

Supporting critical thinking as a Core Disciplinary Criterion

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For the slides, references, etc. see:
<http://www.psy.gla.ac.uk/~steve/talks/PLAT10.html>

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Introduction

Critical thinking ("CT") is the theme here.

CT is a skill, a procedure;
And it is a Graduate Attribute
And it could be seen as at the core of what we want our undergraduates to display.

Educationally it appears as an assessment criterion e.g. for marking finals exam papers.

Together this makes it a CDC (Core Disciplinary Criterion)

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Introduction (2)

First, in the rest of this introduction, the argument is about: why should we see CT as so important?

Then I address ways in which we teach CT.

- Critical Reviews (CRs)
- *[60 minute exam questions with CT as one marking criterion]*
- CHIP (module on concepts and history of psychology)
- Reciprocal Peer Critiquing (RPC)
- Micro-CT exercise
- On the spot essay plans

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Part A: Critical thinking as a CDC for psychology

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Core disciplinary assessment criteria

We know from the feedback literature, especially Sadler 1989, that a key difficulty for students is understanding the meaning of assessment criteria. Classic ineffective feedback is "poor conclusion" or "not critical enough" because exactly what the student doesn't understand is what is not expressed there: the meaning, and its operationalisation, of "good conclusion" or "critical argument".

Not all criteria are difficult.

But the criteria that are difficult, are not just poorly communicated. They typically are the ones that lie at the heart of a discipline's tacit definition of itself. In other words, they are the most important thing a student must learn during their degree; and often, staff cannot easily explain them: they may be held as tacit knowledge.

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Core disciplinary assessment criteria (2)

There is a real sense that the central learning aim of a history degree is to learn to write a history essay.

In psychology, to write a psychology essay.

In physics, to demonstrate analysis, reasoning and calculation like a physicist (not like an accountant, or mathematician, or logician)

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Core disciplinary assessment criteria (3)

So on this account, the key question for each discipline is:
What is the assessment criterion that is closest to meaning:
"Display thinking like a scholar in this discipline"?

Many disciplines in HE already have much of their assessment organised around a single standard format that exhibits this thinking style e.g. essays for most Arts and Social Science subjects (but actually, quite different essay types depending on the discipline), "problem solving" involving calculation i.e. inferential maths in most science and engineering.

The argument here is: Focus the feedback more effectively, not on the assessment format (i.e. not simply do lots of essays or whatever) but on learners grasping the core criterion.

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Part B: The programme design

Glasgow University psychology honours programme:
Levels 3 and 4 of a four year programme.

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Psychology honours design (1)

They get almost no feedback on content taught in the examined modules.

However at the same time they receive a mixture of small group (6 students) and individual tutorial guidance, i.e. feedforward, on major coursework projects.

Three of these are "critical reviews" which focus on demonstrating critical thinking applied to published literature.

This tutorial strand is the only place of T-L interaction.

Critical thinking is also a marking criterion for the written exams on the content modules.

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Psychology honours design (2)

Level 3:

9 modules, class exam with some formative feedback on 4

Level 4 2008-9:

6 modules, no related coursework

Level 4 2009-10:

9 modules, a few with related coursework

BUT

Level 3:

2 CRs (critical reviews), 2 miniprojects with tutorial groups of 5-6

Level 4:

1 CR, 1 project each with a personal tutor

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Psychology honours design (3) Critical Reviews

So the programme design could be redescribed as investing 100% of its tutor time in focussing on equipping the students with the ability to display critical thinking (of the kind a psychologist values). It invented a type of coursework ("critical review") that announces to students what the main point is; it requires them to produce 3 month long pieces of work focussed on it; but also marks their exams with this requirement applied.

It is the hardest thing they must learn; the most important thing; almost all our teaching investment is put into it; and the students rated us in the NSS as 3rd out of 107 in the UK.

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Psychology honours design (4)

The investment had been on:

- A core procedural skill, not "psychological content"
- Understanding (operationally) the most difficult assessment criterion
- How this applies in a variety of different surface tasks

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Part C: CHIP module in level 3

Concepts and history in psychology. Introduced 2009-10.
Taught as a 10 credit course in year 3 of our 4 year programme.

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Ways of treating CHIP

- Could teach CHIP as a methodology course;
- Or as a history of events and great men.
- Or as a history of ideas
- Or as philosophy of science: Popper, Kuhn etc., but hope that physics and psychology are the same methodologically, sociologically,
- But I viewed (my part of) it as extended critical thinking.

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My angle on, contribution to, CHIP

What do I know? That the philosophy of science course I did as an undergraduate has stayed with me more than any other module.

My own overall learning aim for this segment is to expand students' wider critical thinking skills, by raising issues about the worth of psychology overall (not just the worth of individual studies).

This is in positive as well as negative senses of "critical".

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Psychology: overall review from outside

Prior standards: can we read others' minds?
Can we predict what they will do, say, feel, ...

For each topic: How does the research relate pure and applied studies? Applications?

For each topic: How does the research relate to the arts-science spectrum; or rather: the expectation of permanent unresolved complexity vs. the attainment or expectation of a consensual single conclusion?

For each topic: how is the research relating measures of:
Behaviour, Physiology, attitudes and beliefs (thinking and speaking)

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Part D: RPC recipe

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My current recipe for RPC

Reciprocal Peer Critiquing (RPC)

Psychology level 3 undergraduates; tutorial group of 5-6; one semester.

Done twice in the semester, first with past (already marked) work; second for new coursework before submission.

- Students bring in and exchange work
- Prefaced by 1-3 questions they particularly want comments on
- Each student critiques 2 others, addresses criteria plus the questions; rubric: "best and worst feature" w.r.t. each criterion
- Next time: Round table, feedback delivered F2F, tutor chairing

Prompt sheet

Criterion 1: quality of literature research

- What was good?
- What could be improved?

Criterion 2: quality of the write-up
i.e. well presented and clearly structured?

- What was good?
- What could be improved?

Criterion 3: quality of Critical analysis

- What was good?
- What could be improved?

Possible incremental improvements

- Use a pro-forma for the prefaced author questions?
- Student-generated content: get our students to value each others' work more by creating a repository and index so they can access it.
- Get them to mark up typos as well as the main marking criteria. I.e. emphasise direct formative utility, not only understanding of the criteria
- Try "reader feedback": drill students in expressing feedback as only their personal response and feelings. (See Elbow's work)

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My current recipe (2)

Always goes down well with my students, once they've done it.

See Morrow (2006) for evidence.

Most enthusiastic about seeing how other students write, but also about getting feedback.

Perhaps best indicator is that having done it the first time, they commit to finishing the next bit of work a week early to allow time to do it then.

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Big scale RPC

What about big classes?

As described, it works for groups of 2-6.

1. I've done it in a lecture group of 90 for short (100-200 word passages: swap with neighbour and do RPC)
2. Use software to manage it.
There is free software, and numerous papers reporting experience, on how to do it with big classes (60, 600, ..)
Quintin Cutts has some local experience;
John Hamer: google "Aropa peer"
3. Speed RPC-ing?

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Anonymous vs. F2F feedback

Pro-anonymous: data protection, privacy

Pro-face to face:

- More useful and serious critiques are elicited
- Dialogue for clarification of what the feedback means
- Dialogue of a more open-ended and multi-party kind
- Get feedback on the feedback you gave
- Hear critical issues directed to others but relevant to self.
I.e. discussion of other work than only your own.

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The Vygotskian idea

Social constructivists, following Vygotsky, believe that for every form of thought there is a prefiguring type of conversation.

That is where learners first grasp and start to join in this new type of dialogue; and later internalise it and so come to do it solo.

I make my students first exchange RPC comments round a table, face to face, with me there. This establishes the tone required: neither hostile, nor vapidly polite.

Then they can (and often do) do RPC without me there.

(This works without the irresponsibly glib, hostile, vacuous reviews often got with anonymous software-mediated RPC.)

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The Vygotskian idea (2)

Possibly, it would be good to introduce students to this by a still more graduated sequence. For example:

1. Tutor "models" the kind of comment appropriate
2. Small groups compose joint critiques
3. Solo students deliver critiques F2F
4. Solo students deliver this by email etc.
5. Informal (self-organised) student use

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Evidence from a puzzle about RPC (Reciprocal Peer Critiquing)

Morrow (2006) found strong student attitude support for RPC's benefits, but strongest for being able to see others' work.

I.e. they seem to say that getting feedback on their work is not as useful as simply seeing alternative possible ways of doing it.

That's also what I find repeatedly in oral feedback.

Price et al (2007) found the same.

This doesn't exactly match published theories of feedback.

Students believe it's useful after having experienced the process; and then act on their belief by doing it voluntarily.

But it's not clear how to measure learning gains.

Not least because the gains may only be far in the future and certainly NOT on the current piece of work.

A CT exercise for you: What is wrong with this boast?

My last tutorial group doing this was Jan-March 2010. It had 5 students.

Dividing the class into 10 bands, and looking at their exam results in May (not work marked by me), 4 out of 5 of them came in the top 10%.

Probability theory shows that the chances of this happening are about $p \approx 0.0005$ ($0.1^4 \cdot 0.9^1 \cdot 5 = 0.00045$)

What are the main arguments against this being proof that I am a genius as a tutor?

(Their previous year's marks show a roughly even distribution. But now even the worst student was in the top 40%.)

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Part E: micro Critical Thinking exercise

I've also successfully used a further CT exercise in workshops: In "revision sessions" for our students

In workshops with History students

In a Dundee workshop for students in a variety of essay-based disciplines.

The micro-CT portion takes perhaps 30 mins of a session. Here it is as instructions to students.

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The exercise

In a minute, I'll announce a topic.

From that moment you have 5 minutes to write something on that topic. Most people write a medium length paragraph: about 14 lines of handwriting (depending on how big or small your writing is).

It will then be marked for the format of critical thinking:

1. Mentioning alternative possible views
2. Giving reasons or evidence for the views mentioned.
3. Mentioning reasons against your preferred view.
4. Clear support for **one view in preference to** the others on the topic. (Not sitting on the fence)

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Question (topic) 1

Travel abroad broadens the mind

It will then be marked for the format of critical thinking:

1. Mentioning alternative possible views
2. Giving reasons or evidence for the views mentioned.
3. Including reasons on **both** sides of the topic
4. Clear support for **one view in preference to** the others on the topic. (Not sitting on the fence)

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Peer marking

- Now stop writing.
- Swap your workbook with a partner
- Tear off from the back of the workbook a “structured feedback sheet”
- Read your partner’s micro-essay, and fill in the mark sheet
- Return both essay and completed mark sheet to your partner.

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Question (topic) 2

Children nowadays are wrapped in cotton wool

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Peer marking

- Now stop writing.
- Swap your workbook with a partner
- Tear off from the back of the workbook a “structured feedback sheet”
- Read your partner’s micro-essay, and fill in the mark sheet
- Return both essay and completed mark sheet to your partner.

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Why a micro exercise?

If you want to understand an underlying principle, whether conceptually or operationally, then it is good to vary (perhaps drastically) the examples and time scales on which to apply it, rather than always practising it in one narrow way.

That is why I believe this complements our 3 month critical reviews; and our 60 minute unseen exam essays.

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Practising doing on the spot essay plans

Even very good students often don't believe staff really mean it when they say (or write) that marks will go for the quality of the argument, not reproducing Teacher's opinion / view of the truth.

A student in a CT-focussed history class said when interviewed that he only believed it after the first work had been handed back, and he and his friend both got high marks even though they had argued for radically different conclusions.

A prize winner in this year's psychology graduating group told me it was only during a revision class that she had finally "got" that displaying CT was what counted. I made them repeatedly take a sample exam question, sketch out an essay plan, then discuss it aloud. This requires them to assemble an argument in a few minutes: to play at reconfiguring their knowledge.³⁵

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Part F: Implicit vs. explicit teaching and learning

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Debate sketch

Is it best to spell out what is required, or not?
Is this spoon-feeding; and so reinforces shallow learning?

Or on the contrary, is it efficient teaching and learning as opposed to hiding the knowledge, wasting learner time, applying a medieval guild approach to concealing knowledge rather than spreading it?

My microCT exercise in particular draws on Deanna Kuhn's work on CT to produce a simplistic marking scale for the surface features of CT. (Cf. also Alan Bennett's "The history boys" which has a recipe for getting a First in History at Cambridge.)

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My own position

Many academics, including some who are serious about learning and teaching, think that telling them is cheating, promoting shallow learning.

I don't agree. I think telling them is right, though often not enough. Just as I think the essay format prevents the shallowest learning being rewarded, though it only leaves room for (not requires) the best (deep) learning.

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Part G: Finale.

An anomalous NSS result. Recommended actions

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Anomalous NSS result in 2009

The GU psychology dept. got rank 5 of 107 UK psy. depts. overall. *(The rank used in newspaper league tables says 3rd; the difference/reasons do not matter for the argument here, which use a more conservative estimate.)*

But we got ranks much lower than this for 19 of the 21 questions. How can the administrative merits (qus. 14, 15) outweigh the assessment and feedback questions (5, 6, 7, 8, 9) by such a great amount?

This is impossible to explain if the NSS is measuring the importance of feedback.

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| Rank | Qu. | Qu.text |
|------|-----|---|
| 1 | 14 | Any changes in the course or teaching have been communicated effectively. |
| 2 | 15 | The course is well organised and is running smoothly. |
| 5 | 22 | Overall, I am satisfied with the quality of the course. |
| 8 | 6 | Assessment arrangements and marking have been fair. |
| 8 | 11 | I have been able to contact staff when I needed to. |
| 8 | 16 | The library resources and services are good enough for my needs. |
| 11 | 13 | The timetable works efficiently as far as my activities are concerned. |
| 16 | 1 | Staff are good at explaining things. |
| 35 | 5 | The criteria used in marking have been clear in advance. |
| 54 | 7 | Feedback on my work has been prompt. |
| 79 | 9 | Feedback on my work has helped me clarify things I did not understand. |
| 101 | 8 | I have received detailed comments on my work. |

Recommended Strategy? — Focus on your CDC

- Identify your core disciplinary (assessment) criteria (CDC)
- Focus most or all effort on training students on it:
 - both student effort and staff effort
- Usually many assessments already do test them
- However the same focus may not be present in the feedback
- Furthermore supplementary exercises may be effective.

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Why?

- The CDC are the procedural version of threshold concepts.
- They are the hardest things students have to learn
- They are the most important too: almost all assessment in fact uses them.
- They require a longer timescale to master (not one short module)
- The reward is to see this learning transfer across modules; even across years and departments.

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Tactics?

- Exercise the/each criterion in both directions: not just as authors but as readers/critics
- Exercise the same criterion in tasks that are superficially very different (learn what is common across contexts)
- Try radically different timescales.
3 month, 1 hour, 5 minute versions.

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A place to stop

For the slides, handout etc. see:

<http://www.psy.gla.ac.uk/~steve/talks/PLAT10.html>

(Googling "steve draper plat10" goes there)

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