UNIVERSITY OF
LEADING
THE WAY
WESTMINSTER

Flipping marvellous
Maximising the LEARNING in Problem Based Learning

Gillian Rhodes, Alastair Barr, Bradley Elliott, Chris Biggs and Will Whitlock

UNIVERSITY OF LEADING THE WAY WESTMINSTER

Teaching versus learning

- Our memories of great teachers
  - Motivation
- What are we judged on today?
  - Contact time
  - Recorded lectures
- Is it about what we do?
- More important is what the students do

UNIVERSITY OF LEADING THE WAY WESTMINSTER

Jargon fatigue

- Flipping
  - Students have to study a topic before the lecture
  - Effective?
- PBL (or EBL)
  - Students are given a problem to solve
  - Learn by solving problem
  - Pros & cons:
    - Deeper learning but risk of misconceptions

UNIVERSITY OF LEADING THE WAY WESTMINSTER

Best of both worlds

- Keep the best of PBL
  - Small groups, interesting problems

- Avoid the negative aspects by:
  - Supplementing with lecture
  - Weekly problems with short timeframes
  - Required weekly submission of short written summaries

UNIVERSITY OF LEADING THE WAY WESTMINSTER

Teaching Physiology

- Physiology requires a conceptual shift in the way some students learn
  - Doesn't lend itself to rote learning
  - 1st year core module for all
    - Very large groups, smaller tutorial groups
    - Broad curriculum
  - 2nd year physiology
    - Builds on 1st year knowledge, more detailed and applied

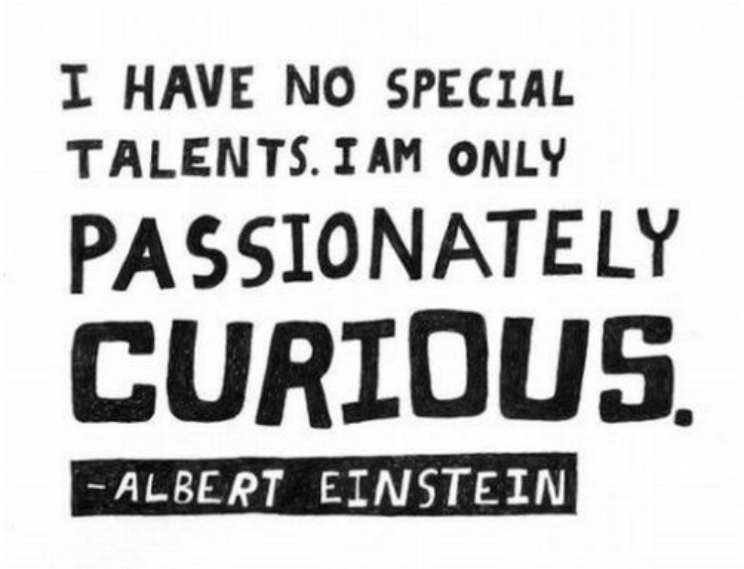
UNIVERSITY OF
LEADING
THE WAY
WESTMINSTER

The problem with 2nd years

- Natural tendency to use the same learning strategies that worked in their 1st year
  - Applied knowledge – doesn't work that way
- Previous traditional module did not encourage students to be engaged and active learners
  - Surface approach to learning led to poor physiological knowledge and understanding
- If we want students to adapt their learning we need to teach in a different way

UNIVERSITY OF LEADING THE WAY WESTMINSTER

To learn we need to want to learn!



– Curiosity is our best teaching aid

(Biggs & Tang 2011, Wood, 2004)

UNIVERSITY OF LEADING THE WAY WESTMINSTER

We remember what we emotionally invest in

– The excitement of ‘getting it’

(DiCarlo, 2009)

UNIVERSITY OF
LEADING
THE WAY
WESTMINSTER

We learn best when we can link our learning to prior knowledge

– Making connections aids clarity

(Clinton, 2014)

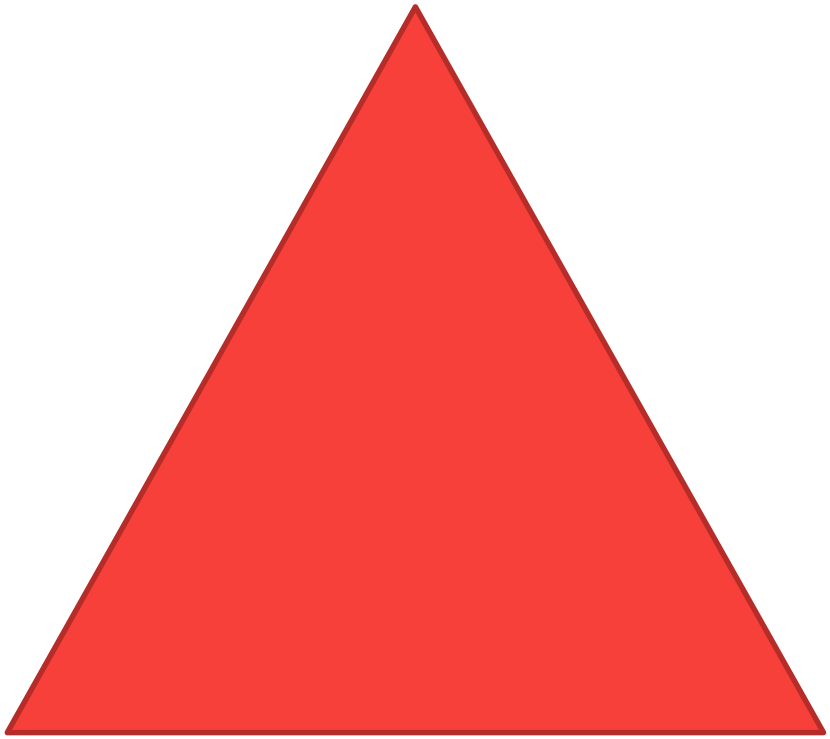
UNIVERSITY OF
LEADING
THE WAY
WESTMINSTER

We learn best when we explain to others

- We start off by thinking that a good teacher can explain things
- Maybe a great teacher is someone who can get even the shyest, quietest, least engaged student to explain things

UNIVERSITY OF
LEADING
THE WAY
WESTMINSTER

Know
(information)



Think
(understand)

Share

UNIVERSITY OF LEADING THE WAY WESTMINSTER

The new module - making the switch

- Instead of the lecture, tutorial, practical format used in 1st year
- Kept learning outcomes the same, but changed the learning & teaching method
- Mostly student-centred problem-based learning
  - Supported by flipped approach
  - Weekly 50 minute lectures after the PBL sessions

UNIVERSITY OF LEADING THE WAY WESTMINSTER

How was it organised?

- Students assigned to groups
  - Rotating chairman & scribe
  - Weekly case studies
    - Given on Monday, discussed in group who decided their learning outcomes – 3 days to find information
    - Thursday, share learning in the group and explain underlying physiology for the case
  - Following Monday - lecture on the case
  - One week later - submission of short summary of the case (400 words) to portfolio

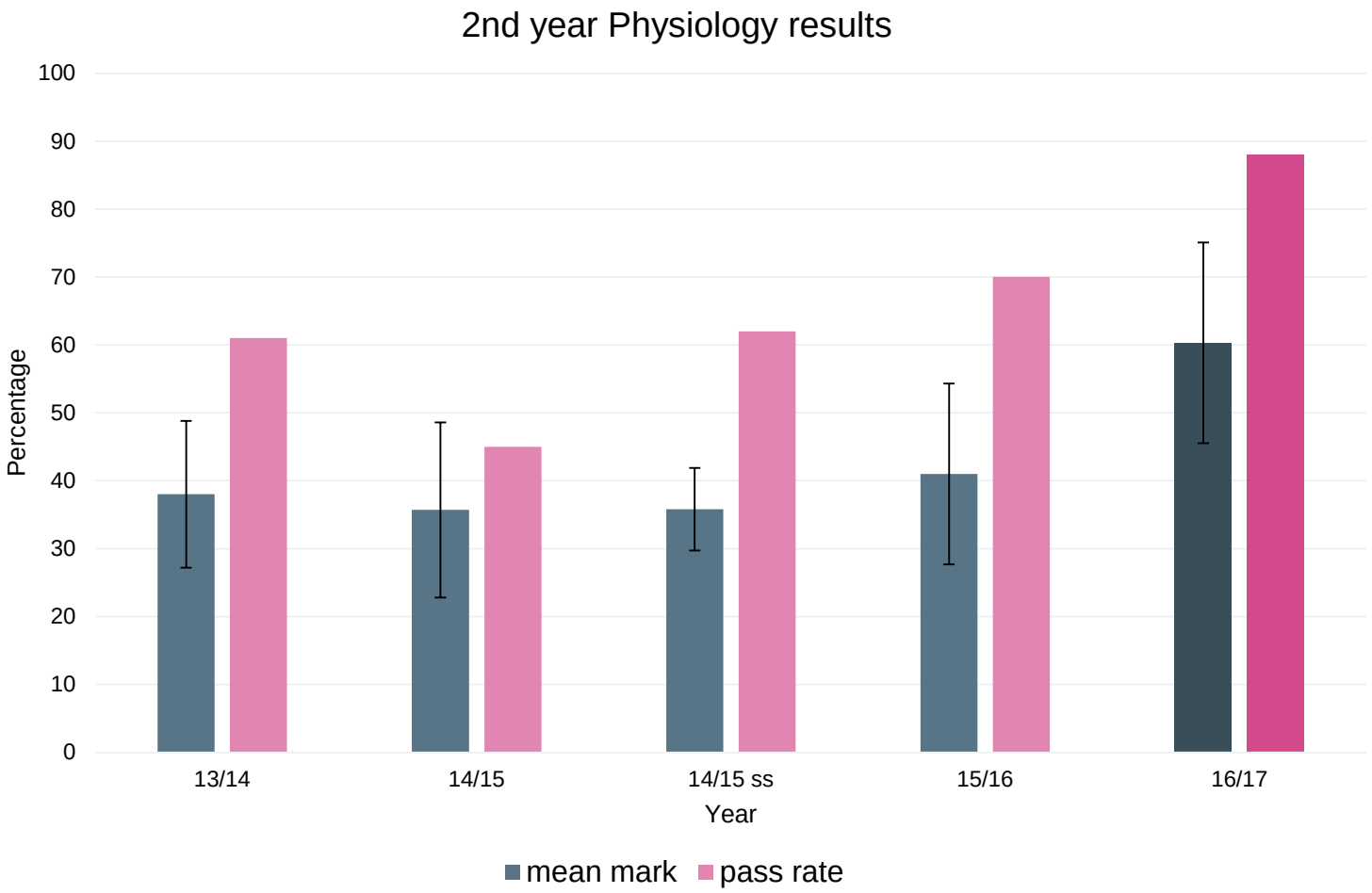
UNIVERSITY OF LEADING THE WAY WESTMINSTER

How was it assessed?

- A mark of 1% was given for attendance and engagement each week 10%
- Case summaries
  - Ongoing formative review
  - Students could select and edit their 2 best case summaries and resubmit them at the end of the module 80%
- Formative MCQs associated with each case were provided throughout the module and formed the basis of a short summative MCQ test 10%

UNIVERSITY OF LEADING THE WAY WESTMINSTER

So how did we do?



UNIVERSITY OF
LEADING
THE WAY
WESTMINSTER

And did they like it?

- An overwhelmingly positive response
  - Particularly from retake students
- A transformative approach to learning and development of skills in:

  applying knowledge

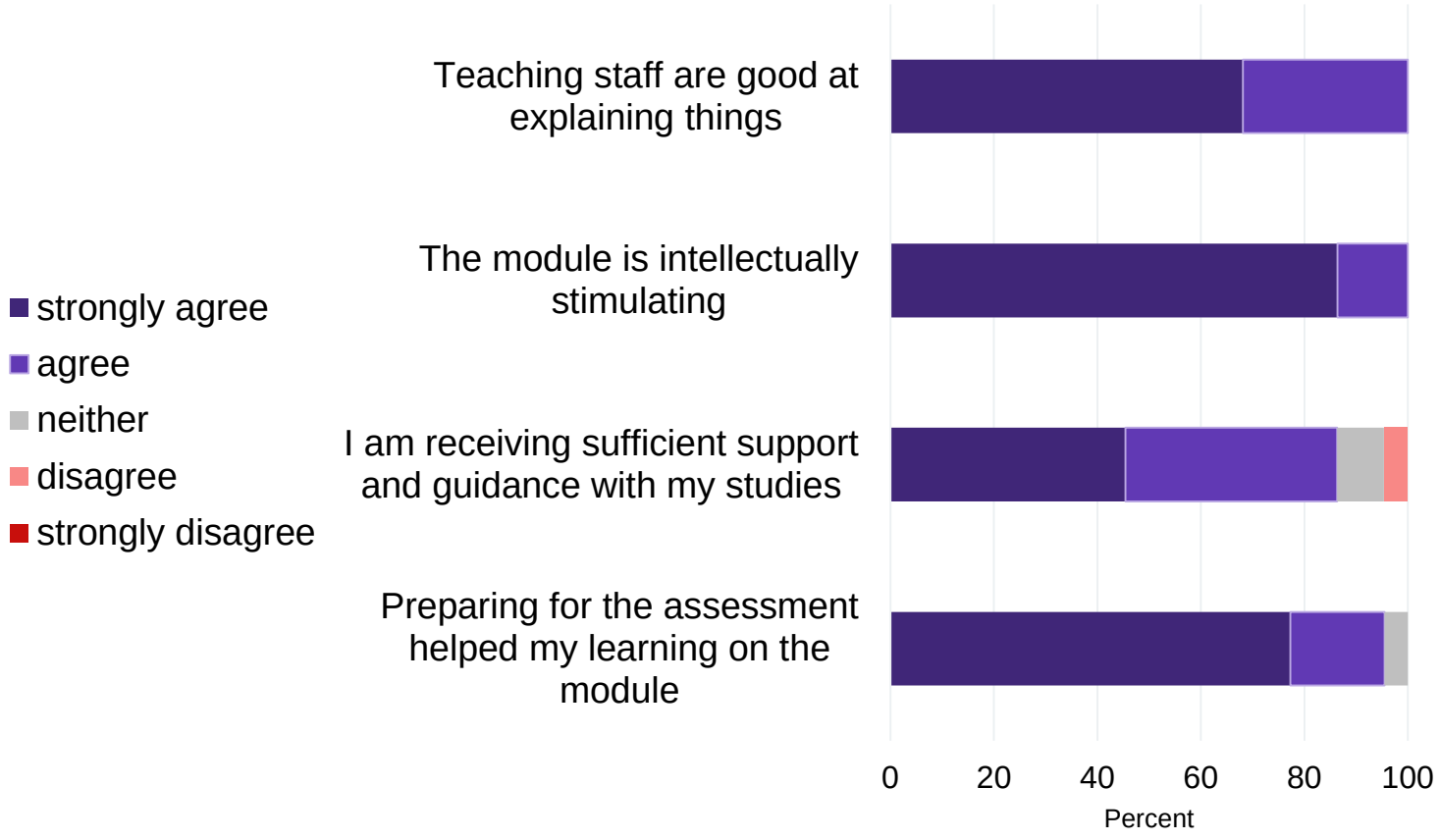
  using resources to integrate new concepts

  critical use of resources

  writing clearly and concisely

UNIVERSITY OF LEADING THE WAY WESTMINSTER

Student module evaluation n=22



UNIVERSITY OF
LEADING
THE WAY
WESTMINSTER

But don’t take our word for it…….

UNIVERSITY OF LEADING THE WAY WESTMINSTER

Benefits of flipping and PBL

- Engaged students and deep learning
- Increased learning from more active exploration of physiology and shared exploration of troublesome knowledge

  A true community of learning
- Improved academic communication skills, both oral and written
  - Enhanced ability to articulate concise and coherent arguments supported by evidence
    - Evidenced in the sessions and in the development of academic writing style

UNIVERSITY OF
LEADING
THE WAY
WESTMINSTER

Thank you to……

- The students who participated in the module and particularly in the focus group
- The team who worked so hard to make this work: Will Whitlock, Chris Biggs, Bradley Elliott and Alastair Barr

- Dr John Murphy, HoD of Biomedical Sciences for giving us the resources to run this module

- Stuart Prosper for video

UNIVERSITY OF
LEADING
THE WAY
WESTMINSTER

References

Biggs, J.B & Tang, C.S. 2011.Teaching for quality learning at university : what the student does. 4th edition. Maidenhead : McGraw-Hill/Society for Research into Higher Education/Open University Press 2011

Clinton, V. 2014. The relationship between students' preferred approaches to learning and behaviors during learning: An examination of the process stage of the 3P model. Instructional Science. 42:817-37

DiCarlo, S.E. 2009. Too much content, not enough thinking and too little FUN! Advances in Physiology Education; 33:4.257-264.

Wood, E.J. 2004. Problem-Based Learning: Exploiting Knowledge of how People Learn to Promote Effective Learning. Bioscience Education.3. http://bio.ltsn.ac.uk/journal/vol3/beej-3-5.htm

UNIVERSITY OF
LEADING
THE WAY
WESTMINSTER

Question - Adaptability

How could you adapt this approach within your course?