

Psychometricians can create unique, parallel forms for test-takers using several techniques. The CAT model selects items for test-takers in an iterative manner based on their exam performance, whereas LOFT uses complex, automated test assembly algorithms to create psychometrically equivalent forms.

Developing extensive item banks for these purposes is resource-intensive, but the payoff includes enhanced test security and increased flexibility during test delivery.



The digital nature of online tests also makes it easier to develop “innovative” (or “alternative”) item types, which are typically more complex and harder to retain. This makes it more difficult for test-takers to predict and share answers. These items—increasingly enriched by diverse media tools like videos and interactive elements—offer a more engaging and skill-focused experience compared to the traditional item types used in paper-based testing. Learn more about the move beyond traditional item types in the [“Future of Online Testing”](#) chapter.

Pre- and Post-Administration Security Measures

Before the digital revolution, people who wanted to cheat on a test would rely on word of mouth to narrow down potential tactics and strategies. Today, much of that collusion occurs in the online space—in public and private social media platforms, internet forums, chat rooms, and test prep sites. Nearly all collusion attempts now leave some sort of digital trail. And if you know where to look, you can find:

- People who sell their cheating services
- People who solicit cheating advice
- Misconduct methods that have been successfully used in the past
- Misconduct methods people are actively attempting

By employing targeted digital listening and monitoring tactics, exam solution providers and program managers can learn about new threats and determine the best course of action to take. Tangentially, monitoring and researching new browser and operating system changes can also uncover emerging exam threats.

After an exam, psychometric data forensic analysis can be used to pinpoint instances where test-takers answered questions in a suspiciously similar way. This level of analysis is made possible by the digital nature of online tests, where detailed data on test-taker and item performance is easily accessible and capable of identifying items that might indicate unauthorized access to test content.

LEARN THE LINGO

An **innovative** item is one that differs from the traditional multiple-choice item type. Its goal is to assess a test-taker’s higher-level cognitive abilities, critical-thinking skills, and real-world or workplace knowledge.



PRO TIP

Watermark your test content to mitigate the threat of content theft or increase your ability to detect content theft. Watermarked content can include exam materials that have a unique identifier, such as a logo, code, or digital signature. These identifiers are embedded in the content to ensure their authenticity, prevent unauthorized copying or distribution, and make identification of stolen content easier. By using watermarked content, exam providers can help prevent, detect, or respond to cheating—all of which aids in maintaining the credibility and value of the test and resulting credential.



Data Collection and Analysis

Online testing not only provides a wealth of data that exceeds what can be gathered through paper-based testing, but it also makes the process of analyzing that data easier. Additionally, it offers increased transparency for administrators, granting them greater visibility into the inner workings of every exam.

This enhanced capability stems from the technology used throughout the assessment life cycle, which automatically captures and stores all exam-related data, including test content and metadata, test-taker scheduling behavior and location, attendance, responses, total exam duration, and time spent on each question. This digital repository gives programs and solution vendors the ability to conduct both broad and detailed analyses of the entire testing experience with greater efficiency and depth than paper-based testing allows.

LEARN THE LINGO

Psychometric data forensics is a field that involves the application of forensic techniques to assessment data. It aims to ensure the integrity, security, and validity of the data and to identify and address potential issues related to cheating, fraudulent behavior, or data irregularities.



Interoperability, Integration, and Automation

The interoperability and integration capabilities of online testing platforms—such as candidate management systems, exam delivery drivers, learning management systems, and proctoring platforms—support real-time (or near real-time) updates, thereby promoting cost-efficiency and reducing manual data entry needs. They also accommodate automated data sharing and allow certain scoring procedures to be automated, leading to a quicker turnaround time for test results and performance information. These capabilities are known to decrease workloads for administrators and test owners, improve satisfaction for test-takers, and promote additional studies in competencies where performance is lacking.

Diversity, Equity, and Inclusion

Compared to paper-and-pencil tests, which are geographically limited to those near a test center or who can afford to travel, online testing provides a more inclusive and equitable experience. This helps program owners reach a wider, more diverse demographic. (See the [Geographic Considerations](#) section later in this chapter for a deeper dive into this topic.)

Online testing can be further enhanced by adaptive testing techniques, like CAT. This model adjusts the difficulty of questions based on test-taker responses, ensuring that test-takers are challenged at an appropriate level according to their performance and potentially reducing bias against those with different educational backgrounds or abilities.

Another DEI advantage of online testing is the technology used to assist test-takers throughout their assessment journey. Online testing platforms often include built-in accessibility features, such as adjustable text size and color schemes for test-takers with visual impairments or color vision deficiencies. Many platforms can also seamlessly integrate assistive tools like screen readers and speech-to-text software, which is a crucial accommodation for certain test-taker populations.

RELATED RESOURCE

GUIDE: [The Assessment Life Cycle](#)



Advantages of Online Testing Over In-Person Testing

Security

There's widespread debate in the assessment industry about whether remote delivery is more secure than in-person delivery. But the truth is, there's no definitive, straightforward answer. Why? Because they have different technological capabilities, are vulnerable to different cheating tactics, and rely on different processes, procedures, and policies. It's like comparing apples and oranges. That said, online testing has several security advantages compared to in-person delivery. Let's explore a few of them.



Remote Proctoring Technology

Proctoring—regardless of exam delivery modality—is a strong form of security. Simply having a human present to observe or review a test can deter many opportunistic cheaters and attempts to steal exam content. And since proctors are randomly assigned during remote test sessions, there is less concern about collusion—or even bribery—affecting the results. Below, we've outlined a few advantages of remote proctoring technology.

Tech- and AI-Enabled Proctoring Support

Remote proctoring systems use a combination of advanced technology, artificial intelligence (AI), and professional human support to deliver robust security benefits for online exams. Many systems offer varying degrees of security, allowing programs to tailor their level of protection to the stakes of the exam being delivered. For example, high-stakes exams can employ rigorous security protocols, including continuous monitoring by a live proctor while advanced algorithms—designed to detect behavior patterns that may indicate test-taker misconduct—run in the background. For tests that have lower stakes, programs can opt to employ a less intensive approach.

A note about AI: There's no doubt that AI will continue improving new and existing proctoring solutions, but it's still necessary to involve a human in the remote proctoring process. That doesn't mean every session needs live, synchronous proctoring; it means a human must be involved somehow in every proctored exam—either synchronously or asynchronously.

While AI has advanced tremendously in recent years, it's not advanced enough to replace a human brain, eyes, and ears. Software-only proctoring solutions can't decipher nuanced human behavior yet; they can only flag activities that their algorithms are programmed to detect. Without having a human present to review each flag, test-takers could cheat without getting caught or be falsely accused of cheating—both of which are unacceptable. However, by using advanced technology to support trained professionals, programs can scale their security measures while personalizing a solution to meet their unique needs.

Real-Time Screen and Webcam Monitoring

There's no doubt that in-person proctors are excellent at monitoring and controlling the physical testing environment. With online proctoring, however, screen mirroring technology can be used in combination with webcam monitoring and live observation. That means a proctor can simultaneously and continuously observe a test-taker's virtual and physical testing environment from eye level—and always have an unobstructed view of the test content and test-taker.

Session Recordings, Data, and Transparency

Useful and usable data can be found in many places these days—including test centers and remote environments. However, online proctoring solutions typically deliver a broader range of data points than test centers. Why? Because testing program and vendor staff can replay and re-proctor session recordings. Most remote proctoring solutions record a test-taker's virtual and physical environment, including their computer screen and webcam, during each exam session. Combined with chat logs and audio files, these recordings capture the entire testing experience. Plus, proctoring providers often store recordings for a pre-determined amount of time in encrypted databases after a session has ended, giving test owners and stakeholders the ability to re-proctor sessions as needed.

The extensive data and enhanced transparency provided by online testing give administrators a level of insight into each exam session that's difficult to achieve with in-person delivery. With this information, administrators can make more informed decisions about:

- Program policies
- Administration and delivery procedures
- Test-taker behavior, including exonerating a test-taker who may be wrongly suspected of misconduct or providing corroborating evidence to support a misconduct claim

The cherry on top: Administrators can often find all this data in a single, integrated platform—eliminating the need to retrieve data from multiple test centers used during test administration.

RELATED RESOURCE

ARTICLE: [Technology Interoperability: Why It Matters in Professional Testing](#)



PRO TIP

Take an inventory of all the media and data points at your disposal. Try to use those tools of detection to your advantage.

The use of multiple sources of data helps provide a more accurate picture of test-taker competency and reduces the potential for bias or inaccuracies. The data can be big, like full session recordings from a 1:1 perspective, or small, like details about scheduling and launch times.



Convenience and Scalability

Choosing an exam delivery modality depends on the specific strengths and weaknesses of each option and how they align with unique program and test-taker needs. Using the in-person modality alone, however, can impose various geographic, capacity, and time barriers—limiting growth and scalability.

Moreover, online testing provides increased convenience for test-takers when compared to in-person delivery. In fact, with the widespread use of online learning and testing in recent years, many test-takers now expect a remote option—and will continue to do so in the future. Let's explore these factors in more detail.

RELATED RESOURCE

VIDEO: [High-Stakes Credential Owners Discuss Test-Taker Satisfaction With Live Remote Proctoring](#)



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Geographic Considerations

With in-person delivery, test-takers must find an approved location where they can take their exam. This inherently restricts the pool of potential test-takers to a geographical radius around approved test centers or sites, thus limiting a program's ability to reach new populations. It also means test-takers may find themselves with fewer location choices, sometimes necessitating extended travel distances and extensive financial means to reach an available location.

However, online testing allows those programs to reach anyone who can access the internet, regardless of where they live or work. (See the chapter titled [“Addressing Common Concerns About Online Testing”](#) to learn more about navigating areas with poor internet access.) Test-takers can take their exam anywhere with a strong internet connection, whether that's their own home or another familiar environment, such as a local library or a friend's home. This helps reduce anxiety about travel time, traffic conditions, parking, and on-site navigation. Online testing also allows them to test their equipment ahead of time to troubleshoot potential issues and settle into their space prior to the exam start time.

That said, online testing can also cause anxiety if vendors lack adequate in-person support from proctors and/or technicians. This anxiety can be mitigated, however, with a detailed test-taker communication plan. The more a test-taker knows about the process prior to their session, the better their outcome will be. (See [“Evaluating an Online Testing Provider”](#) for more information about communication planning.)

LEARN THE LINGO

Session-based tests are administered within a designated time frame or specific administration window.

Continuous testing enables test-takers to schedule and take tests at their convenience, without being confined to specific time frames or windows.



Capacity & Time Considerations

With in-person delivery, tests are often scheduled far in advance, confined to a short administration window, and commence at a single designated start time. This can limit test-takers' choices when considering their work schedules, childcare responsibilities, and other commitments. Online testing, however, gives organizations the ability to provide continuous or session-based tests—leading to more scheduling flexibility for test-takers and additional (or more convenient) opportunities to take an exam. Having this flexibility is especially important for those in industries such as law enforcement, healthcare, and hospitality, where test-takers may need to schedule exams around their work shifts.

Physical test locations also have a finite number of seats available and fixed business hours on any given day. Once the available seats are filled, no additional test-takers can schedule an exam. This can cause numerous inconveniences, such as needing to travel to a different test center, rescheduling for a future administration window, or being placed on a waitlist. It also creates challenges for administrators, who may need to extend the administration window or seek additional test center locations.

Online testing offers round-the-clock scheduling and can accommodate far more test-takers than in-person testing. Remote proctoring providers have different capacity thresholds for live and automated proctoring, but the most sophisticated providers can scale their operations up or down based on client needs and industry demand. Many can also accommodate “on-demand” testing, which is impossible with in-person delivery.

THE MORE YOU KNOW

Continuous or session-based administrations can aid in program reach. However, many programs use short administration windows or single start times as a form of security, with the logic being that if every test-taker starts at the same time, there's a lesser likelihood of content theft or exposure.

If content theft is a key program concern, implementing some of the test development and delivery security measures mentioned previously in this chapter will be especially important.



Accommodations

While there's no doubt that removing geographic and time barriers helps improve equity among test-takers, exam accommodations also play a pivotal role. With in-person delivery, the process of coordinating accommodations—like extended time, private spaces, specialized assistive technologies, or dietary needs—can often be challenging and costly. Test-takers may contend with the logistical complexities of navigating restrictive schedules and finding a suitable test center (with accessible entryways and parking, a private room, etc.).

Online testing gives test-takers greater autonomy, allowing them to manage their accommodations efficiently. They can choose to take their exams in the comfort of private spaces, use familiar assistive technologies, or customize their testing environment to their unique needs.

Additionally, requesting accommodations can sometimes feel conspicuous in a traditional test center setting, as it often involves disclosing personal needs to several people, including fellow test-takers. In the more private setting of online testing, such accommodations can be arranged discreetly, reducing the potential stigma and making test-takers more comfortable in accessing the support they need. This added privacy is a key advantage, allowing test-takers to focus on their performance without concern for unnecessary attention or judgment. It's important to acknowledge, however, that online testing may also pose potential accommodation challenges.

CONSIDER THIS

Michael has a visual impairment and needs extra time and a quiet space for his exam. At test centers in the past, Michael has found it difficult to access the building because of a steep flight of stairs at the entrance. However, now that he has the option to test at home, Michael can use his own screen-reading software and avoid physical barriers that once limited his access to a comfortable and convenient testing environment.



Time, Workload, and Cost Considerations

Time Savings

Coordinating and managing an in-person test involves a complex set of tasks for administrators. However, online testing streamlines this process—and, in some cases, eliminates time-consuming tasks. The reason is simple: Many online testing providers handle the scheduling of approved test dates, maintain automated scheduling systems, and are better equipped to handle contingency planning. This flexibility allows administrators to focus more on the strategic aspects of test delivery and less on logistical challenges.

Let's explore a few ways in which online testing helps administrators save time.

RELATED RESOURCE

SUCCESS STORY: [Modernizing Dental Exams: RCDC's Success Story With Meazure Learning](#)



Exam Scheduling

In-person exams require extensive coordination, from securing test sites and arranging IT support to negotiating computer resources and ensuring seat availability according to the anticipated test-taker volume.

Online testing, however, largely automates these processes. Once administrators set their exam windows and open up scheduling for test-takers, automation takes care of nearly every other task, significantly reducing administrative burden. And if a program requires its test-takers to meet certain criteria before they're allowed to schedule an exam, online testing helps streamline those processes as well, especially for programs that use a candidate management system.

Proctor Management

For in-person tests, administrators organize training sessions on exam rules and special accommodations, schedule proctoring staff across multiple locations, and deal with inconsistencies in proctor communications and training due to varied management styles at each test center.

With online testing, though, all these aspects are handled during exam setup within a remote proctoring system. Administrators can efficiently manage proctors through centralized communication channels, standardized training modules, consistent management processes, and streamlined auditing procedures.

Business Continuity and Emergency Preparedness Planning

The innate adaptability and resilience of online testing make it an invaluable tool for business continuity and emergency preparedness planning. The advanced technology involved makes programs more agile and scalable, helping them adapt to changing demands and accommodate a growing number of test-takers. Often designed with redundancy, online testing technology minimizes the risk of system failures and downtime, and its lack of reliance on physical locations ensures continuity even during unexpected disruptions. Plus, its ability to scale easily and handle a growing number of test-takers makes programs more agile.

Imagine a scenario where a large test center in a coastal city is scheduled to administer a high-stakes exam to hundreds of test-takers. On the eve of the exam, a severe tropical storm unexpectedly hits the area, leading to power outages and making travel unsafe. In a traditional setting, this would result in a complete shutdown of the exam, causing significant delays, financial losses, and stress for both the test-takers and the administering body. However, with online testing, such a situation is easily navigated as the redundancy of operations ensures the entire cohort isn't disrupted even if a few test-takers are affected. Test-takers in unaffected areas can proceed as planned, while those impacted can reschedule, ensuring the continuity of the testing process without the constraints and vulnerabilities of a physical test center.



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Cost Savings

While there's no doubt that program owners save facility and operational costs with online testing, it's important to consider how those savings trickle down to test-takers too. Because there are fewer administrative fees associated with online testing, those savings are often passed down to make exams more affordable for test-takers. However, they can also be retained by the testing organization for continued investment in test development or improvements. And—as we've previously explored—test-takers also save travel time and money when testing remotely.

Conclusion

The embrace of online testing in recent years has introduced numerous benefits for everyone involved in the testing process, including test-takers, administrators, and program managers. As the assessment industry—and the technology used throughout the assessment life cycle—continues to evolve, so will its impact on credentialing organizations, higher-ed institutions, and solution providers. By fully embracing the trend toward digital learning and testing, we can set ourselves up for more adaptable, inclusive, and resilient testing experiences in the future.



Chapter One Discussion Guide

Now that you have a better understanding of the key impacts and advantages of online testing, this part serves as both a summary and a practical guide, helping you transform your theoretical knowledge into tangible outcomes.



Core Concepts and Key Takeaways

- Online tests offer enhanced security measures by using advanced technology throughout the assessment life cycle to mitigate security risks, such as content theft and exposure.
- From a proctoring and delivery perspective, online testing:
 - Offers additional scheduling opportunities and more flexible testing hours.
 - Eliminates or significantly reduces test-taker burdens, such as travel expenses and time off from work.
 - Provides a more comfortable and accommodating environment for test-takers who need special accommodations or experience test anxiety.
 - Drastically reduces logistical challenges for administrators through automation and integration capabilities. It also eliminates proctor and test center management costs.
- The data collected during online exams enable in-depth analysis of the entire testing experience, helping identify operational issues and opportunities for program improvement.



Apply the Knowledge to Your Program

- Reflect on the vulnerabilities in your own program. In what ways can online testing help you mitigate those vulnerabilities?
- Consider the challenges or barriers your test-takers face. How can online testing help your test-takers overcome those obstacles and achieve their goals?
- Identify the most common logistical issues faced by your administrators. How can online testing alleviate their scheduling and budgeting concerns?
- Evaluate the strengths and weaknesses of your testing experience. How can the data from online test sessions enhance your program and improve the overall testing experience?



CHAPTER TWO

Addressing Common Concerns About Online Testing

Online testing has been valuable for years, offering an array of benefits to test-takers, program coordinators, managers, and sponsors. However, the rapid and widespread adoption of online testing in early 2020 turned the learning and assessment industries upside-down—introducing a wave of unfamiliar exam environments and processes to credentialing programs and higher-ed institutions. While some legitimate concerns about the use of online testing emerged, others were borne from misinformation.

Note: When we use the term “online testing” in this e-book, we’re referring to the combination of internet-based testing (IBT) and remote delivery.

Common Concern #1: Threats to Test Security

There are some people who believe online testing is not as secure as in-person delivery. They think it's an open invitation for test-takers to cheat—and get away with it. We understand where their fear comes from. For any exam or degree program, especially one that administers high-stakes tests, leaders must have an accurate understanding of test-taker performance. Exam misconduct damages test-takers while also degrading the overall reputation of a program. And it ultimately hurts the public and/or employers, who rely on test-taker competence and integrity.

The truth is, online testing is as effective as—if not better than—in-person testing at protecting exam integrity.

When a test is built for online administration and delivery, psychometricians and test development specialists can use numerous techniques—such as randomized items across multiple forms, computerized adaptive testing (CAT), or linear on-the-fly testing (LOFT)—to combat certain threats. (See [“The Benefits of Online Testing”](#) for more information about CAT and LOFT.) After development, security experts and professional proctors can use numerous methods to stop misconduct before it occurs, while it occurs, or afterward.

PRO TIP

Make sure your provider has in-house experts who monitor and address quality concerns. They should include dedicated security, compliance, and QA teams as well as third-party auditing and internal secret shopping programs.



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Here are a few methods that can be used throughout the assessment life cycle to address common cheating tactics:

Cheating Tactics and Solutions in Online Testing

Cheating Tactic	Security Measures
Unpermitted Resources Test-taker using a resource that's prohibited by exam rules to gain an advantage	<ul style="list-style-type: none"> • Virtual and physical environment checks, including camera and phone scans • Check for unpermitted applications or computer functions through algorithmic or LMS scripts • Live or asynchronous proctor review*
Proxy Testing Someone taking an exam on a test-taker's behalf by controlling their computer or impersonating their likeness	<ul style="list-style-type: none"> • Check for virtual machine* and remote sharing* applications • Continuous monitoring by a live proctor • Proxy checks via technology scripts • Multifactor* identity verification • Rigorous scheduling processes • Username and password controls • Two-factor authentication* • Session recording for asynchronous review • Check for response anomalies
Content Theft or Harvesting Test-taker stealing test content to share or sell it to others	<ul style="list-style-type: none"> • Frequent content rotation • Create large item banks or multiple test forms • Use LOFT or CAT • Continuous monitoring by a live proctor • Prevent computer functions that allow copying text or taking screenshots
Collusion Test-takers working with each other, a proctor, or an administrator to circumvent rules and integrity controls	<ul style="list-style-type: none"> • Randomize proctor assignment • Strict policies for proctors and test-takers • Check for response anomalies

*See definition in [Glossary of Terms](#).

The bottom line is that no test can be 100% free from security threats, including cheating and other forms of misconduct. However, there are many proven ways to uphold test and program integrity through online testing.

Common Concern #2: Data and Privacy Violations

In our digital world, ethical debates about data collection are being had everywhere—and the assessment industry is no exception. Recognizing that some concerns about data and privacy stem from valid issues (while others may arise from misinformation), test solution providers have adopted tighter security protocols and more transparent communication to appropriately address or ease these concerns.

Before an online test, many providers require test-takers to consent to data collection. Most collect only the data required to verify identity and ensure the test-takers are properly associated with the intended test. Ideally, these providers plainly state their reasons for collecting the data and describe how it will be used, where it will be stored, and how long it will be kept. After a test, many providers store test-taker data in encrypted servers for a pre-determined amount of time before deleting it, and they do not sell test-taker data or use it for purposes other than testing or proctoring.

PRO TIP

While vetting and selecting a potential solution provider, program leaders should pay particular attention to the provider's data security protocols.



RELATED RESOURCE

ARTICLE: [Navigating Change: The Key Role of Documentation and Communication](#)



THE MORE YOU KNOW

To safeguard user privacy, enhance data security, and promote accessibility, a comprehensive framework of compliance standards, regulations, and guidelines—such as the Standards and Organization Controls (SOC) standards, FERPA, GDPR, and PIPEDA—are used by most solution providers.



Common Concern #3: Fairness Throughout the Testing Process

To trust the results of any assessment, ALL test-takers must have a fair and equitable testing experience. That means no test-takers have an inherent advantage or disadvantage. To create a fair experience, certain factors must be considered, such as the availability of professional proctors who can objectively review system-generated flags for potential integrity violations. Another factor in the fairness of an exam involves biases built into the testing software. For instance, proctoring software that relies heavily on facial recognition might not be as effective for certain test-taker populations or could disadvantage test-takers with certain physical traits.

Software-only remote proctoring systems fully automate the entire testing experience, from identity verification to exam entry and monitoring—all without human involvement. Programs that use these systems can't guarantee a level playing field for all test-takers. While efficient, they can incorrectly flag normal test-taker behavior as a violation, leading to an unfair testing process and causing unnecessary emotional distress. These systems ultimately fail for one reason: Even the most advanced AI cannot currently replace human eyes and a critical brain. In addition to falsely flagging test-taker behavior and missing signs of actual cheating, these systems leave online exams open to a plethora of security concerns. It's important to acknowledge, however, that these systems are continuously evolving and will likely offer a more equitable testing experience one day. (See the [“Future of Online Testing”](#) chapter for more insights into AI and other emerging technologies.)

On the flip side, online proctoring solutions that require human oversight and validation—whether synchronously or asynchronously—can lead to increased fairness and accessibility. How? By using a remote, professional proctor for online assessments, programs can reach a more diverse candidate pool and eliminate various geographic, demographic, psychographic, and socioeconomic barriers—all while ensuring academic integrity.

For example, consider a scenario where a high-stakes admission test transitions to an online format. Previously, the test's in-person requirement could inadvertently exclude potential candidates due to geographic distance, financial constraints, or other logistical challenges. However, with the shift to online testing, a wider and more diverse candidate pool can emerge. Individuals from remote or underserved areas, those with financial limitations, or people with childcare responsibilities are now able to participate—democratizing access to education or professional advancement opportunities.

RELATED RESOURCE

SUCCESS STORY: [How MuleSoft Adopted Online Proctoring and Boosted Accessibility While Hitting Aggressive Growth Targets](#)



LEARN THE LINGO

A **system-generated flag** refers to an alert or notification automatically created by online proctoring software when it detects something unusual or potentially problematic during a test. These flags are generated based on predefined criteria set within the proctoring system, and they indicate that something in the test-taker's environment or behavior may need further review. They do not necessarily mean that a violation has occurred.



Common Concern #4: Technological and Spatial Requirements

At a minimum, online testing requires access to a private room as well as a computer or mobile device with an internet connection, webcam, microphone, and speakers. Given the wide range of technological access and familiarity among test-takers, it's crucial to communicate online testing and proctoring requirements before exam day. Knowing what technology is needed—and providing the opportunity to test those components ahead of time—lays the groundwork for a reliable and uninterrupted exam session. It also ensures all test-takers start on equal footing.

Test-takers who lack reliable access to computers or the internet can still have a fair test experience, though it may require creative solutions, such as establishing a computer rental program or identifying opportunities for private room rentals. Providing alternative equipment and test environment solutions for those who need them may require an additional investment, but that investment is significantly less than it would take to build, operate, and maintain a test center delivery and in-person proctoring network. Solving equipment or location requirements on a mass scale may warrant an investigation into hybrid testing delivery—a model that allows test-takers to choose between an online delivery method and an in-person testing experience for each exam.



Common Concern #5: Accommodations

Test-takers benefit from the freedom to choose their delivery method, with each modality offering its own pros and cons. While online testing offers significant advantages in terms of accommodation availability and coordination, it's important to recognize that test-takers may encounter unique challenges in a remote testing environment. These challenges could include distractions at home, technical issues, or connectivity concerns. However, with careful planning and communication between program owners and test-takers, these challenges can often be mitigated to ensure a smooth and equitable testing experience. Despite these potential hurdles, online testing remains a valuable option for providing accommodations that cater to the individual needs of test-takers, offering greater flexibility and inclusivity.

RELATED RESOURCE

WEBINAR: [Challenging Personas: User Experience Design in a Complicated World](#)



PRO TIP

To ensure inclusivity and accessibility are upfront considerations rather than afterthoughts, we recommend following these guidelines when you review your exam and provider's platform(s):

- Beware of essential documentation that's only available in video form. This information may be inaccessible to someone who can't watch the mouse click around the system.
- Make sure all support and help functions are usable for all test-takers, including those with disabilities.
- Take notice if your provider doesn't adjust its features, functions, or processes based on feedback.



Conclusion

Online testing has ushered in a wave of advantages for users across the assessment life cycle, but it's also introduced some common concerns. While some of these concerns are legitimate, others are borne out of misinformation. As with anything in assessment, especially when the stakes are high, online testing requires thoughtful decision-making and communication to mitigate issues of fairness, reliability, validity, and integrity. By addressing these concerns and reflecting on the testing practices, providers, and technologies employed, many obstacles—whether anticipated or not—can be easily navigated.



Chapter Two Discussion Guide

Now that you have a better understanding of the key concerns, challenges, and misconceptions associated with online testing, this part serves as both a summary and a practical guide, helping you turn your theoretical knowledge into tangible outcomes.



Core Concepts and Key Takeaways

- Online test delivery paired with remote proctoring can mitigate security threats and instances of test-taker misconduct by leveraging:
 - Tech-enhanced identity verification
 - Username and password controls
 - Virtual and physical environment checks
 - Session recordings and live or asynchronous proctor reviews
 - LMS scripts, technology scripts, virtual machines, and remote-sharing app checks
 - Psychometric methods, like frequent content rotation and adaptive testing, that build security into the development phase
 - Strict policies for test-takers and proctors
- When it comes to test-taker data privacy, always make sure your provider:
 - States why it's collecting data, how the data will be used, where it will be stored, and how long it'll be kept
 - Does NOT sell test-taker data or use it for purposes other than verifying test-taker identity
- Software-only proctoring solutions can introduce challenges such as algorithmic bias and false misconduct flags, potentially impacting test fairness and outcomes.
- Online testing improves many factors relating to inclusivity and accessibility, particularly for test-takers requiring accommodations. It allows them to test in familiar, comfortable environments, thus improving their overall testing experience.



Apply the Knowledge to Your Program

- Reflect on your primary concerns regarding online testing. How does this chapter address and alleviate those concerns?
- Consider the suggestions this chapter poses regarding the provider vetting and selection process. What key questions should you ask potential providers about their data security and privacy protocols?
- Evaluate the accommodation needs of your test-takers. How can you provide a suitable and flexible environment for those needs in an online testing environment?



CHAPTER THREE

The Future of Online Testing

In every industry, change is a constant—and the assessment industry is no exception, having seen major shifts in recent years. As the testing landscape evolves, our strategies for developing, delivering, and protecting assessments must keep pace as well. As a result, industry professionals may feel like they're in constant catch-up mode—always being reactive rather than proactive. But by staying updated on emerging trends and technologies, we can ensure that online tests remain relevant, fair, valid, and reliable.

Note: When we use the term “online testing” in this e-book, we’re referring to the combination of internet-based testing (IBT) and remote delivery.

Evolving Trends and Technologies

Leveraging Emerging Technologies

Technology and software engineering have long been key drivers of innovation in the assessment industry, and it's increasingly clear that they hold immense potential for progress in the future. In recent years, rapid advancements in technology and engineering—including artificial intelligence (AI), machine learning (ML), and generative content models—have been made. While we can't predict with 100% certainty what else will come from these advancements, we're already seeing trends that have opened our eyes to what the future could hold. Some of these advancements may feel like science fiction right now, but it's important to consider what capabilities may be on the horizon. Solution providers and programs that proactively embrace these changes stand to benefit significantly in both the near and the long term.

Let's explore why.

Adaptive Testing and Personalized Learning Experiences

Adaptive testing and personalized learning experiences have become increasingly important in online testing. Advancements in these areas in recent years have led product and engineering teams to explore ways to further enhance the adaptability of assessments, with a focus on integrating adaptive methodologies more deeply throughout the assessment life cycle—and improving the technology needed to do so.

Today, algorithmic testing methods like computer-adaptive testing (CAT) and linear on-the-fly testing (LOFT) are already being used to improve the security, quality, reliability, and efficiency of online tests. Moreover, exam programs, publishers, and solution providers are experimenting with generative AI (GenAI) to draft questions for review and refinement by SMEs. As algorithms continue learning over time, we expect fewer human resources will be needed to generate and safeguard test content.

Consider what an assessment may look like if a GenAI model is integrated into a delivery platform used to administer an online cybersecurity certification exam. As a test-taker answers questions about network security correctly, the model could instantly create a tailored case study question asking the test-taker to devise a security protocol for a specific type of cyber threat. This would test their understanding of the material and evaluate their practical problem-solving skills in an IT-specific context.

RELATED RESOURCES

WEBINAR: [Lessons in AI: The Higher-Ed Edition](#)

WEBINAR: [Lessons in AI: The Credentialing Edition](#)



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In every industry, change is a constant. The assessment industry is no exception.

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It's easy to think big about what the future could hold, considering all the advancements we've already made. But how will these advancements continue enhancing the testing process as their models improve? Will future testing platforms use sensor or biometric data to analyze test-taker emotions and engagement levels, providing insights to further personalizing their learning and testing experience? Will personal AI assistants be used through the education journey to create custom pathways? These are just a few scenarios that depict a future where technology not only assesses what we know but also understands how we learn, providing a deeply individualized educational journey.

Efficiency and Scalability

The world is changing fast, which means testing requirements are changing fast as well. Assessment technology must be agile enough to pivot at the same pace. This will pose challenges for product and engineering teams, but it will ultimately deliver significant benefits to both test-takers and test owners.

Let's look at automated item generation as an example. While this type of algorithmic technology has been around for years, the recent advancement in GenAI has opened the door to a potential revolution in test development and psychometrics. As we explored previously, AI systems can currently generate test items automatically, but they require a great deal of human involvement to ensure their accuracy, relevance, etc. In the future, though, we believe these systems will be able to produce a lot of diverse and complex questions with less human oversight, significantly reducing the time and effort required at this stage.

Automating certain aspects of the online testing process, such as scoring, has long enhanced the efficiency and scalability of assessments, especially for standard items like multiple choice, true/false, and dropdown select. Currently, machine learning (ML) algorithms are extending this capability to accurately score responses to short-answer or constructed-response items, helping program staff save time and reduce human error. In the future, this capability may be applied to more complex item types and assessment formats, such as objective structured clinical exams (OSCEs) and practical exams. When ML scoring models are integrated into a program's chosen exam delivery platform, test-takers may be able to complete an exam and receive their score through a unified interface more rapidly. That's a far cry from today's turnaround times, when scoring advanced exam formats can take days or even weeks.

Looking even further into the future, there may even be the possibility of leveraging quantum computing, which harnesses the principles of quantum mechanics to process information at speeds unattainable by traditional computers. This possibility could lead to near-instantaneous scoring and analysis of complex tests—even with an extremely large volume of test-takers. (We told you these predictions may sound like science fiction by today's standards.)

LEARN THE LINGO

Machine learning is a subset of AI that involves developing algorithms and statistical models that enable computer systems to improve their performance on a specific task. They do so through iterative learning from data, without being explicitly programmed.



Security and Integrity

Future technological advancements hold vast potential for test integrity and security. Algorithms can already be used during the proctoring process to monitor test-takers and detect unusual behaviors in real time. Eventually, however, we anticipate broader applications and enhancements in this area, potentially resulting in technology that's smart enough to monitor test-takers without human involvement. (See [“Addressing Common Concerns About Online Testing”](#) for more information about current software-only proctoring limitations.)

Let's consider the potential use of predictive ML algorithms in future online test delivery. By assessing keystroke rhythms, typing speeds, mouse movements, and click patterns over multiple sessions, a comprehensive behavioral profile of a test-taker could be created. Then, any deviation by that test-taker during subsequent sessions could be flagged by ML models. For instance, if a test-taker typically types at a consistent speed with a specific pattern but suddenly changes this behavior, it could suggest potential proxy testing. Applying predictive ML like this could avoid invasive or intrusive techniques while still improving test security.

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The world is changing fast, which means testing requirements are changing fast as well. Assessment technology must be agile enough to pivot at the same pace.

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Beyond test delivery and proctoring, there may be opportunities to use blockchain technology to securely store and manage test-taker data and exam results. This would provide transparency in the assessment process while maintaining individual privacy because the technology allows for the validation of data without revealing sensitive information. We could even imagine something straight out of a sci-fi movie: Using advanced biometric technologies—such as fingerprint recognition, webcam facial recognition, or even retina scanning—throughout the assessment life cycle. One day, these technologies could be used for everything from securing access to item banks to verifying the identities of test-takers.

RELATED RESOURCE

VIDEO: [Exam Security Solutions for an Evolving Industry](#)



Data Analysis

Emerging technology capabilities will bring forth an increasing ability to uncover deeper data analytics throughout the testing journey. For example, ML can already process and analyze vast amounts of data that were previously difficult or impossible to obtain, such as response times, answer patterns, and completion rates across various demographic groups. Continuing to gather data and train these algorithms will help solution vendors, program owners, and test administrators identify meaningful patterns, trends, and correlations—resulting in better strategic direction and decision-making.

Exam Access

With technology and AI-driven tools, we believe tests will become more accessible to people of varying demographics. One way in which technology is poised to do so is by broadening the range of devices that can be used to schedule and deliver online tests. For example, at some point, mobile devices will play a larger role in test delivery and associated portions of the testing process—but to what extent is still unclear.

Moving Beyond Traditional Assessments

The past decade has ushered in a shift from questions based on rote memorization to those that require applying knowledge to real-world workplace scenarios or using critical-thinking skills to address complex problems. The goal of these questions (often called “innovative items” or “alternative items”) is to replace or supplement traditional, multiple-choice (MC) items, which have long been known to provide an incomplete and artificial representation of competence and practical application of knowledge. Historically, attempts to create innovative item types have been very expensive or proven ineffective. With recent technological advancements, however, the range of possible online test formats has expanded.

Assessing higher-order cognitive knowledge and skills is of utmost importance for many high-stakes exam programs. Specifically, program owners need to know how test-takers will perform when faced with real-life, on-the-job situations. These higher-order skills can be assessed through performance-based assessments (PBAs), such as objective structured clinical exams (OSCEs), oral assessments, and various low- and high-fidelity simulations.

In the future, we expect these non-traditional, skill-oriented assessments to leverage remote delivery and virtual reality technology. Currently, neither the technology nor the assessment industry is in a state to conduct OSCEs virtually, but we'll likely get there as AI and VR capabilities advance. Already, we can envision immersive, realistic simulations where test-takers navigate complex clinical scenarios in a virtual environment. This leap in technology would not only enhance the assessment of higher-order cognitive skills but also bring a new dimension to remote proctoring and PBAs.

CONSIDER THIS

In the future, sentiment analysis—a natural language processing (NLP) technique that helps analyze and understand the sentiment or emotions expressed in text data—may be used to understand the emotional responses and feedback of online test-takers.



RELATED RESOURCE

ARTICLE: [From the CEO's Desk: The Future of Assessment](#)



The Potential Impact of Evolving Societal Values on Testing Decisions

Online testing trends are not solely influenced by technology and engineering; they're deeply influenced by societal shifts as well. How assessment programs respond to these shifts can affect their credibility, relevance, and effectiveness.

One clear example of this is the increasing focus on cultural competence in test development. Recent societal shifts toward greater awareness of diversity and inclusion have led program managers to scrutinize and revise their content to eliminate cultural biases. In doing so, they've improved test fairness while enhancing its relevance and credibility. Now and in the future, it's crucial to ensure tests are developed and delivered in ways that are representative, inclusive, and free from cultural biases.

Diversity, Equity, and Inclusion

As the world grows more interconnected, there will be a continued push to build diversity into test design and development processes while catering to the needs of neurodiverse test-takers. The key challenge will be creating tests that are globally inclusive yet still respectful of local nuances, ensuring everyone is fairly represented and evaluated. Beyond mere translation, exams will require cultural and contextual adaptation. At some point, technology may be advanced enough to initiate the process of standard setting across different languages, potentially using advanced language translators or ML to bridge linguistic and cultural divides more easily.

Additionally, we will likely be able to customize online testing and proctoring platforms to suit the specific linguistic and cultural contexts of different geographic regions. This may involve adapting the language, content, and functionality of the platforms to align with local norms, dialects, and cultural sensitivities, ensuring that the test delivery experience is accessible, relevant, and respectful of test-takers from various cultural backgrounds.

RELATED RESOURCE

ARTICLE: [Advancing Equity: The Latest in Testing Accommodations](#)



Ethics, Data, and Privacy

With the advent of new and changing technology, data security and privacy protocols will need to evolve to ensure test-taker data is always protected. As concerns about data privacy and ethical use continue to evolve, building trust will hinge on more transparent data practices and fortified security measures for exam delivery and proctoring platforms.

Microcredentialing, Stapling, and Badging

The boundaries between education and careers continue to blur as the demand for specific, job-related skills grows. In response, microcredentials—verified through online tests—are poised to fill the evolving skills gap, often by “stapling” them to traditional credentials or academic achievements. And since microcredentialing often involves continuous, smaller tests than traditional programs, its modular approach aligns well with online tests, which can be administered anytime, anywhere. As microcredentialing becomes more popular, online testing platforms need to scale in order to assess test-takers concurrently, even across various regions and time zones. Equally important, programs must also consider adopting a modular approach to accommodate this scalability effectively.

RELATED RESOURCES

ARTICLE: [5 Most-Pressing Questions Facing Credentialing Today](#)

GUIDE: [The State of Higher Education: Emerging Trends and Student Demands](#)



THE MORE YOU KNOW

Microcredentials have gained popularity not only for their educational value but also for their role in gamifying the learning process. On LinkedIn and other online platforms, learners can proudly display their digital badges as symbols of their achievements.



The Impact of Emerging Trends and Technologies on Current Strategic Decisions

Organizations that proactively embrace the emerging trends and technologies we've previously explored stand to gain a competitive edge, offer better test experiences, and ensure the continued relevance, validity, and reliability of their tests. Now and in the future, program owners should consider the following questions when weighing the impact of these changes:

- Are you allocating enough resources to research and integrate the latest technology solutions?
- Does your current staff possess the skills needed to harness these new technologies effectively? What training initiatives can you implement to ensure a seamless transition and proficient use of emerging tech?
- As you evaluate existing or prospective providers that use AI and ML in test development and/or delivery solutions, how can you work together to weigh the ethical implications? What measures are your organization and your solution provider taking to ensure fairness, transparency, and the elimination of biases in their AI-led processes?
- Are you effectively communicating with all stakeholders—including test-takers, program owners, exam administrators, IT staff, board members, executives, educators, and other relevant personnel—about technological shifts? How can you enhance your communication strategies to secure buy-in and address potential concerns?
- How can you ensure that your investment keeps you competitive and elevates the quality of your assessments? Have you considered pilot-testing new technologies before a full-scale rollout? What mechanisms do you have in place to identify challenges and collect valuable feedback during these phases?



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The assessment community must continue to embrace innovative solutions to meet evolving demands.
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Conclusion

The evolution of assessment has brought about exciting changes for credentialing programs, higher-ed institutions, test-takers, and solution providers. It's also significantly altered our understanding of best practices in testing, security, and psychometric methodologies.

As we reflect on these changes, it's clear that the assessment community must continue to embrace innovative solutions to meet these evolving demands. By viewing these advancements as opportunities—rather than barriers—to refine our resources and practices, we can continue to drive assessment forward and deliver better outcomes for everyone involved.



Chapter Three Discussion Guide

Now that you have a better understanding of the evolving trends and technologies impacting the future of the assessment industry, this part serves as both a summary and a practical guide.



Core Concepts and Key Takeaways

- Emerging technologies have introduced a wave of new or enhanced capabilities in AI, ML, automation, and more. While there are—and will continue to be—risks associated with these capabilities, they're poised to deliver numerous benefits throughout the assessment life cycle.
- A shift from traditional question formats to those requiring application of knowledge in real-world scenarios and performance-based assessments is underway. This shift presents an opportunity to make tests more personalized and secure.
- Diversity, equity, and inclusion are continuing to grow in prominence and importance, with increased focus on adjustments that can be made along the testing journey.
- The growing trend of microcredentialing and stapling as a way to bridge the career readiness gap aligns well with online testing's modular and flexible nature, especially when paired with digital badging systems.



Apply the Knowledge to Your Program

- Assess your program's readiness to integrate and leverage emerging technologies. Are your current resources and staff skills aligned with future technological needs?
- Reflect on the ethical considerations of AI and ML use in both the development and delivery of assessments. How can your program collaborate with solution providers to ensure fairness, eliminate bias, and avoid inaccuracies or legal issues as testing processes move to further incorporate AI and ML?
- Consider your current communication strategy for internal and external stakeholders. How can you inform them and engage with them about emerging technological changes within your program and overall industry?
- Think about the shift from traditional assessment methods. Are there opportunities to incorporate innovative item or assessment types into your program?

A young man with curly hair, smiling and looking down at a laptop screen. The image is dark and serves as a background for the text.

CHAPTER FOUR

Evaluating an Online Testing Provider

Online testing has become table stakes for many markets, underscoring the need to continually evaluate the practices, providers, and technologies used throughout the assessment life cycle. However, when the stakes are high—with program reputation and test-taker competence on the line—it's not enough to rely solely on intuition.

Note: When we use the term “online testing” in this e-book, we’re referring to the combination of internet-based testing (IBT) and remote delivery.

Vetting Potential Providers and Choosing Your Best Match

The key to a successful online testing solution is finding a provider who can—and will—support your program’s unique exam and test-taker needs. In fact, selecting the right provider plays a crucial role in determining whether a program—and, consequently, the overall organization or institution—will thrive or simply survive in the coming years.

So, how do you choose the right provider? Let’s explore some factors for you to consider as you evaluate possibilities.

Consider a Provider’s Industry Experience

There isn’t one right way to conduct online testing—just like there isn’t a foolproof way to foresee the challenges you may encounter. However, partnering with a provider that has experience with similar programs can make it easier to anticipate and address those challenges. With prior knowledge, the provider is already equipped to help you navigate potential obstacles, thereby allowing you to concentrate on the nuances of your specific exam needs and test-taker preferences.

Inquire About the Provider’s Technology

Online testing requires a combination of systems and services that align with your program’s specific needs. Here are some key aspects to consider when assessing a provider’s technological capabilities.

Test Delivery Platform—The delivery platform should offer a clean, modern, and user-friendly interface for your program staff and test-takers. Furthermore, it may not be necessary for your delivery platform to be fully automated, but some automation (e.g., scoring) can greatly improve your operational efficiency, the test-taker experience, and more. You should also inquire about the platform’s ability to deliver different exam and item formats, which can help you predict whether the platform will be able to adapt alongside your evolving needs and goals.

RELATED RESOURCE

WEBINAR: [What Makes a Great RFP in Online Testing](#)



PRO TIP

If you’re not sure which providers have relevant experience, get referrals from other organizations, especially those that are similar to yours. They can help you differentiate providers and make an informed decision.



Proctoring Platform—There are many things to evaluate when it comes to online proctoring systems, including the flexibility of proctoring options (e.g., automated or live), accommodation capabilities, customized exam rules, and interoperability with other technologies. Additionally, a platform’s internal controls and systems relating to security, processing integrity, confidentiality, and data privacy are highly important—as are its available support channels: Are they built into the platform? Are they available to test-takers 24/7? How long do test-takers typically have to wait to receive a response?

Secure Browser—If the provider uses a secure browser to control a test-taker’s virtual environment and connect them to their proctoring session, you should ask whether that browser is proprietary or owned by a third party. If it’s the latter, your provider may be unable to mitigate security risks introduced by the third party, improve certain accessibility features, and give your exam managers all the computer permission controls they require to effectively safeguard the virtual testing environment.

Item Banking—For this type of technology, the most important consideration is whether it can accommodate the item types required for your exam(s). For programs that seek accreditation, it’s also important to use an item banking platform that can easily extract and report on exam-related data. And if the item bank has authoring and delivery functionality, too, you can streamline the test development and delivery processes while simultaneously making them more secure. This type of “all-in-one” platform eliminates the need to publish exams from an external source, which minimizes the room for error, saves on publishing fees, and reduces additional quality assurance sets.

Vouchering—For programs that use vouchers for assessment access, it’s important to inquire about the provider’s solution for the creation, distribution, tracking, and redemption of vouchers. You should also assess its flexibility to accommodate various voucher models, such as promotional vouchers, bulk vouchers, and individual vouchers.

Candidate Management and/or Scheduling—The provider’s candidate management and/or scheduling solution should be easily integrated into your chosen exam delivery platform. This is often the first touchpoint your test-takers have with your program; it’s critical to ensure a smooth, consistent, and positive experience. An element of that experience is the technology’s communication features, including reminders, notifications, and rescheduling options for test-takers.

Credential Management—You should ask: Can the provider’s solution manage and issue digital credentials or badges? Can it customize and brand those credentials to align with your program and/or organization? What security features within the technology help prevent credential fraud and protect the integrity of the credentials issued?

Let’s explore a few other technology-related factors to consider, including integration and interoperability as well as infrastructure redundancy.

THE MORE YOU KNOW

Assessment solution providers can demonstrate their commitment to data security, privacy, and management by undergoing a System and Organizations Control (SOC) audit, which examines the provider and verifies that it:

- Has the required security controls to protect client and test-taker data against known and emerging threats
- Has an alert system to detect exam anomalies and violations across the platform
- Can recover from a security breach or system failure quickly



Integration and Interoperability

Integration in online testing involves combining different testing systems and components—such as item banks, delivery platforms, and scoring tools—to function as a unified whole. Interoperability, on the other hand, refers to the ability of these varied systems to work together without issue.

For instance, an item authoring tool that integrates seamlessly with a banking and delivery platform facilitates the smooth development, storage, management, and administration of test content. While integration and interoperability aren't always essential for a program, they can deliver numerous benefits, including:

- Improved test-taker experience
- Less administrative maintenance
- Increased efficiency

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Integration and interoperability aren't always essential for a program, but they can deliver numerous benefits.
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When evaluating a potential provider, ask about its integration options and make sure they fit the needs of your program:

- How robust are the integration abilities?
- When using the provider's online proctoring platform, do you have to use a specific test delivery platform or LMS?
- Is integration possible if you plan to use an existing third-party tool or platform already in place? If so, what will that integration look like and how will it impact the testing experience?
- What is the timeline for building an integration?
- Are there any additional costs associated with integration?

It may go without saying, but your provider should be able to assist you in identifying the right tools to effectively conduct online testing. If you only have one or two of the technology elements needed to do so, consult your provider about additional platforms that meet your specific needs.

Infrastructure Redundancy

An experienced provider will use enterprise-grade technology—complete with backup servers—and prioritize both operational and physical location redundancy to ensure uninterrupted service. Additionally, they should strive to minimize reliance on third-party systems. Every provider has a different way of doing so, and your organization or program leaders will need to determine what will work best for their needs and comfort level.

THE MORE YOU KNOW

Most high-quality and experienced providers have at least a 99.9% SLA uptime guarantee for their test delivery platform, proctoring platform, and any third-party technology used. Both are critical to the reliability and credibility of a testing program.



Assess the Provider's Collaboration Style

A high-quality provider should collaborate with your program staff, prioritizing mutual understanding and teamwork. It's essential to have a provider who listens attentively to your specific needs, works alongside you to identify and implement the most suitable solutions, and values your input and feedback. In addition to openly and frequently communicating with you about product updates or enhancements, the provider should also be committed to continuously refining their security, quality control, implementation, support, and psychometric processes—not just in general terms but specifically tailored to support your unique goals.

To build a strong relationship with your provider, you must open your lines of communication and create a foundation of trust. In an ideal partnership, your provider should view your staff and subject-matter experts (SMEs) as collaborators. The provider should insist on transparency during every stage of the testing process and always give you direct access to your intellectual property.

Here are some key considerations regarding the expertise, qualifications, and responsiveness of a provider's personnel.

RELATED RESOURCE

GUIDE: [12 Questions About Communication and Documentation to Ask in an RFP](#)



Psychometrics Team

Not every online testing program requires support from a dedicated psychometrics team or specialist. If your program does, though, you must be able to trust their expertise. After all, a proficient psychometrics team can significantly influence the validity, reliability, and fairness of your exam(s).

In addition to assessing the technical skill of a provider's psychometrics expertise, you should pay close attention to the team's willingness and ability to collaborate with your program staff to tailor assessments to specific goals and test-taker populations. Doing so can help enhance your exam's relevance, engagement, security, inclusivity, and more.

RELATED RESOURCE

SUCCESS STORY: [AMCA's Path to Rapid Health Care Certification Growth](#)



Implementation or Onboarding Team

Any potential provider you evaluate should have a dedicated implementation or onboarding team to help you get started with their services and technology. Full stop.

This team's specialized expertise, efficiency, training, and support capabilities are integral to the successful adoption or transition of any online testing solution. The provider's team should demonstrate their commitment to ongoing support and communication with your stakeholders throughout the implementation process, and they should also have robust training and onboarding programs. After all, what's the point of implementing a new platform to accommodate or enhance your online exams if your staff or test-takers can't effectively use it?

Security Team

It's often said that security is a game of cat and mouse; if you don't have a cat, the mice will take over. Now more than ever, it's critical for providers to have a team of dedicated professionals who understand modern cheating tactics and can develop methods to detect and prevent them across the entire assessment life cycle. A provider should have expertise in establishing and implementing security measures targeting the development, administration, proctoring, and post-administration analysis processes.

Compliance Team

A provider's compliance team plays a pivotal role in ensuring all relevant standards, regulations, and guidelines are adhered to. For you and your test-takers, the team's expertise directly impacts how secure, legal, and ethical the online testing environment and processes are.

In addition to inquiring about a potential provider's commitment to data privacy, accessibility, and security best practices, you should also make sure the team provides clear information about their compliance practices and status. By doing so, you will help safeguard your program's health and reputation as well as your test-takers' valuable data. With this information in hand, you can also communicate the provider's practices with your test-taker population, thus easing their concerns.

Remote Proctoring Operation Team

If possible, talk directly to a provider's proctoring operation team and tour one of their facilities. The insights you'll uncover about their training program, auditing process, and best practices will help you narrow down your list.

Think about it: Proctors are an extension of your front-line staff, serving as both the "face" of your exam and the gatekeepers of its integrity. It's important that they fully understand the stakes of your program and are committed to upholding exam integrity.

PRO TIP

When collaborating with a provider on security measures, take the following steps:

- Establish a threat identification process that works for you
- Review shared or similar threats together
- Examine new threats as they come up
- Build a process to combat existing and new threats



RELATED RESOURCES

GUIDE: [For Academic Institutions: 9 Questions to Ask Every Online Proctoring Vendor Before Committing](#)

GUIDE: [For Credentialing Programs: 11 Questions to Ask When Considering Online Proctoring](#)



Engineering & Product Development Team

The engineering and product development teams are the backbone of any online testing and proctoring solution. Their expertise directly impacts platform functionality, reliability, security, and overall user experience—regardless of whether it's an online proctoring platform or exam delivery platform. Therefore, it's important to thoroughly evaluate the team's capabilities to ensure a robust and reliable testing environment.

Here are three of the most important qualities to assess:

Security Integration—Security is not just the responsibility of a security team; it should be ingrained in the software development process as well. Assess how the engineering and development team incorporates security measures throughout their product life cycles to safeguard against vulnerabilities and breaches.

Quality Assurance—Evaluate the team's approach to quality assurance, including testing, debugging, and ongoing monitoring of their technology. These activities are critical to ensure the technology remains stable and reliable, even during peak usage times.

Innovation and Adaptation—Inquire about the team's commitment to staying updated on emerging trends and their capacity to incorporate innovations that enhance the online testing and proctoring experience.

Test-Taker Support

To achieve true flexibility, you need a provider that can offer test-taker support around the clock and around the world. Online testing is popular among test-takers because they can take a test anytime, anywhere. But it's a problem if they run into technical or process issues and don't know how to resolve them. When you're assessing providers, make sure they can provide test-taker support through multiple channels.

PRO TIP

When evaluating remote proctoring providers, ask whether proctors specialize in proctoring duties or are required to provide support in other areas, such as active intervention, operations, or technical help. It's critical that test-takers receive specialized support from a trained professional who's not expected to proctor an exam while also troubleshooting a technical issue.



Consider Using Multiple Providers

Sure, there are a lot of benefits to using a single provider for all your online testing needs. But not every provider specializes in the type of support your program may require. As you assess the unique needs of your program and test-takers, consider the possibility of using multiple providers. In your vetting and selection process, look for those who prioritize interoperability, ensuring their systems and services can seamlessly integrate with others. This is particularly important when using several providers due to the disparate systems involved. Additionally, try to glean the providers' collaboration style because this will be essential for coordinating various aspects of your testing process effectively.

RELATED RESOURCE

ARTICLE: [The Role of Tailored Assessment Solutions—and How to Choose the Right Provider](#)



Conclusion

The success of an online testing program is dependent not only on the program's quality but also on the proficiency and capability of the solution provider behind it. Your choice of solution provider is both a decision for the present and a strategic step toward future adaptability and success in the ever-evolving digital assessment landscape.

Chapter Four Discussion Guide

Now that you have a better understanding of the key considerations involved in evaluating an online testing provider, this part serves as both a summary and a practical guide.



Core Concepts and Key Takeaways

- The importance of partnering with the right online testing provider cannot be overstated. Your provider should guide you through every step of the process, and make sure your program thrives in the coming years. When evaluating a potential provider, you should consider its:
 - Relevant industry experience with programs like yours
 - Technological capabilities, including user-friendliness, security features, automation, integrations, and interoperability
 - Proctoring options for varying exam stakes
 - Operational infrastructure as well as location and system redundancy
 - Support channels and processes for administrators and test-takers
- The best program/provider relationships are built on a foundation of trust, transparency, and open communication. Providers should collaborate closely with your SMEs and always give you direct access to your exam items and intellectual property.



Apply the Knowledge to Your Program

- Reflect on the specific priorities, goals, and needs of your program. What are the critical technological and operational components you need in an online testing provider?
- Consider the level of support and services your current or potential provider offers. How do their teams—from psychometrics to engineering and technical support—align with the needs and goals of your program?
- Evaluate the quality and quantity of exam-related data provided by the provider. Now reflect on the level of transparency offered. Could any improvements be made to help you make more informed decisions for your program and test-takers?
- Think about the advantages and potential drawbacks of using multiple providers. Could this approach better meet the unique needs of your program and test-takers?

Wrap-Up

We hope this guide has provided you with valuable insights, relevant advice, and practical tools to enhance your online testing practices throughout the assessment life cycle. With the information gleaned from these pages, you're well-equipped to navigate potential challenges and take advantage of all the opportunities that online testing provides.

As we bring this comprehensive guide to a close, remember that adaptability and a commitment to staying informed will be your greatest tools for success. The future holds exciting possibilities for assessment in the digital age—with technological advancements, personalized learning experiences, enhanced security protocols, and increased accessibility offering just a glimpse of what lies ahead. Your role in shaping this promising future is more important than ever.

Thank you for joining us on this journey through “The Ultimate Guide to Online Testing.”



If you have any questions that this e-book hasn't answered, please contact us. We'd love to have a one-on-one conversation with you about online testing and proctoring.

GET IN TOUCH

Glossary of Terms

Administration Window: A set period of time during which an exam is administered

Agile Technology: Systems that are flexible, nimble, and capable of rapidly evolving or responding to user needs and market demands

Algorithm: A set of systematic, computational rules or procedures used to process data and make decisions

Algorithmic Bias: Occurs when an algorithm produces systematically prejudiced results due to erroneous assumptions in the machine learning process

Artificial Intelligence (AI): The simulation of human intelligence processes by machines, especially computer systems, used in various aspects of online testing

Assessment Life Cycle: The seven-stage process of designing, developing, administering, scoring, and evaluating assessments

Asynchronous Proctoring: A method of exam supervision where proctors evaluate recorded sessions post-exam, rather than monitoring test-takers in real time

Candidate Management System (CMS): A system used for organizing and handling all aspects related to test-taker administration, including registration, scheduling, and information management

Collusion: Test-takers working with each other, a proctor, or an administrator to circumvent rules and integrity controls in order to gain an unfair advantage on an exam

Computerized Adaptive Testing (CAT): A method of testing where the difficulty of questions is adjusted in real time based on the test-taker's responses

Computer-Based Testing: The use of technology to deliver exams as an alternative to paper-based testing

Content Theft or Harvesting: The process of stealing test content to share or sell it with others

Continuous Testing: A flexible approach where tests are available for candidates to take at a preferred date/time, rather than being confined to specific time frames or administration windows

Credential Management System: A system used to manage and issue credentials, such as certificates or badges, often digitally, after successful completion of an exam or course

Data Analytics: The process of examining datasets to uncover patterns, correlations, and insights; increasingly used in online testing for strategic decision-making

Data Forensics: The process of examining exam data to detect patterns of cheating, collusion, or other forms of misconduct

Digital Badges: Electronic representations of achievements or skills, often issued upon the completion of a course or assessment

Exam Delivery Modality: The method or format through which a test is administered, such as online, in-person, and event-based delivery

Exam Delivery Platform: Technology used to administer, deliver, and manage online tests or exams; can be a native computer software application or an internet-based platform

Fairness: The equitable treatment of all test-takers, ensuring that the testing experience is free from bias and that every individual has an equal opportunity to demonstrate their abilities

Generative AI: A type of AI that can create content, such as test questions or scenarios, based on data inputs and learning algorithms

Hybrid Delivery: A term used when an exam is administered through more than one delivery modality or a combination of modalities within a single administration window or continuously; allows test-takers to choose their preferred modality (see also “Multimodal Delivery”)

Innovative Item Type: A test item that differs from a traditional item type in its aim to assess a test-taker’s critical-thinking skills and real-world or workplace application of knowledge

Integration: The process of combining different testing systems and components to function as a unified whole

In-Person Delivery: The administration of a test at a physical, brick-and-mortar location

In-Person Proctoring: The supervision of a test by a proctor who is physically present in the same location as the test-taker

Internet-Based Testing: The administration of an assessment online, where test-takers complete it via an online application or platform

Interoperability: The ability of diverse testing systems (e.g., platforms, software) to integrate and function seamlessly

Item Analysis: The process of analyzing the statistical properties and performance of individual test items

Item Bank: A repository of items or questions that can be selected and used to create tests

Item Banking Software: Software used to store, organize, and manage test content and metadata

Keystroke Biometrics: A technique used to identify individuals based on their unique typing patterns, including rhythm and speed

Learning Management System (LMS): A software application used for the administration, documentation, tracking, reporting, and delivery of educational courses or training programs; in some cases, the LMS also delivers exams associated with those courses or programs

Linear on-the-Fly Testing (LOFT): A method of delivering tests where items are randomly selected from a pool of items during the test, making each test unique



Machine Learning: A subset of AI that involves developing algorithms and statistical models that enable computer systems to improve their performance on a specific task through iterative learning from data without being explicitly programmed

Microcredentialing: The granting of badges, certificates, or credentials to individuals who have completed a short learning course on a specific subject or skillset and passed a competency-based assessment

Multiple-Choice Item: An item that consists of a problem (stem) and a list of suggested solutions (alternatives), where the latter includes one correct or best option (i.e., the answer) and incorrect or inferior alternatives (i.e., distractors)

Multifactor Identity Verification: The act of confirming a person's identity using multiple methods or different types of evidence

Multimodal Delivery: A phrase used when an exam is delivered through more than one modality—but not necessarily within the same administration window (see also “Hybrid Delivery”)

Natural Language Processing: A field of artificial intelligence that enables computers to understand, interpret, and respond to human language

Objective Structured Clinical Exams (OSCEs): Hands-on, practical exams used in health care to assess clinical skills and competencies when faced with a set of pre-determined scenarios

Online Proctoring Platform: Technology that facilitates the supervision of exams remotely, using various tools like webcam monitoring, screen sharing, recordings, and AI to ensure test integrity

Paper-Based Testing: The use of paper and pen to deliver tests

Parallel Forms: Different versions of a test built to the same table of specifications and equivalent in difficulty, often used to prevent cheating and improve test reliability

Physical Environment Check: An assessment of a test-taker's physical surroundings, typically done at the beginning of a remote proctoring session, to ensure a secure testing environment that adheres to exam-specific criteria

Performance-Based Assessment (PBA): A form of testing that requires test-takers to perform tasks or create responses rather than selecting answers from given options

Predictive Algorithms: Algorithms that use historical data to predict future outcomes, used in online testing for security and behavioral analysis

Psychometrics: The psychological theory or technique of cognitive measurement

Psychometrician: A person who is trained in the development, administration, and interpretation of tests

Proxy Testing: Someone taking an exam on a test-taker's behalf by controlling their computer or impersonating their likeness

Reliability: The degree to which an assessment consistently produces stable and accurate results over repeated administrations

Remote Delivery: The administration of assessments through online technology, allowing test-takers to participate from disparate locations

Remote Sharing: The process of sharing digital content or screen data from one device to another over a network, used as a method of misconduct in online testing as well as a tool to facilitate remote proctoring

Responsive Technology: Systems that can quickly adapt and adjust to changing conditions or requirements, often in real time or with minimal delay

Scalability: The ability of a system or process to handle a growing amount of work or to expand in order to accommodate that growth

Screen Mirroring Technology: Technology that allows the display of one device to be replicated onto another screen, often used in remote proctoring platforms for proctors to view test-takers' computer screens

Scripts: Predetermined guidelines or code sequences used in software or testing environments to automate processes or tasks

Secure Browser Technology: Specialized web browsers designed to provide a controlled and secure environment for online testing, restricting access to unauthorized resources or applications

Security Integration: The process of building security measures or capabilities into an online testing platform or software to protect against threats and vulnerabilities

Sentiment Analysis: The use of natural language processing to identify and categorize opinions or emotions expressed in text

Session-Based Testing: A test that occurs in a specific time frame or administration window

Session Recordings: Digital recordings of an online exam session, capturing both the test-taker (including audio and video) and their computer screen

Software-Only Proctoring: Online proctoring solutions that rely solely on software, typically using algorithms and artificial intelligence, without any human involvement or oversight

Stapling: The practice of integrating industry certifications directly into academic programs or curricula; allows students to simultaneously earn academic credits and professional qualifications, thereby aligning educational outcomes with industry standards and job market requirements

Subject Matter Expert (SME): An individual with extensive knowledge and expertise in a particular discipline, often working alongside psychometricians to develop exam content that is technically accurate

Synchronous Proctor Review: Real-time (or "live") monitoring and supervision of a test-taker by a human proctor during an online exam

System Flag: An alert or notification automatically created by online proctoring software when it detects something unusual or potentially problematic during a test; generated based on predefined criteria set within the proctoring system

Test Content and Metadata: The actual questions (or “items”) and related information in a test, including data about the nature and structure of the items

Two-Factor Authentication: A security process requiring two distinct forms of digital identification before granting access or approval into a software application or a specific exam

Unpermitted Resources: Content, sources, devices, or materials that are prohibited by exam rules; often used as an umbrella term to describe the nature or subject of exam misconduct by which a test-taker gains an unfair advantage (i.e., an individual used unpermitted resources during an exam)

Validity: The extent to which an assessment measures what it intends to measure

Virtual Environment Check: Security measures taken to ensure the digital test-taking environment (i.e., the computer being used during a test) is secure and free from potential aids (including virtual machines) or unauthorized material

Virtual Machine: A computer system created using software on one physical computer to emulate the functionality of another separate physical computer

Vouchering System: A system for creating, distributing, and managing vouchers (used as a payment method or access key) that grant test-takers entry to specific assessments or services