A comparison of three online proctoring services: ProctorU, Respondus Monitor and Proctorio

Distance Learning, Tseng College

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Abstract

After identifying a need for an automated/remote proctoring service or software to help protect the integrity of online exams at California State University Northridge (CSUN), the Distance Learning group at The Tseng College conducted an in-depth evaluation of three potential solutions: ProctorU, Respondus Monitor and Proctorio. Each was deployed and integrated into CSUN's online learning infrastructure, and tested using real online quizzes taken by seven real students. The following report will outline the evaluation of each of these applications/services based on the results of the test case and the observations of the students and Distance Learning technical staff conducting the evaluation.

Respondus Monitor

Respondus Monitor is an add-on for an existing learning management system (LMS) where students use their own computer and webcam to record their assessment sessions. During the initial startup students are required to download and install Respondus's companion product, Lockdown Browser. Students log into the LMS and complete some brief setup prior to the exam (which can include student identity authentication). The student and surrounding environment are recorded during the entire exam and instructors can review details of the assessment and watch any or all of the recorded video.

Proctorio

Like Respondus Monitor, Proctorio is also an add-on for the LMS where students use their own computer and webcam to record their assessment sessions. During the initial startup prior to the exam, students are required to install the Google Chrome browser (if not already installed) as well as a Proctorio-provided Chrome extension. The student and surrounding environment are recorded during the exam. Proctorio applies a set of advanced video detection algorithms to the recorded video to flag potential cheating behaviors. Instructors can then review these flags, any accompanying video and other assessment details after exam completion. The instructor can also adjust the sensitivity of Proctorio's video detection algorithms, as well as other assessment settings.

ProctorU

ProctorU is a remote proctoring service where a live proctor observes a student and his/her environment while taking an online exam. Instructors log into the ProctorU website and schedule an online assessment, providing a range of hours and days during which students can schedule a test-time, exam URL (URL from Moodle) and password (Moodle), resources allowed for students during the exam, etc. Students then log into the ProctorU website to schedule a time to take the online exam. When it's time to take the exam, students connect with a live proctor via webcam. The live proctor has the ability to see the student's environment while taking the exam as well as the student's computer screen(s) and any open applications. After authenticating the student (through showing ID or other verification questions), the proctor provides the student with the link and password to the exam on the LMS. The student takes the exam and is observed by the proctor for the entire duration of the exam. A proctoring

report for the student's exam session is created by the proctor, outlining any witnessed cheating behaviors and observations, and is made available to the instructor on the ProctorU website.

Features	Respondus Monitor	Proctorio	ProctorU
Automated or Remote?	Automated	Automated	Remote
Integration with LMS?	Yes	Yes	No
Hardware requirements	PC, Mac or iPad, Webcam, Microphone	PC or Mac, Webcam, Microphone	PC or Mac, Webcam, Microphone
Additional software required	Respondus Lockdown Browser	Google Chrome	None
Cheating detection	After-the-fact by instructor review	After-the-fact by video detection algorithm and instructor review	Real-time by live, remote proctor
Student authentication	Yes	Yes	Yes
Observe student's environment	Yes	Yes	Yes
Observe student's screen	Yes	Yes	Yes
Monitor student's computer activity	No	Yes	Yes
Ability to lock down student's browser during assessment	Yes	Yes	No
Student setup	Download and install Lockdown Browser	Download and install Google Chrome, install Chrome extension	Create ProctorU account on website, schedule testing session. Log in to ProctorU to connect with remote proctor at exam time
Instructor setup	Specify assessment recording settings in LMS	Specify assessment recording settings in LMS	Create ProctorU account on website, schedule assessment availability and settings
Instructor review	Review recordings of all student assessments	Review recordings flagged by Proctorio as suspicious	Review report provided by remote proctor
Ability to use software other than web browser during assessment	No	Yes (all or nothing)	Yes (customizable)

Table 1 – Descriptions and comparisons of three proctoring services

Dry-run testing

End-user experience is crucial in comparing these online proctoring services. In order to collect more realistic end-user experience from students, we created practice exams using those proctoring services and selected seven student assistants to take the exams. Of course, we could get more meaningful results from a bigger experimental group, but unfortunately we had to complete this dry-run test within a limited time frame (winter break). The seven student assistants took the practice exams between January 11, - January 14, 2016. For testing purpose, students were encouraged to cheat.

Test protocol

The three different proctoring solutions were tested with three different exams created in Moodle. The exams each consisted of 13 multiple choice questions about world geography and one essay question on a broad, general topic. Seven student assistants were given 30 minutes to take and complete each exam just as a real student would. We selected the world geography questions because students can easily get the answers by searching the Internet. A private room and clean computer were provided for students. They took the three exams at once, so they could easily compare those three proctoring services. They were also asked to follow the installation instructions of each service, so they installed all required applications and plug-ins themselves.

End-user survey

After students completed the practice exams, they answered a survey that required them to rate each online proctoring service on five criteria: ease-of-use, privacy, technical issues, security (possibility of cheating) and other concerns and limitations. Refer to Appendix A for more details of the survey results.

a. Ease-of-use. As you can see at the Table 2, Proctorio was rated as the easiest service by students. In order to use ProctorU, students needed to login to the ProctorU website (https://go.proctoru.com) to schedule and run their exams. For Respondus Monitor, students had to install companion application (Lockdown Browser) on their computers before they started the exams. Unlike ProctorU and Respondus Monitor, Proctorio required the installation of Google Chrome that is commonly used and the Proctorio Chrome extension

	ProctorU	Respondus	Proctorio
Ease-of-use (higher score for easier service)	10	10	10
	0	6	10
	8	4	5
	9	6	8
	5	7	8
	9	9	9
	7	8	10
Average	6.9	7.1	8.6

Table 2 – Ease-of-use Rating

b. Privacy. Respondus Monitor and Proctorio were similarly rated for privacy. A photo ID and student's picture were required at the beginning of the exams for all three services, but only ProctorU asked follow-up questions. The follow-up questions were formulated upon cross-referencing information provided by the students with public information databases to authenticate the test-takers identity. Students rated ProctorU poorly due to the invasive nature of the follow-up questions as mentioned in the survey.

	ProctorU	Respondus	Proctorio
Privacy (higher score for better privacy protection)	10	10	10
	10	10	10
	6	5	5
	7	7	7
	3	8	9
	9	9	9
	6	8	9
Average	7.3	8.1	8.4

Table 3 – Privacy Rating

c. Technical Issues. Disclaimer: Reported technical issues may vary depending on the technical savviness of the users. For example, student assistants from the tech support team experienced less technical issues that some of the others and this was reflected in their respective survey ratings.

Similar to the ease-of-use rating, students rated Proctorio higher for technical issues likely due to Proctorio' s direct integration with Moodle. They rated ProctorU lower, because in comparison to Proctorio and Respondus Monitor, when using ProctorU, students had to access an additional site, create an account, log-in, etc.

	ProctorU	Respondus	Proctorio
Technical issues (higher score for less technical issues)	10	9	10
	0	6	9
	4	4	4
	10	6	8
	7	9	9
	10	10	10
	1	7	7
Average	6.0	7.3	8.1

Table 4 – Technical Issue Rating

d. Ease-of-cheating.

During the testing of the three proctoring services, one of the students successfully cheated on the exams by hiding a smartphone under the keyboard. Though all of the applications record the student and their testing environment, it would be impossible to entirely prevent students from hiding cheating aids in the environment.

Proctorio allows the instructor to change the anti-cheating detection levels (Proctorio behavior settings: lenient, moderate and severe) during the reviewing process. This allows the program to detect more extraneous movements of the students, so instructors are able to see more red flags (on higher severity levels) on students that might have cheated during the exam; however, higher severity levels have the potential to detect false positives.

Overall, the students expressed that none of three proctoring services are sufficient to prevent student cheating activities completely.

	ProctorU	Respondus	Proctorio
Ease-of-cheating (higher score for more secure proctoring)	10	7	3
	10	0	0
	2	2	2
	8	6	6
	7	7	8
	9	7	7
	2	2	5
Average	6.9	4.4	4.4

Table 5 – Effectiveness of Cheating Detection Rating

e. Other student observations.

- Some students expressed that they disliked the fact that they were being recorded.
- Without live proctors, students may feel more comfortable positioning their smartphone, cheat sheets off screen to use during the exams.
- It was noted that ProctorU's live proctors have varying amounts of competency and thoroughness

Evaluation from an instructor perspective

1) Ease-of-use

The three proctoring services all require varying amounts of additional work and time for instructors when compared to taking a standard, non-proctored assessment in Moodle. Both Respondus Monitor and Proctorio integrate directly with Moodle via a plugin (or 'Block', as they are named in Moodle). Respondus Monitor is controlled via a separate 'Respondus Monitor Dashboard' in Moodle, where its functionality can be added to existing assessments in Moodle by an instructor.

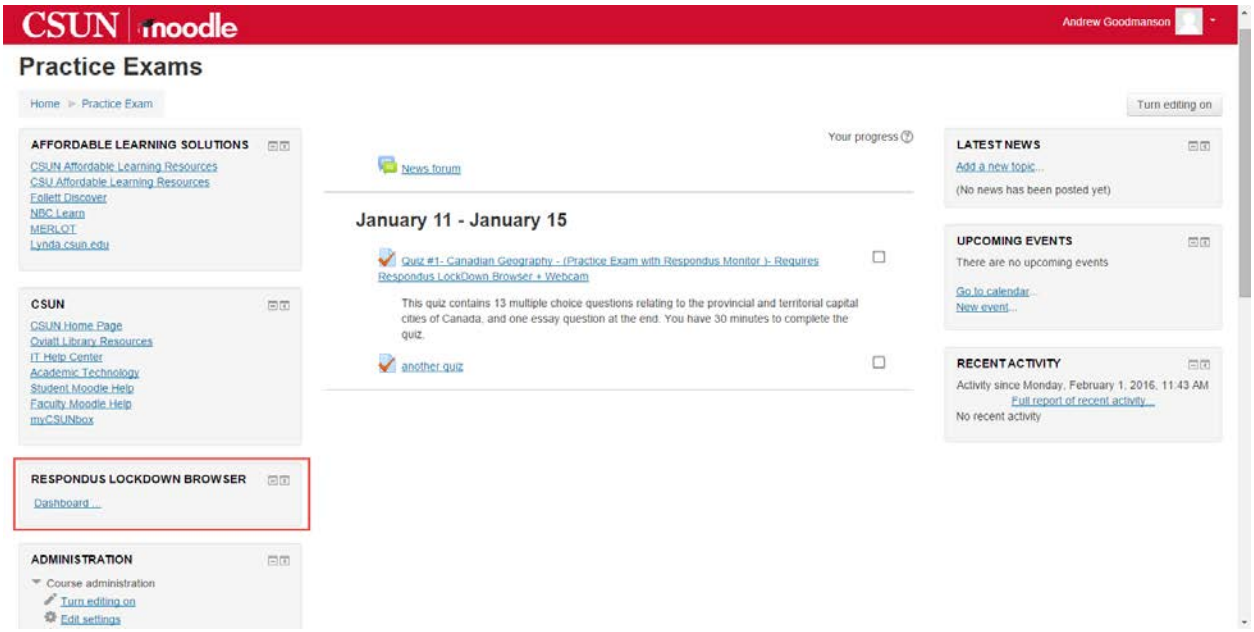

Figure a. Location of Respondus Monitor Dashboard in Moodle

Proctorio is configurable by an instructor directly within a Moodle assessment's properties.

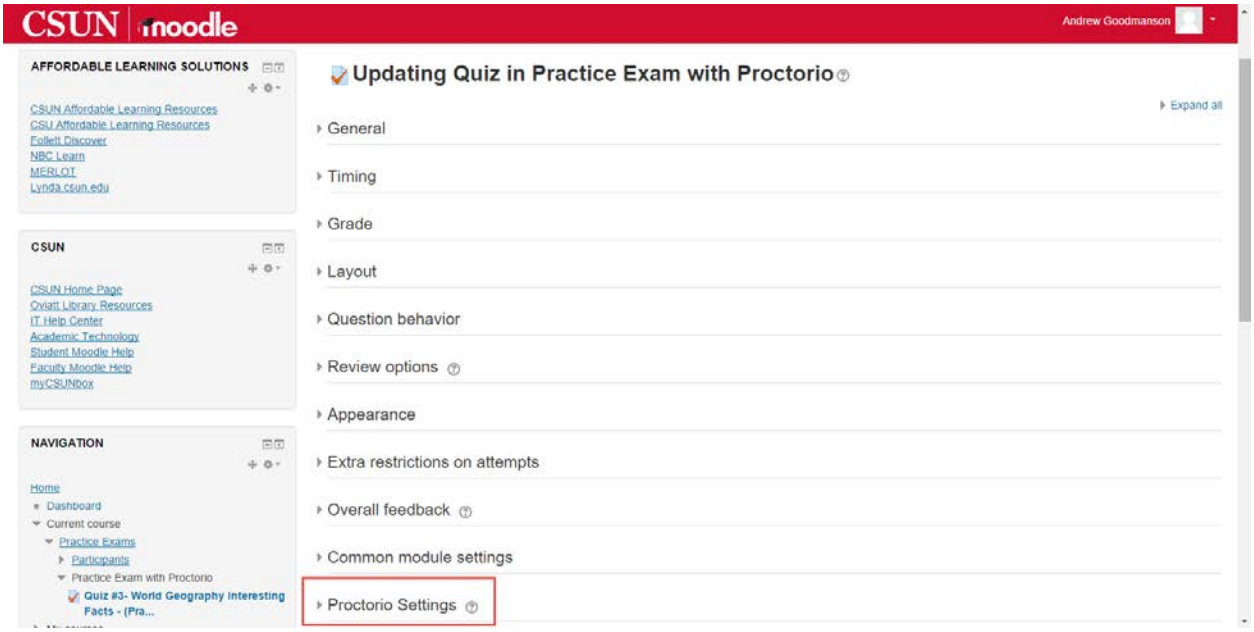

Figure b. Proctorio Settings in Moodle assessment properties

In the case of both, instructors will need to configure the respective settings that they wish to use for each, but doing so only takes a few additional minutes.

ProctorU requires the most amount of additional setup and configuration time, as it does not integrate directly with Moodle. Instructors need to create an account and log in to the ProctorU website where they need to schedule their assessment(s) for students and provide the link to the assessment in Moodle. Assessments need to be password protected in Moodle, and the password needs to be provided in the assessment properties in ProctorU.

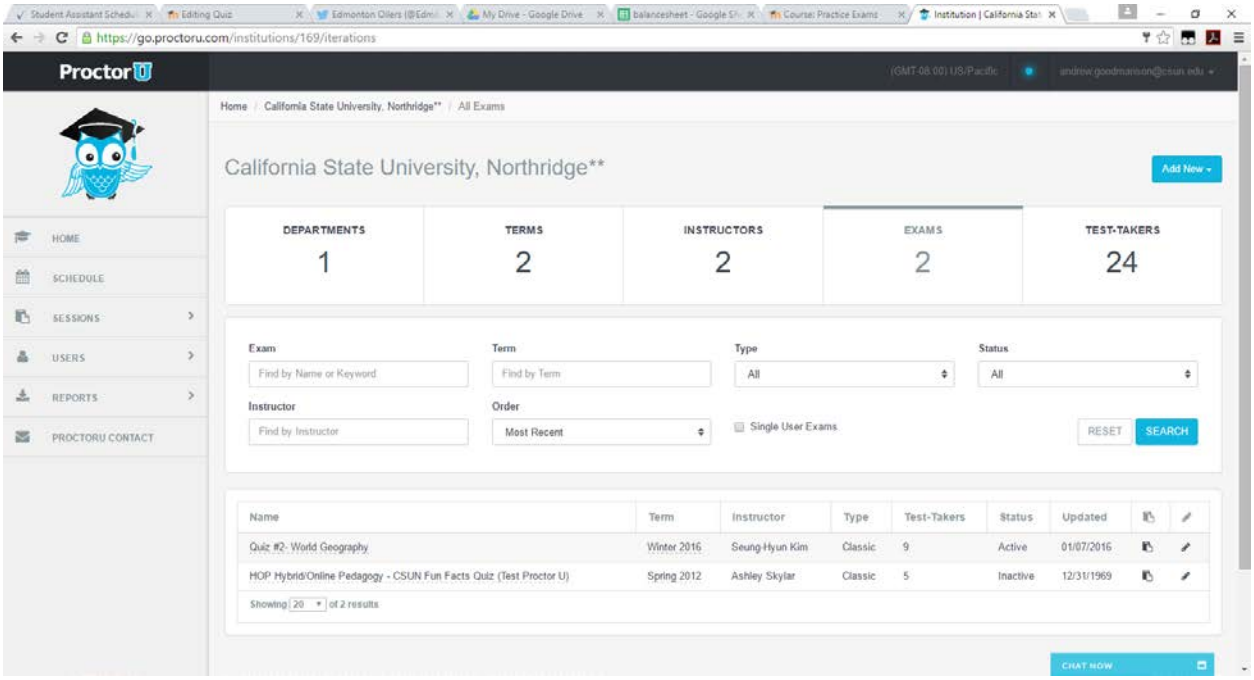

Figure c. Instructor interface on the ProctorU website

After an assessment is taken, the instructor will need to spend additional time reviewing the results with all three of the proctoring services. With Respondus Monitor, the instructor can view the entire video recording of each student taking the assessment. This can take a lot of time, as Respondus Monitor does not flag suspicious activity, and of the three services Respondus Monitor will require the most amount of additional time for instructors viewing the results of the assessment.

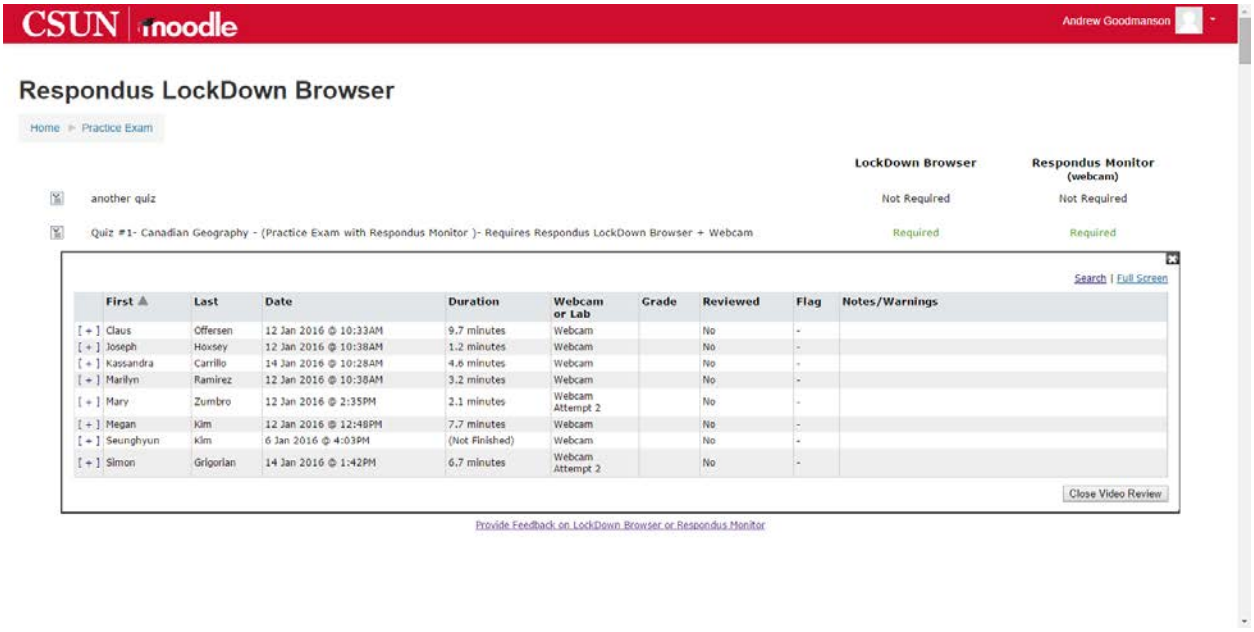

Figure d. Assessment review interface with Respondus Monitor

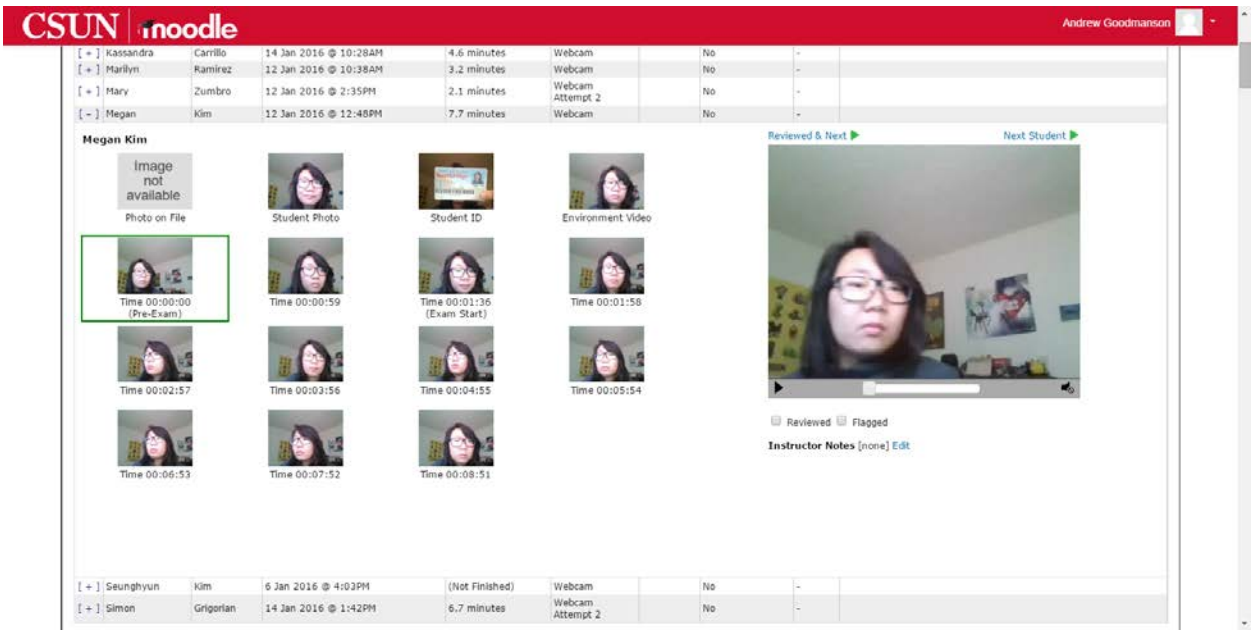

Figure e. Assessment review interface with Respondus Monitor

Proctorio flags suspicious activity based on the settings provided by the instructor, which substantially reduces the amount of video the instructor needs to review.

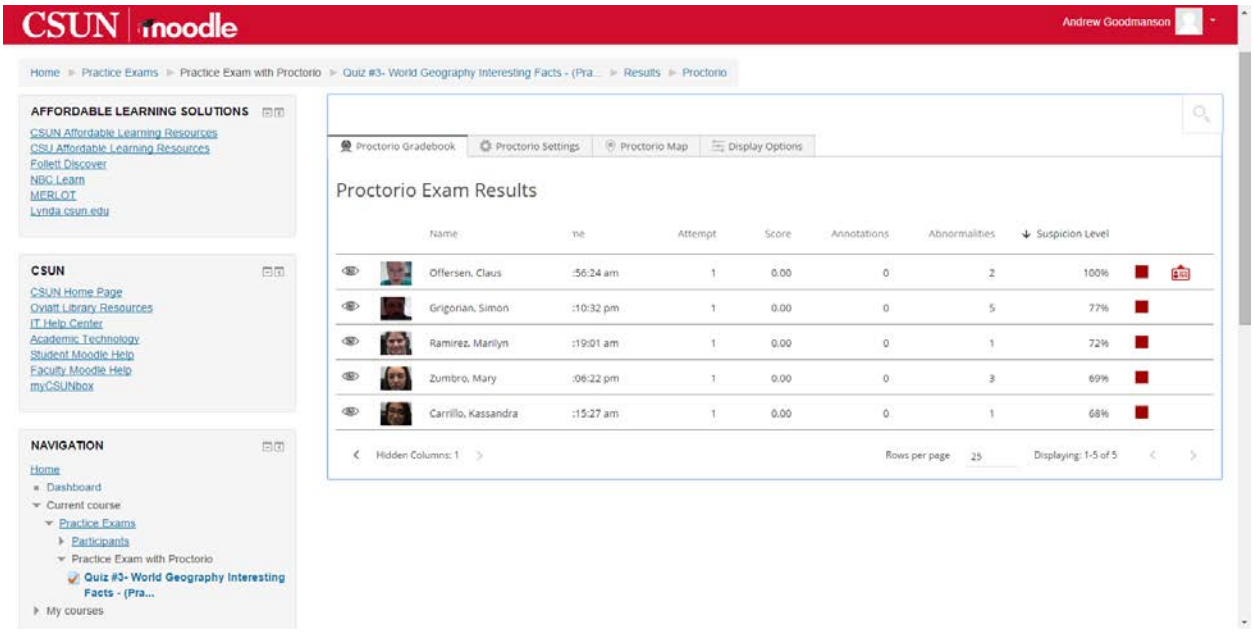

Figure f. Assessment review interface with Proctorio

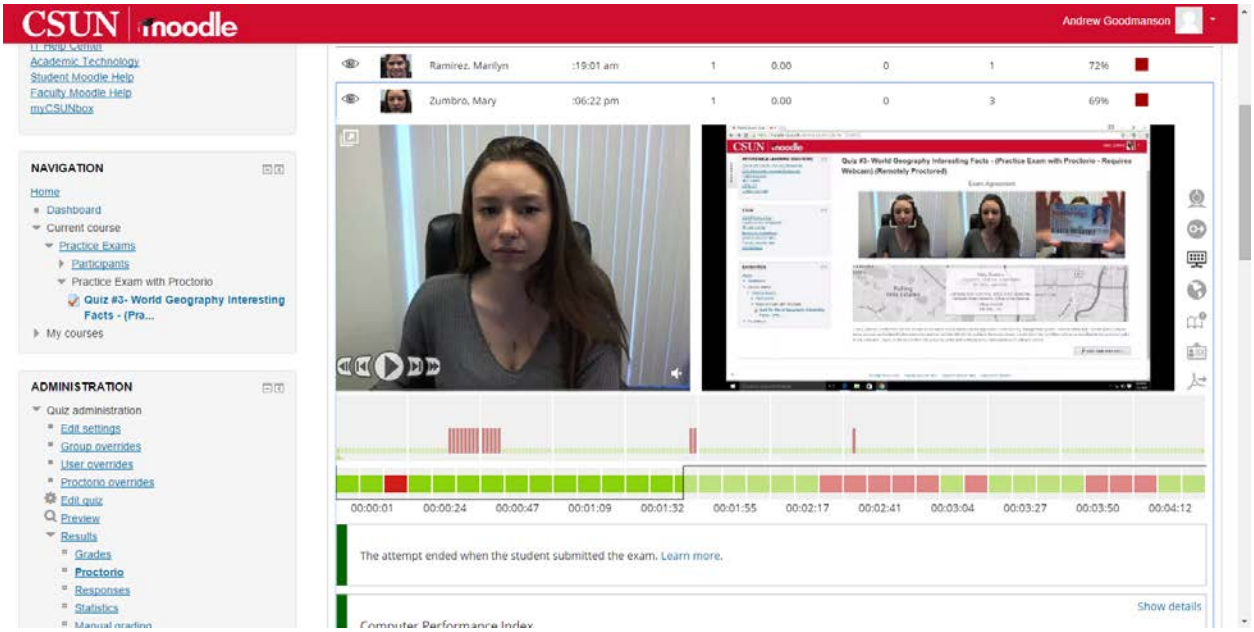

Figure g. Assessment review interface with Proctorio

Rather than requiring the instructor to review assessment video, ProctorU provides a proctoring report for each student and clearly outlines whether potential cheating behaviors were observed during the assessment.

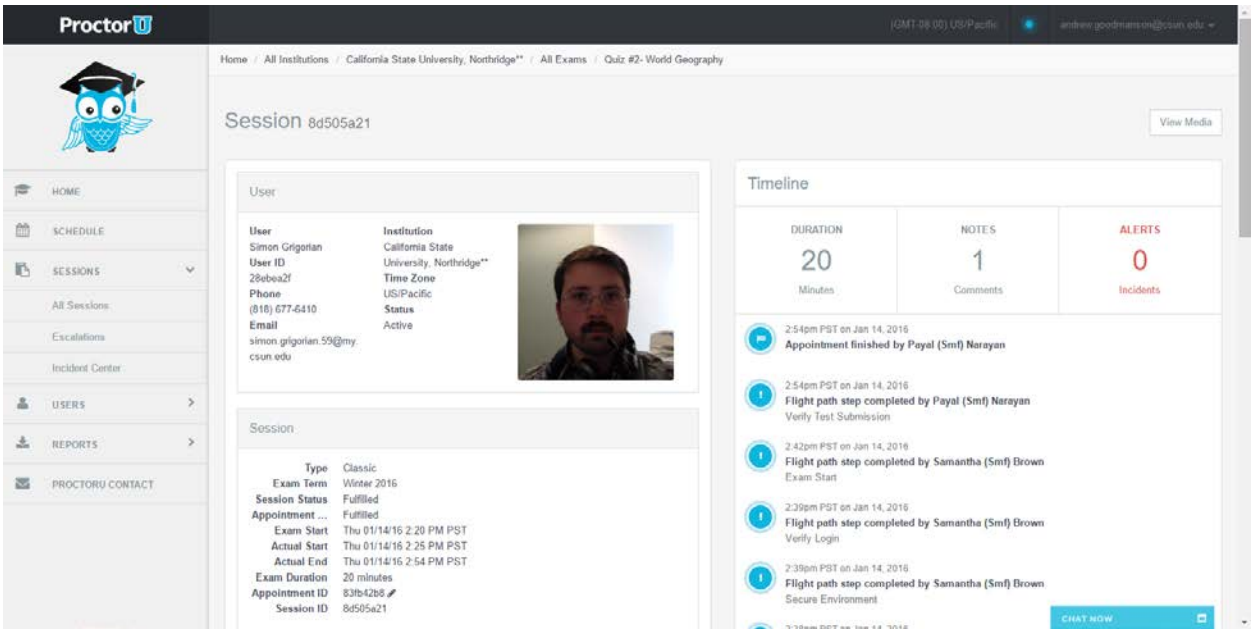

Figure h. Student session activity report in ProctorU

To recap, ProctorU will require the most amount of time for an instructor to set up, but will require the least amount of time for the instructor to review the student's activity during the assessment. Respondus Monitor and Proctorio are relatively quick to set up, but will require more time to review student activity (particularly in the case of Respondus Monitor as suspicious behaviors are not flagged). In terms of total overhead for both setup and review, ProctorU and Proctorio are pretty close for requiring the least amount of time, while Respondus Monitor will definitely require the most amount of additional instructor time out of the three.

2) Efficiency in detecting cheating

Respondus Monitor is, by a significant margin, the least efficient of the three proctoring services in detecting cheating. In order to check any possible cheating activities, instructors must review entire videos that were recorded during the assessments. For example, if there is a one-hour midterm exam in a class of 30 students, the instructor will have 30 hours of video to review.

Proctorio is more efficient than Respondus Monitor in cheating detection; it includes cheating detection algorithms which can be controlled by instructors, allowing each course and exam to

scrutinized differently. For example, you can specify in Proctorio settings to disregard instances of a student's eyes looking away from the screen if the instructor doesn't feel it is important. Proctorio also allows instructors to control the playback speed of videos, so they can review the video in a shorter time. While all three services offer a certain level of flexibility in configuration settings, it should be noted that Proctorio provides the most options of the three.

ProctorU provides a live, remote proctor during the assessment that will observe the testing session and provide a subsequent proctoring report after the test is taken. As such, instructors have relatively little to review after students complete the test. Of the three services, ProctorU is the most efficient for instructors in detecting potential cheating behaviors.

Other considerations

1) **Technical Support**

During deployment and testing, we did require additional technical support with all three proctoring services. Technical support is available 24 / 7 / 365 via chat, email, phone with ProctorU and Proctorio. ProctorU appears to have better technical support for students, as each student is required to connect with a live proctor during assessments. Proctorio issues support contact numbers specifically for each educational institution, as well as priority lines for faculty and administrators. Respondus Monitor provides ticket-based technical support via their website, and claim "staff members generally respond to tickets within 24 hours, excluding weekends and U.S. holidays."

2) **Privacy**

For all three proctoring services, any recorded footage of student testing sessions is stored on servers external to CSUN. At the beginning of exams, students may need to authentication themselves with government (or university) issued photo ID. In ProctorU, the picture of student's photo ID is automatically purged after a few days, while it continued to be retained with Proctorio and Respondus Monitor after our testing.

Conclusion

The Distance Learning group at Tseng College reviewed introductory descriptions, user instructions and demonstrations of all three online proctoring services. We deployed these services into our learning environment and evaluated them by doing a dry-run test. From the reviewing and testing process, we could recognize the advantages and disadvantages of each. For example, ProctorU is more secure and efficient than others for preventing and detecting cheating activities because of the "live" remote proctors. However, with ProctorU, more training and technical support are required because users need to use a separate website in addition to Moodle (proctoru.com). Also, different from the others, students are asked to schedule their exam more than 72 hours in advance (there will be a $5.00 charge added to all exams scheduled less than 72 hours in advance).

Proctorio is generally easier and more flexible than the others. Proctorio is integrated into Moodle, and system monitors student's computer using Google Chrome and the Proctorio Chrome extension. Students don't need to schedule their exams, and the video detection algorithms could reduce faculty's reviewing time significantly.

Similar to Proctorio, Respondus Monitor also locks down student's computer and record student's activities during assessments. However, students are required to download and use Respondus's Lockdown Browser product to take any assessment with Respondus Monitor, and the amount of time required by instructors to review the video of student testing sessions is significant.

In summary, we concluded that all three services are imperfect to varying degrees; all three present additional work and potential technical difficulties for both instructors and students. Through testing we observed that it would be possible for students to cheat using any of the three services. However, it should be noted that these three proctoring services are marketed and branded as 'cheating deterrent' services as opposed to 'cheating prevention'**. In dissuading students from cheating, our evaluation found that ProctorU was the most effective;** however, with that effectiveness came additional time overhead and complexity for both instructors and students. **Proctorio was found to have the best balance of effectiveness vs. additional time and complexity for users**. And finally, despite direct integration with Moodle and easy setup, **Respondus Monitor presented the most amount of total additional overhead for instructors to use.**

APPENDIX A. End-User Survey

End User Survey for Online Proctoring Services

(ProctorU, Respondus and Proctorio)

1. How **easy** was it to take the test?
   a. Give it a rating of 10 (1-10) for each (higher score for easier service)

ProctorU	Respondus	Proctorio
5	7	8

   b. Elaborate on your experience

Proctor U was at times complicated and a hassle. Too many steps to complete to just complete a simple quiz. Proctorio was the simplest program used.

2. Do you have any **privacy** concerns while taking tests inside this proctoring environment?
   a. Give it a rating of 10 (1-10) for each (higher score for better privacy protection)

ProctorU	Respondus	Proctorio
3	8	9

   b. Elaborate on your experience

I did not like at all how for ProctorU we had to submit our addresses and answer private authorization questions. For example, it asked me questions about my father's birthday which was strange because I do not know how they got that. Also, I do not like how ProctorU made me take down everything on the walls.

3. Did you have any **technical issues**?

   a. Give it a rating of 10 (1-10) for each (higher score for less technical issues)

ProctorU	Respondus	Proctorio
7	9	9

   b. Elaborate on your experience

I only had an audio issue with ProctorU. I was also confused with all the steps but the tech support helped on chat.

4. Is there any way you could **cheat** while taking the test?

   a. Give it a rating of 10 (1-10) for each (higher score for more secure proctoring)

ProctorU	Respondus	Proctorio
7	7	8

   b. Elaborate on your experience

I cheated on all the tests. It was the hardest to do so with Respondus and Proctorio so I only used my phone. During ProctorU I was using my phone the whole time while on camera.

5. Is there any **concern** and **limitation** that you would like to share with us?

I believe Proctor U has too many privacy issues and many students will not like using this system.

End User Survey for Online Proctoring Services

(ProctorU, Respondus and Proctorio)

1. How **easy** was it to take the test?
    a. Give it a rating of 10 (1-10) for each (higher score for easier service)

ProctorU	Respondus	Proctorio
9	9	9

    b. Elaborate on your experience

It was easy to take the tests with all proctoring services. No issues came up and all instructions were very easy to follow.

2. Do you have any **privacy** concerns while taking tests inside this proctoring environment?
    a. Give it a rating of 10 (1-10) for each (higher score for better privacy protection)

ProctorU	Respondus	Proctorio
9	9	9

    b. Elaborate on your experience

I didn't particularly have any privacy issues with these proctoring tools. ProctorU had a live person guiding you through the steps, so I had very little issues there. I have used Respondus before for prior classes / test taking, so I trusted it. If anything, it was just a bit unnerving to know that you are being recorded on your laptop and/or watched while taking the quizzes.

3. Did you have any **technical issues**?

   a. Give it a rating of 10 (1-10) for each (higher score for less technical issues)

ProctorU	Respondus	Proctorio
10	10	10

   b. Elaborate on your experience

I did not experience any technical issues with any of the programs. All downloads and installations were straightforward and easy. Also nothing went wrong while I was taking the quizzes.

4. Is there any way you could **cheat** while taking the test?

   a. Give it a rating of 10 (1-10) for each (higher score for more secure proctoring)

ProctorU	Respondus	Proctorio
9	7	7

   b. Elaborate on your experience

ProctorU – Since there was a live proctor who made sure nothing else was open on your screen, no notes were around, floors and walls were void of anything that could have been helpful, etc. Respondus – While it is nice that there was a lockdown on your browser, it doesn't really prevent notes being scattered about on your workspace or the floor or have an extra monitor to look at. Though I am sure that it was pretty obvious that I was cheating while looking at another monitor for answers. Proctorio – I have the same concerns and comments for Proctorio as I do with Respondus. There was very little prevention in having notes or second monitors or phones being somehow used to cheat.

5. Is there any **concern** and **limitation** that you would like to share with us?

I don’t have any concerns to say. I guess some comments would be that I believe that ProctorU seems to be the most secure and harder to cheat on proctoring service. But maybe Respondus or Proctorio would be the easiest to use.

End User Survey for Online Proctoring Services

(ProctorU, Respondus and Proctorio)

1. How **easy** was it to take the test?
    a. Give it a rating of 10 (1-10) for each (higher score for easier service)

ProctorU	Respondus	Proctorio
8	4	5

    b. Elaborate on your experience

ProctorU has a very personal experience compared to the other two.
That being said, it is super easy to cheat, when they ask to scan the room, I passed without showing my room

2. Do you have any **privacy** concerns while taking tests inside this proctoring environment?
    a. Give it a rating of 10 (1-10) for each (higher score for better privacy protection)

ProctorU	Respondus	Proctorio
6	5	5

    b. Elaborate on your experience

I think people are going to find this recording experience uncomfortable.
→A question most will ask is “what happens to my recording?”

3. Did you have any **technical issues**?

   a. Give it a rating of 10 (1-10) for each (higher score for less technical issues)

ProctorU	Respondus	Proctorio
4	4	4

   b. Elaborate on your experience

Difficult to scan ID with all of them

4. Is there any way you could **cheat** while taking the test?

   a. Give it a rating of 10 (1-10) for each (higher score for more secure proctoring)

ProctorU	Respondus	Proctorio
2	2	2

   b. Elaborate on your experience

One can easily cheat by NOT showing work station.

5. Is there any **concern** and **limitation** that you would like to share with us?

I liked ProctorU more, but I would prefer an in-class exam instead. I think people will dislike the fact that they are being recorded. Violation of privacy is one of the hot topics, so more people are aware, which rises some questions about these services.

End User Survey for Online Proctoring Services

(ProctorU, Respondus and Proctorio)

1. How **easy** was it to take the test?
    a. Give it a rating of 10 (1-10) for each (higher score for easier service)

ProctorU	Respondus	Proctorio
0	6	10

    b. Elaborate on your experience

ProctorU had difficulty connecting the webcams. Took about 45 minutes until they decided to start the test without the webcam.

2. Do you have any **privacy** concerns while taking tests inside this proctoring environment?
    a. Give it a rating of 10 (1-10) for each (higher score for better privacy protection)

ProctorU	Respondus	Proctorio
10	10	10

    b. Elaborate on your experience

3. Did you have any **technical issues**?

   a. Give it a rating of 10 (1-10) for each (higher score for less technical issues)

ProctorU	Respondus	Proctorio
0	6	9

   b. Elaborate on your experience

ProctorU wouldn't connect webcam & Respondus was confusing to use.

4. Is there any way you could **cheat** while taking the test?

   a. Give it a rating of 10 (1-10) for each (higher score for more secure proctoring)

ProctorU	Respondus	Proctorio
10	0	0

   b. Elaborate on your experience

5. Is there any **concern** and **limitation** that you would like to share with us?

ProctorU sucks! I liked Proctorio the most.

End User Survey for Online Proctoring Services

(ProctorU, Respondus and Proctorio)

1. How **easy** was it to take the test?
    a. Give it a rating of 10 (1-10) for each (higher score for easier service)

ProctorU	Respondus	Proctorio
9	6	8

    b. Elaborate on your experience

ProctorU – It was easy to take the test because you had a proctor with you and able to answer questions throughout the exam.

Respondus – This was a little bit harder to use because you had to download a separate server. It felt like if I was to get lost on a step or the separate application stop working, I would be unable to take my exam or not given a grade for it.

Proctorio – With this proctor, I was asked to download and check a few boxes and it was easy to follow.

2. Do you have any **privacy** concerns while taking tests inside this proctoring environment?
    a. Give it a rating of 10 (1-10) for each (higher score for better privacy protection)

ProctorU	Respondus	Proctorio
7	7	7

    b. Elaborate on your experience

A student may not be comfortable sharing their home/surroundings with a third party and may not feel comfortable having their computers controlled by third party.

ProctorU does not only ask to see your surroundings, but they ask for your home address. They have now seen in your personal space and have where it is located. They can see everything you view on your computer screen. This might make students wonder if they can see other parts of their personal computer.

Respondus and Proctorio do not ask to see your surroundings right away but warn you they might at any time. Students may feel uncomfortable giving 100% control of their computer to the site as well as being recorded for future use.

3. Did you have any **technical issues**?

   a. Give it a rating of 10 (1-10) for each (higher score for less technical issues)

ProctorU	Respondus	Proctorio
10	6	8

   b. Elaborate on your experience

ProctorU – I had no technical issues thanks to the live proctor that was assisting me the whole time. Respondus – I had a technical issue and was unable to call anyone for assistance. Once the student begins the exam, if they start having technical difficulty, they are unable to log off the screen for help. Proctorio – I did not have technical difficulty when taking the exam, but if I did experience technical difficulty, I would be unable to get help which could be concerning for students taking important exams.

4. Is there any way you could **cheat** while taking the test?

   a. Give it a rating of 10 (1-10) for each (higher score for more secure proctoring)

ProctorU	Respondus	Proctorio
8	6	6

   b. Elaborate on your experience

ProctorU- When I attempted to cheat by opening another tab, I was asked by the proctor to exit out of all other tabs and not to google questions. I was able to google one answer before I was asked to shut down the other page. My proctor did check my surroundings and made sure my phone was out of reach. Respondus and Proctorio – Both programs made it impossible to cheat on the computer you are taking the exam on, but because there is no live proctor, students may feel more comfortable positioning their phones or other cheating devices off screen to use during the exam. If they are simply being filmed, they may not think their video will not be viewed carefully enough to see the cheating device. Their surroundings are also not checked so they could have cheat sheets or devices hidden behind the webcam.

5. Is there any **concern** and **limitation** that you would like to share with us?

End User Survey for Online Proctoring Services

(ProctorU, Respondus and Proctorio)

1. How **easy** was it to take the test?
    a. Give it a rating of 10 (1-10) for each (higher score for easier service)

ProctorU	Respondus	Proctorio
10	10	10

    b. Elaborate on your experience

All the programs were very easy to use

2. Do you have any **privacy** concerns while taking tests inside this proctoring environment?
    a. Give it a rating of 10 (1-10) for each (higher score for better privacy protection)

ProctorU	Respondus	Proctorio
10	10	10

    b. Elaborate on your experience

I don't feel that my privacy was violated because the same situation would occur if I was taking a test in a classroom.

3. Did you have any **technical issues**?

   a. Give it a rating of 10 (1-10) for each (higher score for less technical issues)

ProctorU	Respondus	Proctorio
10	9	10

   b. Elaborate on your experience

All programs were very easy to use and download especially Proctorio.

4. Is there any way you could **cheat** while taking the test?

   a. Give it a rating of 10 (1-10) for each (higher score for more secure proctoring)

ProctorU	Respondus	Proctorio
10	7	3

   b. Elaborate on your experience

I don't know how Respondus and Proctorio looks over the video, but I feel Respondus can allow people to use phones and maybe tablet. Proctorio I was able to use another browser to search the answers, but again I don't know how the program catches cheaters. ProctorU was much secured and I don't think there is a way of cheating unless a student figures out some way of hiding physical information for the test.

5. Is there any **concern** and **limitation** that you would like to share with us?

End User Survey for Online Proctoring Services

(ProctorU, Respondus and Proctorio)

1. How **easy** was it to take the test?
    a. Give it a rating of 10 (1-10) for each (higher score for easier service)

ProctorU	Respondus	Proctorio
7	8	10

    b. Elaborate on your experience

ProctorioU: Had to go through third party download and third party extension to use.

Respondus: After installation was confused how to proceed, no further directions were provided. Fortunately my intuition was to check my Desktop for the application that was installed.

Proctorio: Easy fast google chrome extension with good instructions. Only bad thing is that It ONLY uses Chrome and not Firefox or other explorers.

2. Do you have any **privacy** concerns while taking tests inside this proctoring environment?
    a. Give it a rating of 10 (1-10) for each (higher score for better privacy protection)

ProctorU	Respondus	Proctorio
6	8	9

    b. Elaborate on your experience

ProctorU: Frustrated because I entered the wrong address so they wanted to use my passport, and would not let me proceed, and I personally did not want to show someone I don't know either my drivers license or my Passport so I proceeded into asking them to give me one more chance to enter information in which I succeeded and finally proceeded with the test after their approval.

Respondus: Nothing really frustrating about this one, just took a screenshot of my student ID which was okay with me but still I don't know where the picture is being stored or who's viewing it, so 8/10 and

Procotorio: Same response as Respondus but 9/10 for Proctorio since it took the image without me having to press a button which was frustrating to do so with Respondus since I kept messing it up trying to hold the ID in one hand and clicking a button with the mouse with the other hand.

3. Did you have any **technical issues**?
    a. Give it a rating of 10 (1-10) for each (higher score for less technical issues)

ProctorU	Respondus	Proctorio
1	7	7

    b. Elaborate on your experience

ProctorU: Having control over my browser is a no no. The proctor when taking over misspelled a few letters on my address bar which re-directed to a web page telling me “I HAVE A VIRUS”.. After multiple frustrating clicks they were able to enter the proper address AFTER escaping from that horror story. Technical Issues you say? I think they need to have pre-designed links for situations like this rather than typing gibberish in the address bar themselves.

Respondus: Not clear enough instructions how to run and start the application. Download instructions were clear but I wish it would at least tell you to run the application after it finished installing otherwise I’m just sitting there and waiting for something to happen.

Proctorio: Non real technical issues really. I didn’t like this software to be honest, it told me to scan my entire room then press done..? Who knows how much of my room I scanned for them.. and what I’m hiding. 7/10 for this reason.

4. Is there any way you could **cheat** while taking the test?
    a. Give it a rating of 10 (1-10) for each (higher score for more secure proctoring)

ProctorU	Respondus	Proctorio
2	2	5

    b. Elaborate on your experience

ProctorU: Cheating was easy. Hid phone underneath keyboard and without moving a muscle slowly took it out and pretened to look at screen where instead I was googling my answers. No detection was found and I passed the test with flying colors.

Respondus: I forgot I was being tested by a webcam haha, which is a good thing actually because It's probably the only application that caught me cheating since I wasn't paying attention to that detail. Nonetheless I don't know how cheat proof this is. I could have cheated just as easily as I did with Proctor U.

Proctorio: Cheating was just as easy as proctor, and Respondus (even though I messed up on the cheating part on this one). All I have to do is hide phone under keyboard, and take it out without moving any arm muscles and keep eye contact on the phone/monitor as I google search. I gave this one 5/10 hoping that the algorithm found something.

5. Is there any **concern** and **limitation** that you would like to share with us?

1) My ID is one, all three required ID, which is fine but at long as it's my Student ID and not my passport / driver liscence because those are confidential to me and I do not feel safe if someone views it; the reason is because who know if they will take a picture of it or not and do what with it. Identity theft is huge in US, and I don't want to be part of it.. 2) Not being able to use firefox, I.E. or safari with proctorio is troubling because that's probably my most favored application. I like this application a lot because it looks and feels more integrated with Moodle as well. 3) Other limitations / concerns is being watched on a webcam. I don't feel comfortable, and others might not as well. I DON'T recommend ProctorU because the fact that they can take over my mouse and keyboard is extremely bad especially if they're going to redirect me to a site that might potentially give me a virus (even if it was an accident). The other two applications (respondus and proctorio) are possible options and are actually better than not having a webcam. In the long run I feel respondus is going to win if there is a winner since it's more ADA compliant than proctorio, otherwise proctorio is almost perfect if we could use it on other browsers.