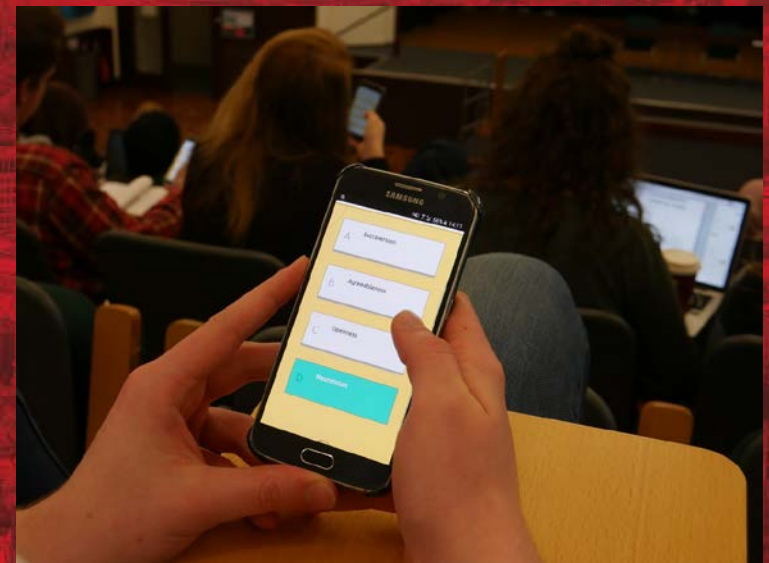


Academic excellence for
business and the professions



Quodl: Supporting students and enlivening lectures with a live quizzing web app

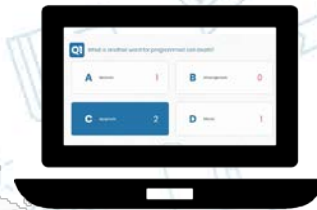
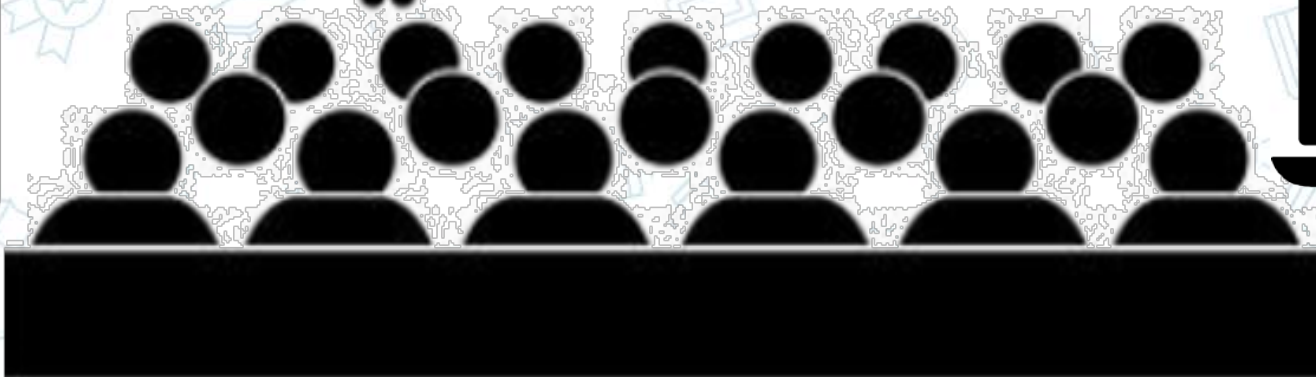
Stian Reimers
Department of Psychology



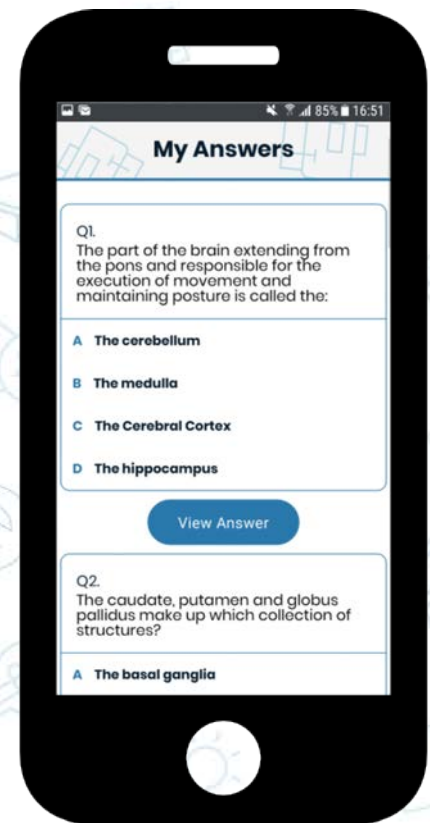
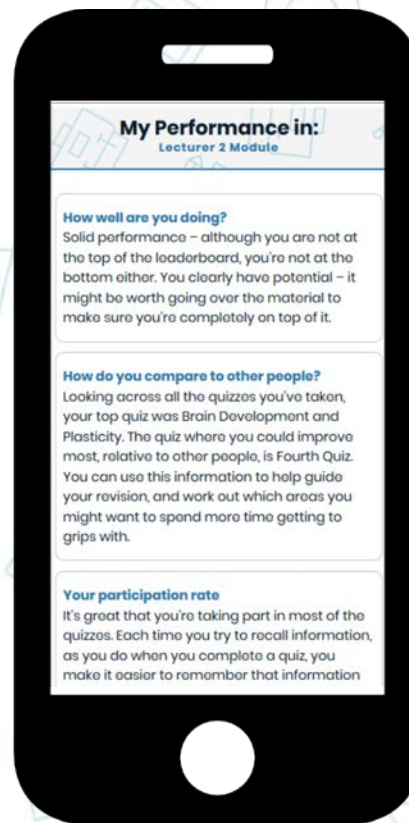
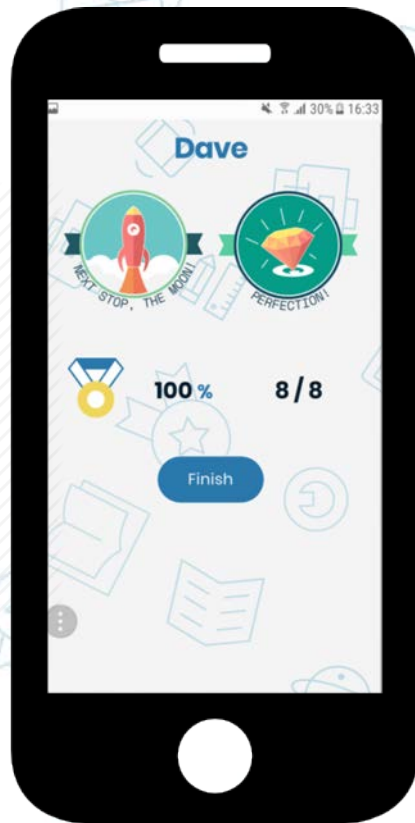
What is Quodl?

- A web app for running live in-lecture quizzes and surveys
- A gamified platform with points, badges and leaderboards to keep motivation and attendance high
- A support tool giving written feedback on overall performance and individual questions
- Revision software to let students test themselves on course material
- A data source to help identify and support struggling students
- A tool designed around psychological principles of learning, memory and motivation

What is Quodl?



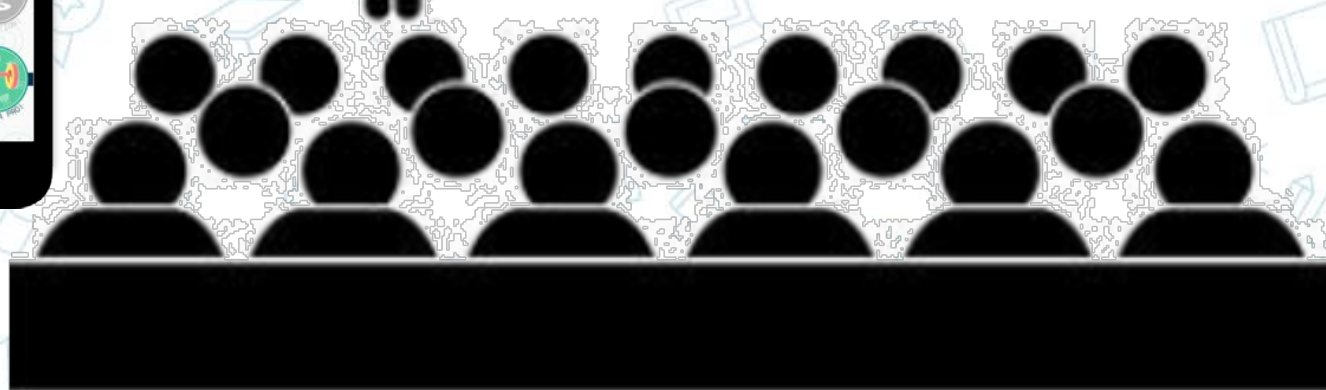
What is Quodl?



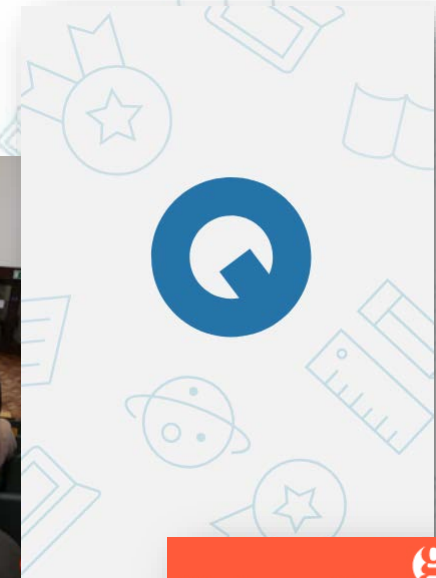
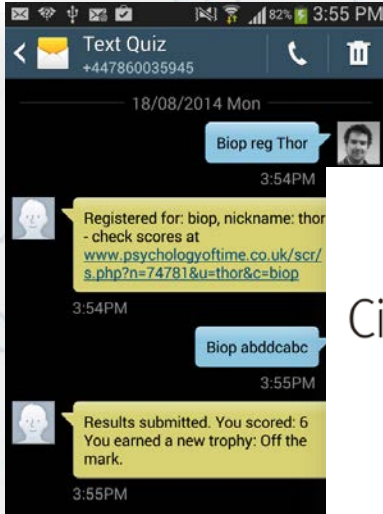
What is Quodl?



#	Name	Badges				Score
1	Dave		0	0	1	8
2	Princess Carolyn		0	0	1	6
3	Patrick		0	1	0	5
4			0	1	0	5



Background



Techcelerator project assesses viability and development options

Development funding for functional prototype

Testing and iteration

Application for central university funds

Lecturer and Student-Led Development

- Adding a timer so that students know how long they have and quiz runs automatically
- Allowing lecturers to add information about questions to help students revise

Q1 What is another word for programmed cell death?

A Necrosis

B Atherogenesis

C Apoptosis

D Mitosis

30

Next Question

This screenshot shows a quiz question interface. At the top, it displays 'Q1' followed by the question 'What is another word for programmed cell death?'. Below the question are four answer options: A Necrosis, B Atherogenesis, C Apoptosis, and D Mitosis. At the bottom left, there is a timer showing '30' seconds. At the bottom right, there is a 'Next Question' button.

New Quiz

CELL

Name

Week 1 Introduction

Survey

1. What is another word for programmed cell death?

A Necrosis

B Atherogenesis

C Apoptosis

D Mitosis

More information for students when reviewing

Delete Question

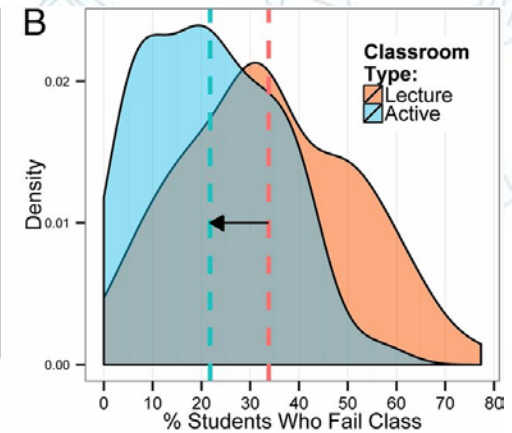
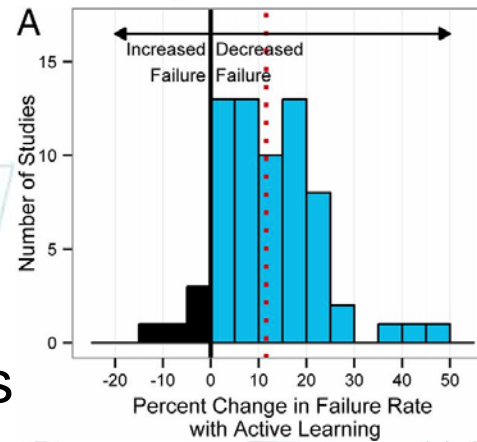
Add Question

Save And Exit

This screenshot shows the 'New Quiz' creation interface. It starts with 'New Quiz' and 'CELL' as the subject. There is a 'Name' field containing 'Week 1 Introduction' and a 'Survey' button. Below this is a list of questions, with the first one being '1. What is another word for programmed cell death?'. This question has four answer options: A Necrosis, B Atherogenesis, C Apoptosis, and D Mitosis. Each option has a toggle switch next to it, with the switch for C being turned on. Below the options is a text area for 'More information for students when reviewing'. At the bottom right, there is a 'Delete Question' button. At the bottom center, there are 'Add Question' and 'Save And Exit' buttons.

Rationale for Quodl

- Clear that lectures are not optimal for student learning
- But they are scalable and easy to implement
- One simple way to improve learning outcomes in lectures is to include interactivity¹
- Also clear that spaced retrieval practice combines two of the most effective techniques to consolidate and reinforce learning²
- But potential motivational issues around repeated testing



¹ Freeman, S., et al. (2014). Active learning increases student performance in science, engineering, and mathematics. *Proceedings of the National Academy of Sciences*, 111, 8410-8415.

² Dunlosky, J., et al. (2013). Improving students' learning with effective learning techniques: Promising directions from cognitive and educational psychology. *Psychological Science in the Public Interest*, 14, 4-58.

Case Study: Autumn Term 2018/19

- PS1004: First year History and Theory of Psychology module
- Around 270 students, new to university
- Main assessment in January 2019: MCQ Exam
- Students had weekly Quodl quizzes on the last week's material
- And one big quiz in the final week
- I supplied trophy, medals, and chocolate-based prizes
- Prizes awarded based on overall performance and acquisition of badges
- Auto-generated PowerPoints of questions provided for all students



Finding 1: Students engage with and enjoy Quodl

- Total of 277 students registered on module, 252 took exam
- At least 214, and probably around 220-240, students used Quodl
- Of these over 70% completed more than half of the 9 quizzes
- Over 10,000 individual answers to quiz questions across the term
- Also used as a register so most students didn't need to sign in
- Checked module evaluation comments for references to quizzes
 - One negative reference (but only because they wanted *longer* quizzes)
 - Positive comments included:

I enjoy taking part in the Quodl quizzes. I like that I know where to look if I have got a question wrong (the box below each question directs you)

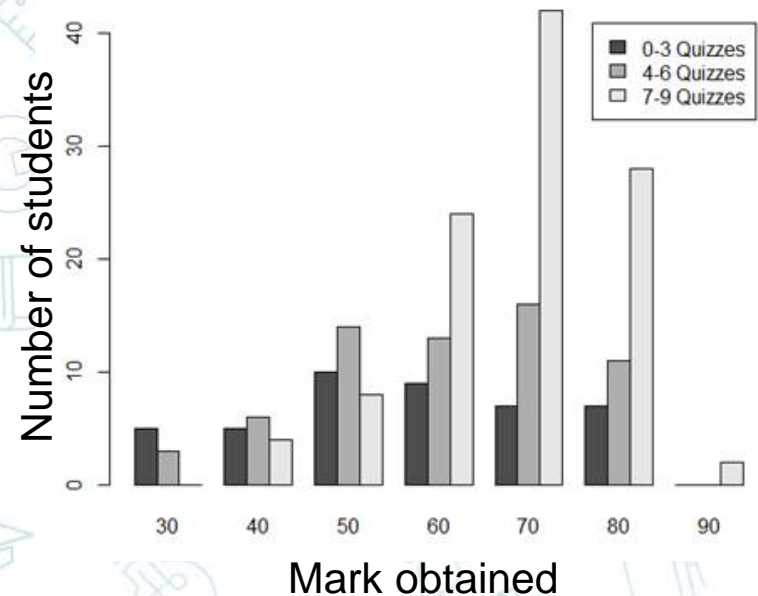
The continuous Quodl quizzes ... help with my understanding

Quodl quizzes help me know where I am

The Quodl quiz are interesting and are very useful for revision

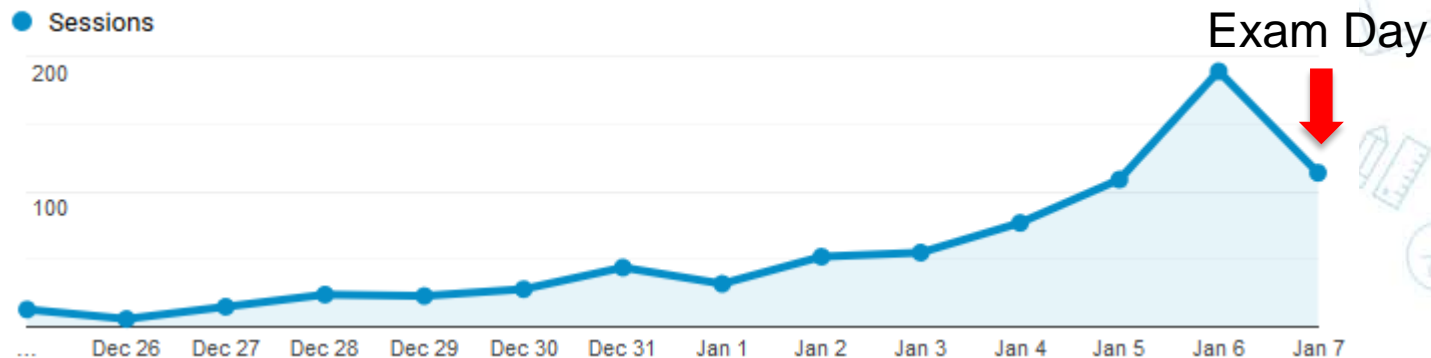
Finding 2: Quodl predicts exam performance

- Analysed anonymized data from Quodl and end-of-module exam
- Modest but highly significant correlation ($r = .43$) between Quodl scores and exam performance
 - Higher than correlation between coursework and exam marks
- Also clear relationship between number of quizzes completed and exam performance:
 - 0-3 quizzes: 62%
 - 4-6 quizzes: 65%
 - 7-9 quizzes: 74%



Finding 3: Quodl motivates positive behaviours

- Informally, students have reported Quodl made them more inclined to come to lectures, and revise materials to do well in quizzes
- First time able to look at evidence for revisiting quizzes in revision
- Google analytics show that over half the cohort likely logged in to Quodl in the fortnight leading up to the exam
- Students spent around 150 hours between them on Quodl in the run-up to the exam, looking at questions and testing themselves



Conclusion and future plans

- The case study was in pretty much all respects very successful
 - Students enjoyed taking part in the quizzes and found them helpful
 - The lecturer was very positive about using quizzes in his lectures
 - There was evidence that the quizzes encouraged positive learning behaviours
- Further developments
 - Some technical issues with students responding in one module
 - Working with new software company to provide ongoing support
 - Innovate UK funding bid for a broader student support platform to target
 - Academic performance
 - Wellbeing and mental health
 - Time planning and deadline management
 - Group activities and support
- But would very much like help from you!
 - Using Quodl in your lectures, with support, to give more design feedback
 - Giving suggestions on features you would like to see
 - Suggesting other users at City and beyond...