Accurate detection of cheating rates in exams over two decades

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University Research Data Steward
Acknowledgements

– The University Exams Office
  – For printing the multiple versions of the exam paper
    • Or other weird variations we ask for!
  – For enabling us to engage the invigilators in the schemes

– The University
  – For letting us collect this data over the last 20 years
  – For allowing us to publicize this data and lead the conversation

– THIS IS A SYSTEMIC ISSUE
  – It is by no means isolated to our Institution or Science courses
  – Don’t kid yourself: this is happening in YOUR courses!!!!
In the Beginning – early 90s

– Observed previously poor-performing students attaining HDs
– Inspection of MCQ answer sheets, SAQs and seating plans
  – Evidence for transcription
– No action from authorities
  – and who can blame them!?
– A stressful process for all
Probability? – mid 90s

Did this approach persuade the authorities?

Probability – mid 90s

- Requires **wrong** answer similarity
  - Cheat off good students!
- Needs an accurate seating plan
  - Often unavailable or misaligned
- Authorities **still** unwilling to act
  - Stringent criteria in favour of the student

Being *dealt* this is 1 in 653,000

About the same as 8 consecutive identical wrong answers on a 5-option test
The Rotated Versions Solution – late 90s

Create FOUR versions of the same paper

Questions in same order, options just rotated

Very easy in Word

Layout so that each version is isolated from its clones

A database solution can generate even more versions.
The Benefits of Rotated Versions

- Natural Justice
  - Cheat of someone good, mark goes down

- Can determine who cheats off who
  - Even using outliers as key sheets to detect cheating
  - Indiscriminate cheats even copy check questions

- No confrontation — we didn’t feel it necessary to pursue

- Easy to implement
  - Both in production and analysis
  - Relaxes invigilation
Graded Multiple Choice Questions: Rewarding Understanding and Preventing Plagiarism

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Mechanized assessments, such as multiple choice questions (MCQs) and true/false questions (TFQs), are exceptionally convenient for teachers because they allow assessment of large numbers of students at a time. Mechanical assessments are easier for students to plagiarize than short-answer questions. Whereas it is difficult to copy the text, diagrams, and logic for a short-answer question or essay,
Using the VLOOKUP function in XL
Maintenance Mode—mid 90s to early 2010s

– Kept it secret from the students
  – Very occasionally it got too much and we did report
  – 100% success with administration
  – Word did get around (social media!)

– Some others adopted
  – Especially the low tech solution of multiple key sheets

– SMH article – got me into some trouble
  – This is telling about attitude from above
  – There are pros and cons to being transparent and pro-active
  – We are a ‘brand’ of a product
WHEN two students walked into their lecturer's study to mount a challenge about the mark one of them had received in a multiple choice exam, the academic smiled.

The first student had scored 90 per cent; the second 10 per cent. All three people knew the real reason for the gripe was that the second student had copied the first. So why the discrepancies in the marks?

Unruffled, the academic compared the disgruntled student's answers to the master copy, demonstrating that the fail mark was justified.

They had just been foiled by a well-worn sting within the biochemistry department at the University of Sydney. Frustrated by suspicions that students were cheating, the department creates four variations to each multiple choice exam it prepares. If students copy the letters circled by their neighbours, they will arrive at different results. The more they copy, the worse they will do...

Answer to cheating is as easy as BCA

Illustration: Cathy Wilcox
20 years of Data – Committed Cheats

– Full paper or whole sides of the answer sheet

1%

Similar rates reported by McGill Uni using H&H methods
20 years of Data – Sectional Cheating

– Discrete topics or easily visible blocks

5%
20 years of Data – Opportunistic Grazing

– Multiple short strings of 5
– Often including check questions

10%
20 years of Data – Special Case of 2013

- Multiple short strings of 5
- Sloping lecture theatres used as exam venues

15%
Mid 2010s – The Media Storm

– Plagiarism in assignments
– Ghost writing
– VC Taskforce set up
– Exam cheating ignored “it doesn’t happen”
– Recommendations predicated on idea that exams sacrosanct
Exam Cheating Methods

- YouTube has many tutorials! 😊
  - Contraband and secretion - bottles, tights, etc
  - Focus on communication and pre-meditated arrangements - hand signals
- But these are difficult to pre-plan
  - seating snakes, room splits
- Possible to limit by invigilation
10 Cleverest Ways To Cheat on a Test

by Beverly Jenkins + 

Tags: how to cheat on a test, how to cheat in exams

11/12/2012

Like 1.2K Share Tweet

748

wikiHow to do anything...

Article Edit Discuss

wikiHow to Cheat on a Test Using School Supplies


Cheating on a test is never a good idea. You cheat both yourself and your future. However, if you must, at least try to do it right.

How To Cheat On Any Multiple Choice Test

1,478,661 views
Lynn, a genius high school student who makes money by cheating tests, receives a new task that leads her to set foot on Sydney, Australia. In order to complete the millions-Baht task, Lynn and her classmates have to finish the international STIC(SAT) exam and deliver the answers back to her friends in Thailand before the exam takes place once again in her home country.
Cheating Methods

- Good old fashioned pattern recognition
  - MCQ sheets are MADE to be clear!
  - Our eyes are better than any scanner!
  - 70% diagonal in front, 25% side
- Impossible to stop by invigilation
- It will get worse
  - increased students, diminished venues
Late 2010s – Enforced Interviews

- **Stipulation of New Policy**
  - Two week commitment from two academics and support staff
  - Traumatic
  - Now unable to get ANY traction in other schools

- **So now let students know**
  - Announcements, Social media

- **Use surrogate methods**
  - Bluffs, coloured papers, strange codes
INSTRUCTIONS TO CANDIDATES
- Students are permitted to bring in the two official sheets of "stimulus material". These sheets may be annotated but MUST BE HANDED IN at the end of the exam. The exam will not be marked if this is not done.
- This paper is CONFIDENTIAL. No part of this paper may be removed from the examination room.
- Calculators CAN be used but should not be necessary.
- Answer Short Answer Questions in the spaces provided in this booklet.
- Answer Multiple Choice Questions on the answer sheet provided.
- All Multiple Choice Questions are graded using the Partial Marking System. Each question has only ONE option that carries full marks, but each option may carry a partial positive or negative mark. Less than 10 questions have negative options. There are no negative marks for blank answers.
- Anti-plagiarism strategies have been built into this paper.

Section A covers the THEORY (lectures) Recommended time: 2 hours
Part I - FIFTY-EIGHT Multiple Choice Questions worth one mark each.
The 88 marks in Section A will contribute 48% to your FINAL mark.

Section B covers the PRACTICAL (lab work). Recommended time: 1 hour
There are TWENTY Short Answer Questions worth TWO marks each.
The 40 marks in Section B will contribute 25% to your FINAL mark.

All marks are considered raw, and may be subjected to moderation, until approved by the Faculty of Science.
Take Home Messages

– Exams are NOT sacrosanct – especially MCQs
– Problem likely to get worse
– Can both measure and combat with rotations
– The politics are complicated
– How much exam cheating is too much?