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Outcomes for healthcare undergraduates
using wikis and MS PowerPoint in computer
supported collaborative assessment: the
influence of student approaches to learning

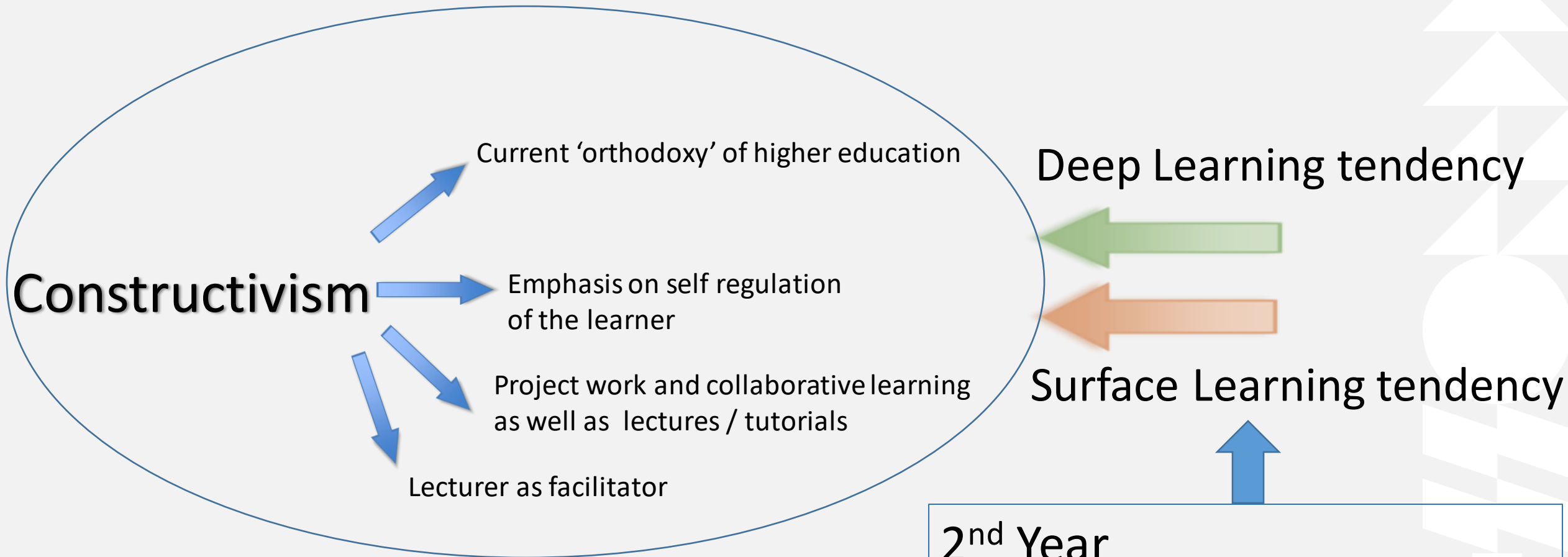
Iain MacDonald, Ph.D.

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MSc Magnetic Resonance Imaging,
University of Cumbria
Carlisle, UK.

University of
Cumbria 



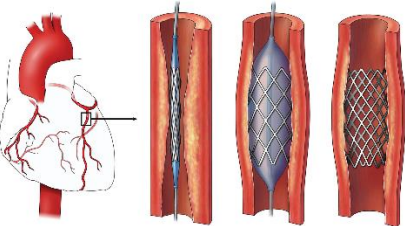
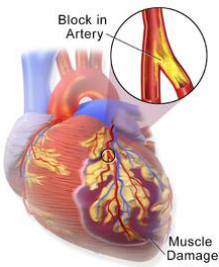
Constructivism in education / Student Approach to Learning (SAL)



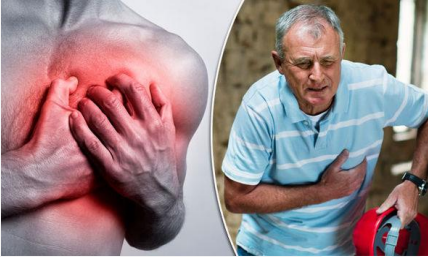
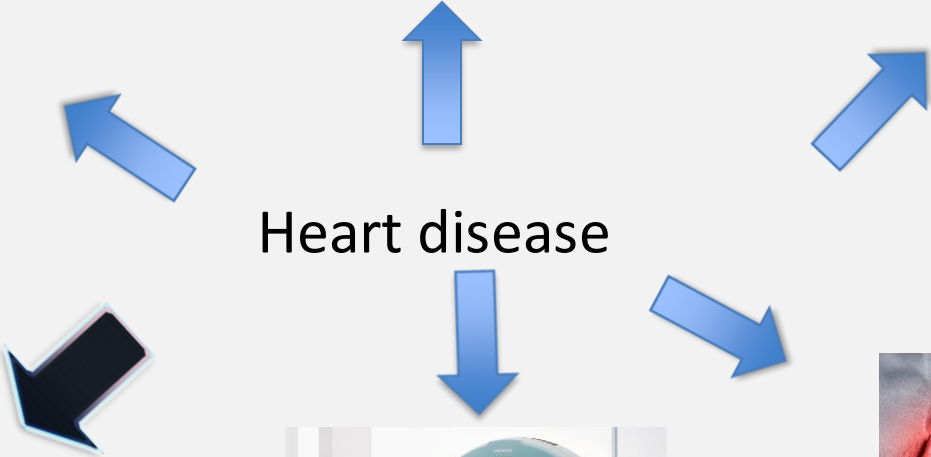
Knowles, 1975; Marton and Säljö, 1976; Biggs, 2003; Thomas, 2008. Johnston, 2010. Entwistle, 2009.

**2nd Year
BSc Diagnostic Radiography
students**

The established formative assessment – MS PowerPoint group presentation



Heart disease



The wiki - Computer Supported Collaborative Learning (CSCL) – the novel approach



A screenshot of a University of Cumbria wiki page titled "Emphysema". The page has a navigation menu at the top with items like "My Institution", "Courses", "APT", "Skills@cumbria", "Jobs & Careers", "TEL Me", "Staff", "Community", "Reassessment", and "UCSU". The main content area lists nine sections: 1. Anatomy and Physiology, 2. Aetiology of Pathology, 3. Disease Presentation, 4. Non Imaging Tests, 5. Treatment, 6. Follow up, 7. Disease / Patient Management Pathways, 8. Medical Guidelines, and 9. References. Below the list, it says "Edited by: [redacted] 4 months ago" and "Tags: None". At the bottom, there is a section for "Author Discussion (12)". A partial image of a CT scan is visible at the bottom left of the screenshot.



Dumfries

A screenshot of a University of Cumbria wiki page titled "Diagnostic Imaging". The page contains text about CT scanning of the chest, stating that high-resolution CT (HRCT) has greater sensitivity and specificity than plain chest radiography. Below the text is a CT scan image showing emphysema. The page has "Edit" and "Delete" buttons.



Sunderland



Carlisle

Wiki - A 'web communication and collaboration tool that can be used to engage students with others in a collaborative environment' (Parker and Chao, 2006)

Methods - Questionnaire

- Action research approach – 2 cycles
- Online anonymous questionnaire – learning approach (based on Entwistle's ASSIST – Approaches and study skills inventory for students, 1998)
 - Preconceptions of wiki and MS PowerPoint
 - Actual experience of carrying out wiki and MS PowerPoint
 - General views on collaborative learning
 - 'Open' text to encourage their own experience to emerge
- Selected upper quartile of surface learning tendency students (cycle 1 $n= 8$; cycle 2 $n=5$) and deep learning tendency students (cycle 1 $n=8$; cycle 2 $n=5$)

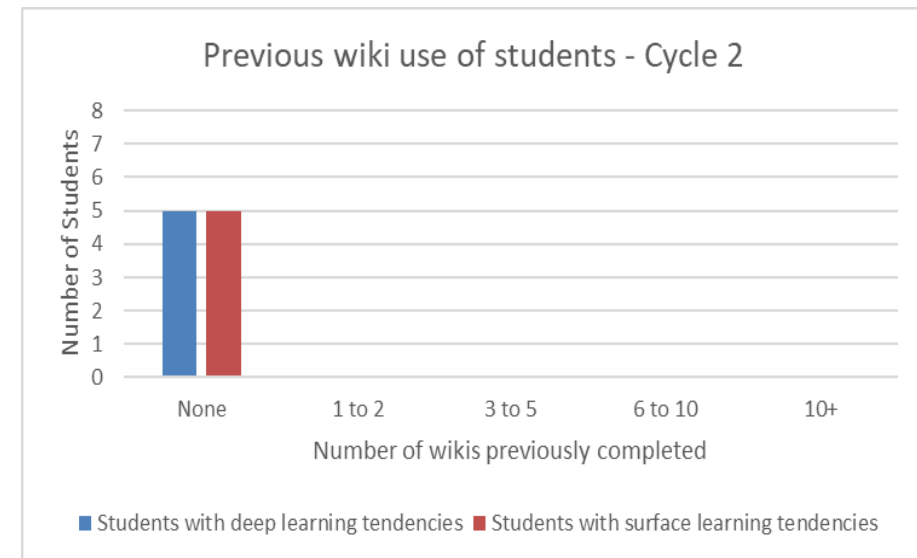
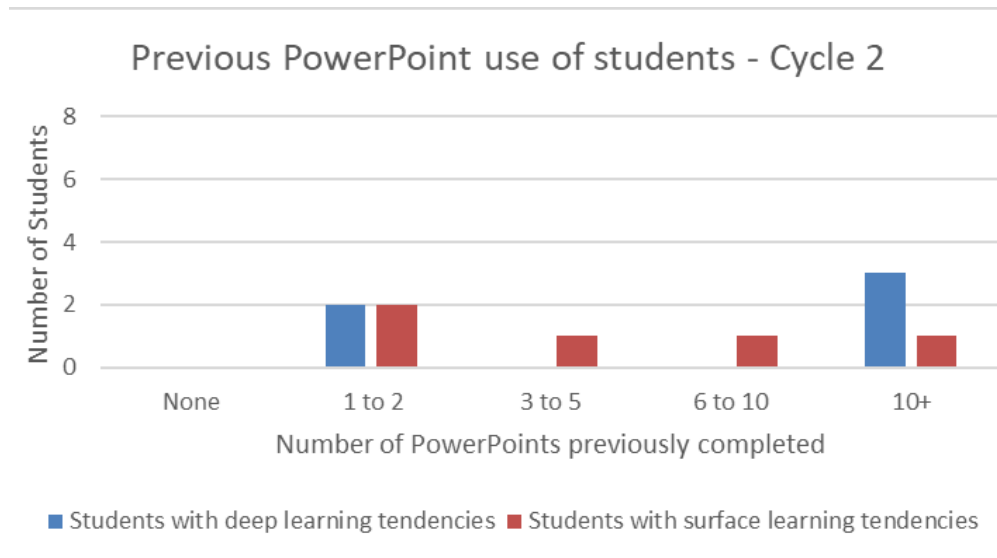
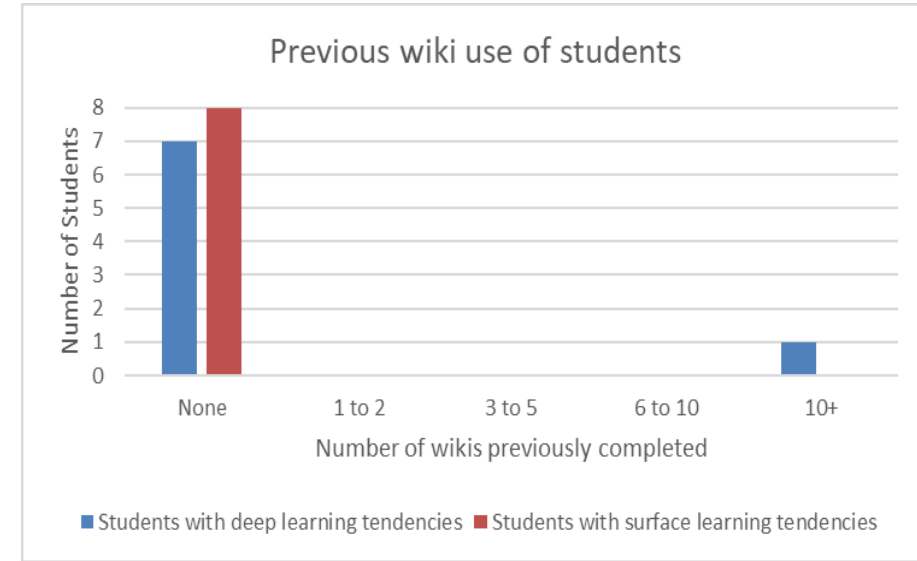
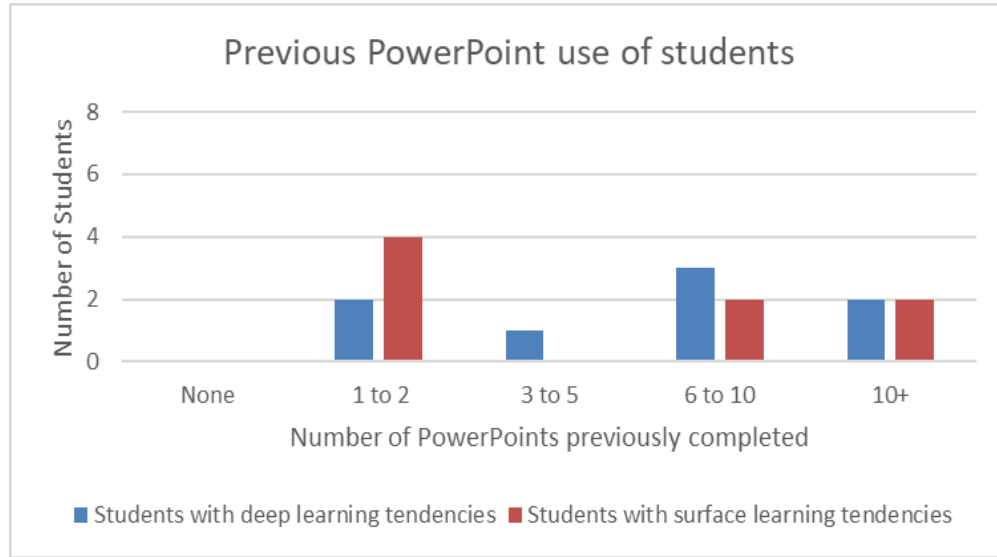
Methods – Analysis

- Text analysis – coded responses
- Cycle 1 – 3193 words / 798 quotations from the 16 participants.
- Atlas.ti software used – excellent

Themes:

1. Confidence levels (7 codes)
2. Division of the workload (8 codes)
3. Wiki production process (9 codes)
4. Team working/group dynamics (20 codes)
5. Learning specifically in groups (13 codes)
6. Formative assessment affordances (4 codes)
7. Specific affordances of wikis (18 codes)
8. Specific affordances of presentations (16 codes)

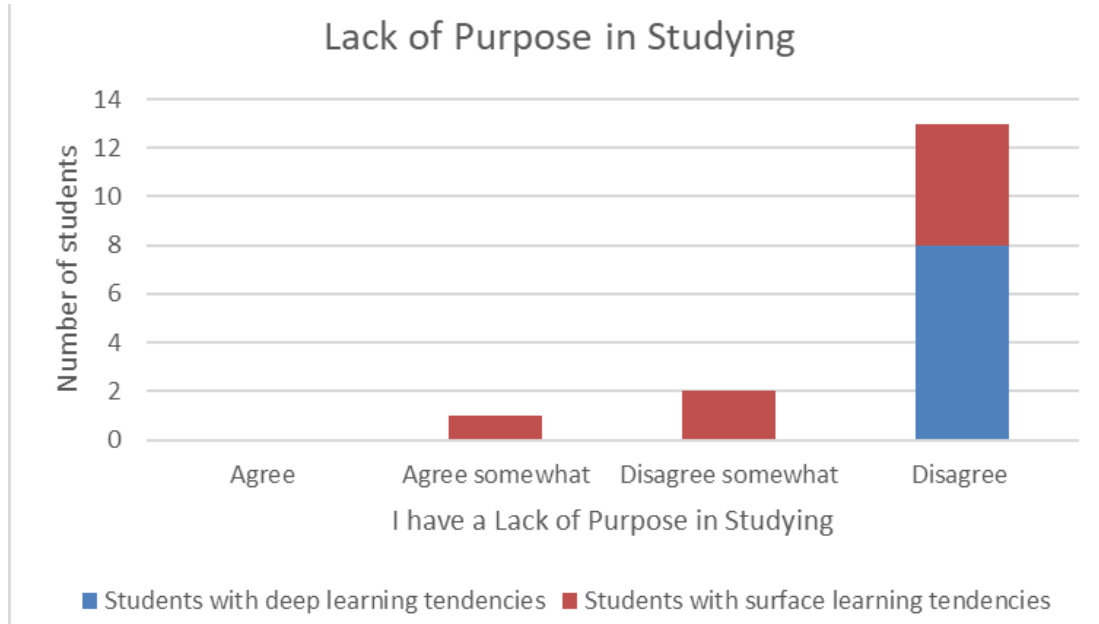
Results



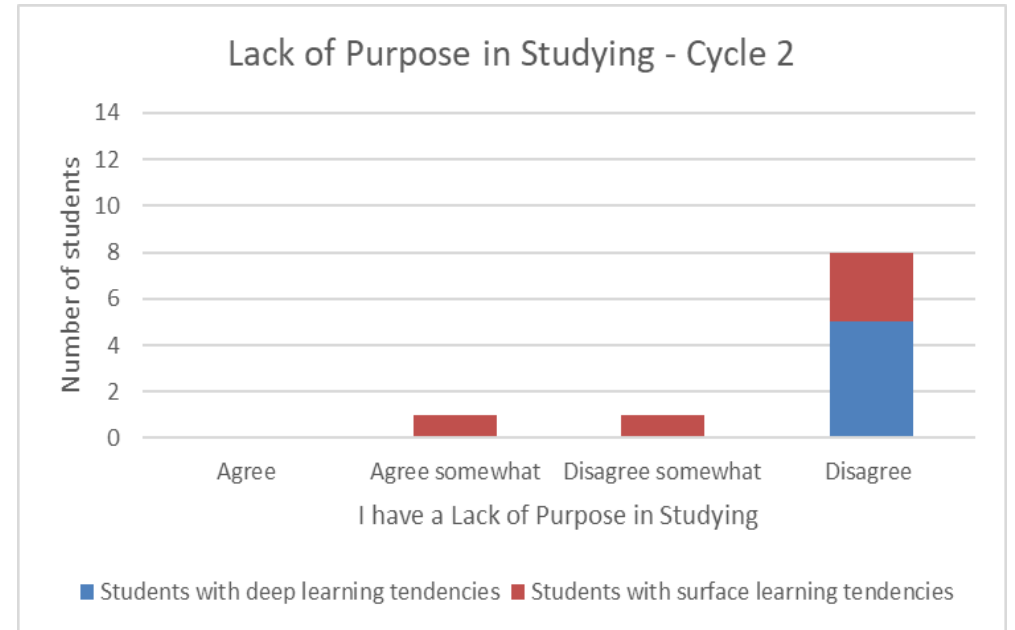
MS PowerPoint

Wiki

Results - 'I shouldn't have done this course'



Cycle 1



Cycle 2

Cycle 1 Results

- **MS PowerPoint** - gave much greater perceived greater level of socially constructed knowledge
- **MS PowerPoint** seen as challenging – due to public performance – but worthwhile skills learned
- **Wiki** - a significant challenge to students – unstructured, not used before
- **Wiki software** - Surface learning tendency students found challenging
- **Wiki** - Surface learning tendency found them less valuable than the MS PowerPoint presentations – ‘poor use of time’

Main changes for Cycle 2

Wiki:

- Structured template – the same areas considered as the final summative assessment
- Choice of pathology
- Feedback more structured – based on published criteria
- Longer and more in-depth practical session

MS PowerPoint:

- Dedicated session on presentation skills

More generally:

- Emphasis on value of collaborative learning
- Encouragement of communication options e.g. WhatsApp / Messenger (experience from cycle 1)



Cycle 2 Key Results

- Wiki more equivalent to MS PowerPoint in terms of socially constructed learning (deep and surface learning tendency students)
- *No reports that wiki was poor use of time (more than half surface learning tendency students reported this in cycle 1)*
- Fewer reports of software problems by surface learning tendency students ($n=3$ cycle 1; $n=1$ cycle 2)
- All surface learning tendency students satisfied with amount of collaborative activities ($n=5/5$) in the course.

Cycle 2 Results - continued

- **Consistent finding:** Only deep learning tendency students discussed the affordance of online learning (cycle 1 n=4/8; cycle 2 n=2/5)
- **Consistent finding:** No discussion about producing MS PowerPoints
- **Consistent finding:** Anxiety - Surface learning tendency students reported greater levels of anxiety with MS PowerPoint presentations
- **Consistent findings:**
 - Written Feedback (wiki) welcomed by those with deep learning tendency particularly
 - Verbal feedback (presentations) compromised by stressful environment

Discussion

- Student approach to learning can influence design of computer supported collaborative learning
- Surface learner attitude toward wiki was a concern – but appeared to be able to be *modified* by use of extended practical online sessions
- Students appeared to welcome group work activities
- Relatively small sample size – but could be scaled up
- Should we more frequently use student approach to learning (SAL) to configure groups?



Summary

- The wiki nicely supplements other forms of formative assessment. Increases variety of assessment & improves inclusiveness of assessment
- An extended practice run in a computer lab with the group is highly recommended – particularly for surface learners
- Should be more understanding of the optimal methods of introducing novel technology enhanced assessment for all learning approaches – developing research in this area

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