

Academic Integrity Issues in Online and Computer Based Testing

Dr. Anshuman Razdan “AR”

Professor, Ira A. Fulton Schools of Engineering

President/CEO Vproctor.com

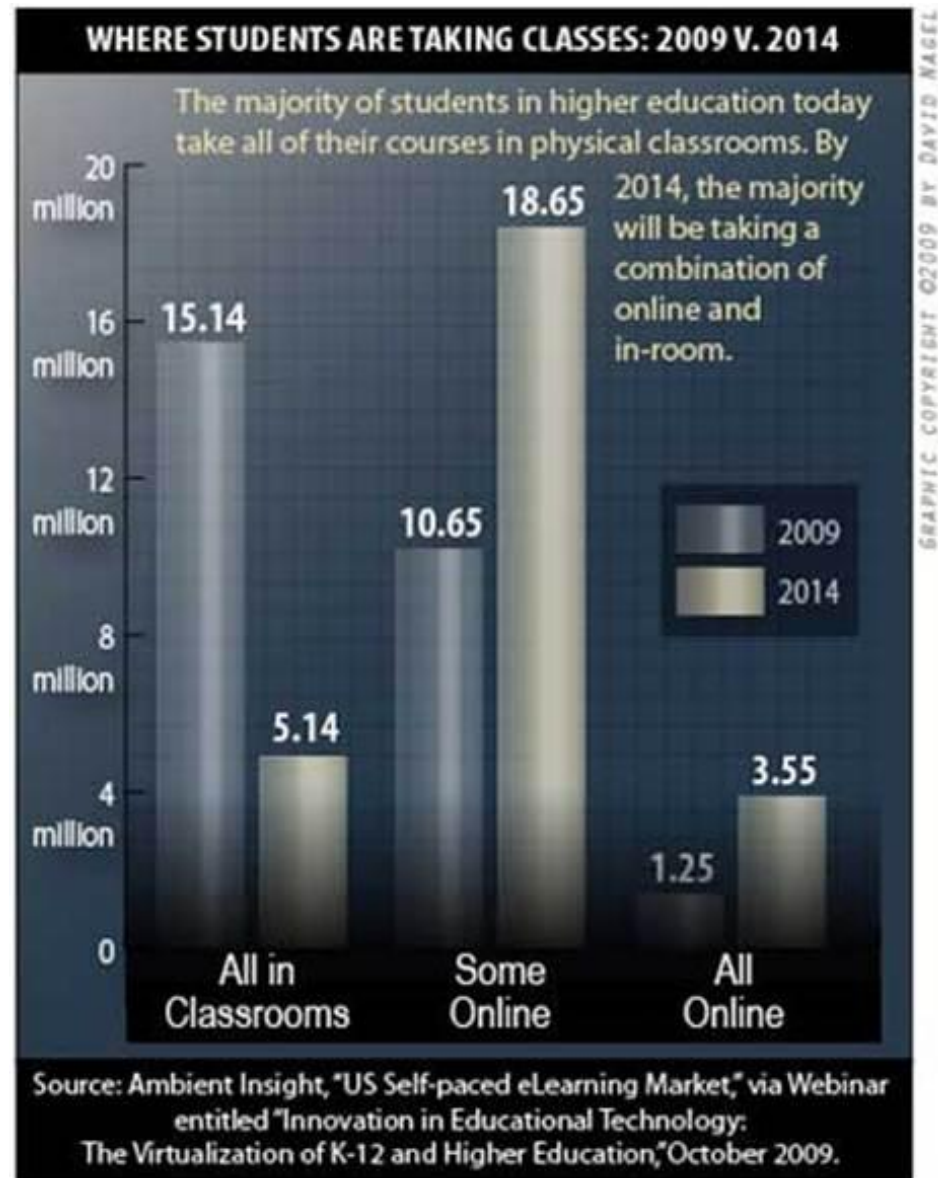
razdan@asu.edu or razdan@vproctor.com

The Premise: E-Learning

- Need to reach global workforce/students cost effectively.
- Knowledge, technology and products are available for dissemination of information.
- Institutions and customers are comfortable interacting online.
- New pedagogical models with media rich environment provides better learning methods.
- Standards are emerging but we are not there !!

E-Learning Case

- In 2009, 1.25 million took all classes online
- 10.65 million take some classes online.
- Predictions indicate this total number could reach 22 million.



“I love e-learning because it makes employees more productive and it’s available anytime, anywhere. Although I think it will take three to four years for e-learning to make as much impact as e-commerce, I truly believe that it will change the way schools and universities teach, the way students learn, and the way businesses will keep employees up-to-date with the skills and information for this fast-changing Internet economy.”

John Chambers, CEO Cisco, 2009

But, what about the assessment?

Cheating?



Test: Final Exam

The table to the right shows the median weekly earnings of full-time workers by gender over a five-year period. Identify the time series data in the table.

What are the time series data in the table?

- A. The time series data are the two earnings from two different groups in a single year.
- B. The time series data are the two earnings from a single subject across five years.
- C. The time series data are the five rows in two different subjects in a single year.
- D. The time series data are the five rows in single group across five years.
- E. There are no time series data in the table.

Click to select your answer.

PEARSON

Time Series vs. Cross-Sectional Data

Data can also be classified as **time series** or cross-sectional. Table 1.3 shows the average unemployment rates for the United States, California, Delaware, Michigan, and Texas during the indicated years. **Time series** data are values that correspond to specific measurements taken over a range of **time** periods. Each of the last five columns in Table 1.3 represents

Table 1.3 Unemployment Rate Data, 2006–2010

YEAR	UNITED STATES	CA	DE	MI	TX
2006	4.6%	4.9%	3.5%	6.9%	4.9%
2007	4.6	5.3	3.5	7.1	4.4
2008	5.8	7.2	4.9	8.3	4.9
2009	9.3	11.3	8.0	13.3	7.6
2010	9.6	12.4	8.5	12.5	8.2

Source: BLS, www.bls.gov

Something Wrong with this Picture?



The Online/CBT Assessment Challenge

- Academic Integrity Who is taking the exam?
- Audit Trail: If cheating is suspected
 - Where is the evidence?
 - How to generate the audit trail for action?
- Bottom/Top line
 - How does it affect the credibility/ accreditation, brand/ranking and \$\$ for your program?

Survey of Self Reported Dishonest Behavior by Watson et al

- 32.1% admitted to having cheated in a live class and 32.7% admitted to cheating in an on-line class
- 23.8% obtained answers from someone else in an online exam (web, chat, ..).
- Students reported they were more than 2X as likely to have been caught cheating in a live class.
- Students predisposed to cheating (Kohlberg 71)
- Role of Gender in Cheating (Stevenson 99).

Physical or Online Proctoring

- Students go to a physical location – PearsonVue, Kaplan, local library, ...
- Online Live Proctoring:
 - Sign up for a time slot to take the test.
 - A human proctor watches N (typically 10-20) students at a time over webcam/mic/shared screens.

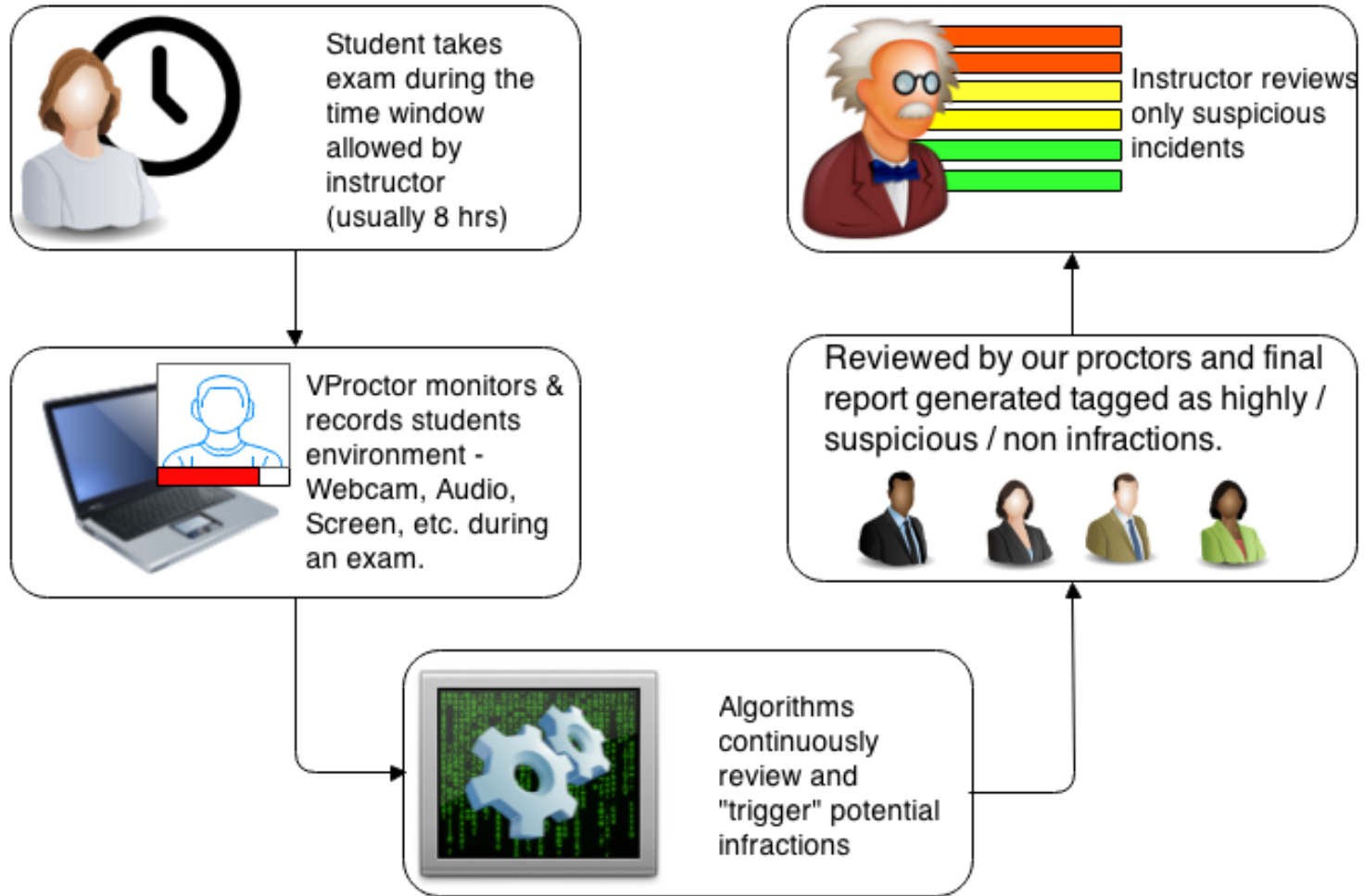
Challenges with Current Model

- A 2 hr exam requires 2 hrs of monitoring
- Human in the loop:
 - One can oversee only so many webcams: distraction at the casino!!
 - Monotonous observations and inconsistently trained
- Lack of Asynchronous access
 - Miss the timeslot, out of luck
 - Not anywhere, anytime as Online is supposed to be
- Cost prohibitive: \$25-40 per 2 hr exam.



The future of online proctoring: algorithm based, asynchronous and cost effective

VProctor: How It Works



Student's View

The screenshot shows a web browser window with several tabs open, including 'W3Schools Quiz Test', 'Lead Organization?', 'SCORM Content Packages', 'Adobe Captivate - Wiki...', 'bigO_plots - YouTube', and 'Big Oh -- Wh...'. The address bar shows 'metta.io and bl...'. The main content area displays a 'SQL Server Query Tool' advertisement from confio.com, followed by a 'W3Schools HTML Quiz' section. The quiz question is '2. Who is making the Web standards?' with radio button options for Mozilla, Microsoft, The World Wide Web Consortium (selected), and Google. A 'Next' button is visible below the options. The page also shows 'Total 20 questions' and 'Time spent 0:20'. At the bottom, there is a Wix advertisement stating 'Over 40 Million People Choose Wix to Create Their Websites.' A video inset in the top right corner shows a man with glasses speaking, with a red 'RECORDING' banner above him. The browser's sidebar on the right contains various links for 'WEB HOSTING', 'WEB BUILDING', 'W3SCHOOLS EXAMS', and 'SHARE THIS PAGE'.

Live Chat Support and Monitoring


The screenshot displays a VProctor exam monitoring dashboard. At the top, there are browser tabs for CNN.com, Facebook, and several VProctor Exam Monitor instances. The main URL is <https://services.vproctor.com/exammonitor.php?examID=14>. Below the URL bar, there are navigation options: 'Auto Refresh', 'Sort By: Most Recent', and 'Filter By: Finished Attempts, Active Attempts, Conflicted Attempts, All Attempts'. The dashboard is a grid of 20 student monitors, each showing a name, ID, phone number, and a video feed. Several monitors have red circles around them, indicating active monitoring or support. The students shown are: Deiara (ID:1954), Lindsey (ID:1952), Sasha (ID:1951), THENG (ID:1949), Mary (ID:1945), Katrina (ID:1943), Michael (ID:1936), Katherine (ID:1934), emilee (ID:1935), Christopher (ID:1933), Kiarra (ID:1914), Vanessa (ID:1914), dametria (ID:1922), Lindsay (ID:1921), Sharosia (ID:1917), and Lauren (ID:1915). Each monitor also shows a 'Last updated' timestamp.

Instructor Report

<http://www.cnn.com> x
 [\(1\) Facebook](#) x
 [VProctor | Home](#) x
 [VP Exam Report](#) x

<https://services.vproctor.com/examreport.php?examID=1>

Apps Imported From IE VProctor Admin...



Logged in as razzan
 Database: vprocdb1
 Role: Admin

Exam Report

View attempts taken.

CST494 Applied Computer Graphics : Exam 1

Unique Attempts / Total Students:

16/84 (19.0%)

Instructor notes:

Test instructions:

- Do not use any outside knowledge to complete this test.
- You may have one bathroom break as long as it is announced vocally.

Click on the attempt ID to view attempt details.

[Not Suspicious](#)
[Slightly Suspicious](#)
[Highly Suspicious](#)

ID	Student's Name	Time Taken	# of Incidents	Interactive	Audio	ScreenCap	Absent	BlackList	Suspicion Level	Notes
128	Chris Lopez	00:09:03	36	0	23	2	3	8	2: Highly Suspicious	amerryma(ID:2) (2013-03-12 18:45:53): Cheater amerryma changed attempt status from "Not Suspicious" to "Highly Suspicious"...
322	Aaron Merryman	00:04:37	14	0	2	8	0	4	2: Highly Suspicious	amerryma(ID:2) (2013-05-03 02:31:06): Had many black listed programs running. Typing to friends. amerryma changed attempt status from "Not Suspicious"...
140	Aaron Merryman	00:00:34	3	0	2	1	0	0	1: Slightly Suspicious	amerryma(ID:2) (2013-03-15 20:53:47): Calm down, just callllmmmm down. amerryma changed attempt status from "Not Suspicious" to "Suspicious" a...
385	Josh Fletcher	00:01:10	5	0	2	3	0	0	1: Slightly Suspicious	amerryma(ID:2) (2013-06-03 08:11:35): amerryma changed attempt status from "Not Suspicious" to "Highly Suspicious" amerryma(ID:2) (2013-06-24 15:3...
26	Aaron Merryman	00:04:12	11	1	6	4	0	0	0: Not Suspicious	jfemiani(ID:477) ...
27	Chris Lopez	00:06:50	21	1	16	4	0	0	0: Not Suspicious	jfemiani(ID:477) ...
30	Chris Lopez	00:09:43	28	1	21	6	0	0	0: Not Suspicious	jfemiani(ID:477) ...
35	Aaron Merryman	00:04:54	24	1	19	4	0	0	0: Not Suspicious	jfemiani(ID:477) ...
37	John Femiani	00:01:07	4	1	2	1	0	0	0: Not Suspicious	jfemiani(ID:477) ...
43	Chris Lopez	00:01:51	2	1	0	1	0	0	0: Not Suspicious	jfemiani(ID:477) ...
46	Aaron Merryman	00:01:37	4	1	2	1	0	0	0: Not Suspicious	jfemiani(ID:477) ...
48	Aaron Merryman	00:05:17	20	1	16	3	0	0	0: Not Suspicious	jfemiani(ID:477) ...
49	Aaron Merryman	00:01:28	8	1	5	2	0	0	0: Not Suspicious	jfemiani(ID:477) ...
50	Aaron Merryman	00:01:02	4	1	2	1	0	0	0: Not Suspicious	jfemiani(ID:477) ...

Instructor's Review – Evidence/Audit Trail

The screenshot displays a VProctor exam interface. At the top, the browser address bar shows the URL <https://services.vproctor.com/proctorclient.php?attemptID=805>. The interface includes a header with 'Attempt ID: 805', 'Exam Info', and the student's name 'Anita [redacted]'. A 'Logout' button is visible in the top right corner.

The main content area is divided into several sections:

- Chat Window:** Located on the left, it shows a conversation with 'Christin [redacted]'. The chat history includes a message from 'AnitaBee3: Hi, I am doing my VProctor exam and they want me to IM someone!'.
- Video Feed:** In the center, there are two video windows. The top one is labeled 'RECORDING' and shows a student's face with a redacted name. The bottom one shows another student's face, also with a redacted name.
- Incident List:** On the right side, there is a list of incidents. Three incidents are visible, all with a status of 'Suspicious':
 - Incident ID: #6698, Duration: 20 seconds, Status: Suspicious
 - Incident ID: #6700, Duration: 20 seconds, Status: Suspicious
 - Incident ID: #6702, Duration: 20 seconds, Status: Suspicious
- AudioTrigger (3) and ScreenCapTrigger (8):** Below the incident list, there are sections for 'AudioTrigger (3)' and 'ScreenCapTrigger (8)'. The 'ScreenCapTrigger' section shows a log of Proctor P actions, such as 'Proctor P at 1 minute 27 seconds said: Individual is IMing a friend, however, this interaction is independent of the test.' and 'Proctor P at 1 minute 52 seconds said:'.

The bottom of the screen shows a Windows taskbar with the Start button, system tray icons, and the date '12/21/2015'. The bottom right corner of the interface displays a timer for '17' and a 'Comment' button.

What VProctor Does/Doesn't Do










- Catches suspicious behavior – 10-12% inline with experts view on how many cheat.
 - Does not prescribe action – instructor/Institution responsibility
- Deters cheating, reinforces ethical behavior
 - Does not stop students from cheating.
 - Determined cheaters will cheat (will they succeed?)
- VProctor implements Instructors rules
 - Instructor defines open close book/notes, use of online software, chat and other software.

Great For

- Deployment over a semester for multiple exams
 - Quizzes, mid-terms and finals
 - Makeup exams, in-class Comp. Based Testing
- Proficiency or Certification test(s).
 - Math and English proficiency tests
 - Nursing/dental board exams

About VProctor

- Vproctor is based in Phoenix Az, USA.
- VProctor was spun off from the technology developed at Arizona State University
- Battle hardened software technology deployed at many institutions.
- Patent Pending (Filed in 2013).

									
Human Proctoring	✓	✓	✓	✓	✗	✗	✓	✓	✓
Screen Recording	✓	✗	✓	✓	✗	✗	✗	✓	✓
Anytime	✓	✓	✗	✓	✗	✓	✓	✗	✓
Anywhere	✓	✓	✓	✓	✗	✓	✓	✓	✓
Uses Built-in Hardware (Cam/Mic)	✓	✗ Proprietary Cam	✓	✓	✗	✗	✗ Proprietary Cam	✓	✓
Audit Trail	✓	✓	✓	✓	✗	✗	✓	✗	✓
No Computer Lock-Down	✓	✗	✗	✓	✗	✗	✗	✓	✓
Web-Based Configuration Tools	✓	✗	✗	✗	✗	✗	✗	✗	✓
Triggers / Infraction Detection	✓	✗	✗	✗	✗	✗	✗	✗	✗
Trigger Configuration	✓	✗	✗	✗	✗	✗	✗	✗	✗
Add/Remove Proctors	✓ Our / Instructor Proctors	✓ Only Their Proctors	✗	✗	✗	✗	✗	✗	✗
Smart Proctor Client	✓	✗	✗	✗	✗	✗	✗	✗	✗
Proctor Report Generation	✓	✓	✓	✗	✗	✗	✓	✗	✗

Leadership

- **Dr. Anshuman Razdan** (AR), a Prof. of Computer Sc. at ASU, heads the **Image and 3D Data Exploitation and Analysis Lab** (I3DEA Lab), and is a serial entrepreneur having started two other successful companies. AR has over 20 years of software development experience having worked at Motorola and Informative Graphics before joining the academia. He is currently the President/CEO of VProctor. He also holds two patents including one on facial recognition. Email: razdan@vproctor.com



- **Dr. John Femiani**, an Assistant Professor at ASU is the Chief Technology Officer of VProctor and holds one patent. John oversees the algorithmic and architecture development for all VProctor software. John has over 15 years of software development experience in both academic applied research and industry. Email: femiani@vproctor.com



Key Features

- Flexible Testing: Anytime Anywhere using built in hardware.
- Works independent of LMS, Blackboard, Canvass, E-College ... lockdown browsers.
- Windows and Mac OS supported
- Easy to deploy and scale – no human factors issues. Deters and catches cheating.
- Secure: Uses Amazon's cloud servers – international connectivity and bandwidth.
- Fast and Easy review + Audit trail
- Inexpensive: 50-70% Cheaper