

# Contributing Student Pedagogy

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## Introduction

- Lines of engagement
- The contributing student
- Challenging traditional practices
- Three sets of CSP case studies

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# Introduction

# Lines of engagement

## Introduction

### ● **Lines of engagement**

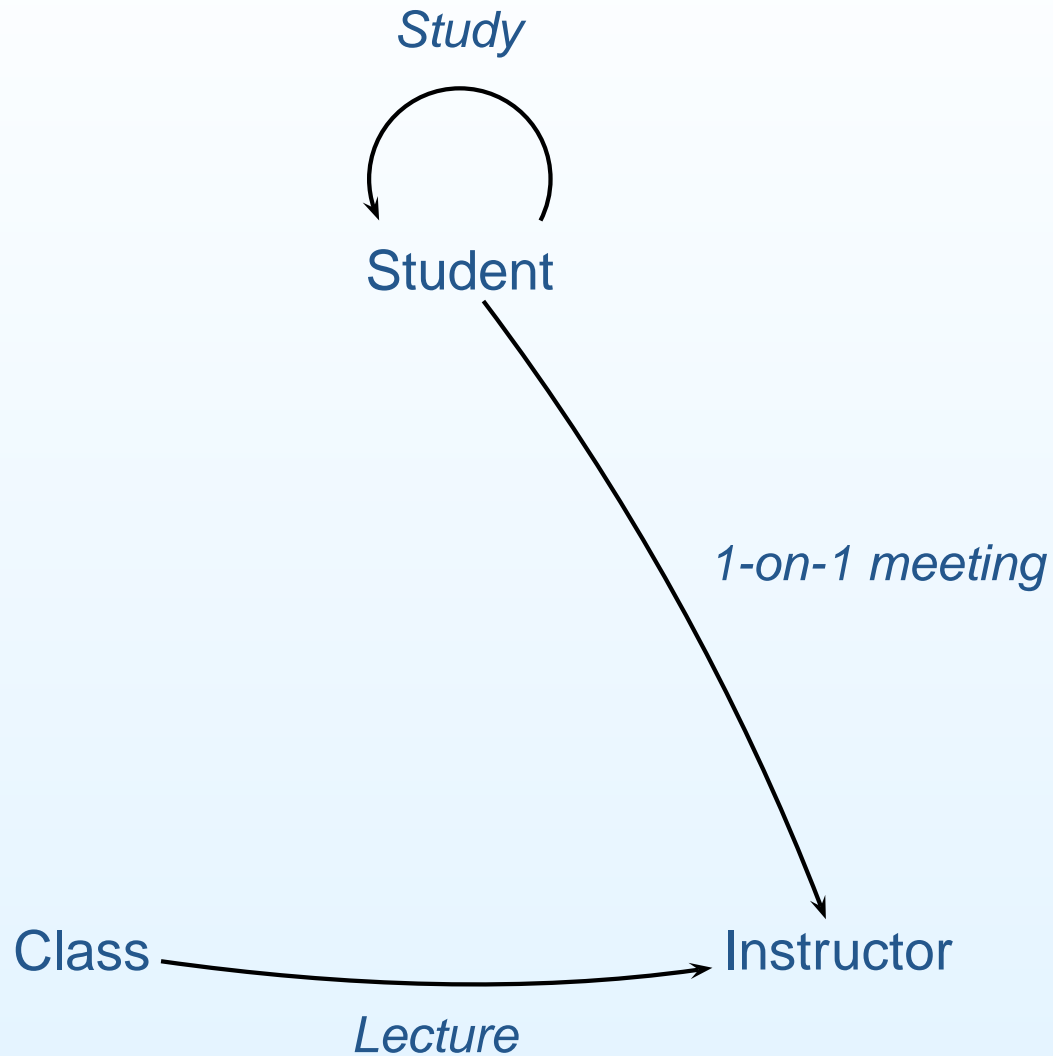
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# Lines of engagement

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### ● **Lines of engagement**

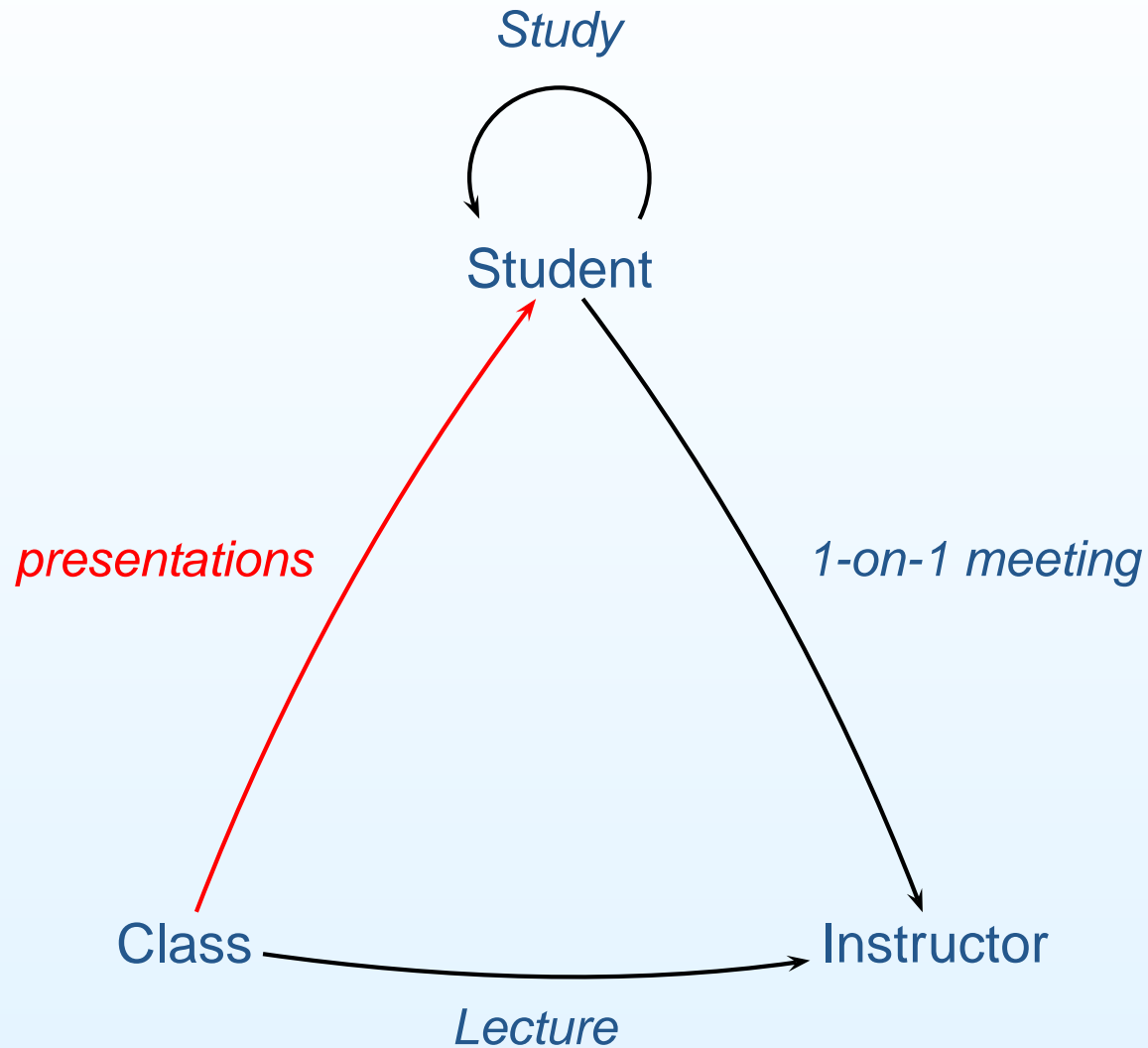
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# Lines of engagement

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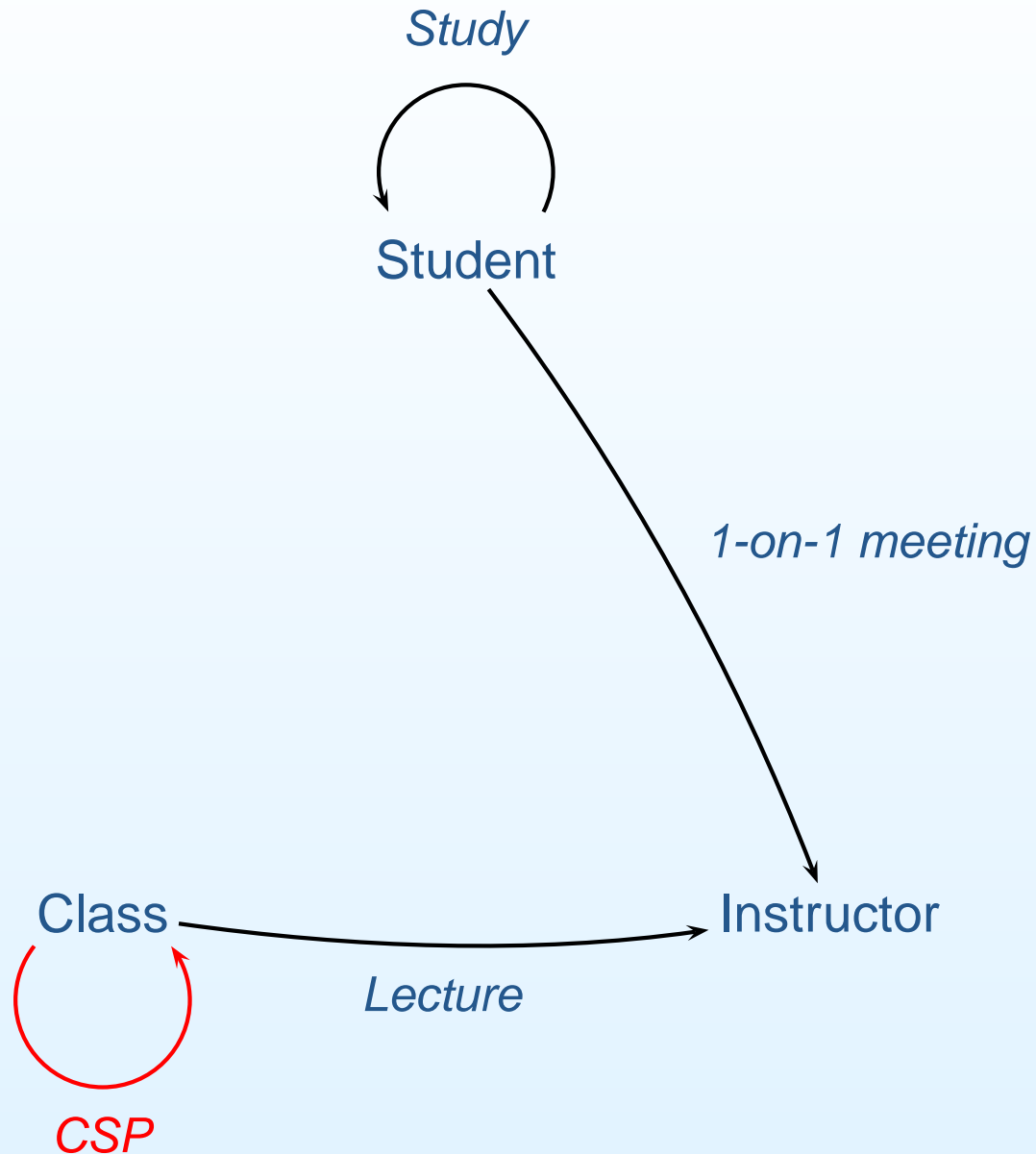
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# The contributing student

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- Create and share learning resources; e.g. edited set of lecture notes, a worked example, an annotated reading list, self-assessment quiz, an oral presentation or screencast, a mind map, etc.
- Sharing also extends to critiquing, correcting, and improving contributions from other students
- Authentic: resources become course study material. Students use and value the work of their peers
- At least some topics must be learned in depth
- **Absence of authority** encourages critical examination of information
- Mixes *acquisition* and *participation* learning elements

# Challenging traditional practices

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- Work and feedback is no longer private between student and instructor, but is typically visible to the whole class.
- Students are no longer assigned identical coursework. A range of different activities are undertaken, with students taking an active part in choosing what they will do.
- Shift from judging coursework in isolation. Value is in the contribution to the learning of the class; e.g. work that arrives late may be awarded a low grade on that basis alone.
- The instructor's primary role is displaced, becomes coordinator and "just another" (albeit valuable) resource available to students.
- Students are exposed to unreliable knowledge sources (their peers, the Internet).
- Attitudes towards plagiarism also need to be reconsidered. Ownership of collective material becomes blurred.

# Three sets of CSP case studies

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- Smaller classes (35–70 students): collective textbook authoring
- Large classes: peer assessment (Aropä project)
- Large classes: MCQ bank authoring (PeerWise)



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- Collective ownership and purpose
- Hypertext-textbook
- Observations and comments

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# Small Class CSP

# CSP in a small class

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● Hypertext-textbook

● Observations and comments

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- 2nd year Software Engineering course (DS&A)
- Prescribed degree structure: students study together for three years, so natural “cohort” mentality
- High entry requirement: capable students, but also comfortable with traditional learning style
- Four classes since 2005. Co-taught; final 6 weeks ( $\times 2$ ), 12 weeks (sole instructor), first 6 weeks (once)
- First 6 weeks class was least successful; 12 weeks most

# Collective ownership and purpose

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- Terminology: rename “lectures” as “class meetings”
- Meetings have a chairperson (lecturer), an agenda, and minutes
- Open agenda, students expected to add items
- Minute taking rotated amongst class
- Student-editable wiki for all course material
- Overall goal is to co-author an on-line multi-media hypertext textbook (HTTB)

# Hypertext-textbook

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- Chapter titles provided by instructor
- Resources: notes, annotated reading list, visualisation or software animation, self-assessment quiz
- Students work individually or in small self-selected group on topic × resource
- Lecturer meets with groups to provide guidance; guidance reduced as course progresses
- Wiki used to coordinate topics and ensure coverage
- Work-in-progress recorded on wiki
- As material reached final status, moved into shared area
- Wiki proved effective for smooth transition from individual to group ownership

# Observations and comments

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- Process is unsettling for many students, takes time to adjust
- Relies on class leaders emerging, class forming into a “community of practice” with degrees of membership
- Additional exercises needed to kick-start use of wiki, sense of ownership (e.g. reflective lab reports)
- Start from scratch each year: sharing HTTB from previous years can de-motivate students
- Evidence of long-term effects: 4th year students spontaneously using wiki for projects, “shadow classes” created on wiki, peer review

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- Traditional assignment
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- What did you like most?
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# Peer Assessment

# Traditional assignment

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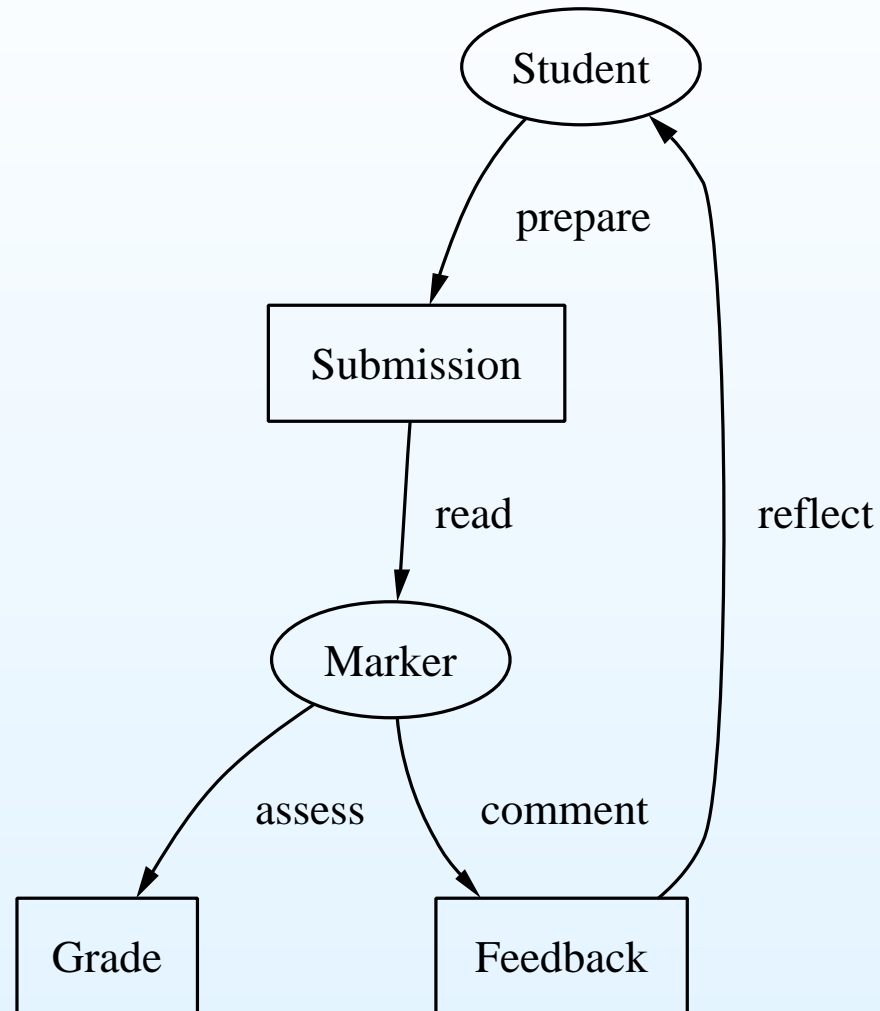
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● **Traditional assignment**

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# Where does the learning occur?

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## MCQ authoring

## Conclusions

- Learning happens in the preparation of assignment submissions, and to a much lesser extent in reflection on feedback:
  - long marking time dilutes value of any feedback
  - markers have little incentive to produce quality feedback; monitoring marker performance is expensive, complaints are diluted by marking delays. . .
  - time-consuming, repetitive marking workload leads to drudgery
- this type of assessment has a *summative orientation*, but suffers from problems of plagiarism and low quality marking





# Learning now occurs everywhere

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## MCQ authoring

## Conclusions

- *every link* involves some kind of learning
- time delay and drudgery are eliminated
- includes performance incentives (review ratings)
- primarily formative, but can also be summative

The *Dispute and Rating* steps arise from a change in power relations: questioning the reviewer is a legitimate activity. They are *not* a statement about the quality of the process.

# What changes?

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## MCQ authoring

## Conclusions

- Increased involvement by student (time on task, time engaged with task)
- Greater variety of tasks undertaken by student
- Reduced delay between authorship and feedback
- Increased volume and diversity of feedback
- More opportunities for reflection
- Raised awareness of own relative performance
- Change in power relations between author and reviewer
- Greater social involvement
- Assessment becomes a part of the learning process
- Rich trace of student performance
- Department marking budget available for redistributing to remedial tutoring, etc.

# Aropä project

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## MCQ authoring

## Conclusions

- Aropä project running since 2002, aimed at making peer assessment a routine activity throughout the curriculum
- Web-based support tool for managing submission, allocation of reviews, review entry, distributing feedback, monitoring progress, and aggregating marks.
- Wide range of courses: Academic Practice, Business, Civil Engineering, Commercial Law, Computer Science, English, Electrical Engineering, Environmental Science, Information Management, Medical Science, Pharmacology, and Software Engineering.
- Wide range of year levels: introductory through to graduate and academics.
- Wide range of outputs: reports, essays, presentations, digital photographs, posters, legal cases.
- Around 1000 students per semester (gradually rising).

# Main screen

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## Allocations

### "Barney's Bikes Ltd." (Reviews due by 5pm May 21, 2008)

Allocation 1	<a href="#">View submission</a>	<a href="#">Re-mark</a>	<a href="#">View last mark</a>
Allocation 2	<a href="#">View submission</a>	<a href="#">mark</a>	
Allocation 3	<a href="#">View submission</a>		
Allocation 4	<a href="#">View submission</a>		

## Reviewer feedback

- ◆ Feedback for "Batou Ltd v. Motoko Ltd"
- ◆ Feedback for "Batou Ltd v Gundam Corporation"
- ◆ Feedback for "Barney's Bikes Ltd."

# Sample grading rubrics

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## Grading rubric for CIVIL 408A Annotated Bibliographies Document

**Title of research topic + An introductory paragraph to the 6 selected articles taken from at least 3 different kinds of source.**

- The research title and introductory paragraph comply with the criteria and are clearly stated.
- The research title and introductory paragraph comply with the criteria and are stated.
- The research title and introductory paragraph comply with the criteria and are poorly stated.
- The research title and introductory paragraph do not comply with the criteria. They have not been stated.

**Summary of the aims, main points and conclusion for each article + Evaluation of the relevance/usefulness of each article**

- The aims, main points and conclusion of have been clearly summarised; At least 6 reference articles have been critically evaluated based on the usefulness or relevance to the research topic.
- The aims, main points and conclusion of have been summarised; At least 4 to 5 reference articles have been critically evaluated based on the usefulness or relevance to the research topic.

# Sample grading rubrics

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### Draft assessment exercise

Write at least one sentence in response to each of the five questions below (making 300 words altogether) with regard to the draft essay.

1. What is the issue that the draft is addressing. Is it interesting? Do you care about it?

[Write your response to the issue in the text box below](#) [hidden; click here to show]

2. Say what you think the argument of the draft is. If the argument is not clear, suggest what a possible argument might be.

[State the argument in the text box below](#) [hidden; click here to show]

3. What kinds of reasons, which includes kinds of evidence, does the writer offer to support the argument? You might like to point out the obvious warrant for the argument, if there is one.

[Give the reasons in the text box below](#) [hidden; click here to show]

4. Suggest a counterargument to the argument of the draft. This comment may, alternatively, point out unexamined assumptions and/or missing or unacknowledged evidence.

[Give the counterargument in the text box below](#) [hidden; click here to show]

5. Identify a characteristic sentence of the writer. Say what you think is good about this sentence, or how this sentence can be improved (your chosen sentence may simply identify a repeated writing fault).

[Identify and comment on the sentence in the text box below](#) [hidden; click here to show]

# Student feedback

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## MCQ authoring

## Conclusions

- Some anxiety in first-time participants, but
- High levels of participation (median > 90%)
- Feedback received is not highly valued, but
- Students see the benefit in writing reviews
- Also value seeing other student work
- Benefits from reviewing both exemplary and weak work



# What did you like most?

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## MCQ authoring

## Conclusions

- “I liked the way that reading other students work sometimes helped me realise the mistakes in my own work.”
- “It was interesting and beneficial to see what others had written in their answers. Not only did it expand my knowledge of the subject matter but it gave me a better understanding of what makes a good answer”
- “I really enjoyed being able to see and comment on other students’ work. It has given me a new perspective on the way I read my own work. I have a tendency to throw all my thoughts into an assignment and expect the marker to understand what I mean by wading through it. I think I am already trying to communicate more effectively by being more concise.”

# Dislikes

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## MCQ authoring

## Conclusions

- “Students do not mark properly, some of them don’t even read assignments properly I gathered that from comments I received.”
- “Some people can have different point of views, some people might even have unique view (by thinking into details. . . while others are just ignoring some facts) and hence produce different marking results.”
- “This process can be fairly time consuming and if, say, it was to be appended to every assignment, it would add significantly to workload, unless there was a corresponding reduction in asst scope.”

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# MCQ authoring

# Student generated MCQ bank

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● **Student generated  
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- Student write MCQ stem and distractors, plus explanation
- Can answer MCQs posted by other students
- Discussion forum with each question
- Rate for quality, difficulty
- Leaderboards: highest rated, most contributed, most answered

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**PeerWise**

## CompSci 101 Questions

You are logged in as **pden001**. [Logout](#)

Main menu

---

### Your questions

[view](#)

- You are currently contributing **9** questions
- You have deleted **2** of your questions

---

### Answered questions

[view](#)

- You have answered **103** current questions
- **10** questions you have answered have been deleted by the author

---

### Unanswered questions

[view](#)

- There are currently **937** unanswered questions you may answer

---

 [View statistics](#)  [Provide feedback](#)

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**PeerWise**

## CompSci 101 Questions

You are logged in as **pden001**. [Logout](#)

[Main menu](#) > Your questions

### Your questions

You have contributed the following questions :

*Questions ordered by date*

QUESTION	SUITABILITY	DIFFICULTY	CREATED	RESPONSES	RATING
<a href="#">1 View</a>	OK	medium	11:58am, 24 May	9	2.8750
<a href="#">2 View</a>	!	medium	12:36pm, 22 May	14	3.5455
<a href="#">3 View</a>	OK	medium	9:20pm, 20 May	16	2.8333
<a href="#">4 View</a>	OK	medium	5:16pm, 15 May	12	2.6667
<a href="#">5 View</a>	OK	medium	12:55pm, 10 May	47	3.7857
<a href="#">6 View</a>	OK	medium	4:00pm, 07 May	132	3.9533
<a href="#">7 View</a>	OK	medium	3:56pm, 07 May	86	3.4225
<a href="#">8 View</a>	OK	medium	3:38pm, 07 May	127	3.9200
<a href="#">9 View</a>	OK	medium	3:32pm, 07 May	124	3.0990

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## CompSci 101 Questions

You are logged in as **pden001**. [Logout](#)

[Main menu](#) > Unanswered questions

### Unanswered questions

You may answer any of the following questions :

*Questions ordered by responses*

QUESTION	SUITABILITY	DIFFICULTY	CREATED	RESPONSES	RATING
<a href="#">1 View</a>	<b>OK</b>	medium	4:21pm, 01 Jun	103	4.0548
<a href="#">2 View</a>	<b>OK</b>	medium	1:08pm, 08 Jun	93	3.6324
<a href="#">3 View</a>	<b>OK</b>	easy/medium	4:26pm, 03 Jun	92	2.7377
<a href="#">4 View</a>	<b>OK</b>	medium	4:21pm, 03 Jun	86	2.8364
<a href="#">5 View</a>	<b>OK</b>	medium	6:40pm, 02 Jun	83	3.1091
<a href="#">6 View</a>	<b>OK</b>	medium	12:39pm, 07 Jun	83	3.2593
<a href="#">7 View</a>	<b>OK</b>	medium	3:05pm, 09 Jun	80	2.8868
<a href="#">8 View</a>	<b>OK</b>	medium	8:40pm, 01 Jun	76	2.3729
<a href="#">9 View</a>	<b>OK</b>	medium	11:18pm, 06 Jun	76	2.2321
<a href="#">10 View</a>	<b>OK</b>	medium	11:37pm, 01 Jun	73	3.2963

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**PeerWise**

## CompSci 101 Questions

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### Answered questions

You have answered the following questions :

*Questions ordered by responses*

QUESTION	RESULT	DIFFICULTY	ANSWERED	RESPONSES	RATING
<a href="#">91 View</a>	✓	medium/hard	10:50am, 15 Jun	11	3.8571
<a href="#">92 View</a>	✓✘	medium	4:56pm, 16 May	10	2.4286
<a href="#">93 View</a>	✓	medium	3:41pm, 17 May	10	2.7778
<a href="#">94 View</a>	✓	medium	5:15pm, 25 May	9	3.3750
<a href="#">95 View</a>	✓	medium/hard	8:13pm, 29 May	8	3.8000
<a href="#">96 View</a>	✓	easy/medium	1:03pm, 03 Jul	8	3.7143
<a href="#">97 View</a>	✘	easy/medium	3:12pm, 28 Jun	8	3.5000
<a href="#">98 View</a>	✓	medium	4:20pm, 05 Jul	8	3.5714
<a href="#">99 View</a>	✓	medium	8:11pm, 29 May	6	2.6000
<a href="#">100 View</a>	✓	easy/medium	7:19pm, 26 May	5	3.0000

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## CompSci 101 Questions

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### Course statistics

Active users  
**434**

Total questions  
**1049**

Total responses  
**15587**

### Top rated questions

*Top 5 rated questions in the system  
(rated by at least 5 users)*

RANK	QUESTION RATING
1	<b>4.4091</b>
2	<b>4.2857</b>
3	<b>4.1364</b>
4	<b>4.1364</b>
5	<b>4.1053</b>

*Highest rating of any of your questions  
(rated by at least 5 users)*

**3.9533**

# Results

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- Students rate questions reliably, and use ratings to decide which questions to answer
- Incorrect questions are picked up and corrected by the class
- Voluntary use for study revision
- Participation is strongly correlated with improved exam performance
- Biggest gains in top and bottom quartiles (suggests activity is working at two levels)

# Voluntary use

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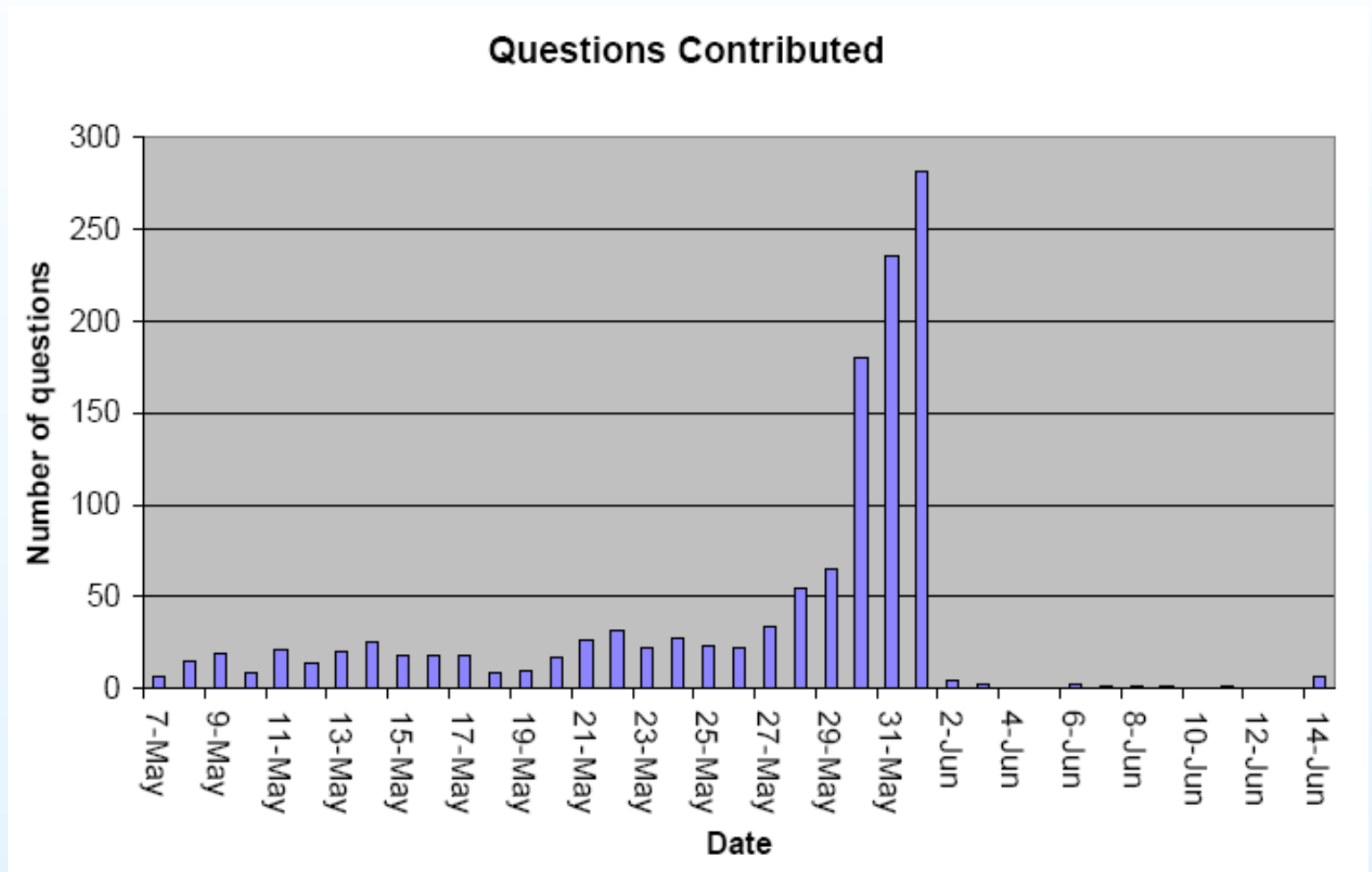
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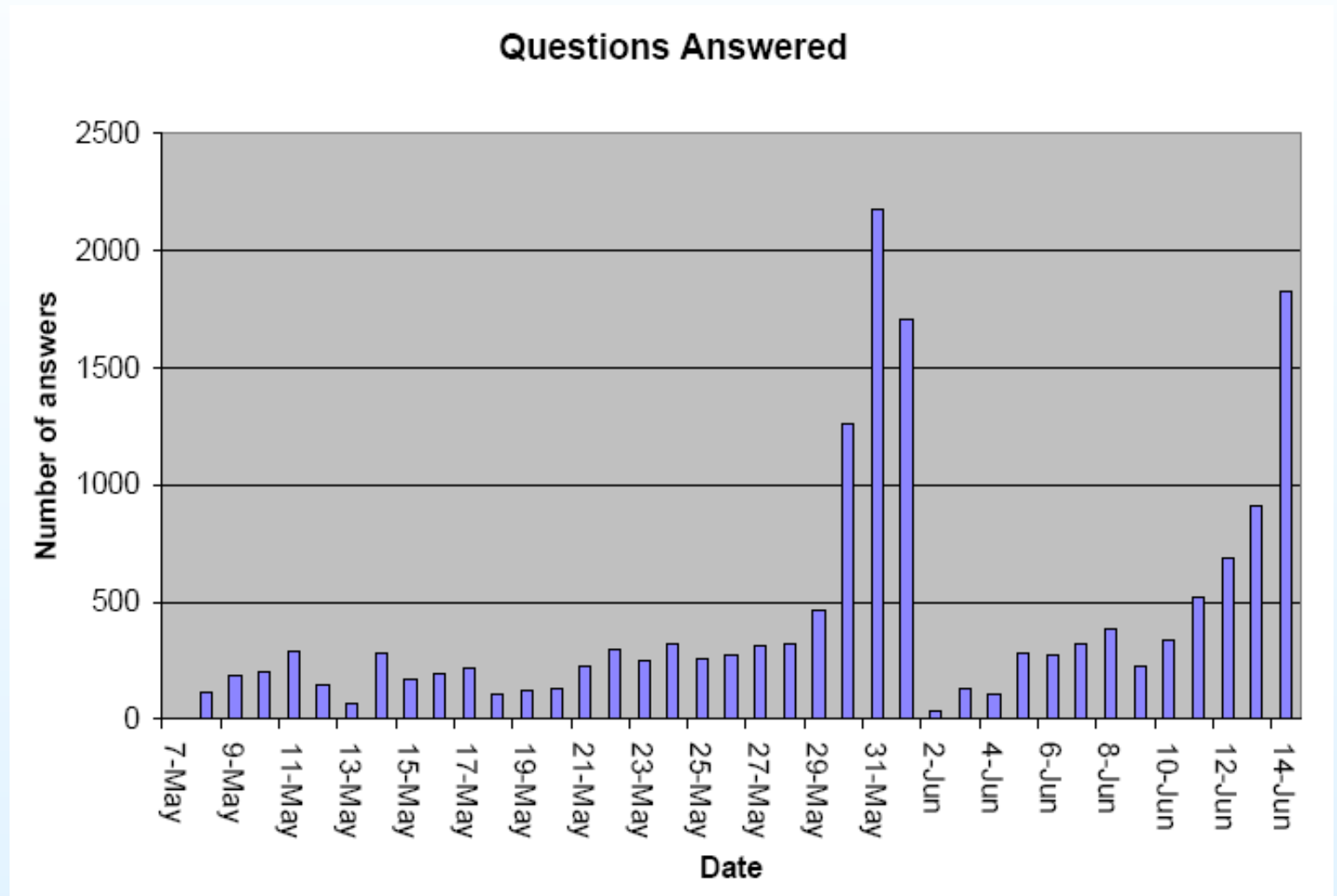
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# PeerWise use and exam performance

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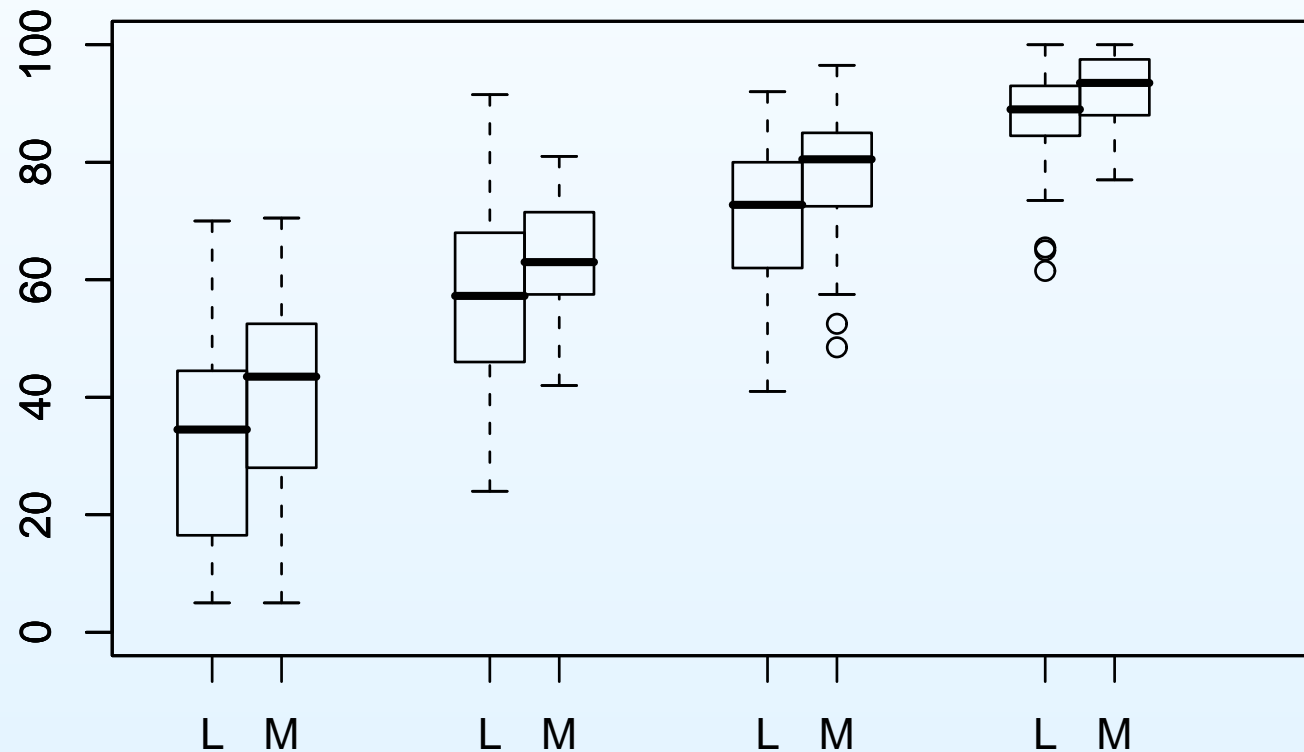
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## Exam performance by quartile, LPA v. MPA



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● Conclusions

- CSP approaches align with broadened educational objectives, not just exam performance; blends both participation and acquisition outcomes.
- Leverages the collective intellectual capacity of the class.
- Peer learning prevents students blindly accepting the word of an authority, thus promoting critical reflection: “teachers considered harmful”
- The approach challenges traditional notions of fairness and individual ownership, favouring flexibility, choice, and the collective co-creation of knowledge.
- Technology is a key enabler: wikis, on-line peer assessment, and collective MCQ authoring all require web technology.
- Class size and year level are not barriers.
- Time demands on instructors are neutral.