

(Movies + Moodle Quizzes) x (Open Optional Discussions) = (Better marks + Happier Students^{Teacher})?

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- Introduction
- Motivation
- Method
 - Video Lectures
 - Moodle Quizzes
 - Assessment and Feedback to Students
- Evaluation of Student Feedback
- Evaluation of Student Performance
- Teacher's Perspective



Introduction

- Can new technologies be harnessed to provide better teaching?
- Better teaching means:
 - improved student grades
 - improved student experience
 - better teaching experience
 - more efficient use of time (students and teacher)
 - more personalised feedback to students
 - more personalised interaction between teacher and student













Motivation

- Larger classes (due to restructuring)
 - now 300+ students in some first year classes (live video links between theatres or repeated lectures)
- More international students
- International campuses (e.g. Singapore)
- Alternative teaching methods are becoming more popular [TED lecture, MIT, iTunesU, YouTube etc]
- Evidence to suggest students pay limited attention in regular lectures [Poh et al. 2010]

Method: Videos & Notes

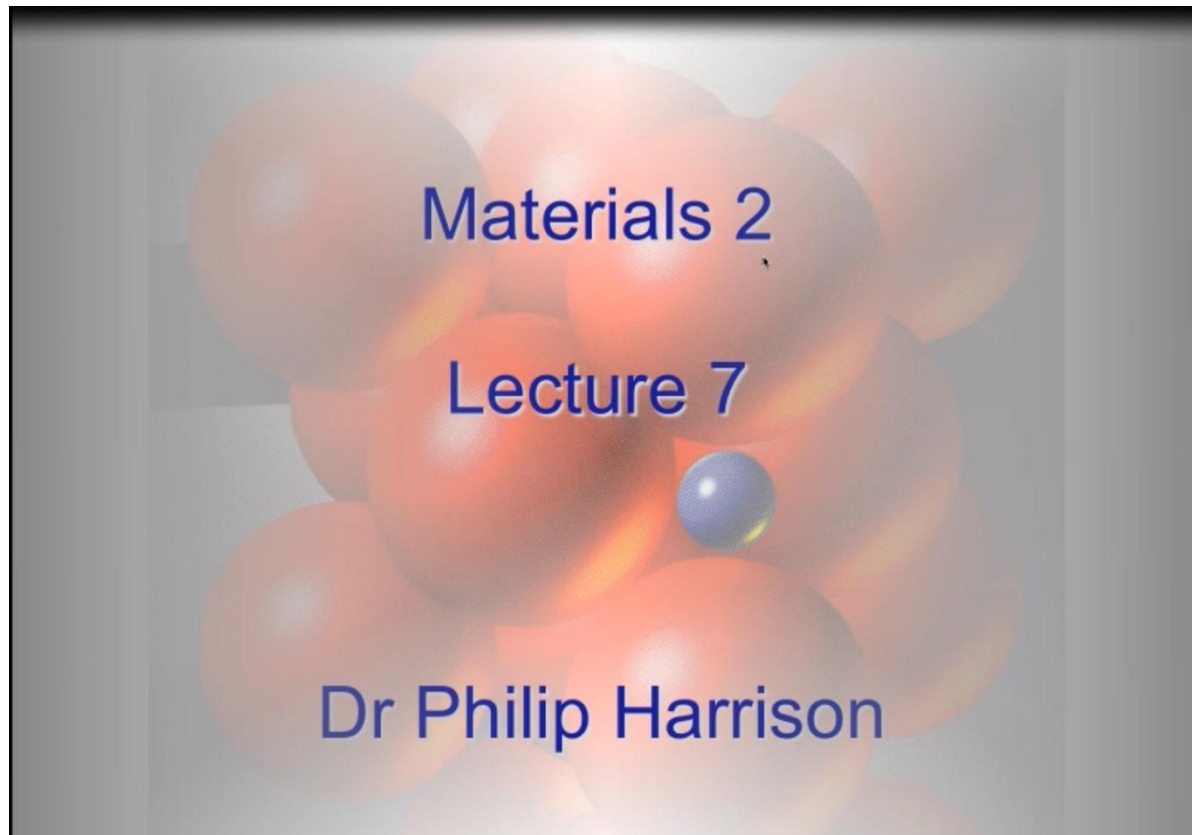
- Video lecture and course notes made available each week on Moodle at the time of the scheduled lecture slots

2	Harrison Lecture 1
	LECTURE 1 VIDEO
	LECTURE 1 HANDOUT
	Lecture 1 Quiz
3	Harrison Lecture 2
	LECTURE 2 VIDEO
	LECTURE 2 HANDOUT
	Lecture 2 quiz
4	Harrison Lecture 3
	LECTURE 3 VIDEO
	LECTURE 3 HANDOUT
	Lecture 3 quiz
	Lecture 3 : Phase Diagram Worksheet



Method: Videos & Notes

- Examples using Lecture Video 7
 - 2'20" worked example
 - 31'52" animations etc



Method: Moodle Quizzes

- Moodle quiz goes live at the same time as the video lecture
- Deadline for attempt is the night before the next lecture (1 week to try each quiz)
 - e.g. **Quiz 2** closes night before **Video Lecture 3** opens
- Course pass criteria
 - Attempt 8 out of 10 quizzes
 - Achieve more than 40% overall
- Short time limit on Moodle quiz encourages prior watching of videos



Method: Moodle Quizzes

- Screenshot of Moodle quiz

2 Choose the correct ending: 'An isomorphous alloy has...'

Marks: -/1

Choose one answer.

- a. limited solubility for one of the components
- b. a different structure depending on its composition
- c. a complicated sounding name
- d. the same structure and complete solubility for all compositions

3 The diagram shows the phase diagram for Copper-Silver alloys. Use the diagram to state the approximate maximum solubility of Silver (Ag) in Copper (Cu).

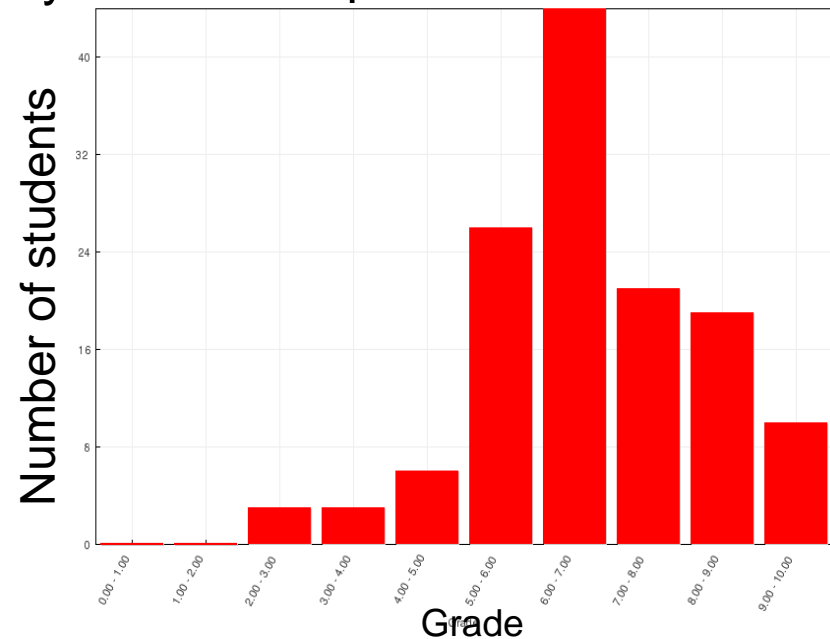
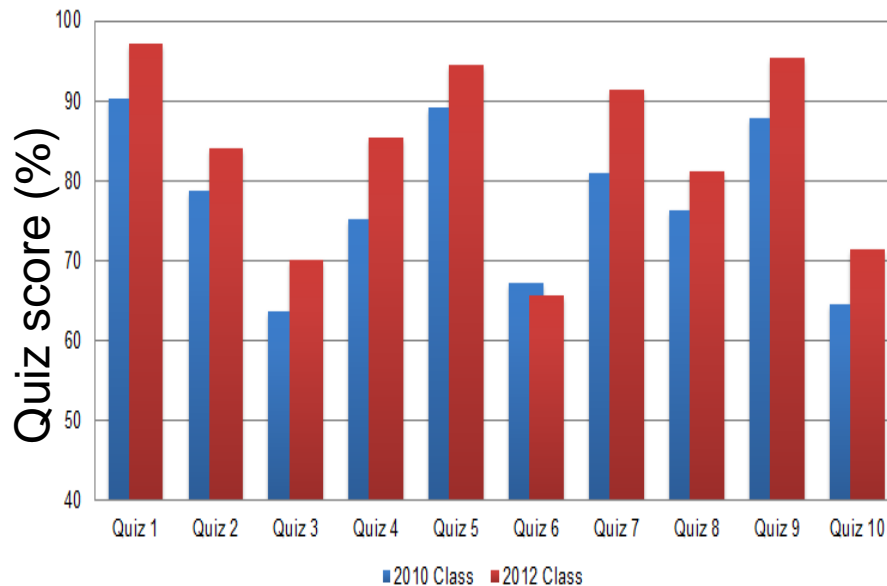
Marks: -/1

The diagram is a phase diagram for Copper-Silver alloys. The y-axis is Temperature (°C) ranging from 200 to 1200. The x-axis is Composition (wt% Ag) ranging from 0 to 100. The diagram shows a eutectic reaction at approximately 800°C and 72 wt% Ag. The maximum solubility of Silver in Copper is indicated by the eutectic composition, which is approximately 72 wt% Ag.

Answer:

Method: Quiz Feedback

- Following each quiz, results are automatically analysed by Moodle and forwarded to students before next lecture (weekly)
 - Compare class results versus previous class
 - Compare own score against the glass average
 - Advice given on most poorly answered question



Method: Question and Answer

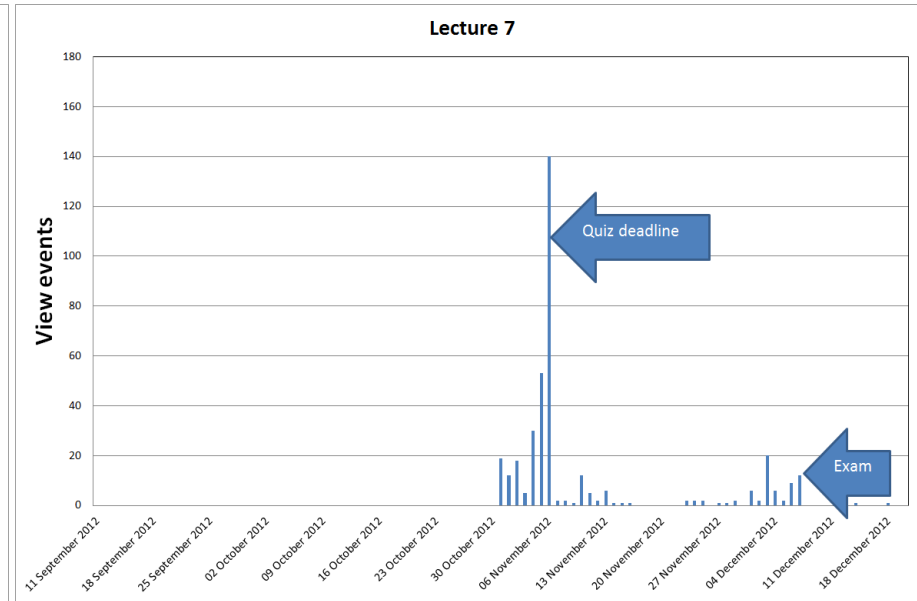
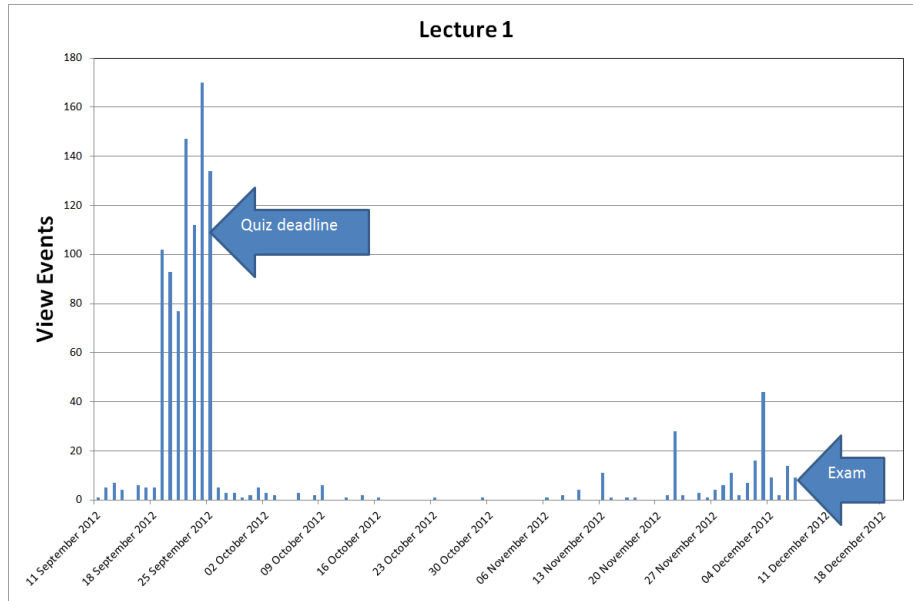
- In place of regular lecture, students can turn up to lecture theatre at scheduled lecture time to ask questions on lecture movie or Moodle quiz (optional)
- Informal, interactive and personalised teaching





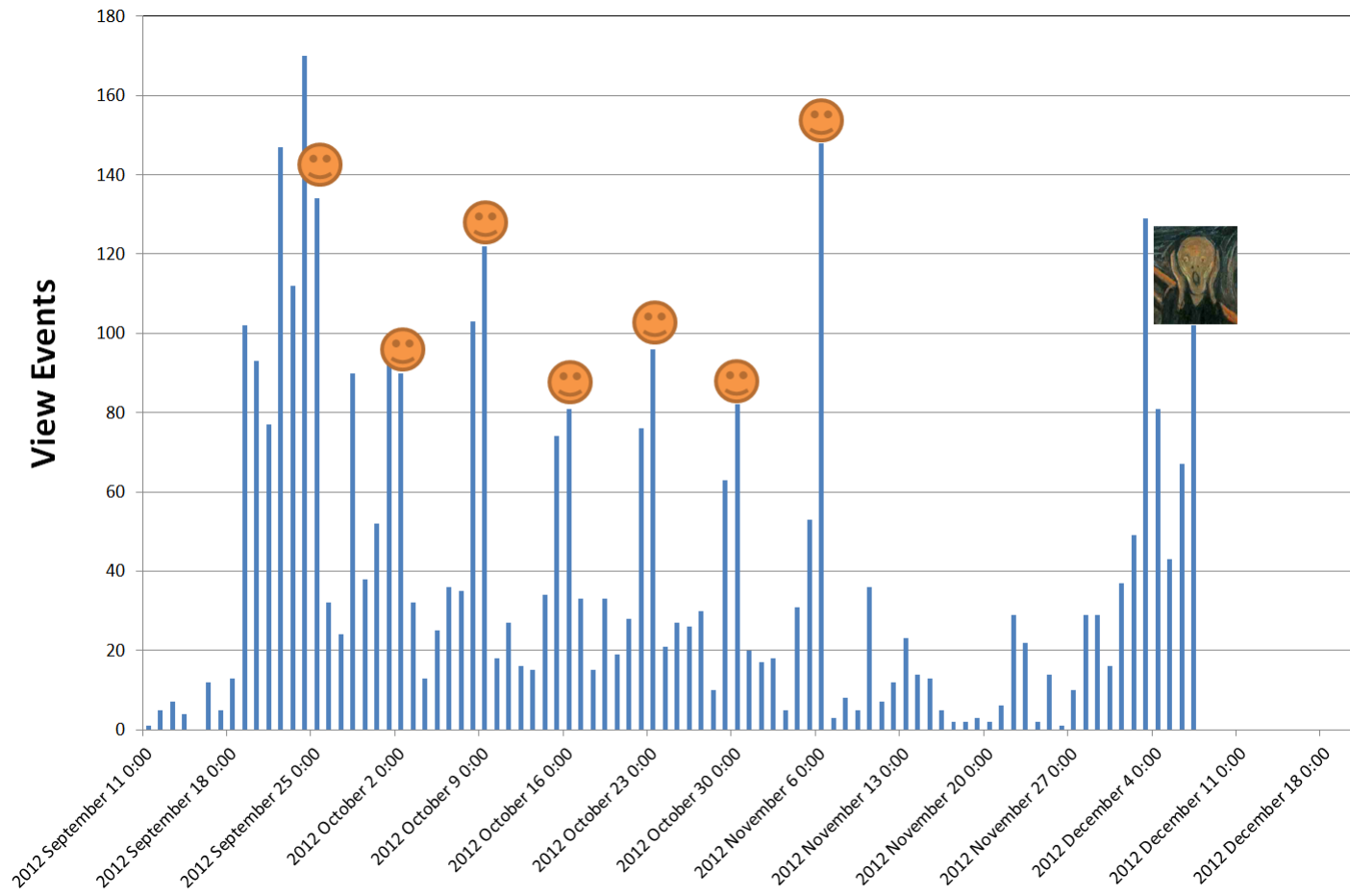
Evaluation: Video Usage

- Video lecture view events versus time



Evaluation: Video Usage

- Video lecture view events (all 7 videos combined)
 - Also useful for resits



- Moodle survey after Video Lecture 5

Please select option 1 or 2 below, in order to let me know how you want the last five of your ten "Materials 2" lectures to be taught, by me, Dr Harrison. (Note, Moodle quizzes will remain compulsory for both options).

1. Video lectures + optional Q&A session

OR

2. Regular lectures delivered in the lecture theatre

Of 113 responses (from 140 in class) 110 chose Option 1

Suggested a 97% approval rate

- Results of online Survey Monkey
 - (live 1 week after final exam)

Q1. Videos lectures was better for my learning than regular lectures.



Q2. Flexibility of video lectures was helpful for me



Q3. Having to attempt the Moodle quizzes made me watch the video lectures



Q4. Moodle quizzes helped reinforce what I learned from video lectures



Q5. Was an innovative and better way to teach, I would like to see it in other courses



Q6. Weekly email feedback on the class's Moodle quiz performance was useful

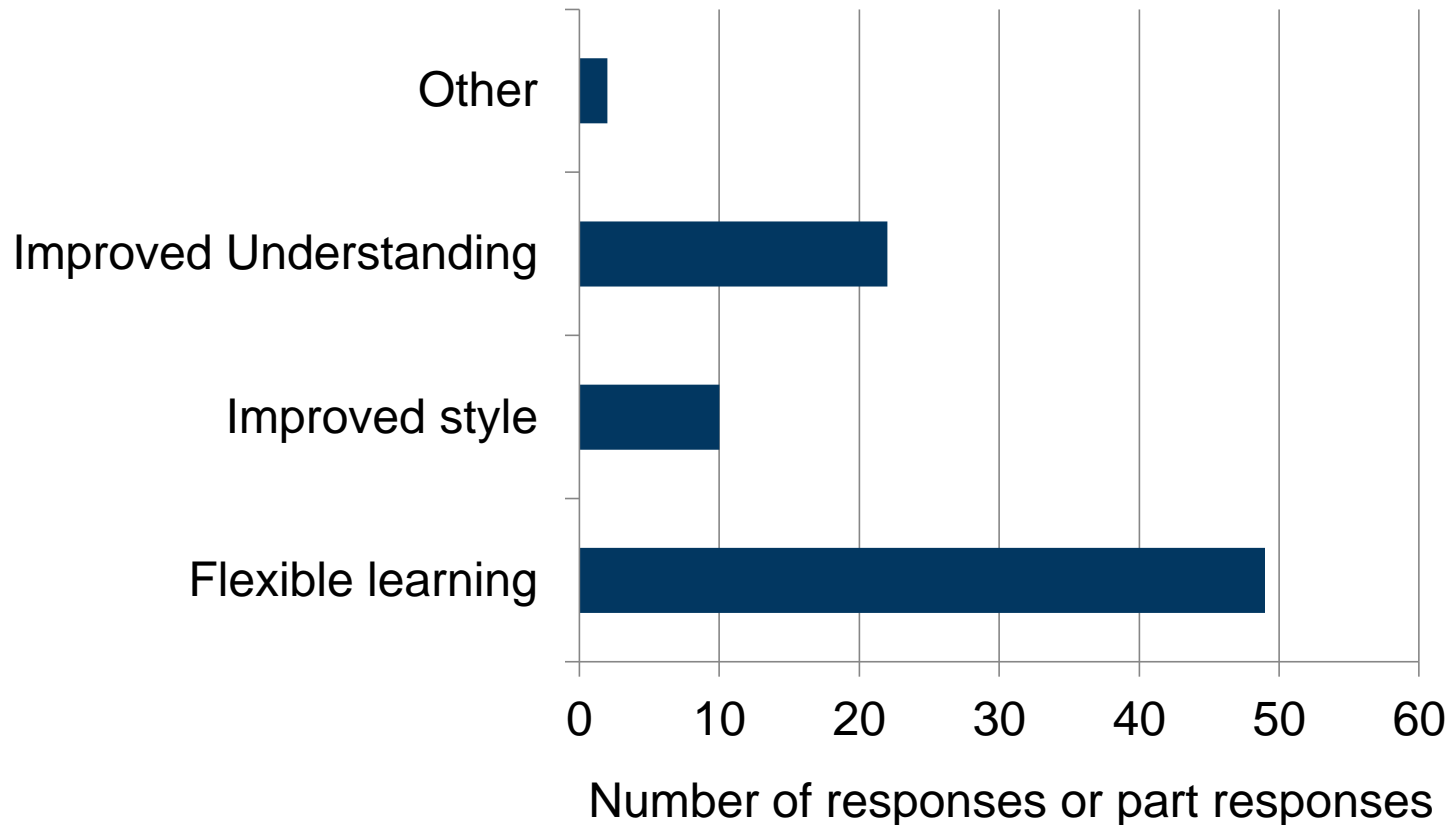


0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

■ Strongly agree ■ Agree ■ Neutral ■ Disagree ■ Strongly disagree

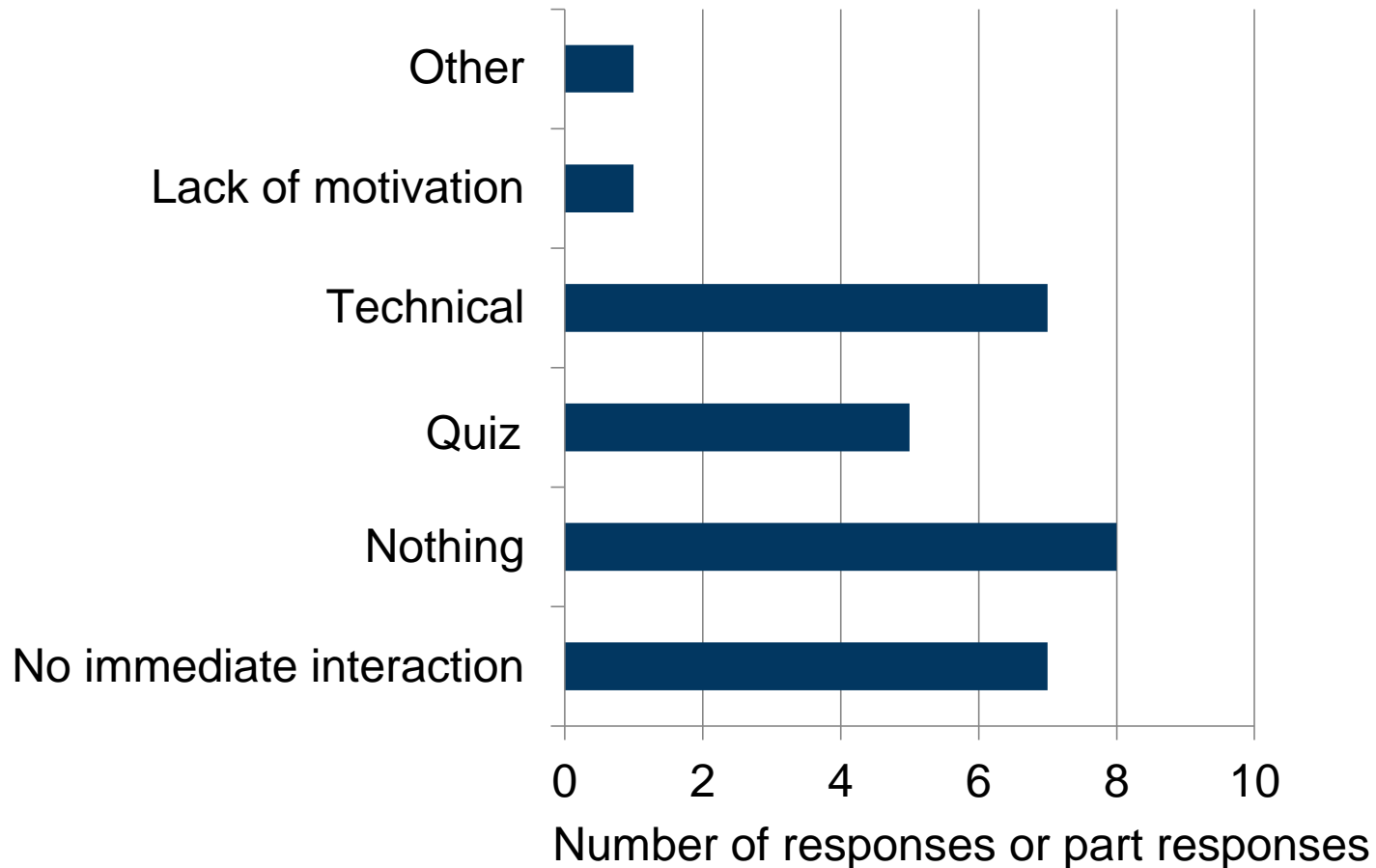
Evaluation: Student Feedback

- Q7: What do you believe is the biggest benefit to you of this style of teaching?



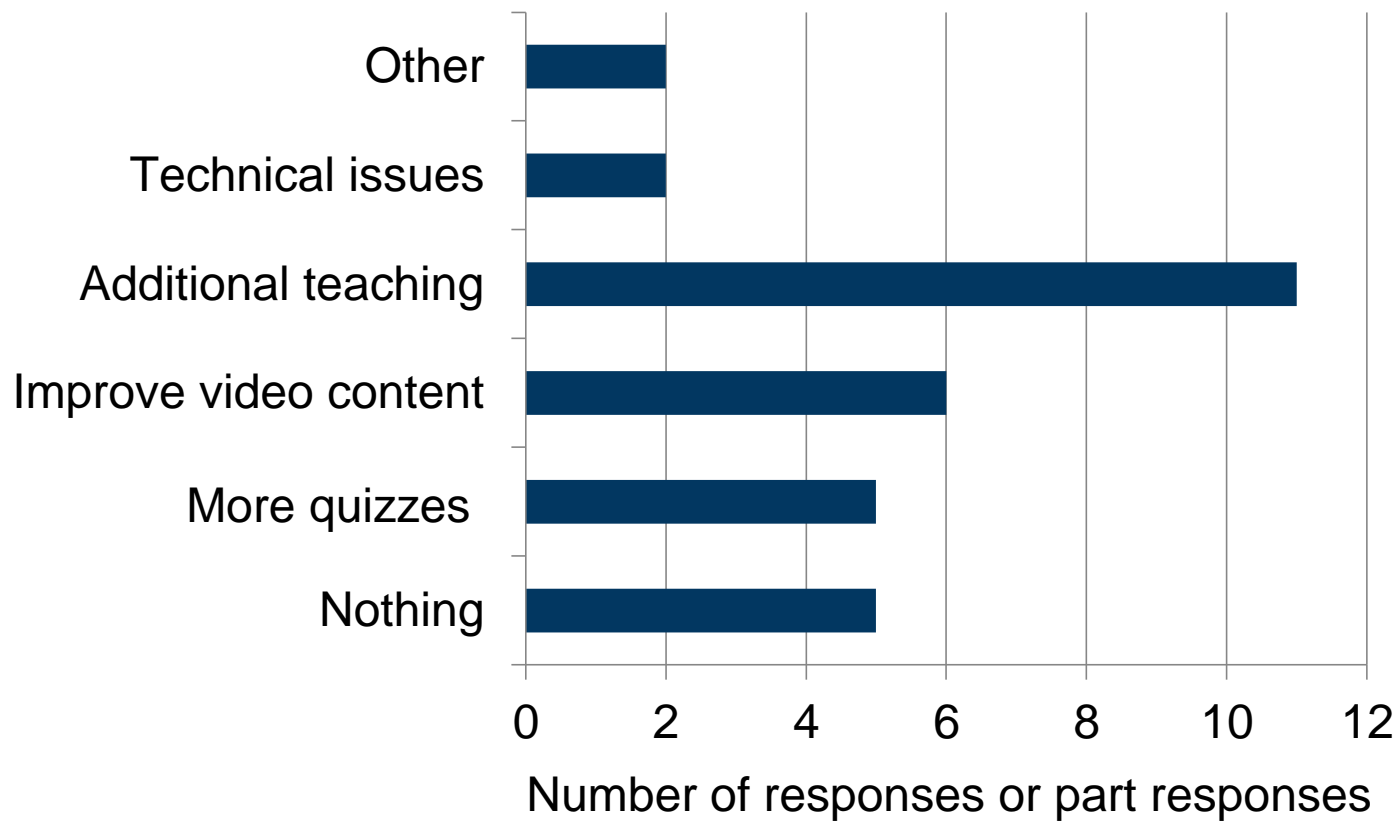
Evaluation: Student Feedback

- Q8: What do you believe is the biggest problem with this style of teaching?



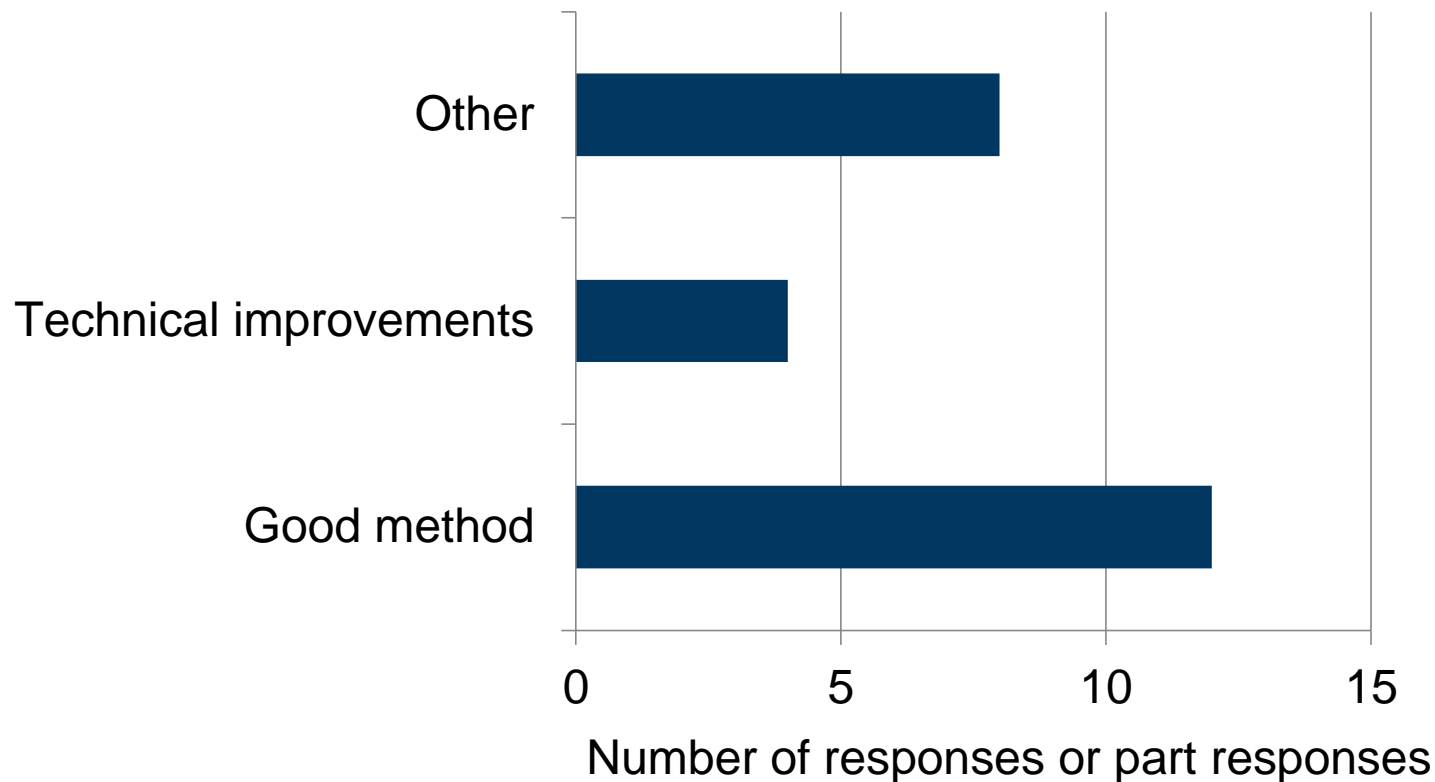
Evaluation: Student Feedback

- Q9: What would you recommend that would make this style of teaching more valuable or effective for your learning in Engineering?



Evaluation: Student Feedback

- Q10: Please give us any other constructive comments about this style of teaching that you feel we should know about...



- Student Interview
 - “you can do the lecture when it suits you... you can pause them and make your own notes, go back if you never heard what he said and pause it again. To make sure you understand”
- Student Feedback
 - “once we switched to the normal lectures I feel that I fell behind as I couldn’t keep up with the pace, was too used to taking my time to learn it”

Advantages for Students

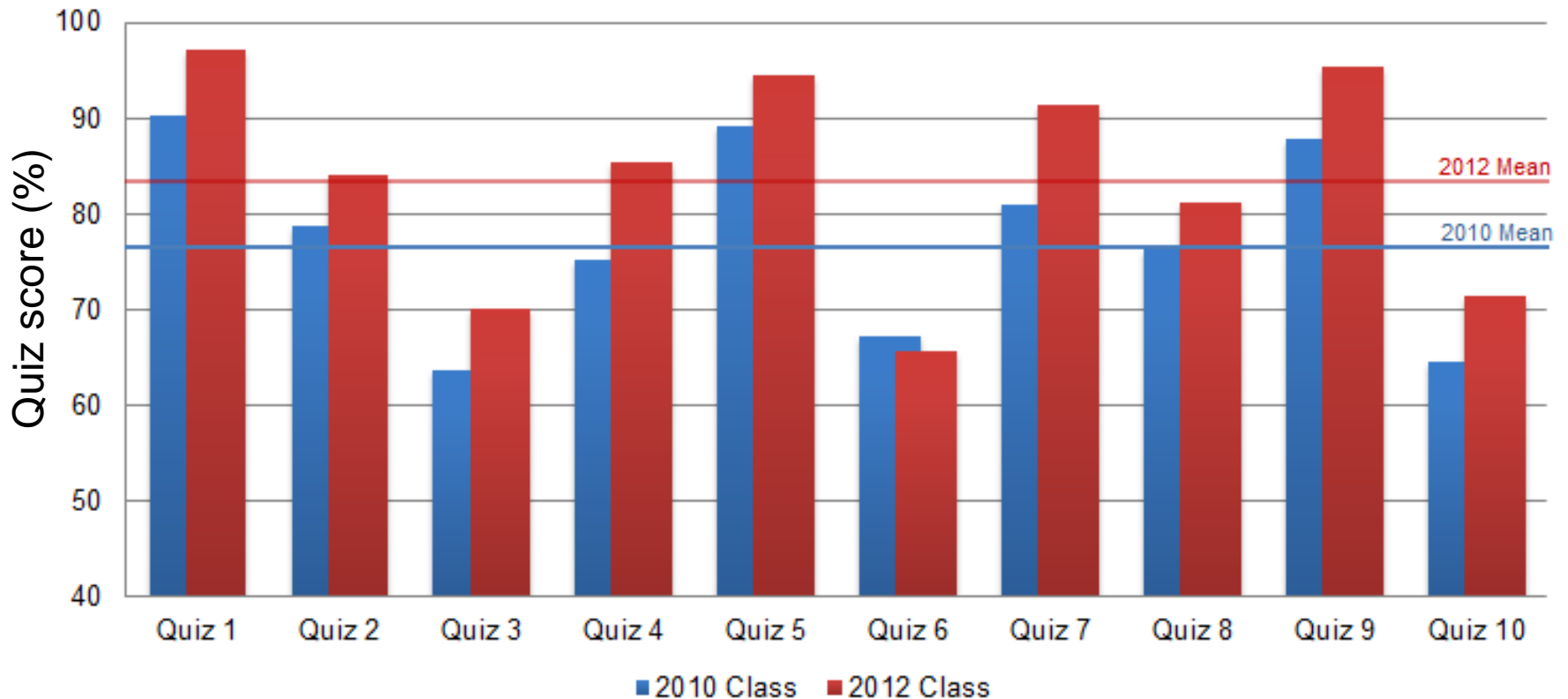
- Flexibility, watch where and when they like, unlimited number of times, can pause and rewind etc
- Clearer explanations
- Weekly feedback
- Can catch up missed classes (late start, illness etc)
- More personalised interaction between teacher and student (if required)

Disadvantages for Students

- Some technical issues with Google Chrome
- Lecturer not present during lecture
- Videos could take longer to work through than lecture (videos are between 40 and 50 mins)
 - Or is this a good thing?

- Comparison of 2010 and 2012 classes

Quiz Performance

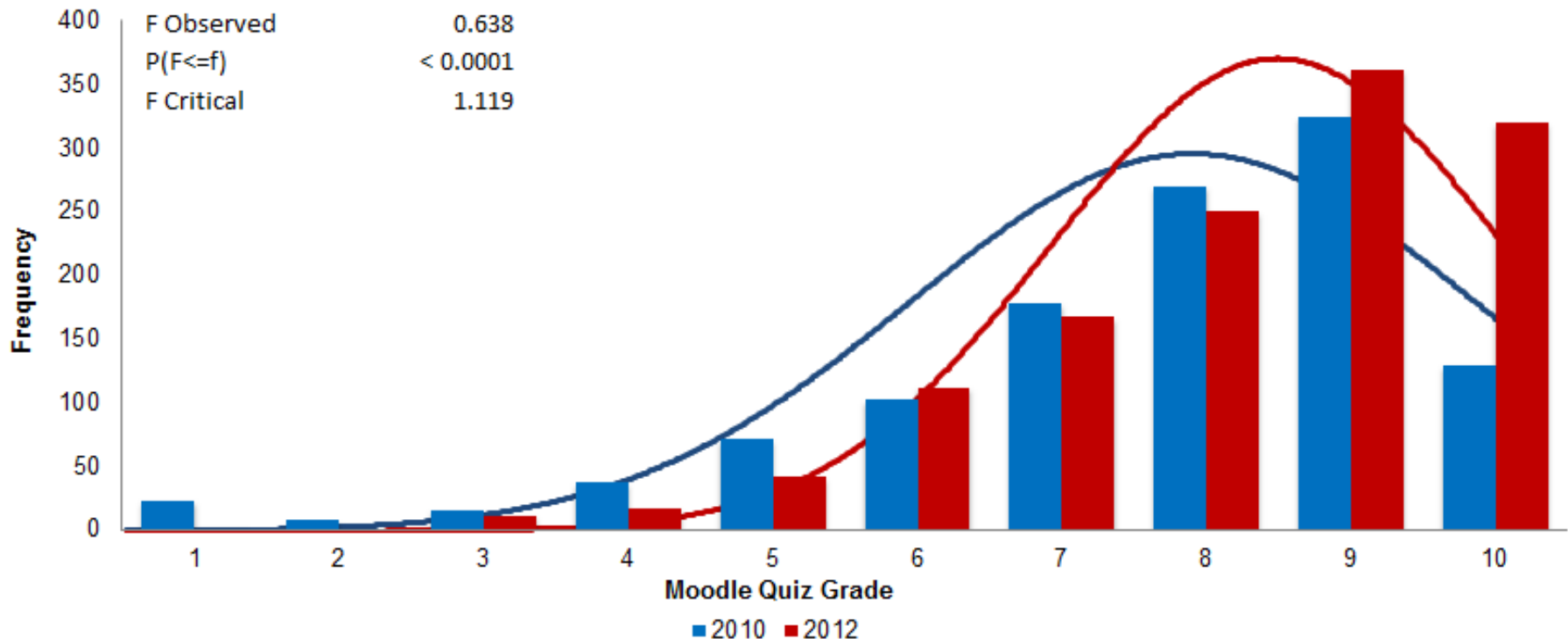




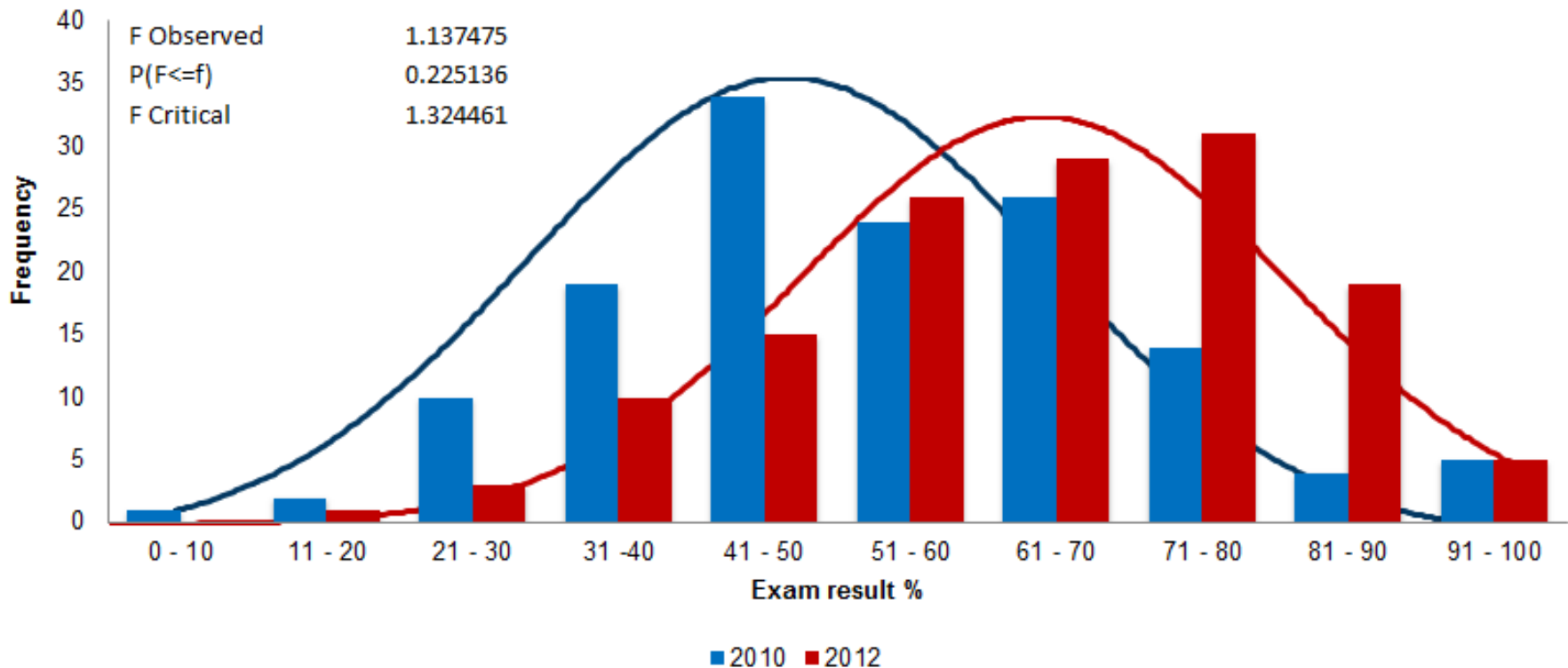
Evaluation: Student Performance

- F-test of quiz grades suggests results vary by more than random variance alone

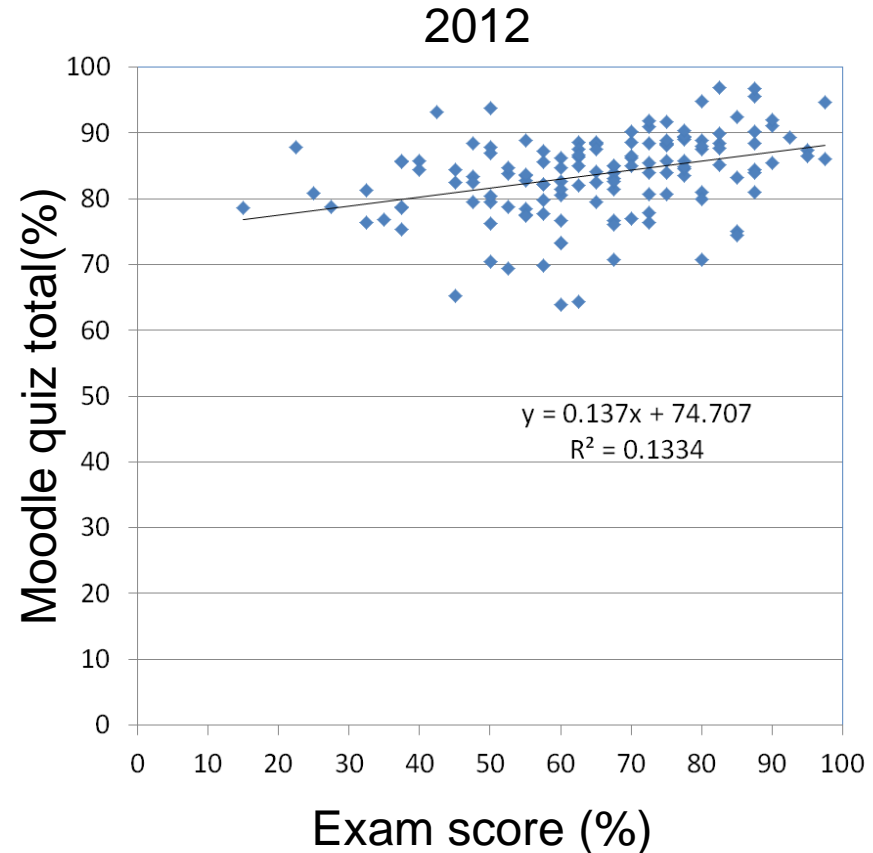
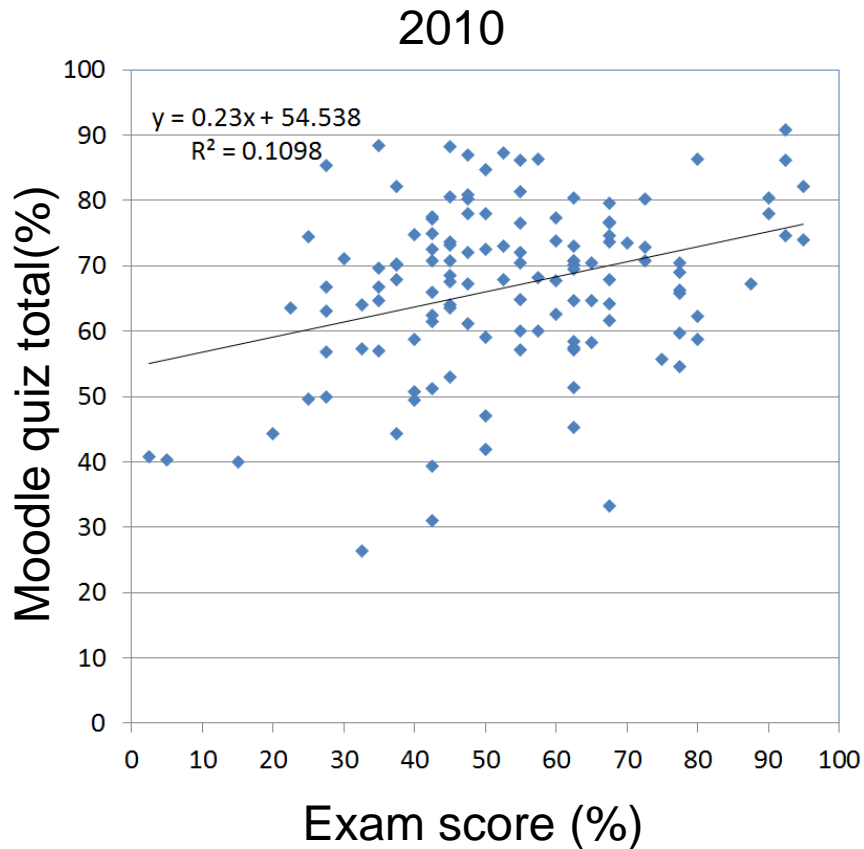
Moodle Quiz Performance



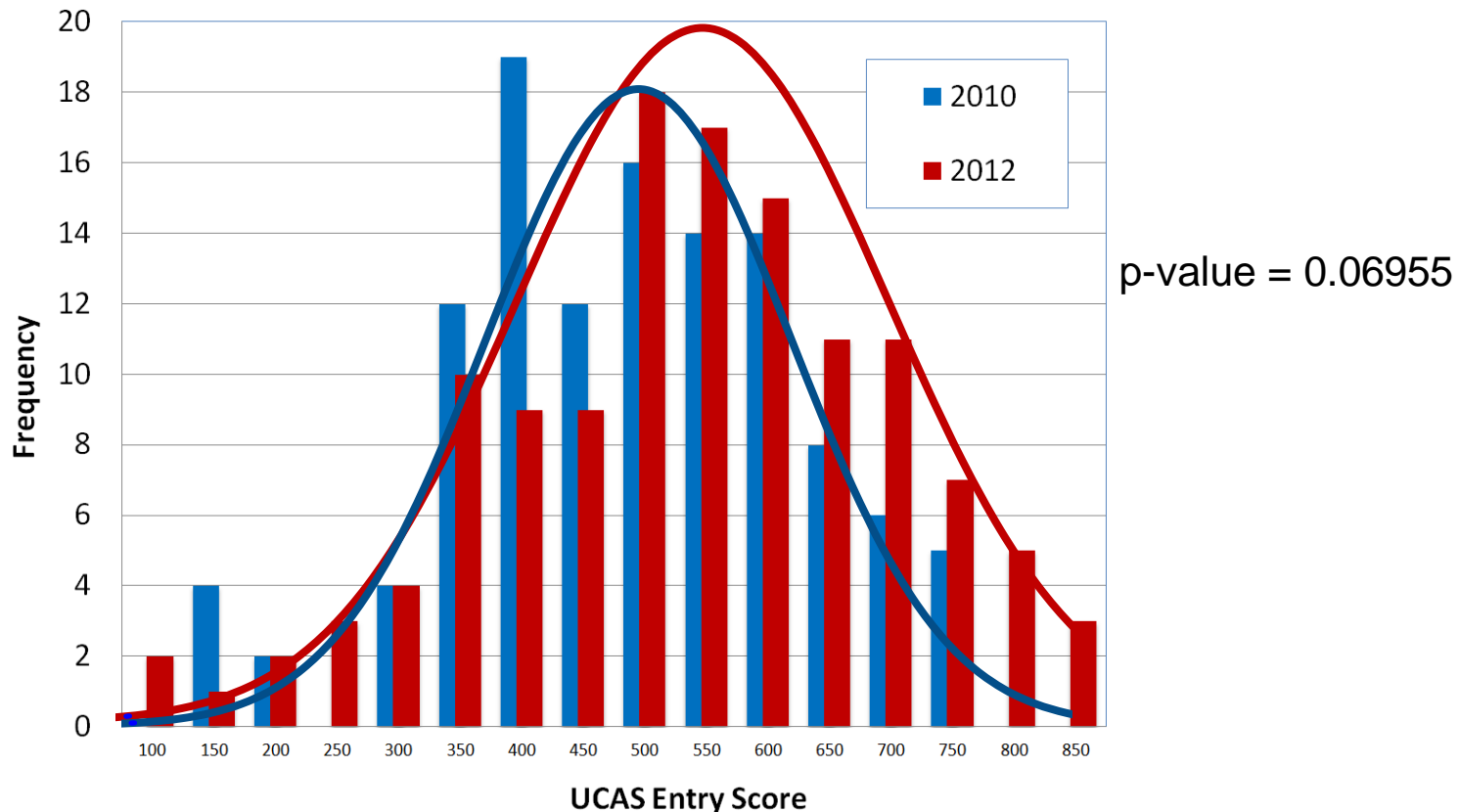
- Exam results show similar year on year change in performance. F-test suggests this is also due to external factor, but with less certainty.



- Correlation between Moodle Quiz vs Exam Results?



- Cohort performing well started with slightly better scores – perhaps a smarter class?
 - Average UCAS grade: **2010 = 464**, **2012 = 510**



Advantages for Teacher

- Unlimited class size
- Undiminished enthusiasm
- Production files are easily modified – prevent ossification of lectures
- Automated feedback easy and fun to produce
- Less stress before and no ‘down-time’ after lecture
- Videos are a strong motivation to create high quality lecture
- Students already record lectures (without permission), so have some control over this process
- Moodle quizzes identify poor/problem students early

Advantage for Teacher

- Can easily monitor quiz performance of entire class
 - Warning sent to students after missing two quizzes (should be automated in future)

			Week 1	Week 2...											Week 10
107		23	@student.gla.a	82.2	10	7	8	7.7	9	5	9	7.5	10	9	
108		25	@student.gla.a	85	10	8	8	8	9.8	5.8	8.7	10	8.9	7.8	
109		34	@student.gla.a	74.42	9.83	9	6	6	8.9	6		5.8	8		
110		26	@student.gla.a	88.25	10	10	9	8	10	5	9	9.6			
111		30	@student.gla.a	88.9	10	8	8	10	10	6	10	8.5	9.5	8.9	
112		27	@student.gla.a	76.13	8.33	7	7	9	9	3	8	9	10	5.8	
113		15	@student.gla.a	75.33	10	9	7	6.9	9	4	9	6		6.9	
114		36	@student.gla.a	85.5	10	8	8	9	10	6	10	8.9	10	5.6	
115		27	@student.gla.a	84	10	7.9	6	7.5	10	6.9	9.4	10	9.7	6.6	
116		35	@student.gla.a	88.37	9.67	8.7	8.2	9.4	10	6.8	8.6	9.2	9.1	8.7	
117		24	@student.gla.a	84.67	10	9.9	6.1	9.7	9.8	6.6	7.7		8.8	7.6	
118		25	@student.gla.a	86.67	10	8	8	10	9.8	5.9		8.6	9.3	8.4	
119		27	@student.gla.a	81.43	10	8	8	7	10	6			8		
120		33	@student.gla.a	87.67	10	8	6.8		9.9	9.5	9.9	8.8	9.3	6.7	
121		23	/@student.gla.a	77.78	10	9	6	8	10	4	10	4	9		
122		26	@student.gla.a	79.43	-	-	3.8	7.8	10	5.8	9.8	8.6	9.8		
123		26	@student.gla.a	87.56	10	9	8	8	10	6	9.6	8.6	9.6		

Disadvantages for Teacher

- Large time investment in preparing teaching materials
 - Moodle quizzes (perhaps 2 hours per quiz)
 - Videos (90 hours for 7, **average about 12 hours**, ranging from 7 to 15 hours depending on content and extra reading)
- Technical issues with Camtasia software
 - don't use Dropbox with production files – lost 20 hours of work!!
 - Software stopped working, only able to produce 7 lectures, hopefully will resolve with updates
- Some students begin to **expect** rather than appreciate!

(Movies + Moodle Quizzes) x (Open Optional Discussions) = (Better marks + Happier Students^{Teacher})?

Yes..... probably!



Thanks to:

- The students of Materials 2 (2010 & 2012)
- Catherine Murphy

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