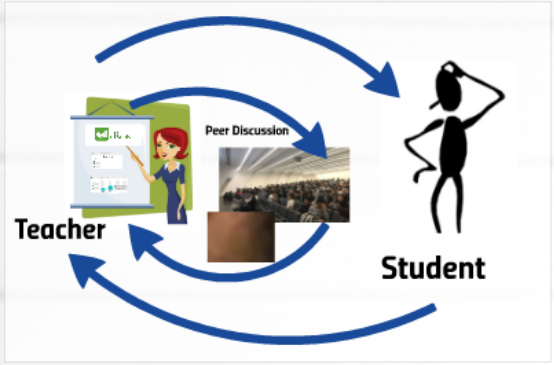
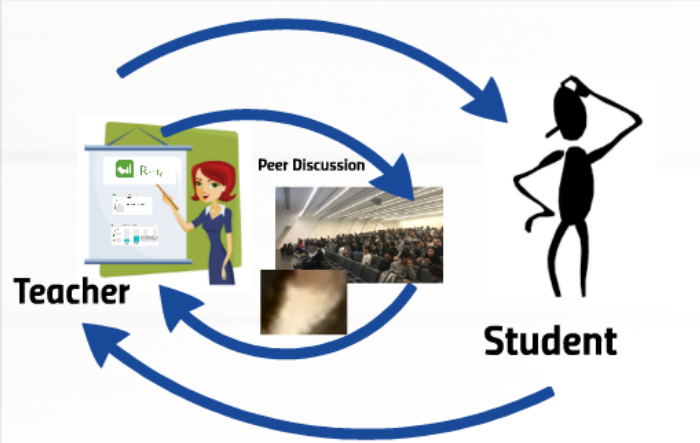
Using UReply to assess Peer Instruction in a flipped classroom environment



Dr Lexie Sanderson

Using UReply to assess Peer Instruction in a flipped classroom environment



Dr Lexie Sanderson

A
Lecturer's challenge

to encourage students to engage actively in classroom activities to improve learning and academic performance

Incorporating technology

engaging students through the use of student response systems increases student engagement and participation (Jones, Antonenkot & Greenwood, 2012).

Peer Instruction (PI)

a pedagogy approach which makes the learner more central to what is happening in the lecture theater. Developed by the Harvard Physicist (Mazur, 1997)

Aim of PI

aims to support students in developing a deeper understanding of lecture material, leading to extrapolation of knowledge to address problem solving in the real world.

Principle

lectures are interspersed with conceptual MCQ designed to expose common difficulties in understanding difficult lecture material.

Literature

- Initially focused on physics where research has demonstrated that PI vastly improves student performance (Crouch & Mazur, 2001; Gok, 2015).
- Research on PI methodology has predominantly focused on STEM subjects (science, technology, engineering and mathematics).
- In a survey of over 300 institutions using PI to teach: physics, chemistry, life sciences, engineering and astronomy, over 80% consider PI to be successful; suggesting that, using PI does successfully enhance learning (Fagan, Crouch & Mazur, 2002).
- PI has also been found to positively impact student confidence during a modified form of PI in two chemical thermodynamics classes (Brooks &Koretsky, 2011).
- PI has been found to be a positive solution for maintaining student satisfaction in large computer science classes (liao et al., 2017).

Aim

Using the student response system UReply we assessed whether PI can facilitate retention of information in large, flipped social science lecture.

Method

- Students - 326 (own and peer)
- Flipped Social Science lecture - cognition and learning
- Week 7 of 13 week course

- Students were posed a high level intellectual question.
- Students were given individual thinking time to answer the question.
- Students were not shown the histogram of responses.
- Students were told when 80% of the class had responded.
- Students responded to the UReply question using a mobile phone device as a clicker.
- After the students had responded to the first question they were asked to engage in peer discussions regarding the same question.
- Peer discussion continued until 80% of students answered.

Teacher

Peer Discussion

Student

uReply

Question title (MC): Algorithm

ONGOING

Session Number :2767

Question

Results

Participants

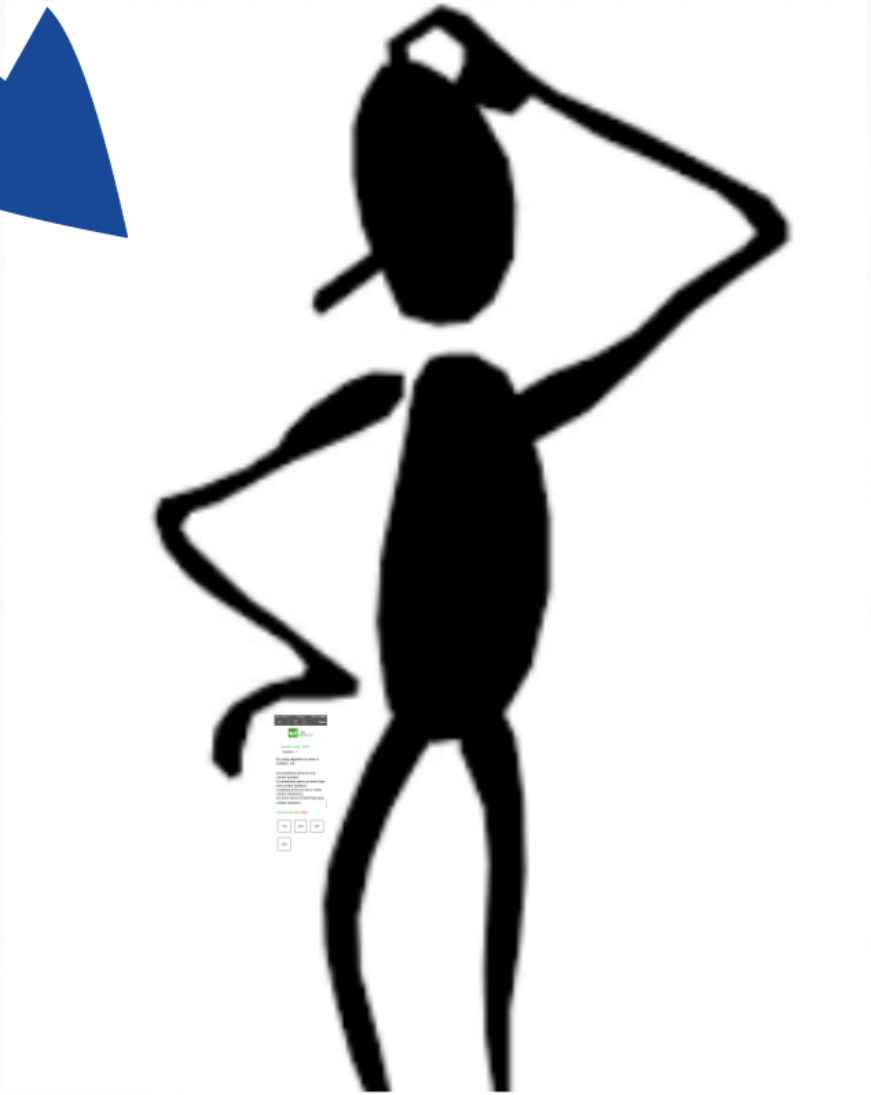
Info to participants

Question: 1

By using algorithm to solve a problem, we:

a) sometimes arrive at one correct solution
b) sometimes arrive at more than one correct solutions
c) always arrive at one or more correct solution(s)
d) never arrive at more than one correct solutions

on



Student

●●●○○ CMHK 12:10 pm 48%
Done

uReply

Session number M525

Question 1:

By using algorithm to solve a problem, we:

a) sometimes arrive at one correct solution
b) sometimes arrive at more than one correct solutions
c) always arrive at one or more correct solution(s)
d) never arrive at more than one correct solutions

You have submitted: **None**

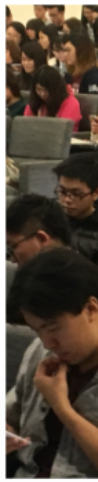
1/A

2/B

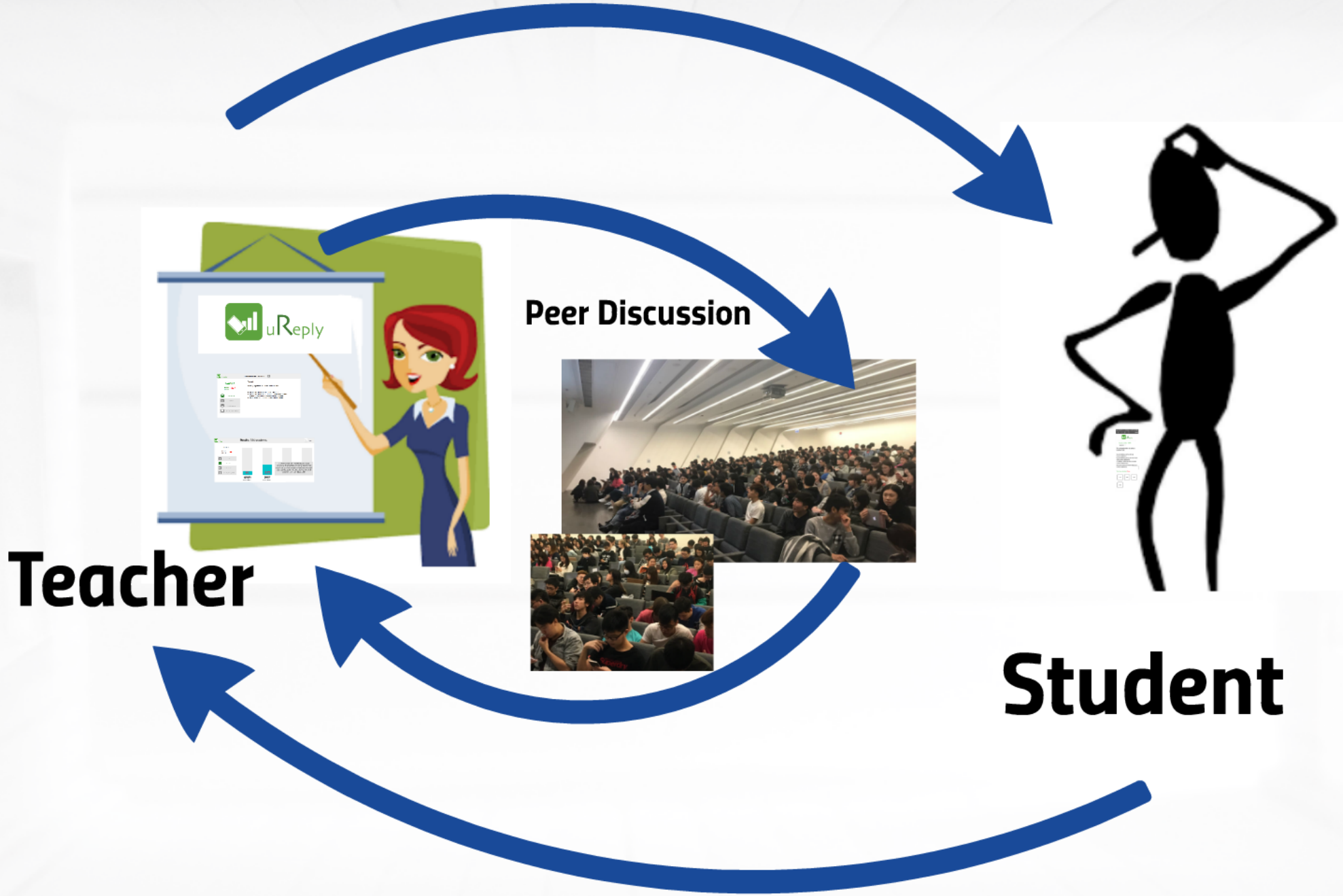
3/C

4/D

Teacher



Peer Discussion


uReply
Peer Discussion
Teacher
Student

uReply

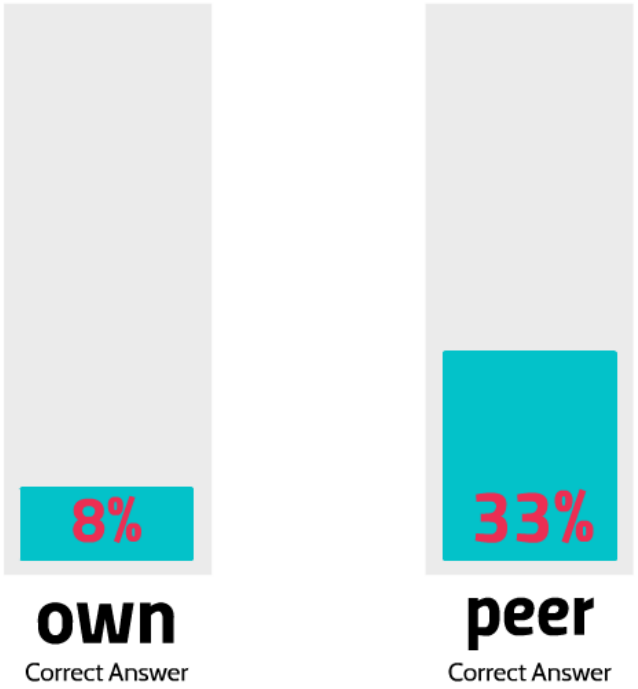
Results 326 students

asande

ENDED

Session Number :2767

- Question
- Results
- Participants
- Info to participants



A McNemar's test with continuity correction determined that the difference in the proportion of correct answers between pre-lecture knowledge and after peer discussion was statistically significantly different, x2(1) =57.188, p =.00.

Discussion

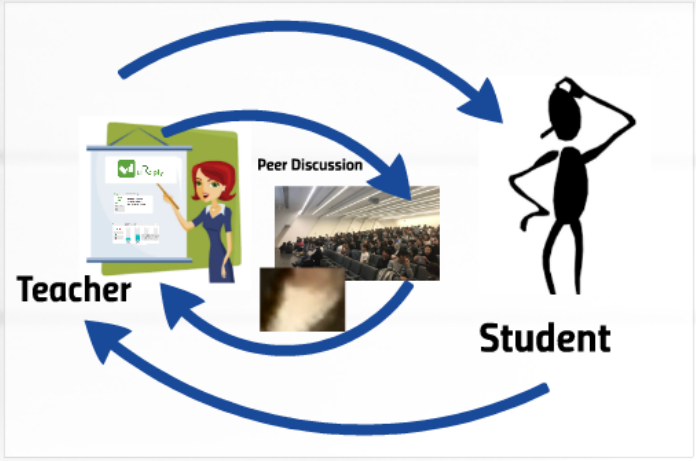
UReply is a useful and efficient tool for lecturers and students to use when assessing knowledge gain in large lectures.

Social reinforcement from peers and a co-operative learning environment facilitates learning and retention in large, flipped social science lectures.

Conclusion

- PI may go beyond communication of information
- Lead to gaining a deeper understanding through active knowledge transfer
- UReply is an efficient tool for assessing PI

Using UReply to assess Peer Instruction in a flipped classroom environment



Dr Lexie Sanderson