



THE UNIVERSITY OF  
MELBOURNE

How do students approach their  
learning online? And what are the  
implications for teaching?

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## Key Questions

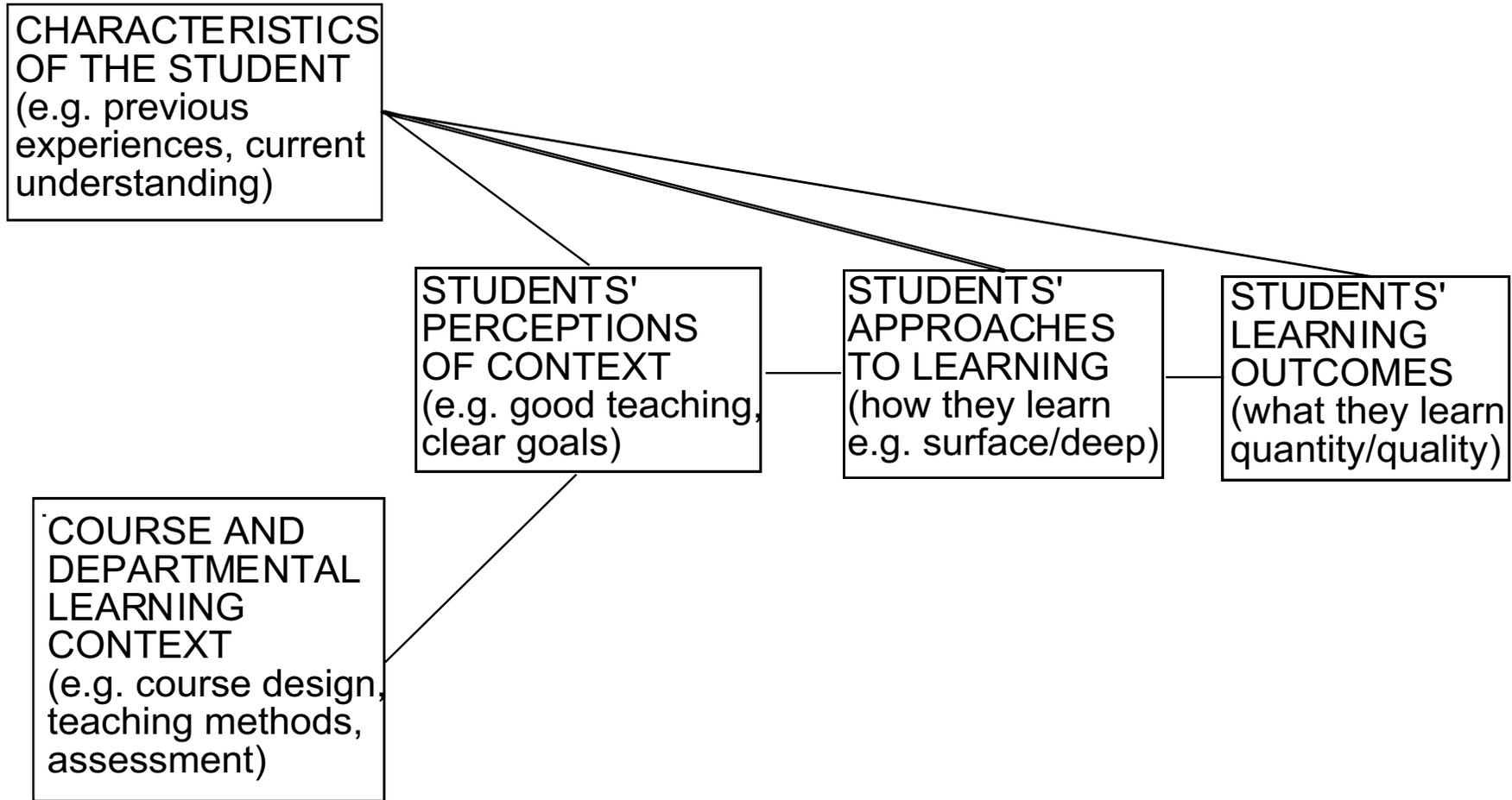
With the increasing use of MCQs as students move to more online learning, what is the effect of increasing use of MCQs on student learning and learning outcomes?

What do student understand to be the point of discussions online and what is the effect of their understanding on student learning?

## Program

1. Model of student learning
2. Student learning and MCQs
3. Student learning and online discussion
4. Suggested questions for our online discussion

# Model of Student Learning



# STUDENT APPROACHES TO LEARNING

## Surface Approach

Intention to reproduce

- rote memorise information needed for assessment
- failure to distinguish principles from examples
- treat tasks as external impositions
- focus on discrete elements without integration

## Deep Approach

Intention to understand

- meaningfully memorise information for later use
- relate new ideas to previous knowledge
- relate concepts to everyday experiences
- relate evidence to conclusions

## Perceptions Relating to Approaches:

If students think the

- teaching is good (including feedback)
- goals and standards are clear (learning outcomes)
- students get help and advice on how to study
- subject is well organised

then they are likely to be adopting deep approaches to study

If students think the

- assessment is inappropriate (testing reproduction not understanding)
- workload is inappropriate (too heavy to learn it all)

then they are likely to be adopting surface approaches to their studies.

# MCQs and Student Learning

Scouller K. and Prosser, M. 1994. Students' Experiences in Studying for Multiple-Choice Question Examinations. *Studies in Higher Education* , 19, 267-279.

Scouller, K. (1998). The influence of assessment method on students' learning approaches: Multiple choice question examination versus assignment essay. *Higher Education*, 35(4), 453-472.

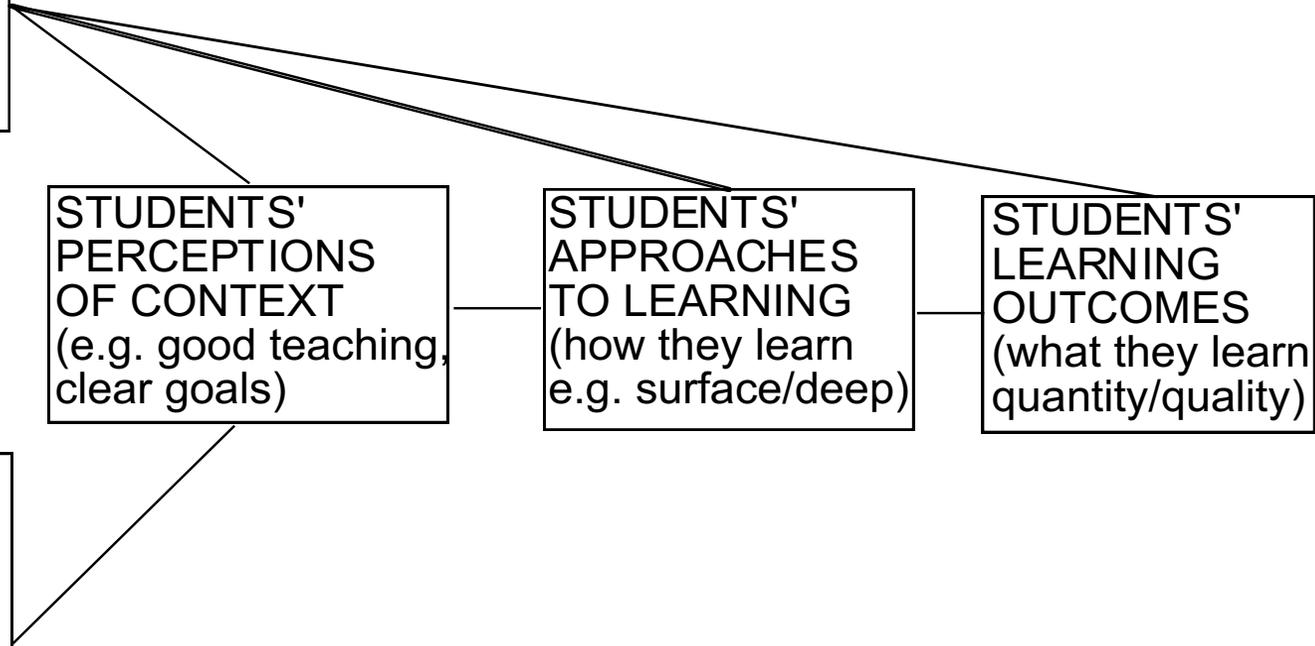
CHARACTERISTICS  
OF THE STUDENT  
(e.g. previous  
experiences, current  
understanding)

STUDENTS'  
PERCEPTIONS  
OF CONTEXT  
(e.g. good teaching,  
clear goals)

STUDENTS'  
APPROACHES  
TO LEARNING  
(how they learn  
e.g. surface/deep)

STUDENTS'  
LEARNING  
OUTCOMES  
(what they learn  
quantity/quality)

COURSE AND  
DEPARTMENTAL  
LEARNING  
CONTEXT  
(e.g. course design,  
teaching methods,  
assessment)



Is there a variation in the way in which students approach an MCQ exam and an essay assignment?

In a study of 206 second year Education students at the University of Sydney, students were asked to complete a 3 part questionnaire

- Approaches to study questionnaire – MCQ exam
- Approaches to study questionnaire – essay assignment
- Perception of the intellectual level being assessed
- Preference for assessment method

Acknowledgement: The University of Sydney for funding the 2 studies

## Approaches to study Questionnaire:

### Surface approach

- When preparing for this [assessment] I summarised a lot of material without understanding it well
- When preparing for this [assessment] I chose topics that I thought I could pass rather than those I was really interested in.

### Deep approach

- When preparing for this [assessment] I tried to integrate the theoretical and practical components of the course so that they had some meaning for me
- I became increasingly absorbed in my work the more I read and studied for the [assessment]

## Perception of the intellectual level being assessed:

### Low intellectual level

- This assesses our ability to reproduce the viewpoints that are presented in lectures ...

### High intellectual level

- This assesses our ability to integrate information from a variety of sources

	<b>MCQs</b>	<b>Assignment essay</b>	<b>Estimated Standardised difference</b>
Surface approach	3.35	2.99	.69 (substantial)
Deep approach	2.66	3.1	-.59 (substantial)
Perception low level	3.72	3.01	1.03 (large)
Perception high level	2.73	3.95	-1.74 (large)

When preparing for an MCQ Exam, student reported adopting more of a surface (reproductive) and less of a deep (understanding) approach compared to preparing an assignment essay

Student reported perceiving that the MCQs test a lower intellectual level than an assignment essay

My conclusion (from this, other studies, and anecdotal evidence from discussions with teachers)

By their very structure, MCQs evoke a perception from students that if they can reproduce enough information then they will do well on MCQs, given that MCQs test at a low intellectual level

MCQs evoke a surface level approach. If academics develop high level MCQ items and students adopt reproductive – surface - approaches they perform poorly. Over time academic reduce the level of MCQs.

Either:

- Support students to develop an understanding that the MCQs test at higher levels
- Use MCQs to test low level knowledge and other assessment methods to test for high level understanding

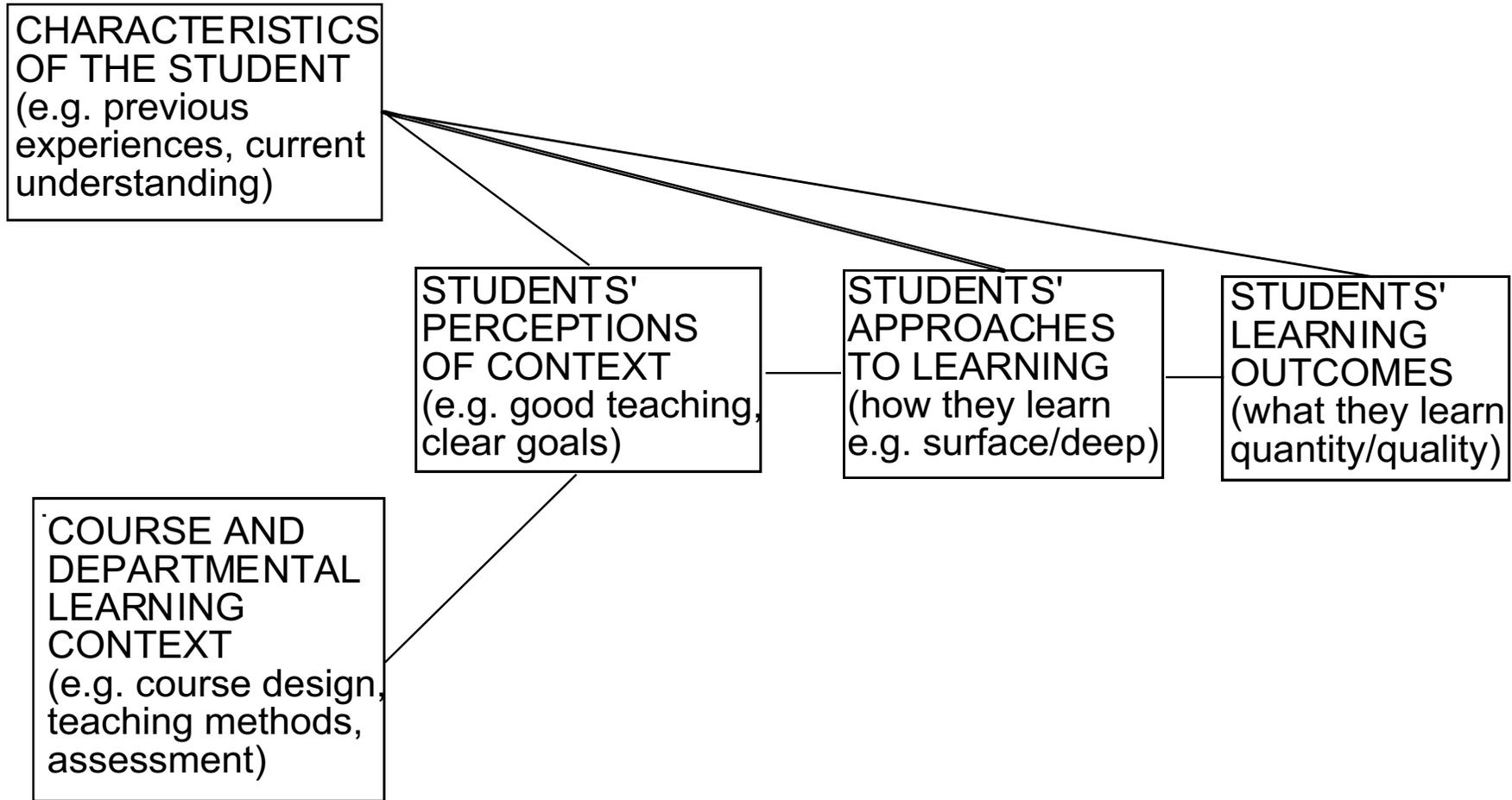
[Melbourne CSHE](#)

[Resources](#)

**[Teaching, Learning and Assessment](#)**

[Multiple Choice Questions: An introductory  
guide](#)

# Model of Student Learning



# Student Learning and Online Discussion

- Ellis, R.A., Goodyear, P., Prosser, M. and O'Hara, A. (2006). How and what university students learn through online and face-to-face discussion: conceptions, intentions and approaches. *Journal of Computer Assisted Learning*, 22, 244-256.
- Ellis, R.A., Goodyear, P., O'Hara, A. and Prosser, M. (2007). The university student experience of face-to-face and online discussions: coherence, reflection and meaning. *Research in Learning technology*, 15, 83-97.
- Ellis, R.A., Goodyear, P., Calvo, R.A., and Prosser, M. (2008). Engineering students' conceptions of and approaches to learning through discussions in face-to-face and online contexts. *Learning and Instruction*, 267-282.

Online discussion is a key component of online and blended learning. What do students think is the point of discussion and how do they approach discussion online?

In a study of 51 second year social work students studying psychology in a blended learning subject, students were asked to make at least 2 postings per week of 200 words per week, representing 13% of final mark.

Using a sample of 51 open-ended questionnaires followed by 20 in depth interviews.

Open-ended questionnaire question:

How do you approach engaging in the online discussion in your course? What sorts of things did you do to engage (or not) in the discussions? Why did you use these strategies to engage (or not) in the discussion?

This questions was subsequently used to structure the more in-depth interviews

The interviews were analysed phenomenographically to map the variation on in approaches to online discussions

Conception	Description	Quotation	N (%)
Fragmented: checking ideas	Discussions as a way of checking your ideas are right	Getting the teacher's point of view . . . it's good being able to talk and make sure you are really learning what you are supposed to be learning. It is just sort of reassuring	
Fragmented: acquiring ideas	Discussions as a way of collecting ideas	...	
Cohesive: developing ideas	Discussions as a way of challenging and improving your ideas	...	
Cohesive: challenging ideas	Discussions as a way of challenging ideas and beliefs in order to arrive at a more complete understanding	It (discussing) challenges my beliefs, which is always good . . . because a belief is something that is based on knowledge and experience and your understanding of the world, and if it is being challenged you are testing it . . . If my beliefs are challenged, I believe that my understanding of concepts is more complete	

Approach	Description	Quotation	N (%)
A: Surface	Engaging in online discussions to read postings to <b>avoid Repetition</b>	I tend to read all of them first. Because I tend to want to write something a bit different to all of them and sort of stand out a little bit because I thought I would get good marks for that, but that's not the point.	12 (24%)
B: Surface	Engaging in online discussions to use postings to <b>add to Ideas</b>		24 (48%)
D: Deep	Engaging in online discussions to evaluate postings to <b>challenge ideas</b>		13 (25%)
E: Deep	Engaging in online discussions to evaluate postings to <b>reflect on key ideas</b>	It just makes me think, like the ideas, like someone today when a post I made this morning and one two days ago which was about ... It wasn't really that original but it was something which I hadn't thought of before. So I mean, I didn't respond to it because I didn't have much to say. It was just something for me to think about it as I come to University, and it will be something that I have already thought about and probably be able to apply it.	2, (4%)

Relating conception of learning through discussion with approaches to learning through discussion online

Conception of learning through discussion	Approach to learning through discussion online		
	Surface Approach (fulfil tasks and/or add to ideas)	Deep Approach (evaluate postings to challenge and/or critically reflect on ideas)	Total (%)
Fragmented (Checking and/or collecting ideas)	26	0	26 (51%)
Cohesive (Challenging, improving and/or extending understanding of ideas)	9	16	25 (49)
Totals	35 (68%)	16 (31%)	51

## Relating conceptions and approaches to performance

Learning through discussion	Final mark		
	Mean	SD	Effect size
Conceptions			
Fragmented	63.5	8.4	.36 (small to medium)
Cohesive	70.0	8.4	
Approaches online			
Surface	64.9	8.6	.67 (medium to large)
Deep	70.6	8.7	

A variation in conceptions of learning held by students through discussion (understanding the point of discussion)

- A way of checking and collecting ideas (fragmented)
- A way of challenging ideas to improve and extend them (cohesive)

A variation in approaches to adopted by students to online discussions:

- Engaging in online discussion to avoid repetition and/or to add to ideas (surface)
- Engaging in online discussions to evaluate postings to challenge their ideas and/or to critically reflect on ideas (Deep)

About half of students held fragmented and half held cohesive conceptions

About 70% adopted surface approaches and 30% adopted deep approaches to discussions

The better performing students were those adopting deep (evaluative) approach to online discussions

No student with fragmented conception adopted a deep approach

A number of students with a cohesive conception adopted a surface approach

It seems as though the understanding precedes to approach

Worthwhile learning through discussion online is most likely to occur when

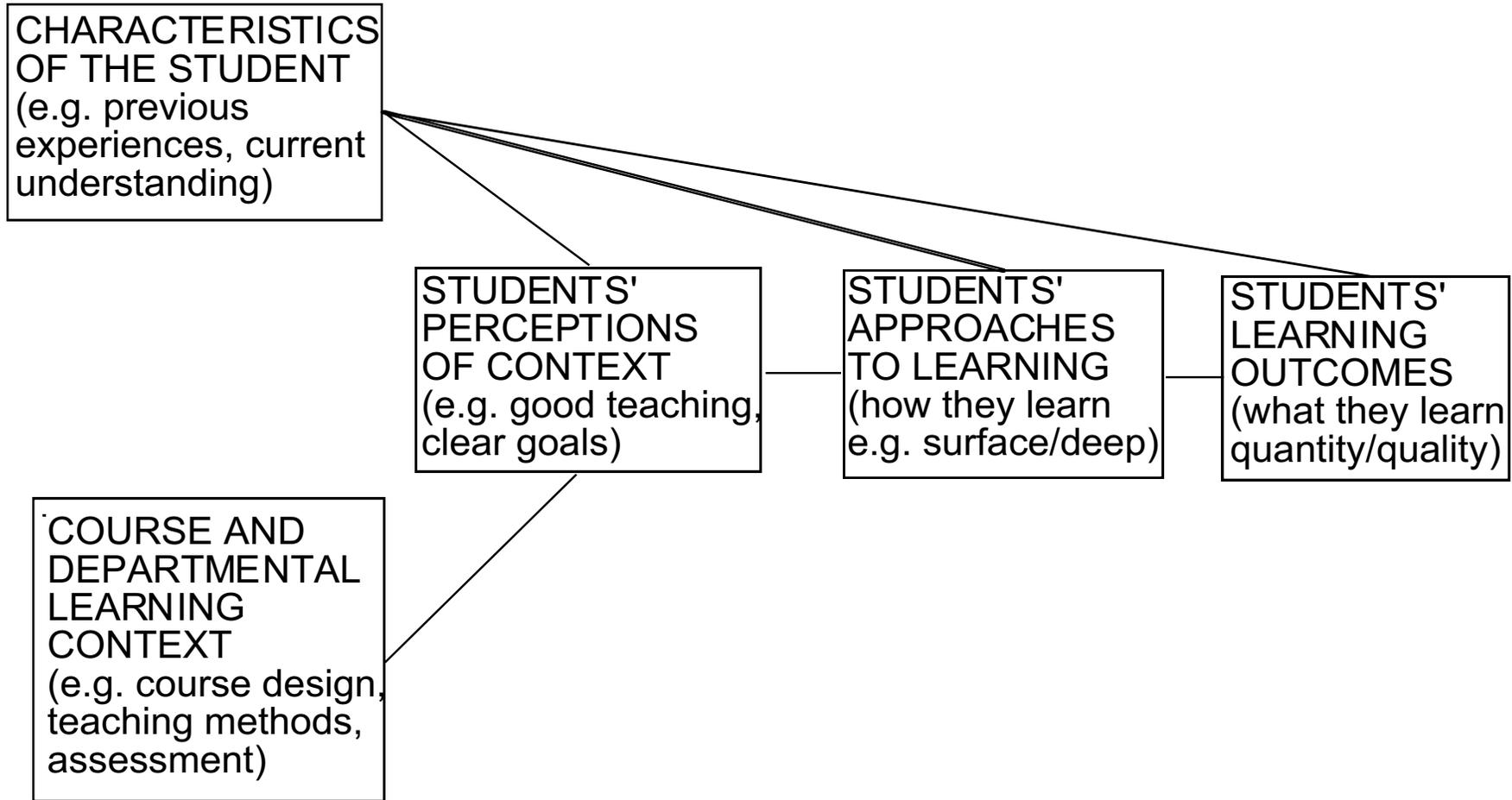
- When student understand that the online discussion aims to encourage challenge and extend their ideas rather than just checking and adding
- When the online approach is designed to help students reflect on and evaluate postings rather than just read.

Student need support to better understand why we wish them to engage in discussion. For example:

- showing them two examples of online postings and asking them to compare and contrast the postings.
- providing them with a marking rubric to mark or evaluate postings

The issue is not just an issue for online learning, but for learning in general. The online environment can bring out these problems more starkly.

# Model of Student Learning



# Suggested questions for our online discussion

Do you have experiences of student performing poorly on higher level MCQs

Have you reduced the intellectual level of MCQs to improve pass rates (the issue is not difficulty but intellectual level)

Have you noticed the variation described in students online postings

Do you agree that students have deep misunderstandings of why they should engage in online discussion – or is it that they do not have a strategy for such engagement