

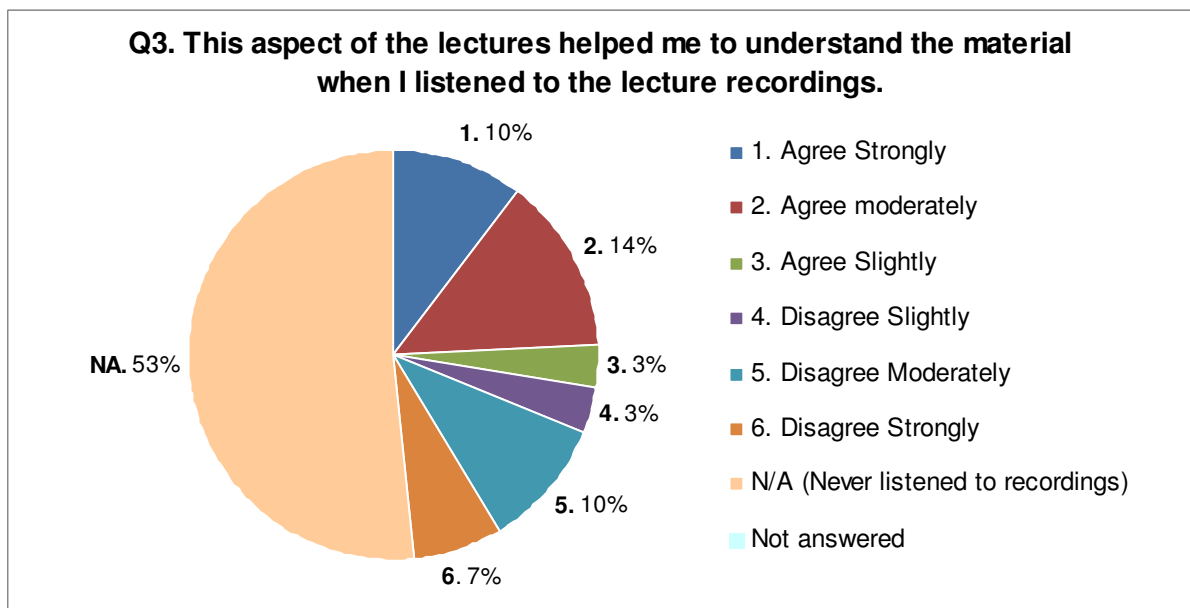
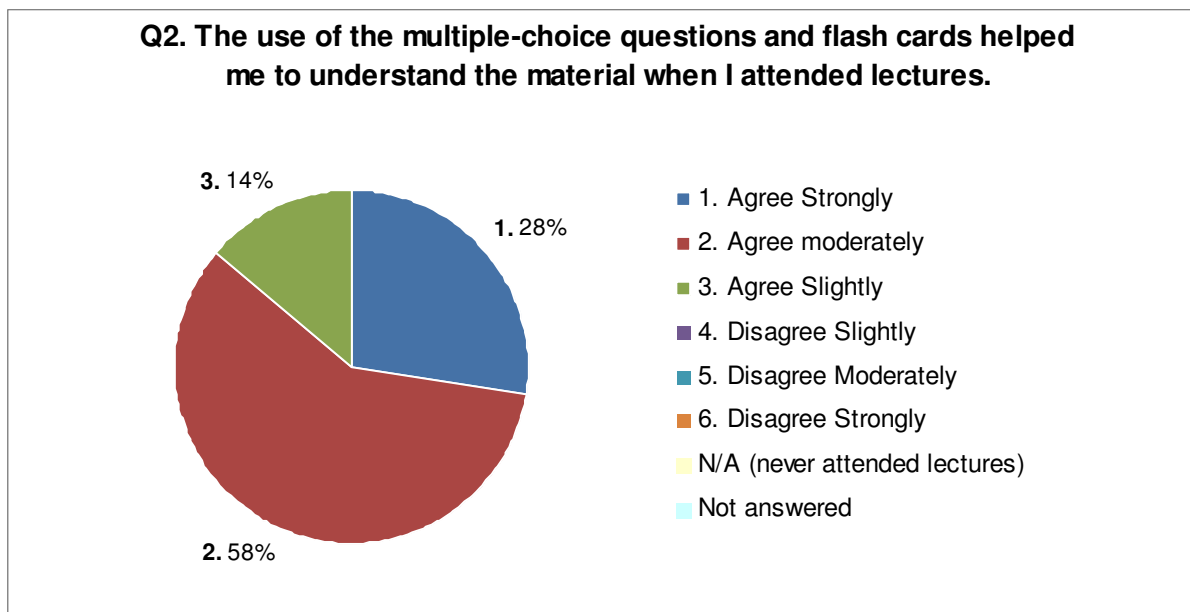
## 161-115 Logic, University of Melbourne, Semester 1, 2007.

### Description

Peer Instruction was used in *Logic*, a first year formal logic course at the University of Melbourne. 2-6 questions were used in each lecture. 29 students completed the questionnaire, representing 50% of the total enrolment of 58.

### Results

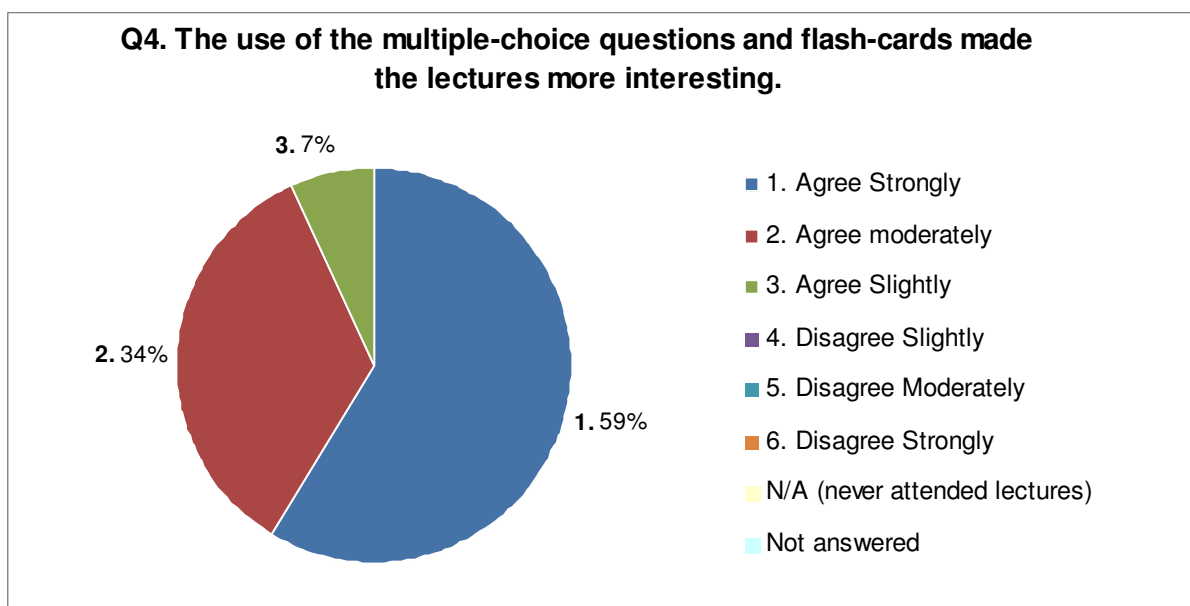
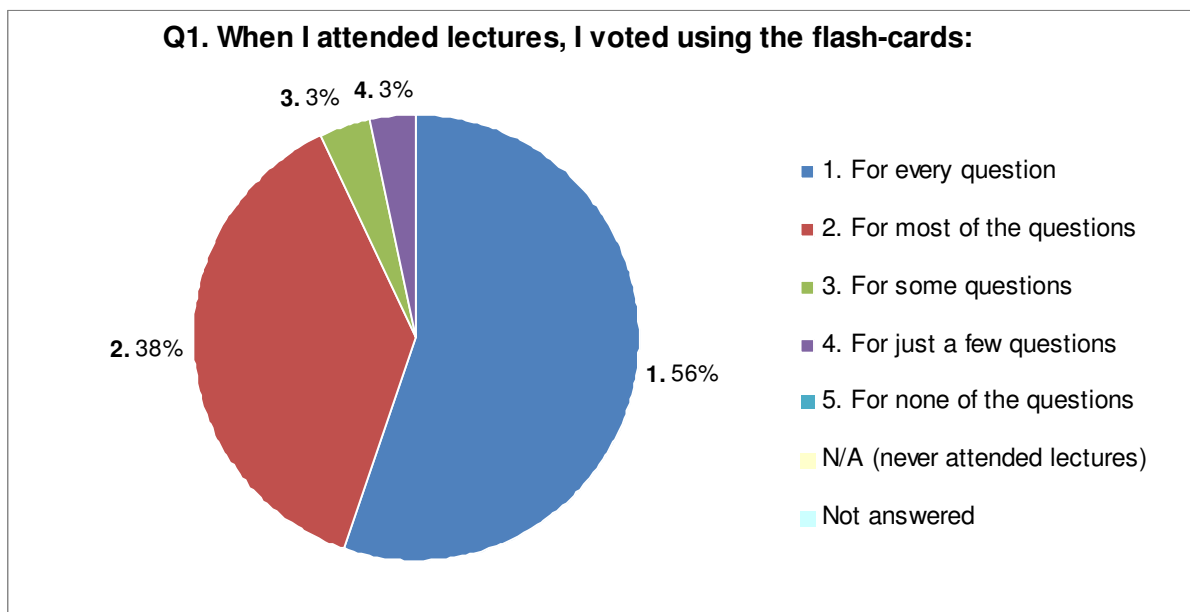
#### Effect on understanding of lecture material

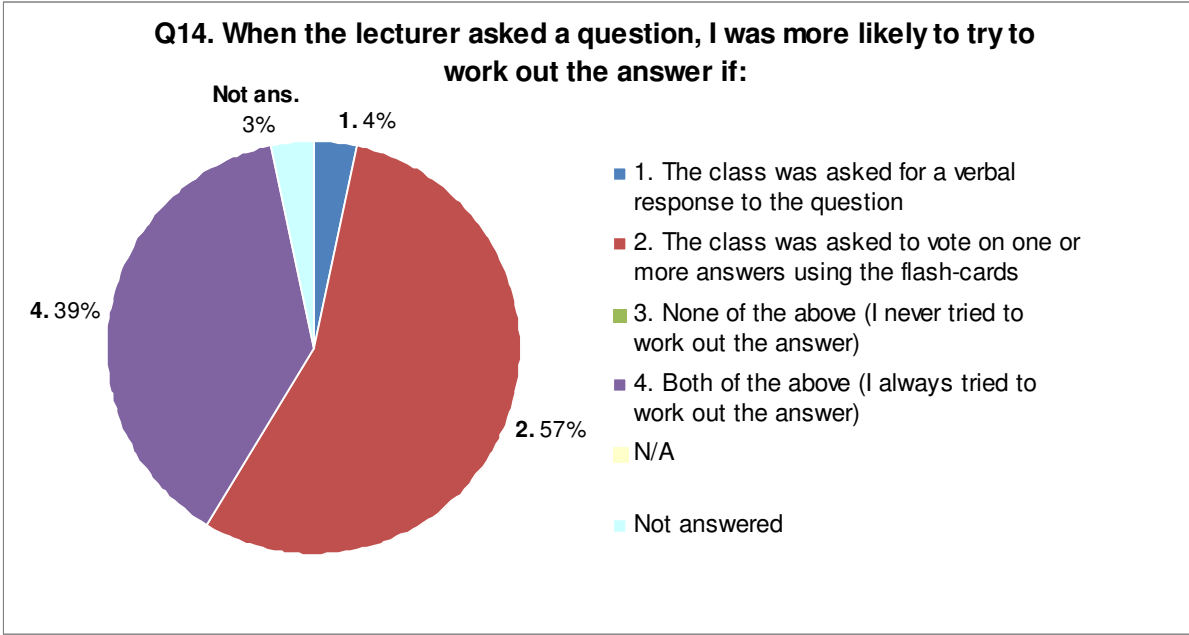


## Student comments

- .... When I got something wrong, and the right answer was explained, it helped my understanding.
- ... Encouraged progress and understanding.
- Getting instant assessment for my answers which, when answers were explained, helped me understand things better. Also helped me to understand/made clear the things I was having trouble with.
- A greater detail in explanation, the interaction helped improve understanding.
- Talking with other students allowed me to hear the information in a different way and consolidate it more thoroughly

## Effect on participation and engagement

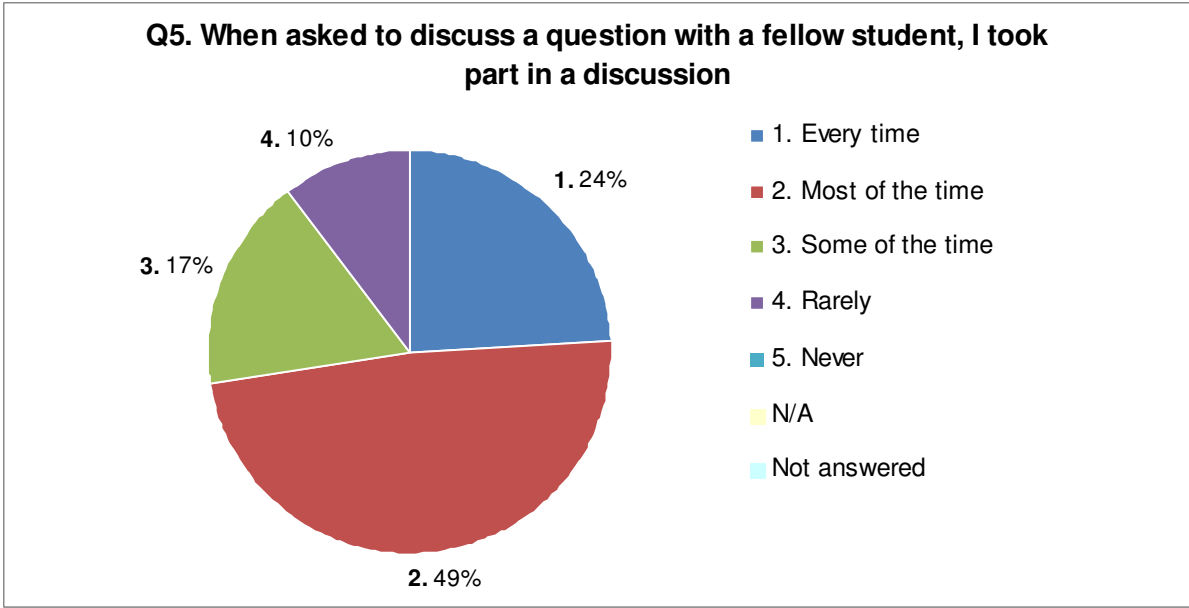


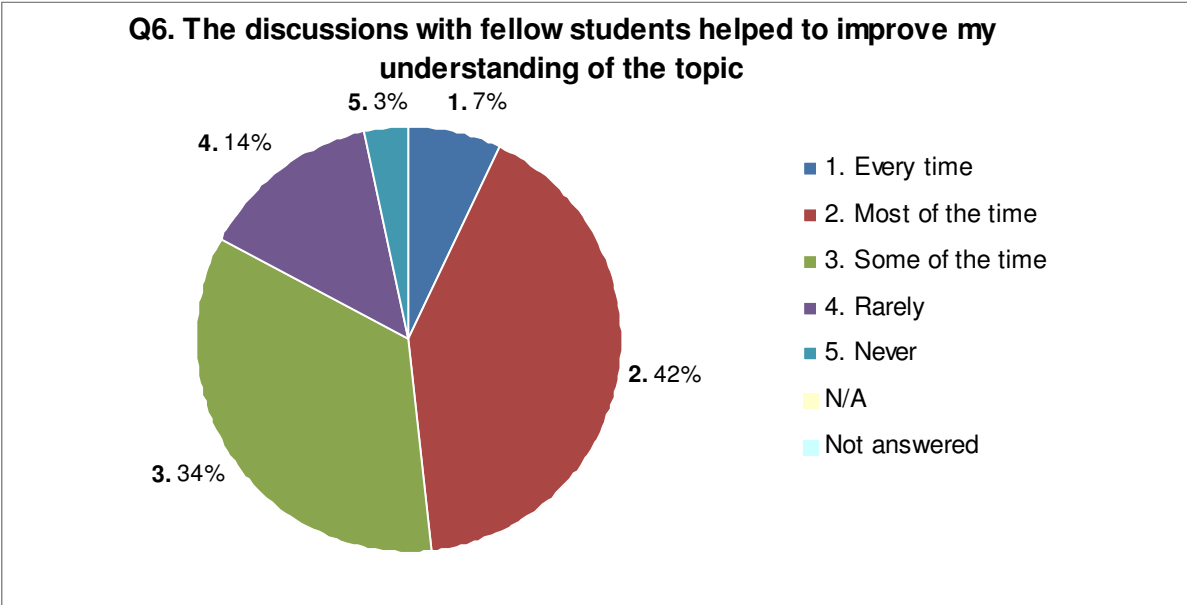


**Student comments**

- Keeps you interested; Makes you participate
- Made things more interesting and intellectually stimulating ...
- It makes the lecture more interactive and thus more interesting and impressive
- Forced me to engage with the material
- The flash cards allow students to participate in the lectures much more than verbal question and responses, which are hard to respond to due to the indirectness of the questions; people hesitate to respond.

**Effectiveness of discussions**

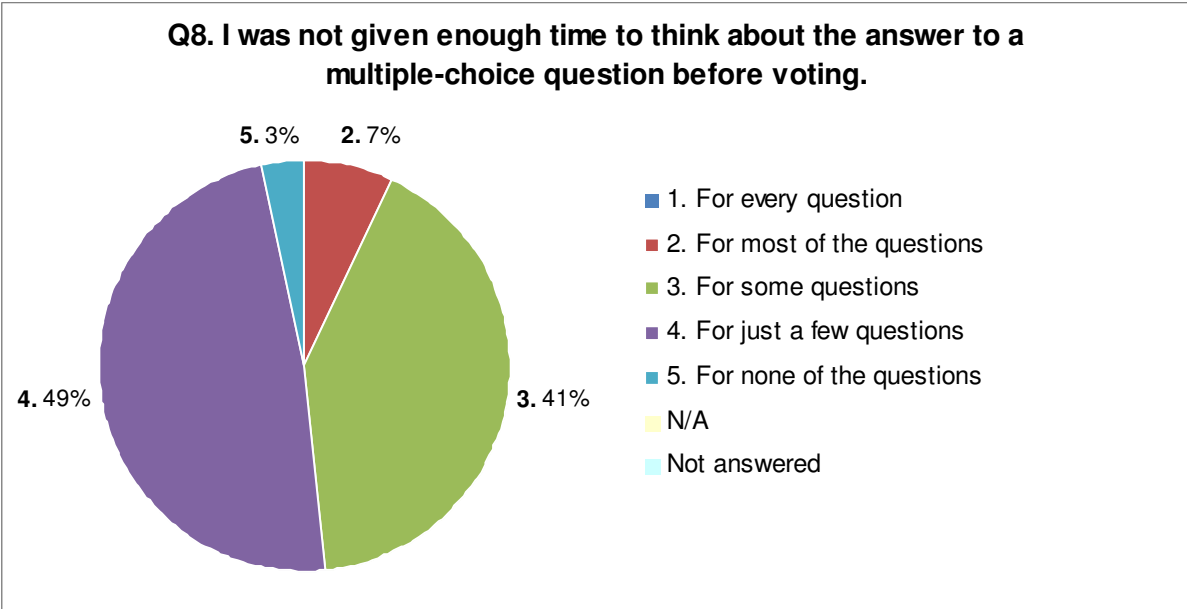


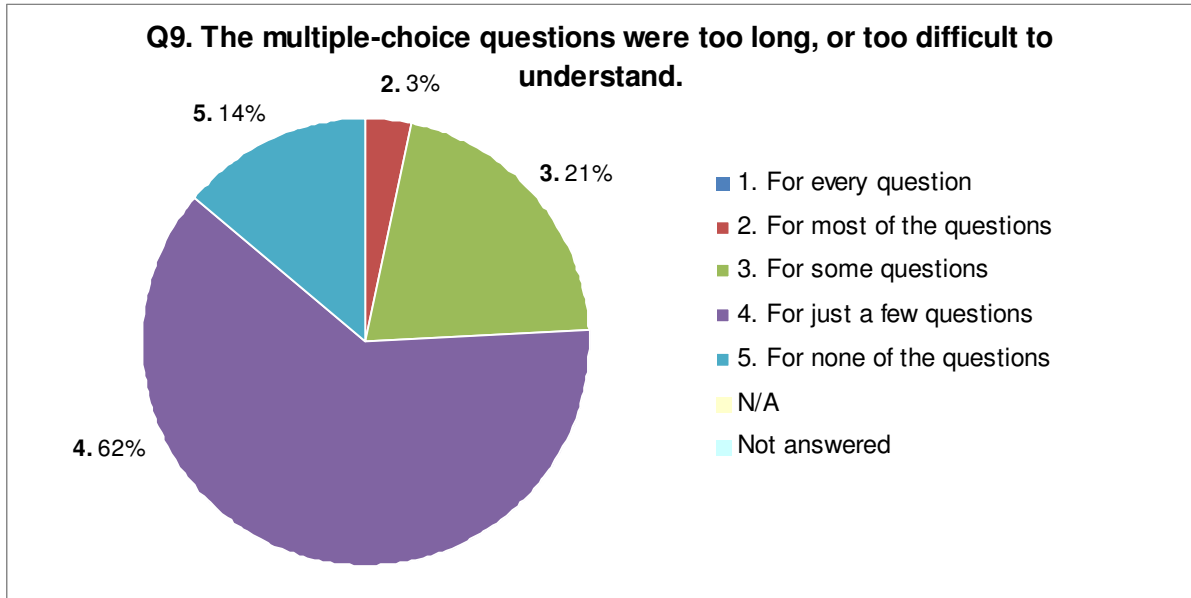


**Student comments**

- Talking with other students allowed me to hear the information in a different way and consolidate it more thoroughly
- Talking to students re. the question - I often found they explain things really well ;-)
- I got to defend my position which helped me understand it better - ala J. S. Mill
- Sometimes I felt that speaking to my peers wasn't of much benefit as both parties were unsure. This, however, was not always the case.

**Problems with questions**

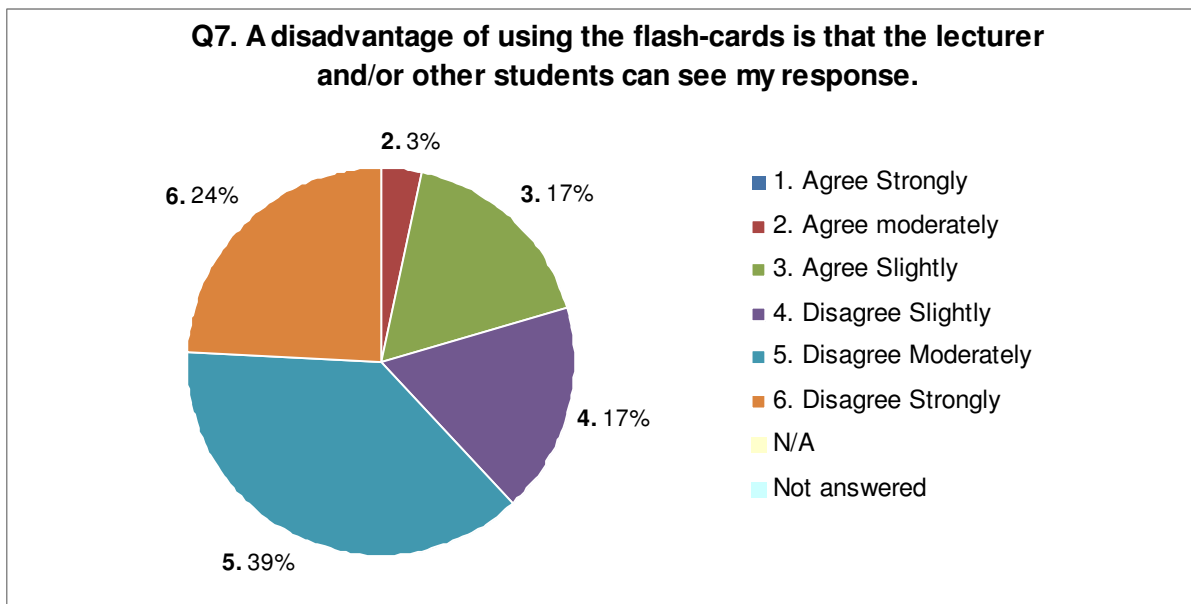


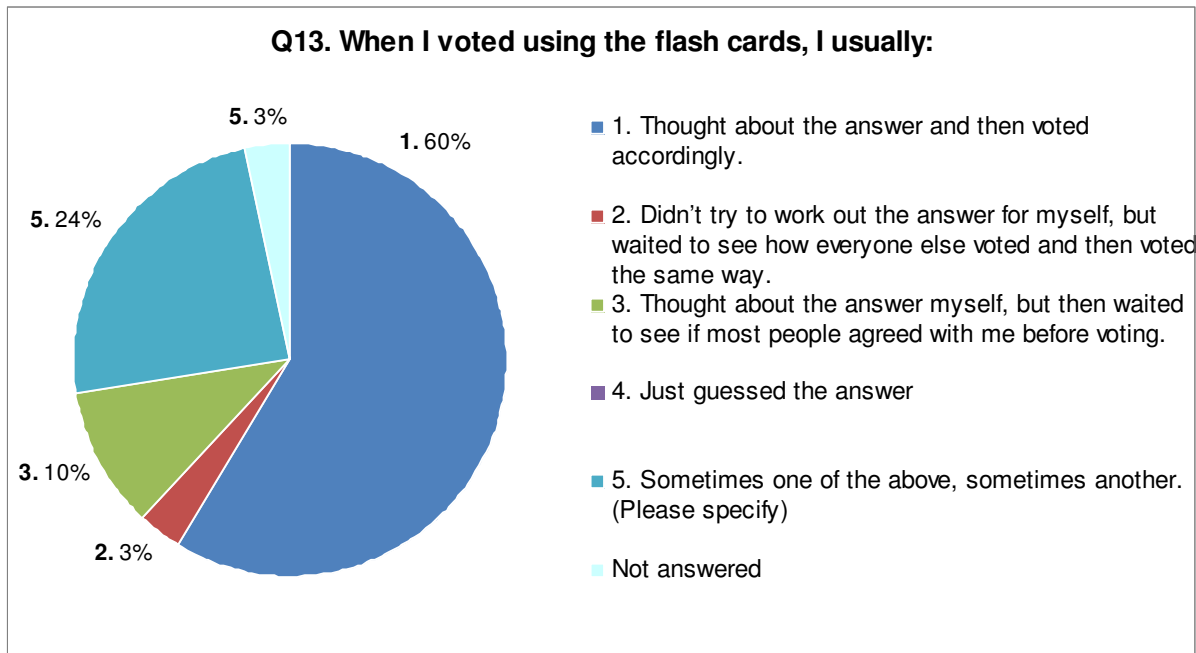


**Student comments**

- Sometimes I needed more time to work out the answer (rarely).
- Partly that there was so little time to think about the questions, especially in questions related to trees.
- For many of the questions I found that it was quite easy to reason the answer based merely on the multiple choice answers. Also the multiple choice answers for the more complicated questions were too specific for my liking. I found that, especially when a question didn't have a hard and fast answer, yes/no was restricting.
- When we hadn't learnt any material, questions/discussion just made it more confusing (eg. In the "vagueness" topic for logic the cards were used to introduce the topic); It was better when the questions were for review (like practice exam questions).

**Voting mechanism**





**Q13. When I voted using the flash cards, I usually:**

1. Thought about the answer and then voted accordingly.	60% (17)
2. Didn't try to work out the answer for myself, but waited to see how everyone else voted and then voted the same way.	3% (1)
3. Thought about the answer myself, but then waited to see if most people agreed with me before voting.	10% (3)
4. Just guessed the answer.	0%
5. Sometimes one of the above, sometimes another:	24% (7)
1 and 3	14% (4)
1 and 4	7% (2)
1, 3 and 4	3% (1)
Not answered	3% (1)

**Student comments**

None relevant

## Benefits

**Q10.** What were the benefits (for you) of the multiple-choice questions and flash-cards (if any)?

Number of students who answered: 24 out of 29. **83%**

Improved understanding	9 comments (38%)
Interaction and engagement	8 comments (33%)
Improved attention	4 comments (17%)
Useful feedback	3 comments (12%)

## All comments

### Improved understanding (9)

- Talking with other students allowed me to hear the information in a different way and consolidate it more thoroughly
- Helped apply concepts more practically
- I got to defend my position which helped me understand it better - ala J. S. Mill
- Learning by example, I like this; Get to see some answers you might think are correct but aren't, and they were usually explained why they were incorrect
- A greater detail in explanation, the interaction helped improve understanding.
- Made things more interesting and intellectually stimulating; When I got something wrong, and the right answer was explained, it helped my understanding.
- Extra questions were helpful; Explanation of answers was helpful.
- Talking to students re. the question - I often found they explain things really well ;-)
- Getting instant assessment for my answers which, when answers were explained, helped me understand things better. Also helped me to understand/made clear the things I was having trouble with.

### Interaction and engagement (8)

- Fun
- Keeps you interested; Makes you participate
- It makes the lecture more interactive and thus more interesting and impressive
- Forced me to engage with the material
- More interesting; Feel that you are doing something to add.
- Thinking about answers on the spot
- Slightly more engagement in lecture.
- Encouraging me to do exercises.

### Improved attention (4)

- It woke me up and got me thinking and wondering why I was wrong! Made me pay attention more and feel less stupid if I was wrong because other people usually were too.
- Broke up the monotony of the lectures; it was interesting to get involved
- Broke up the lecture to re-engage with what was being taught. Without the flash cards I may have started to lose concentration, as the nature of lectures can sometimes be monotonous.
- It meant that I very rarely missed anything in the lectures when we were learning in this way.

### Useful feedback (3)

- Helped to gauge how well I had understood the topic. Also indicated my progress compared to the rest of the class.
- Helped me gauge my understanding of the topic (if I had paid attention).
- To test my understanding of the material in a stress free way. Made lectures much more fun.

### Disadvantages

**Q11.** What were the disadvantages (for you) of the multiple-choice questions and flash-cards (if any)?

Number of students who answered: 21 out of 29. **72%**.

No disadvantages	5 comments (24%)
Takes up time	5 comments (24%)
Not enough time given to think	4 comments (19%)
Not useful when questions used to introduce a topic	2 comments (9%)
Problems with questions	2 comments (9%)
Other	2 comments (9%)
Discussions with peers not useful	1 comment (5%)

### All comments

#### No disadvantages (5)

- None
- Can't think of any ...
- No disadvantages
- None
- None

#### Takes up time (5)

- Costs more time
- Maybe takes quite a bit of time
- Took time....
- Took a little too long to get through some work.
- I felt that the lectures had a slow pace when we used this system, but we didn't actually miss out on any material ...

#### Not enough time to think about answers (4)

- Sometimes I needed more time to work out the answer (rarely).
- Partly that there was so little time to think about the questions, especially in questions related to trees.
- Sometimes not enough time was given to think about or compute the answer before voting was required.
- Not enough time to work out answers

#### Not useful when questions were used to introduce a topic (2)

- Sometimes we jumped ahead and did questions without hearing a lecture on the subject.
- When we hadn't learnt any material, questions/discussion just made it more confusing (eg. In the "vagueness" topic for logic the cards were used to introduce the topic); It was better when the questions were for review (like practice exam questions).

### Problems with questions (2)

- Too bad if you don't understand the question
- For many of the questions I found that it was quite easy to reason the answer based merely on the multiple choice answers. Also the multiple choice answers for the more complicated questions were too specific for my liking. I found that, especially when a question didn't have a hard and fast answer, yes/no was restricting.

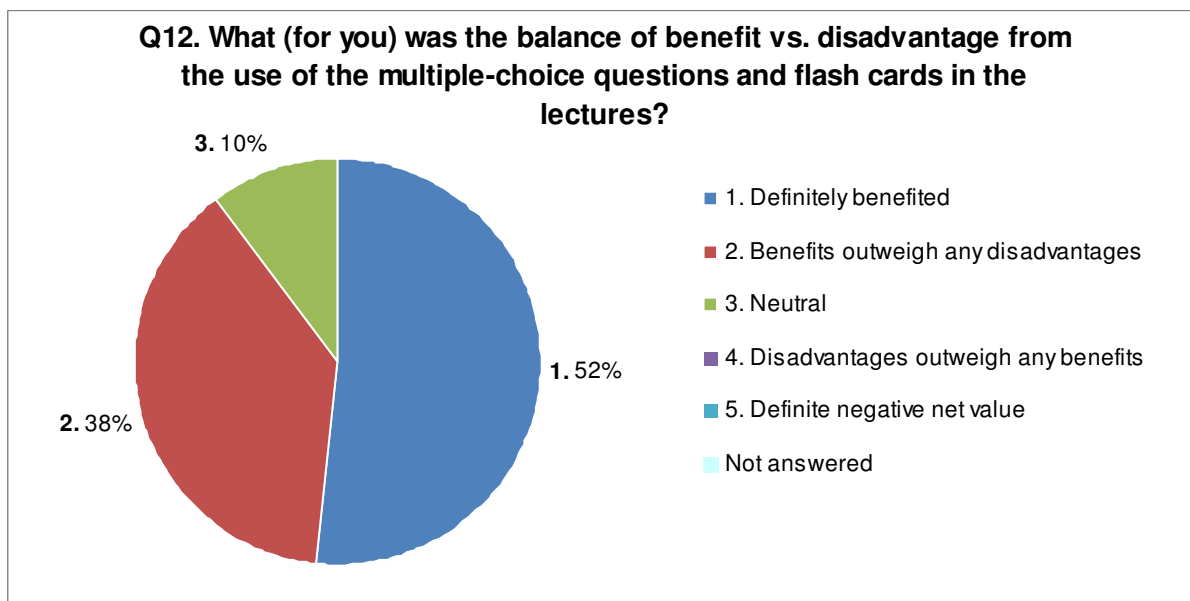
### Other (2)

- Questions weren't posted over the internet to be accessible later
- Sometimes it seems quite repetitive and redundant; it could have been really detrimental if the material was not included in the audio lectures

### Discussions not always useful (1)

- Sometimes I felt that speaking to my peers wasn't of much benefit as both parties were unsure. Thus, however, was not always the case.

## Overall benefit



## Other comments

**Q15.** Any other comments on the use of the multiple-choice questions, flash-cards and discussions:

Number of students who answered: 13 out of 29. **45%**

<b>Positive</b>	11 comments. <b>84%</b>
<b>Negative</b>	1 comment <b>8%</b>
<b>Neutral</b>	1 comment <b>8%</b>

## All comments

### Positive 11/13

- It's awesome!
- Keep it up :-)
- Promoted discussion among class members (good thing). Encouraged progress and understanding.
- They should be used in teaching in many other faculties
- They are good! Stops people from falling asleep and most importantly makes you think in lectures rather than just take what is given - better learning.
- I think it is a really good idea and an interesting catalyst for class discussion.
- They're good, should keep them.
- I liked the system ;-)
- I like them.
- The flash cards allow students to participate in the lectures much more than verbal question and responses, which are hard to respond to due to the indirectness of the questions; people hesitate to respond.
- Good idea, the interactivity made the lectures much more engaging and stopped me from drifting off. Shame the course won't be taught again. Damn Melbourne model. It seems like making the subjects more general will just end up watering them down. Oh well ....

### Neutral (1/13 comment)

- The cards were nice and shiny. [...]

### Negative (1/13 comment)

- Not very efficient

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