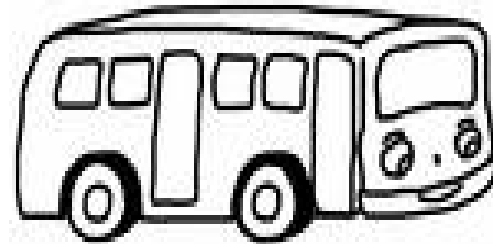


# Opportunistic Action Research into Peer and Self Assessment



**Mark Langan**

Senior Learning and Teaching Fellow  
Faculty of Science and Engineering

**Rod Cullen**

Senior Lecturer in Learning and Teaching Technology  
Centre for Learning and Teaching

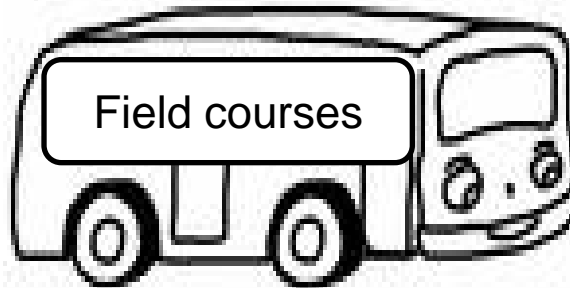
# Background



Schools



Coaching

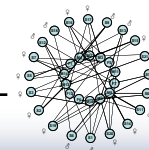
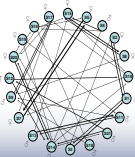


Classroom/unit issues (PA)

e-Learning

Residential courses (PA)

Staff development



# Case studies

**1<sup>st</sup> year UG core unit** (MMU) teaching statistics to those that don't want to be taught statistics...

**2<sup>nd</sup> year UG optional residential unit** (MMU & UoM) oral presentations

# Case 1 - 1st year UG core unit

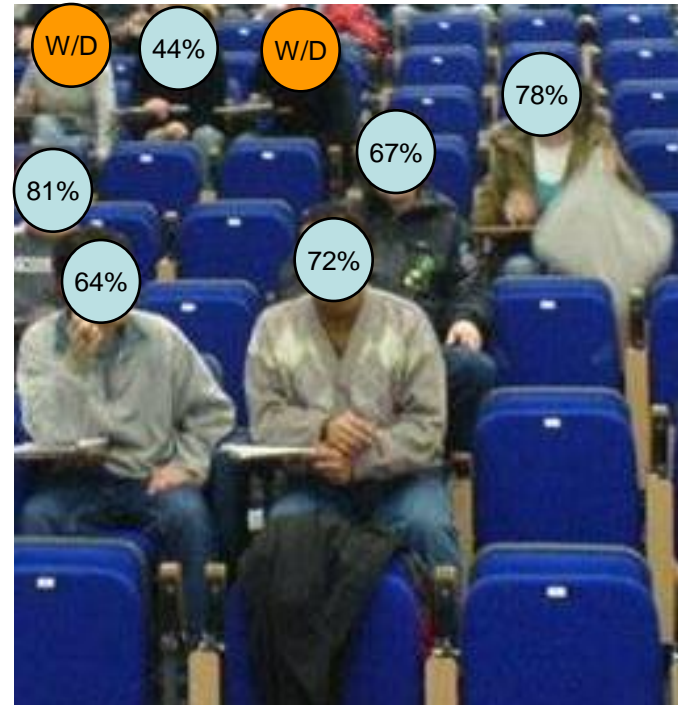
## First steps: Rationale for change

- High failure rate and low grade average of previous unit
- Huge effort to mark and feedback
- Feedback not utilised
- Consistent basic errors
- Lack of understanding of (H.E.) assessment process
- Low satisfaction levels
- Needed innovation, effort and an evidence base



# Drawn to the quantitative...

- View the classroom as a ‘free’ research lab
- ‘Experimental design’
- Manipulative/monitoring
- Ped-R not resourced
- Lack of control groups (ethics)
- Past data



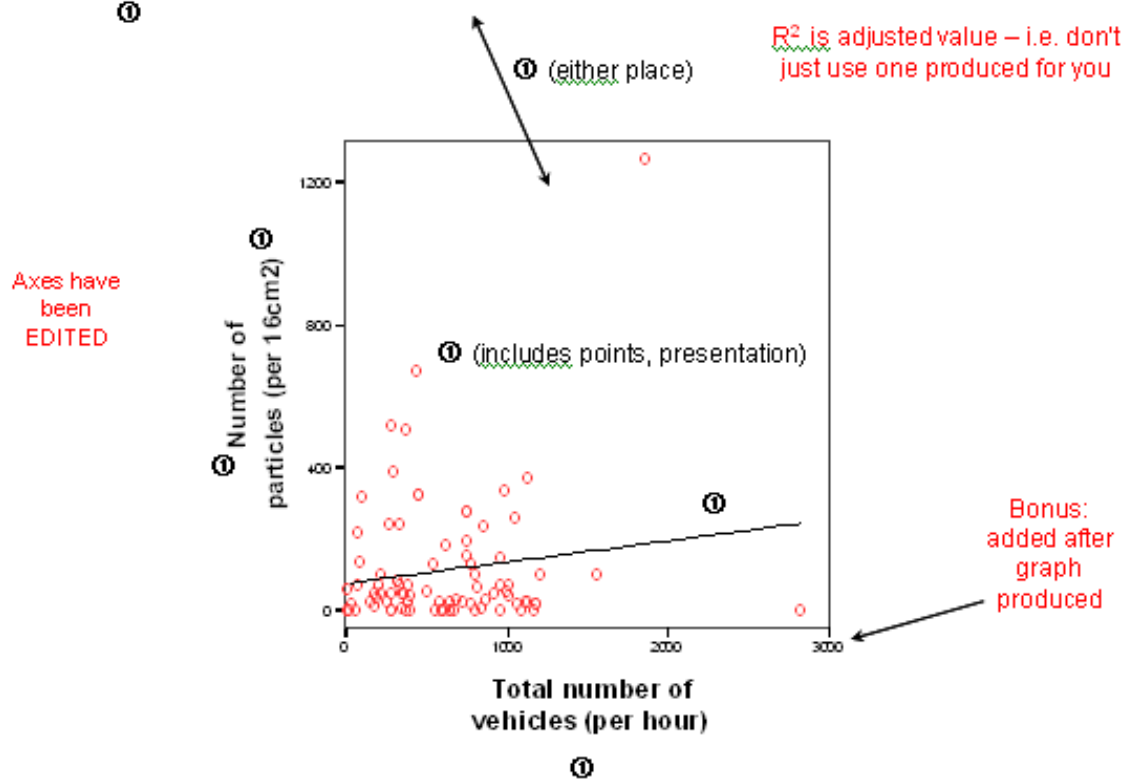
<b>1 Identify which of the variables below are continuous or discrete (one mark for each correct answer):</b>		
VARIABLE	Continuous	Discrete
pH of soil	X	
No. of plants germinating		X
Percentage of moisture in soil	X	
Classes of% moisture in soil (e.g. 0-10%, 11-20%,.....,91-100%)		X
Type of soil (either upland or lowland)		X

<b>2 Identify the data types represented by these variables (one mark for each correct answer):</b>			
VARIABLE	Nominal	Ordinal	Interval/Ratio
pH of soil			X
no. of plants germinating			X
Percentage of moisture in soil			X
Classes of% moisture in soil (e.g. 0-10%, 11-20%,.....,91-100%)		X	
Type of soil (either upland or lowland)	X		

<b>3 Identify which of the variables below are derived (one mark for each correct answer):</b>		
VARIABLE	Derived	Not Derived
pH of soil	X	
No. of plants germinating		X
Percentage of moisture in soil	X	
Classes of% moisture in soil (e.g. 0-10%, 11-20%,.....,91-100%)	X	
Type of soil (either upland or lowland)		X

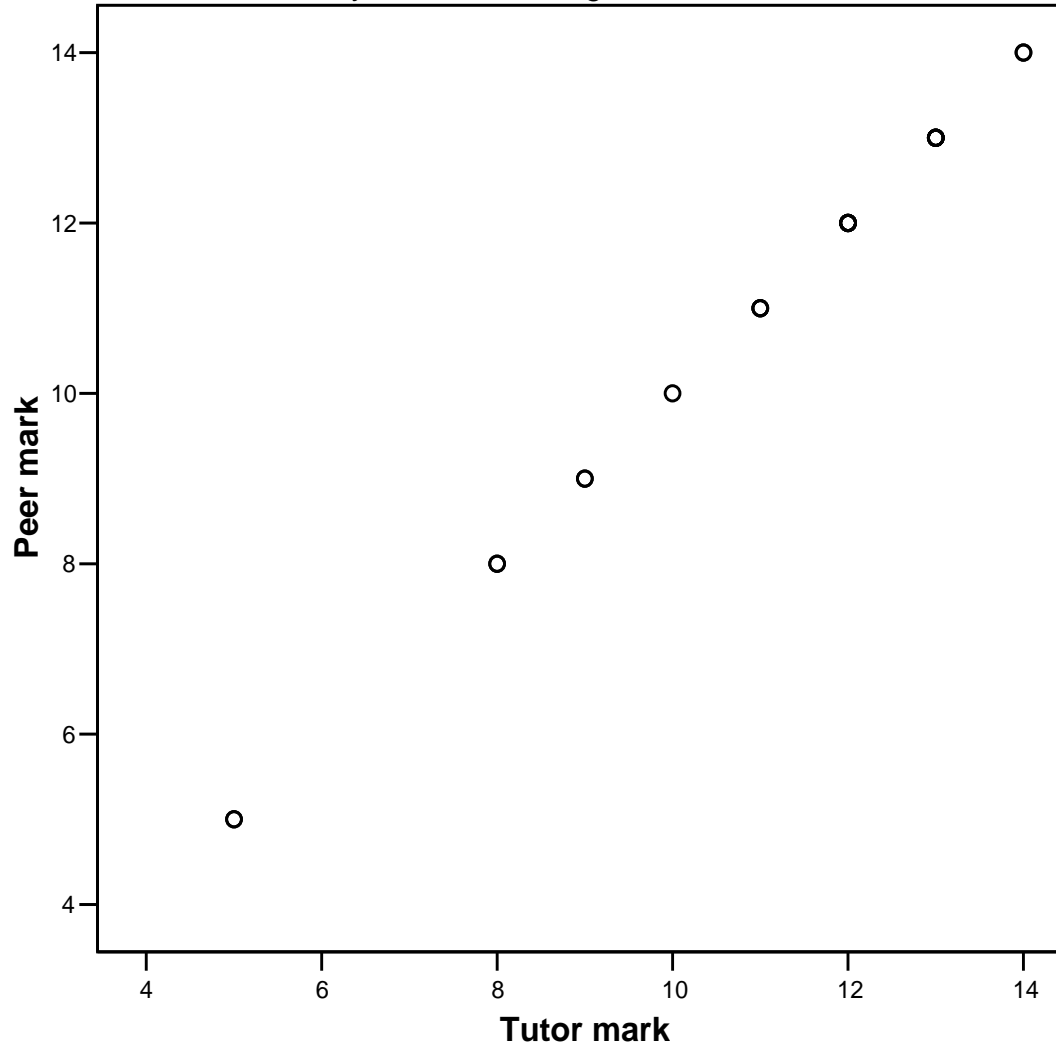
1 Using class data from traffic surveys, draw a regression plot (and line of best fit) to show the relationship between particulate count and total volume of traffic (using a sum of all traffic types; ten marks for the graph):

**Figure 1.** Regression plot showing the relationship between roadside particle counts (particles captured on a 16 cm<sup>2</sup> area during ten minute traffic surveys;  $n = 86$  surveys) and the total traffic volume ( $y = 72.84 + 0.06x$ ; adjusted  $R^2 = 0.01$ ).

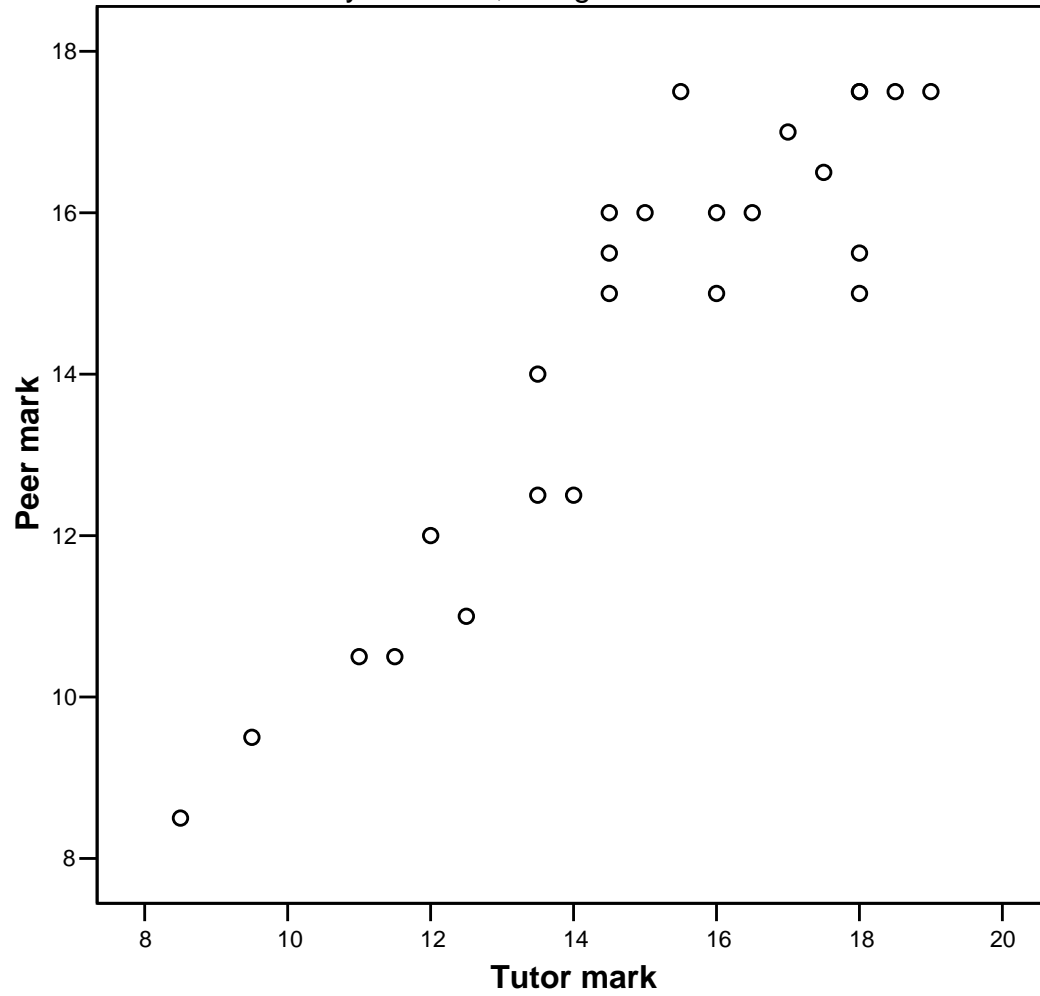


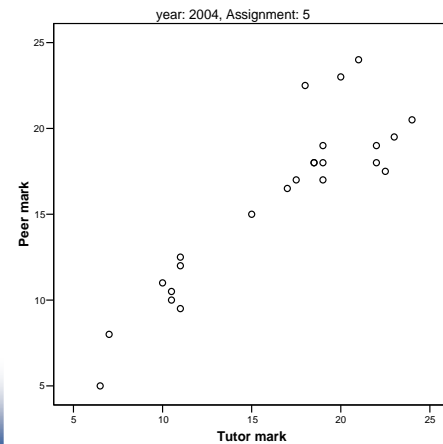
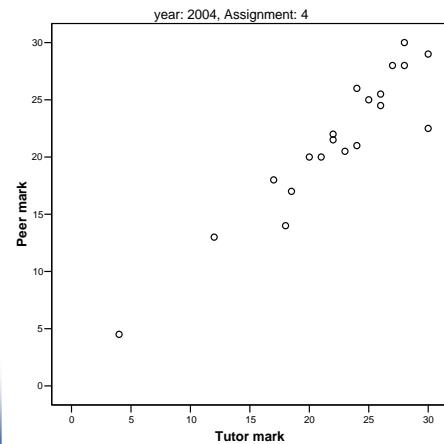
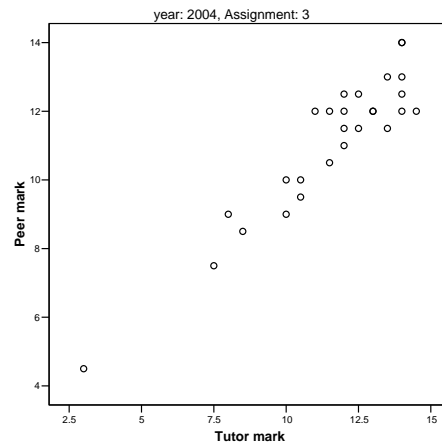
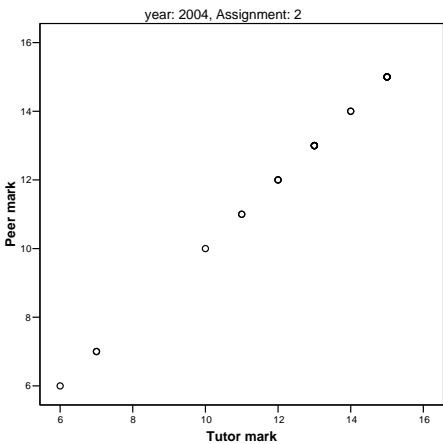
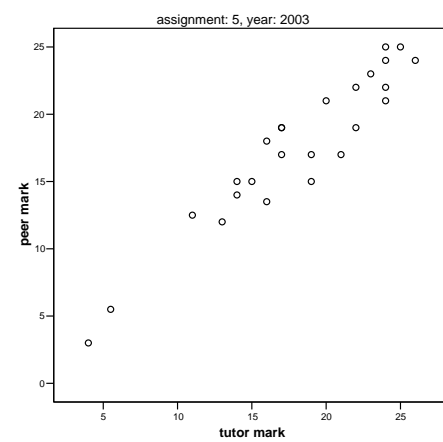
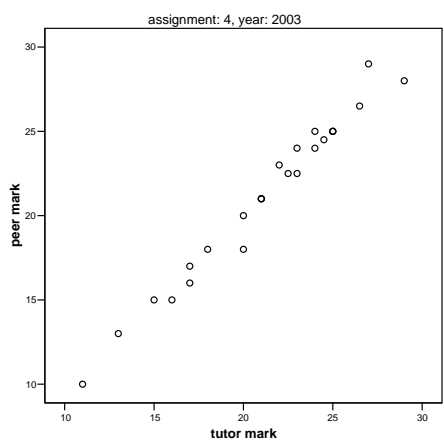
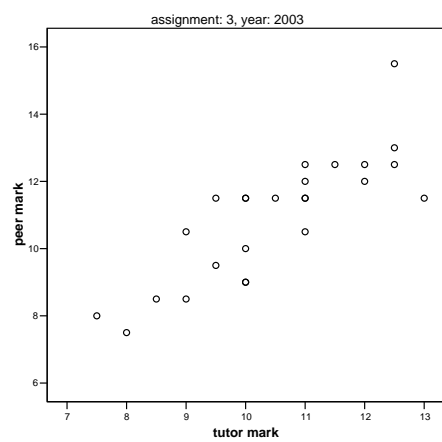
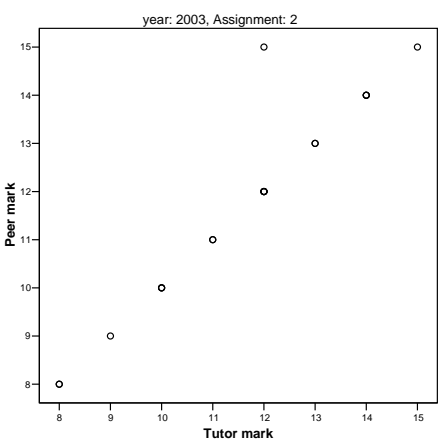
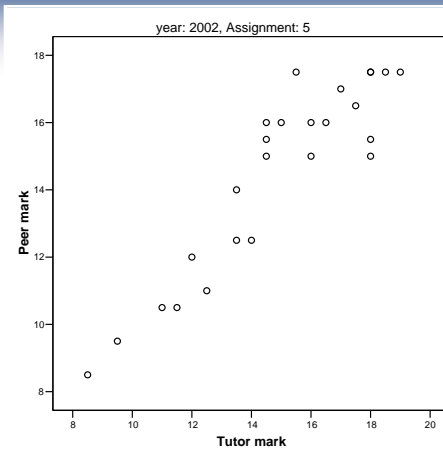
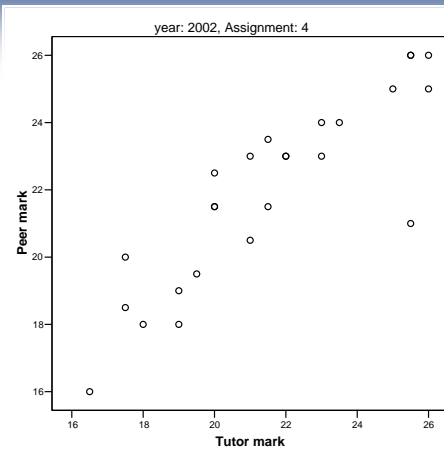
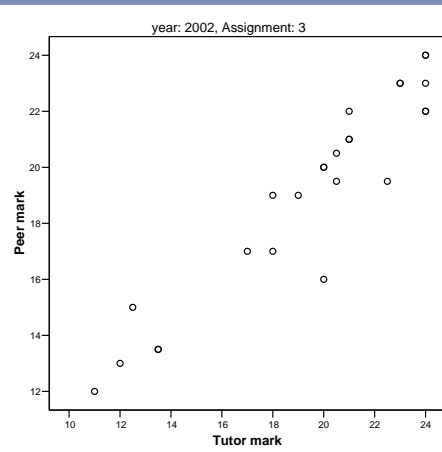
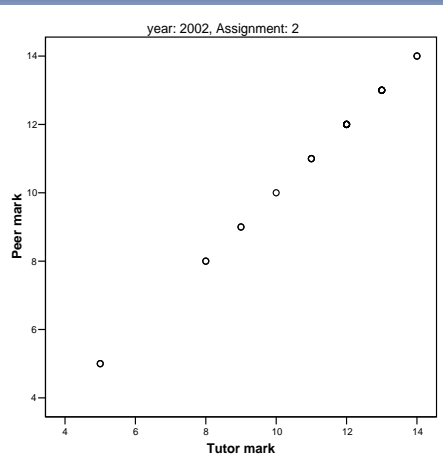
Total number of marks for graph (out of 10)

year: 2002, Assignment: 2



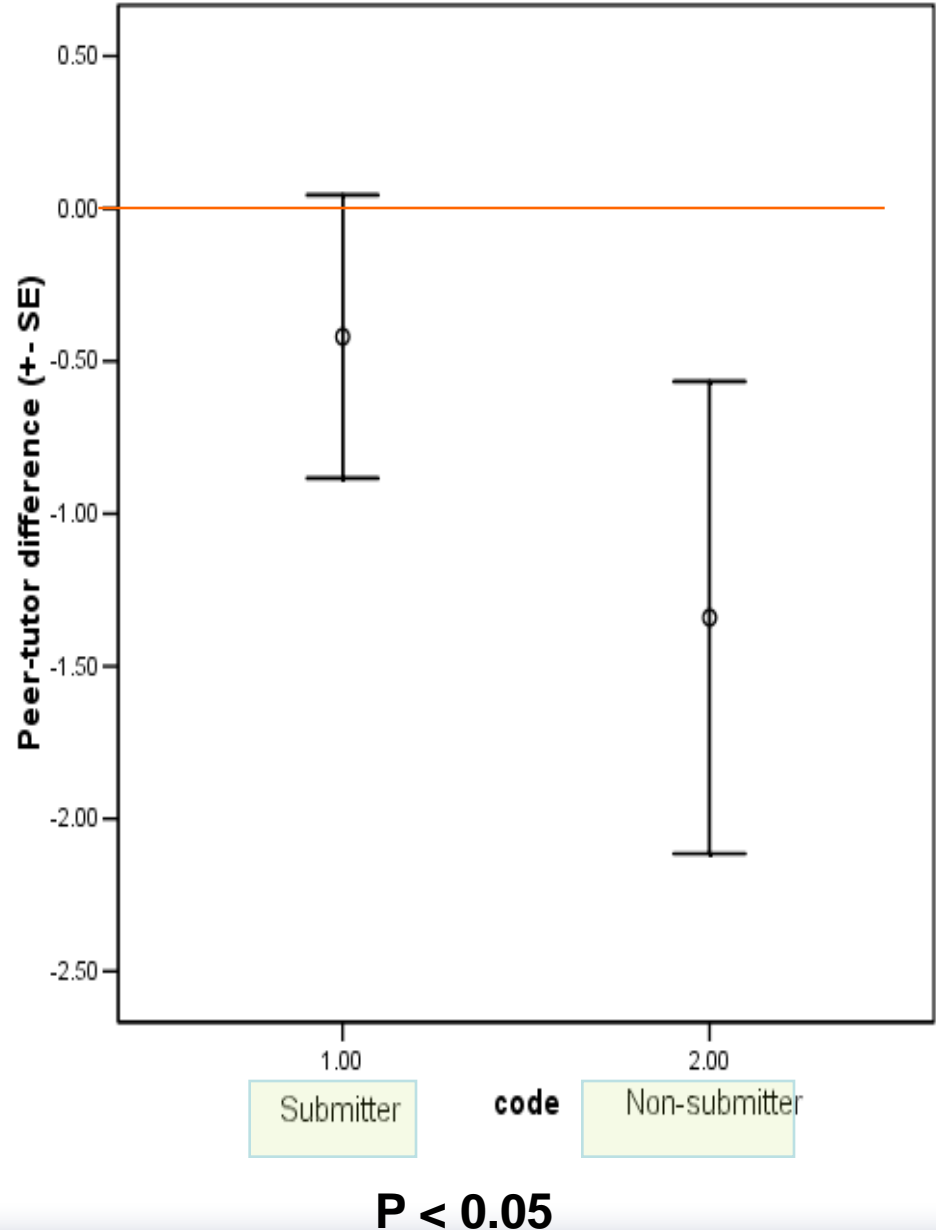
year: 2002, Assignment: 5

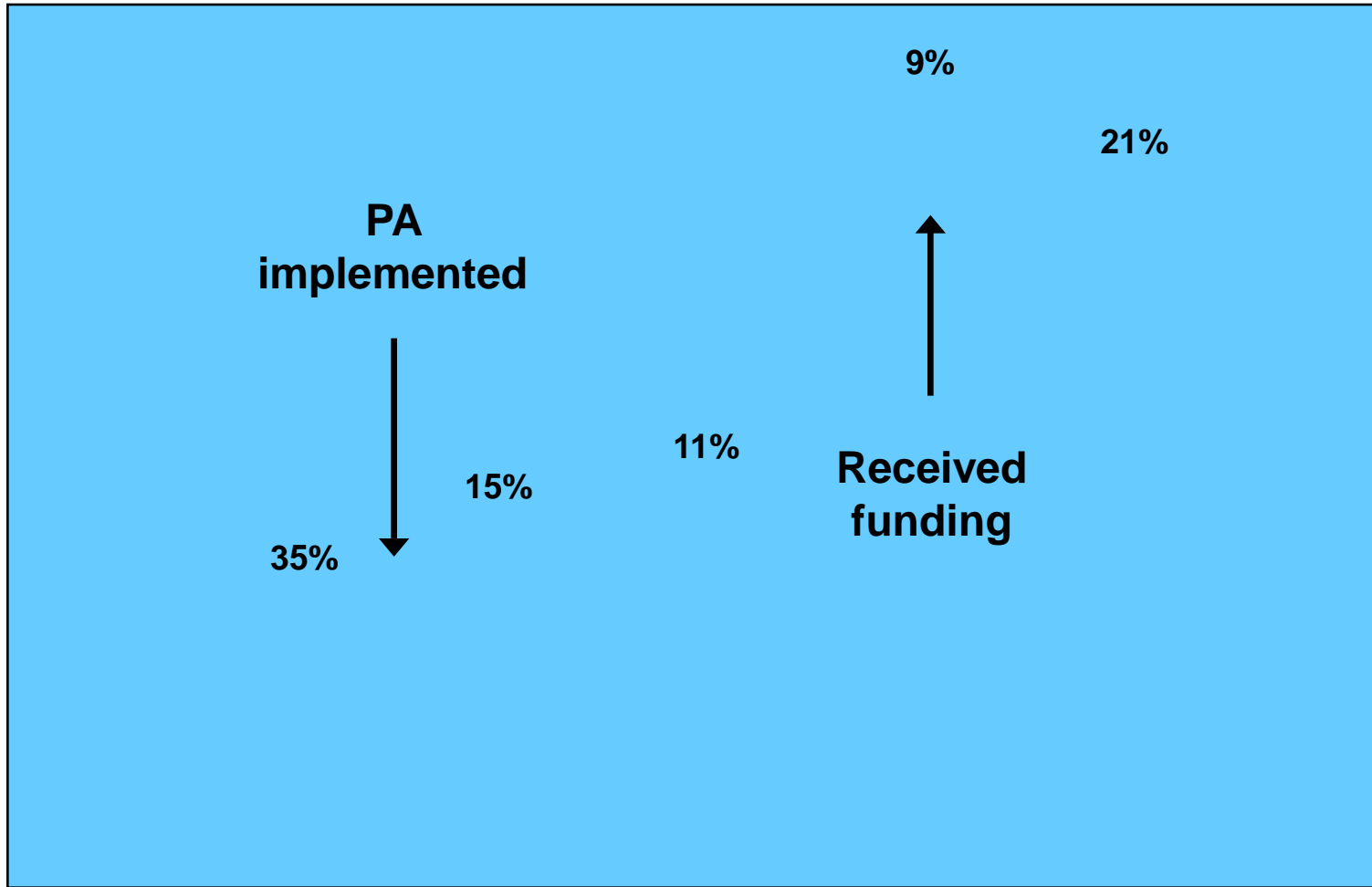




Marks awarded by students **who did not submit the assessment** consistently deviated more from tutor marks than their colleagues who had completed the assessment.

Example from the most complex assessment (2003 data)





Self study assessment (TMA) improvement post-PA implementation. %s indicate non-submission rates. Note that many factors changed during this period (rooms / format of PA sessions etc).

## ... becoming more qualitative

*“Boring. Slow process. Not everyone at the same level. Felt a selfish knowledge that if it was just me we could be done in 20 min.”*



*“You are provided with a deeper understanding.”*



*“Makes you think about the difference between a good answer and an okay answer.”*



*“People who do not submit should not be able to mark others’ work.”*



*“Helped me to understand the assignment and what lecturers wanted from submitted work.”*



- Area of weakness for L&T research
- Journal of Mixed Methods Research
- Moved on to more conceptual studies, not necessarily addressing a clear need.

# Case 2 - 2<sup>nd</sup> year UG residential unit

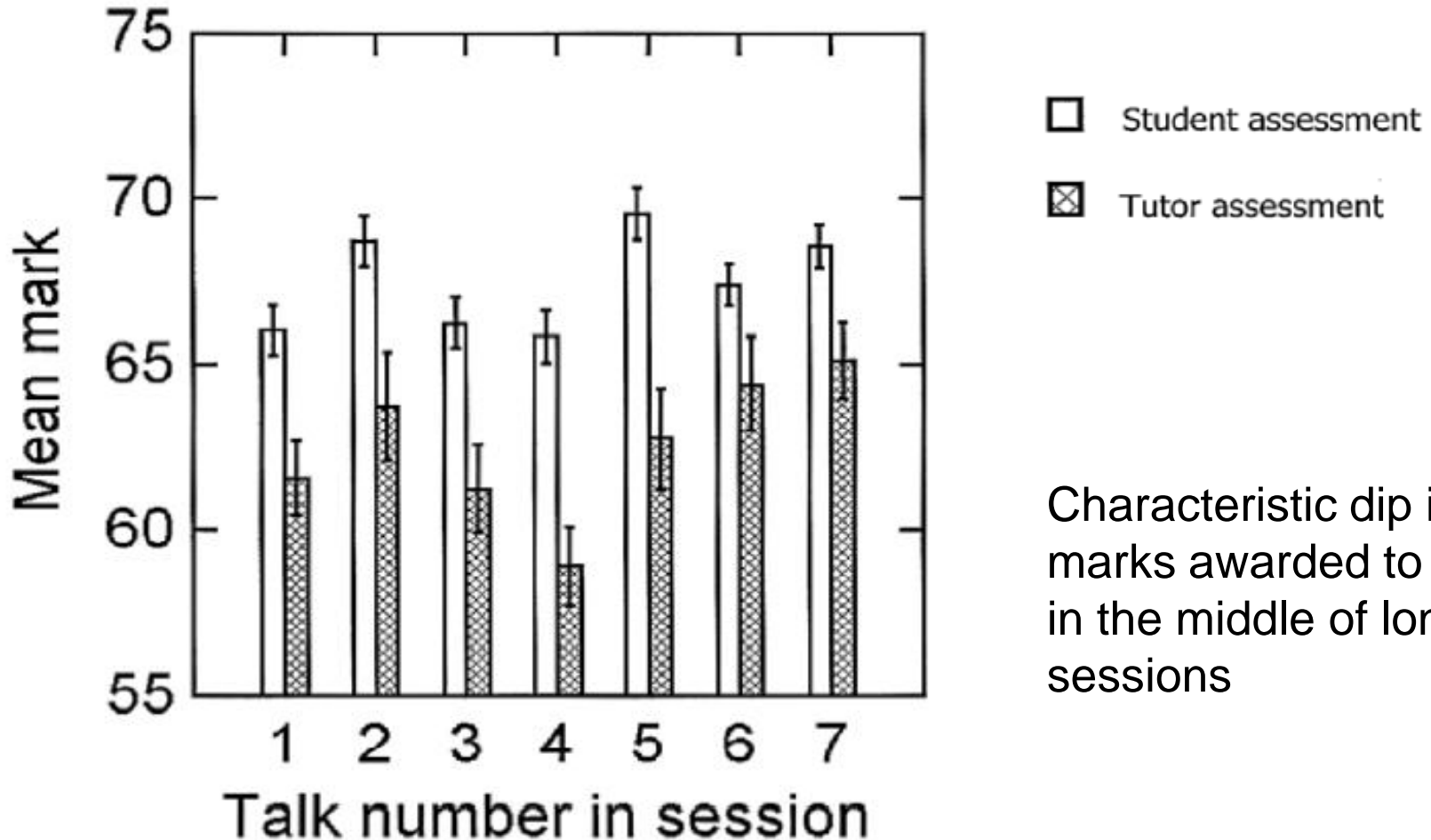
## Project Presentations

### Rationale

- Long presentation sessions
- Falling asleep
- Quality of discussion deteriorated as sessions progressed

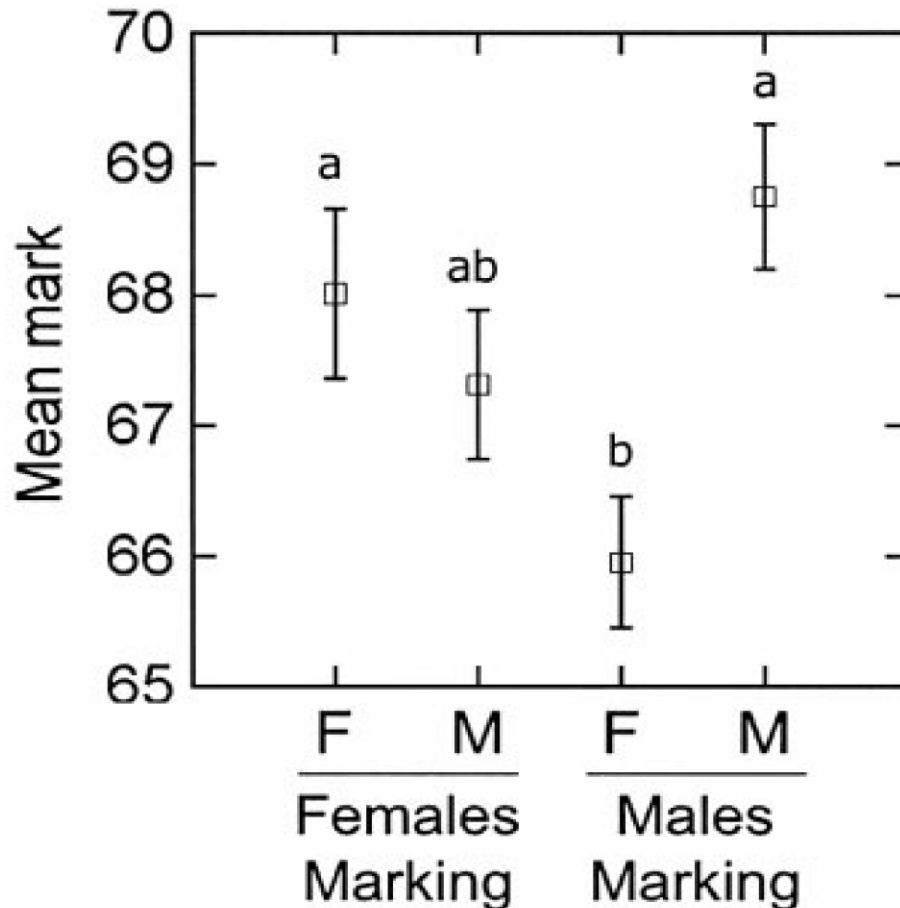


# Consequences of knowledge?



Characteristic dip in marks awarded to talks in the middle of long sessions

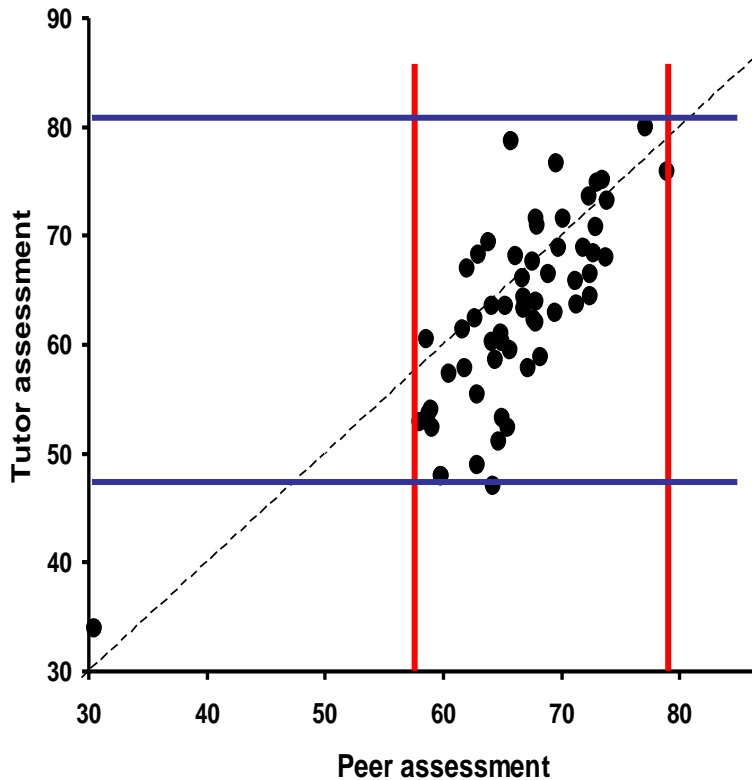
# Gender effects



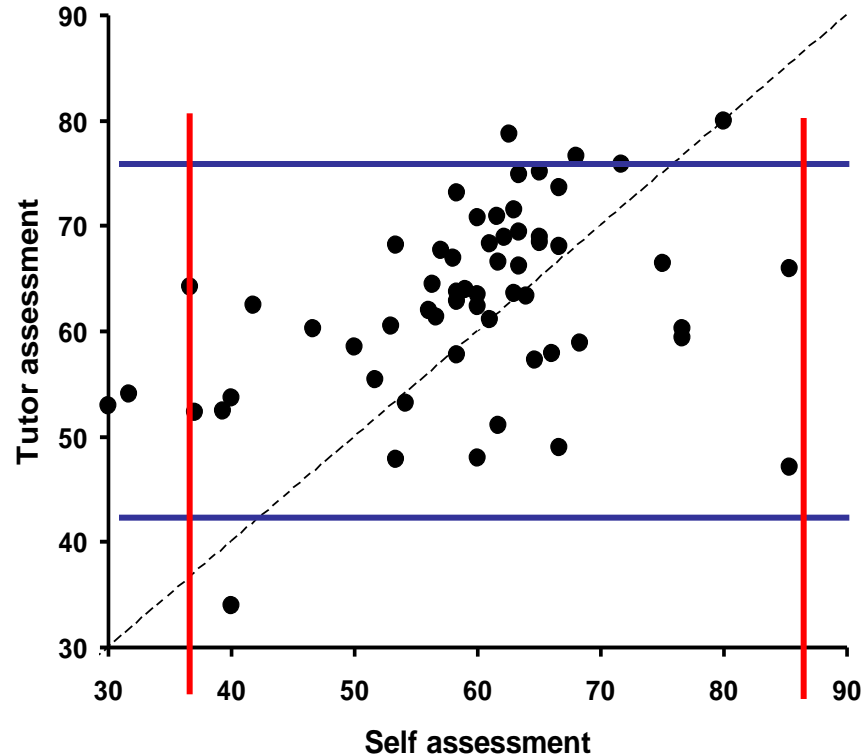
Sexes award **higher** marks to own sex ( $P < 0.001$ ; due to males)

No bias between sexes in tutors marks ( $P = 0.67$ )

# Student marking 'confidence'

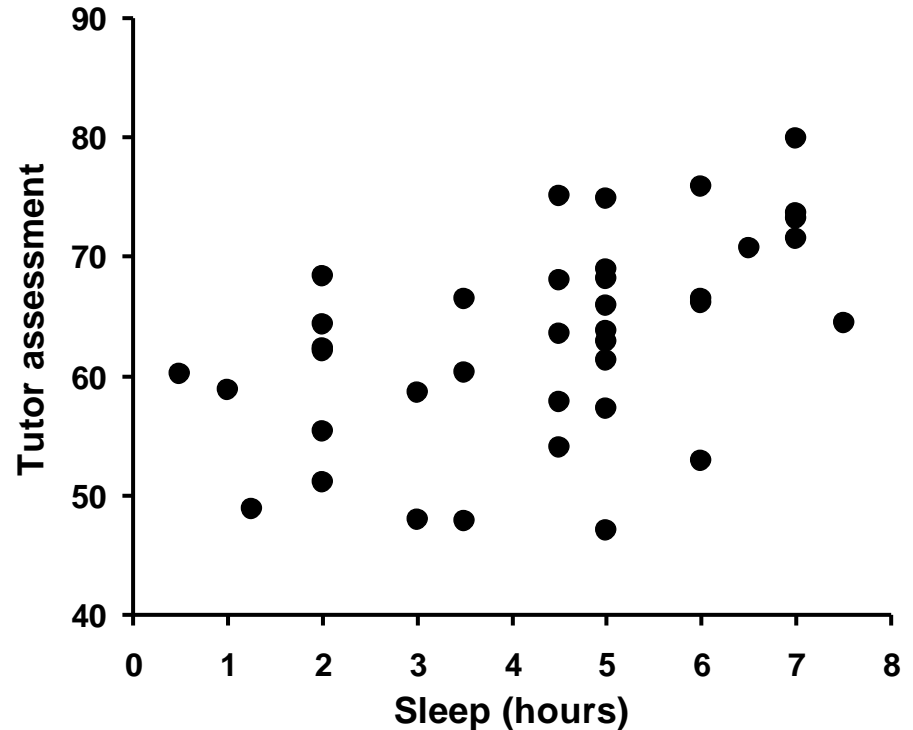


Peer assessed marks were in a narrower range than tutor marks



Self assessed marks were in a wider range than tutor marks

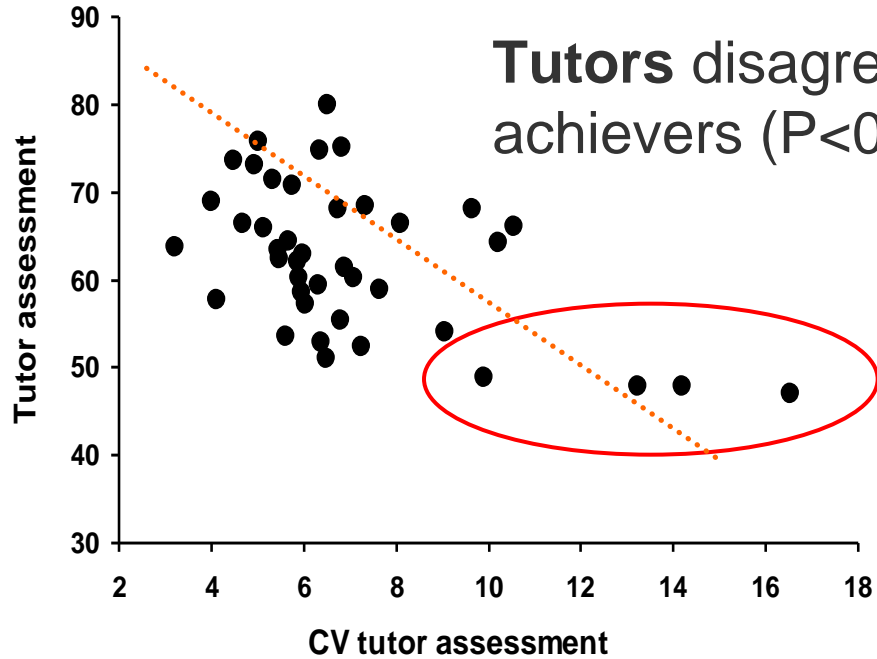
# Opportunities to be novel



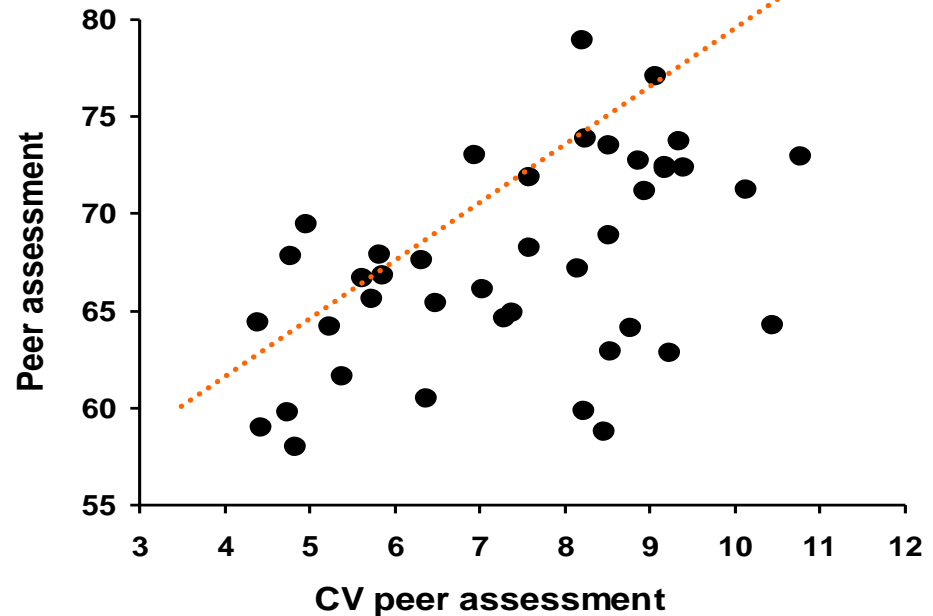
**Peer and tutor assessment:** positively correlated with sleep ( $P=0.02$  and  $<0.001$ )

**Self assessment:** not correlated with (reported) sleep

# Disparity across the marks range



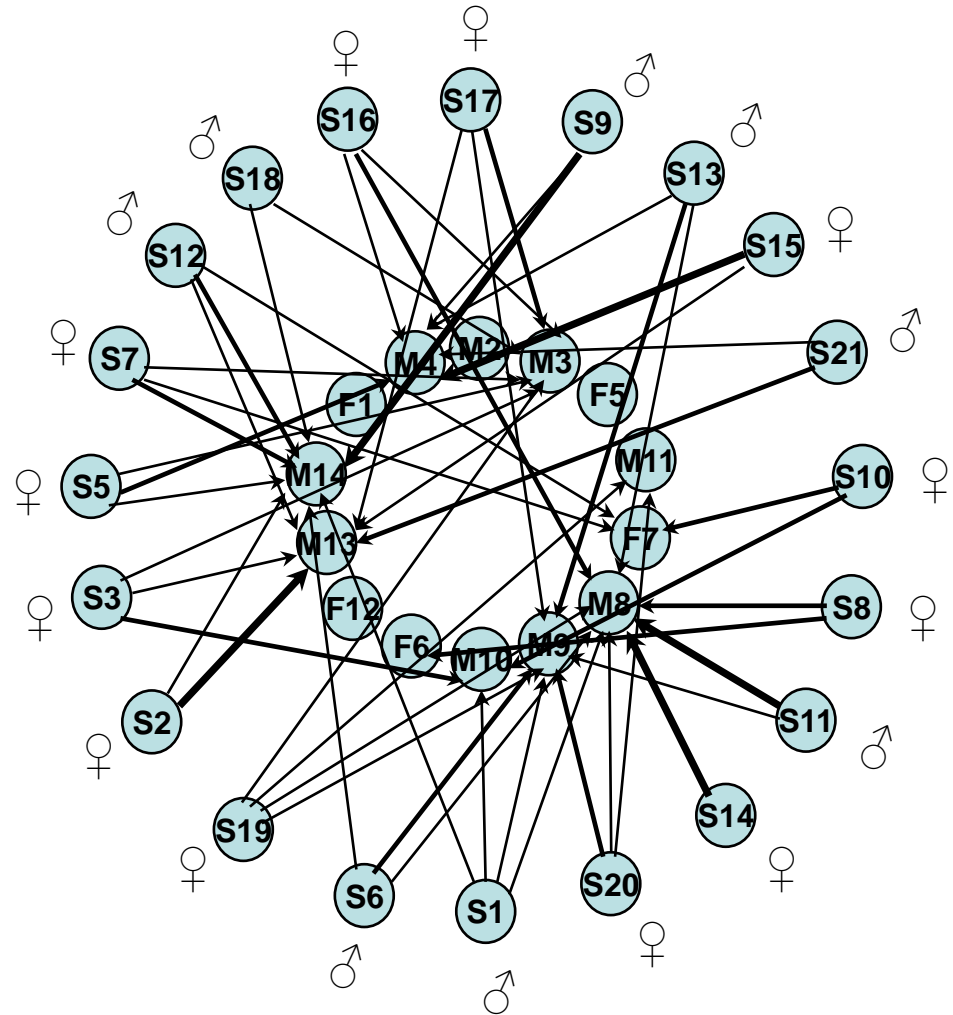
**Student markers** disagreed more about high achievers ( $P < 0.01$ )



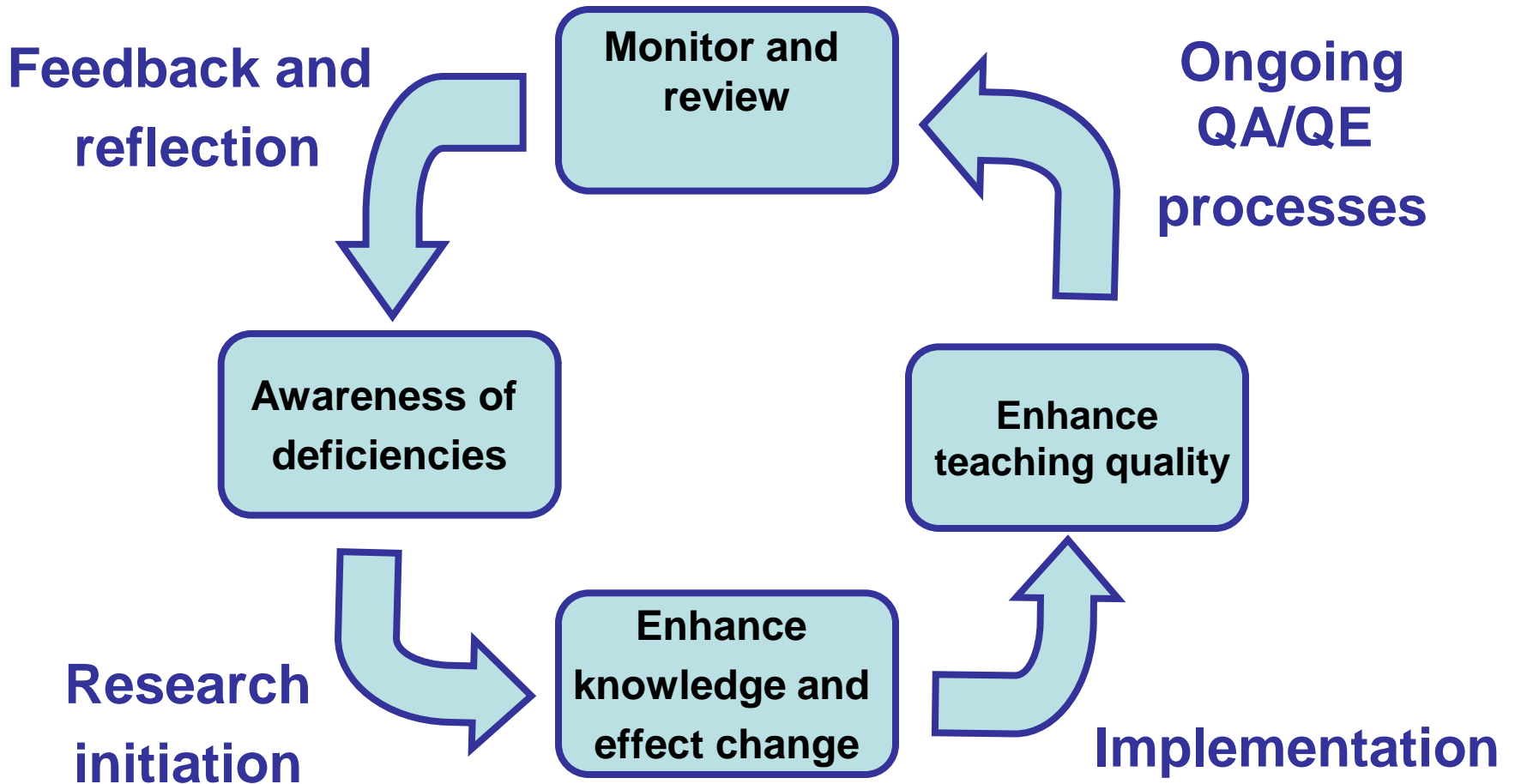
# Learning networks

Which tutor gave the most important advice at each of four stages of project development?

- Key advice from range of tutors
- No obvious gender effect
- Only one 'complete' tutor-student fidelity



# Vicious circle?

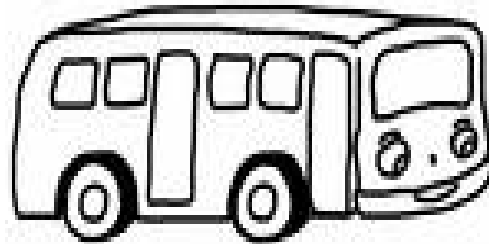




<p>↓ Subject research (<i>nb</i> Ped-R undervalued)</p>	<p>↑ Teaching quality</p>
<p>↑ Time for administration &amp; management</p>	<p>↑ Career progression</p>
<p>↑ Pressure to deliver good L&amp;T</p>	<p>↑ Collegial network &amp; awareness of L&amp;T</p>
<p>↑ Not trained in Ped-R</p>	<p>↑ Publications &amp; funding</p>
<p>↑ Dissatisfaction with lack of perfection</p>	<p>↑ Enjoyment &amp; Drive</p>

# References

- Langan, A.M, D.M. Shuker, W.R. Cullen, D. Penney, R.F. Preziosi and C.P. Wheeler (2008). Relationships between student characteristics and self, peer and tutor evaluations of oral presentations. *Assessment and Evaluation in Higher Education*.
- Langan, A.M., W.R. Cullen and D.M. Shuker (2007) Student networks and learning styles: a case study exploring investigative projects. *Proceedings of the Science in Learning and Teaching Conference, Keele University*.
- Langan, A.M, C.P. Wheeler, E.M. Shaw, B.J. Haines, W.R. Cullen, J. Boyle, D. Penney, J. Oldekop, C. Ashcroft, L. Lockey and R.F. Preziosi (2005). Peer assessment of student presentations: effects of gender, cross-University affiliation and participation in the development of assessment criteria. *Assessment and Evaluation in Higher Education* 30, 19-32.



[m.langan@mmu.ac.uk](mailto:m.langan@mmu.ac.uk)

[r.cullen@mmu.ac.uk](mailto:r.cullen@mmu.ac.uk)