

Critical Thinking Research at Cambridge Assessment



CAMBRIDGE ASSESSMENT

Beth Black, Senior Research Officer
Presentation at the British Academy, February 2010



UNIVERSITY of CAMBRIDGE
Local Examinations Syndicate

Outline of talk

- Brief intro / example
- A digest of Cambridge Assessment research into CT

A photograph of Liam Donaldson, Chief Medical Officer for England, speaking at a press conference. He is wearing a dark suit, white shirt, and patterned tie. He has his hands clasped in front of him and is looking slightly to the right. The background shows a wall with several framed pictures or certificates.

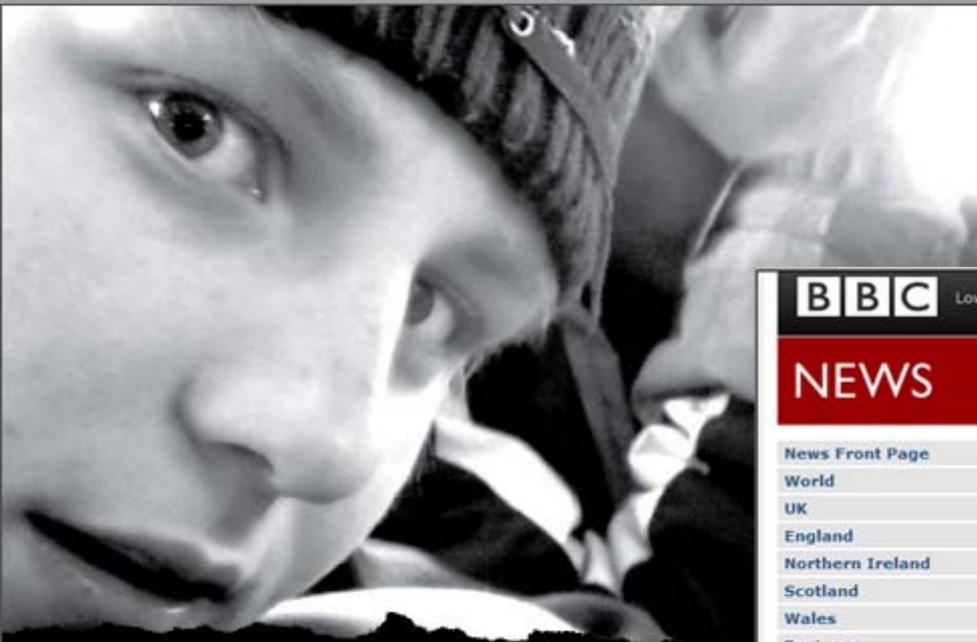
An example:

**Liam Donaldson, Chief Medical Officer for
England**

<http://news.bbc.co.uk/1/hi/health/8413559.stm>



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Press release:

GUIDANCE ON THE CONSUMPTION OF ALCOHOL BY CHILDREN AND YOUNG PEOPLE

From Sir Liam Donaldson
Chief Medical Officer for England

December 2009

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NEWS **LIVE** BBC NEWS CHANNEL

Page last updated at 00:01 GMT, Thursday, 17 December 2009

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Parents giving children alcohol 'fuels binge drinking'

By Martin Hutchinson
BBC News

Parents who allow their children alcohol at home may be increasing the chances of future drinking problems, says England's chief medical officer.

Sir Liam Donaldson accused some parents of a "laissez-faire" approach and said letting children taste alcohol to ready them for adulthood was "misguided".

Evidence showed that this could lead to binge drinking in later life, he said.

New official guidance says under-15s should drink no alcohol, with under-18s drinking only under supervision.

SEE ALSO

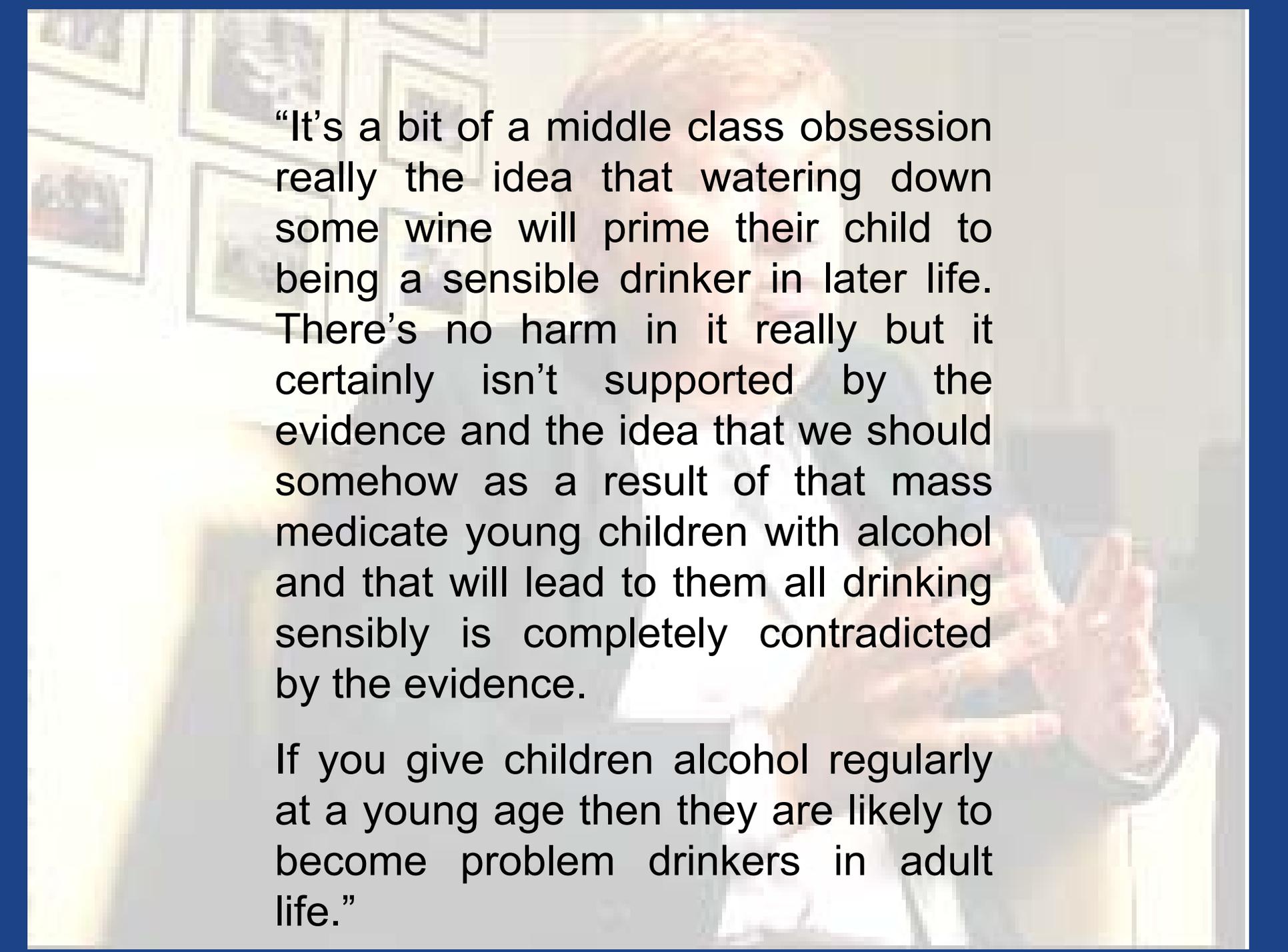
- Chief Medical Officer retiring 15 Dec 09 | Health
- Medics back cheap booze clampdown 06 Apr 09 | Health
- 'No alcohol' urged for under-15s 29 Jan 09 | Health
- 'Vodka, homework and me' 29 Jan 09 | Health
- Alcohol 'toll on young soaring' 30 Dec 08 | Health

RELATED INTERNET LINKS

- Chief Medical Officer
- Alcohol Concern
- Parentline Plus
- British Liver Trust
- Department of Health
- Alcoholics Anonymous

Experts are concerned that too many teenagers are drinking





“It’s a bit of a middle class obsession really the idea that watering down some wine will prime their child to being a sensible drinker in later life. There’s no harm in it really but it certainly isn’t supported by the evidence and the idea that we should somehow as a result of that mass medicate young children with alcohol and that will lead to them all drinking sensibly is completely contradicted by the evidence.

If you give children alcohol regularly at a young age then they are likely to become problem drinkers in adult life.”



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**Highly
questionable**



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rhetoric

**Highly
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rhetoric

contradiction

Highly
questionable



Conflation: 'children who drink at an early age' with...

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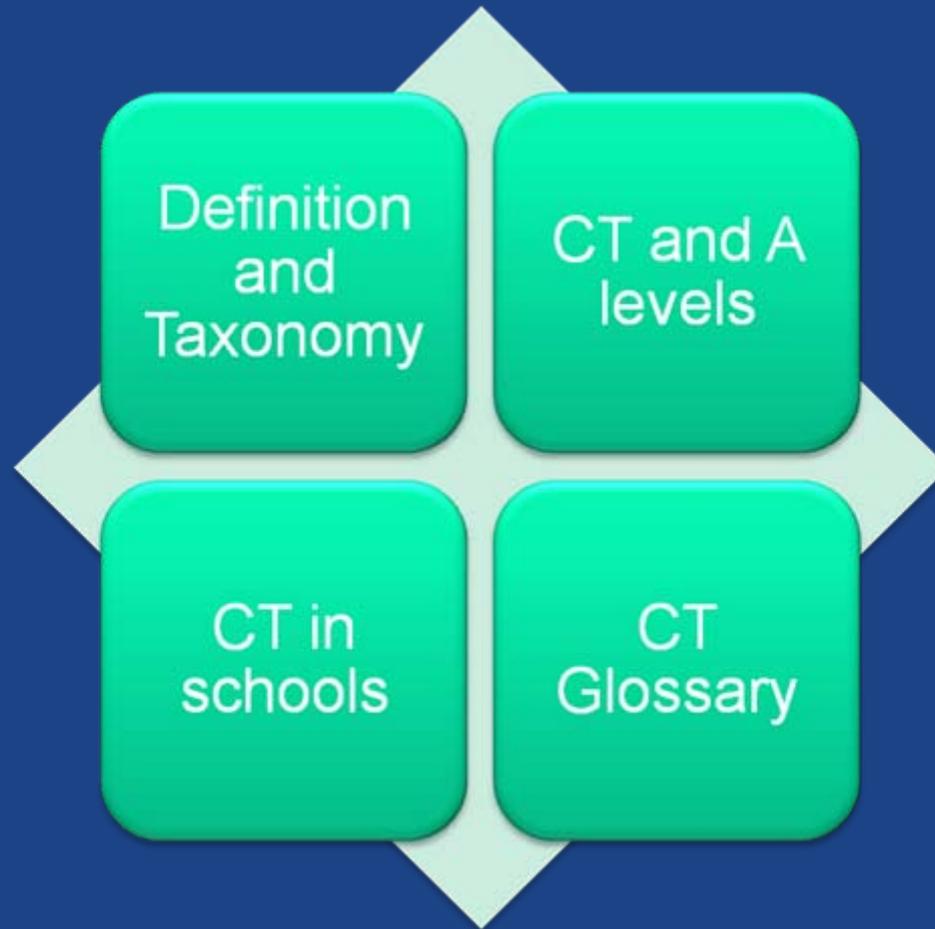
rhetoric

contradiction

Highly
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Digest of Cambridge Assessment research activities in CT





Digest of Cambridge Assessment research activities in CT

Definition
and
Taxonomy

CT and A
levels

CT in
schools

CT
Glossary

Definition and taxonomy

UK experts.

Work in response to:

- Proliferation of qualifications and tests.
- Some questions about the nature of CT in relation to these tests.
- Validation

Definition

main feature

Critical Thinking is the analytical thinking which underlies all rational discourse and enquiry. It is characterised by a meticulous and rigorous approach.

As an academic, they equate CT with rationality. It explicitly focuses on

i.e. not passive

Pre-requisite for analysis of own and others' positions

- analysing arguments
- judging the relevance and significance of information
- evaluating claims, inferences, arguments and explanations
- constructing clear and coherent arguments
- forming well-reasoned judgements and decisions

Incidental vs. purposeful acquisition

Being rational also requires an open-minded yet critical approach to one's own thinking as well as that of others.

Taxonomy (without expansion)



CAMBRIDGE ASSESSMENT

| | Skill/process | | Sub-skill/sub-process |
|---|--|---|--|
| 1 | Analysis | A B C D E F G | Recognising and using the basic terminology of reasoning. Recognising arguments and explanations Recognising different types of reasoning Dissecting an argument Categorising the component parts of an argument and identifying its structure Identifying unstated assumptions Clarifying meaning |
| 2 | Evaluation | A B C D E F G H I | Judging relevance Judging sufficiency Judging significance Assessing credibility Assessing plausibility Assessing analogies Detecting errors in reasoning Assessing the soundness of reasoning within an argument Considering the impact of further evidence upon an argument |
| 3 | Inference | A B | Considering the implications of claims, points of view, principles, hypotheses and suppositions. Drawing appropriate conclusions |
| 4 | Synthesis/ construction | A B C D E F | Selecting material relevant to an argument Constructing a coherent and relevant argument or counter-argument. Taking arguments further Forming well reasoned judgements Responding to dilemmas Making and justifying rational decisions |
| 5 | Self-reflection and self-correction | A B | Questioning one's own pre-conceptions Careful and persistent evaluation of one's own reasoning. |



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CT and A levels

Key Question:

Do candidates who have taken Critical Thinking AS level perform better in their A levels in other subjects?

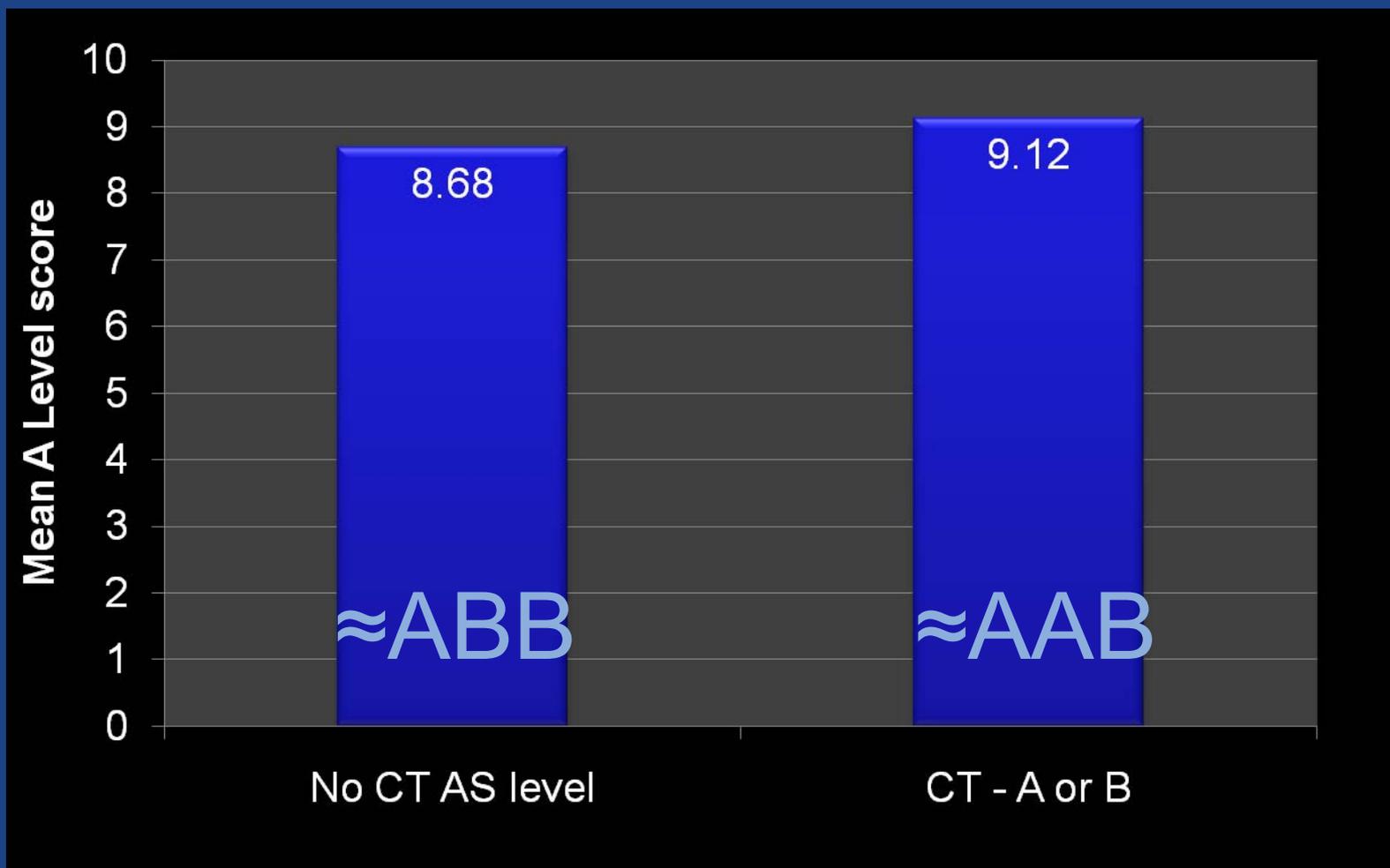
1a. Identified candidates who had done well at AS level CT (grade A or B).

1b. Matched them to another group of candidates for GCSE prior attainment

1c. Compare A level results



CT and A levels



CT and A levels

| | Mean A level grade | |
|------------|--------------------|---------------|
| | Non CT candidates | CT candidates |
| Biology | 8.76 | 9.17 |
| Chemistry | 8.96 | 9.35 |
| Physics | 8.94 | 9.33 |
| Maths | 9.02 | 9.32 |
| Geography | 8.64 | 9.17 |
| Economics | 8.98 | 9.46 |
| Psychology | 8.01 | 8.55 |
| English | 8.91 | 9.24 |



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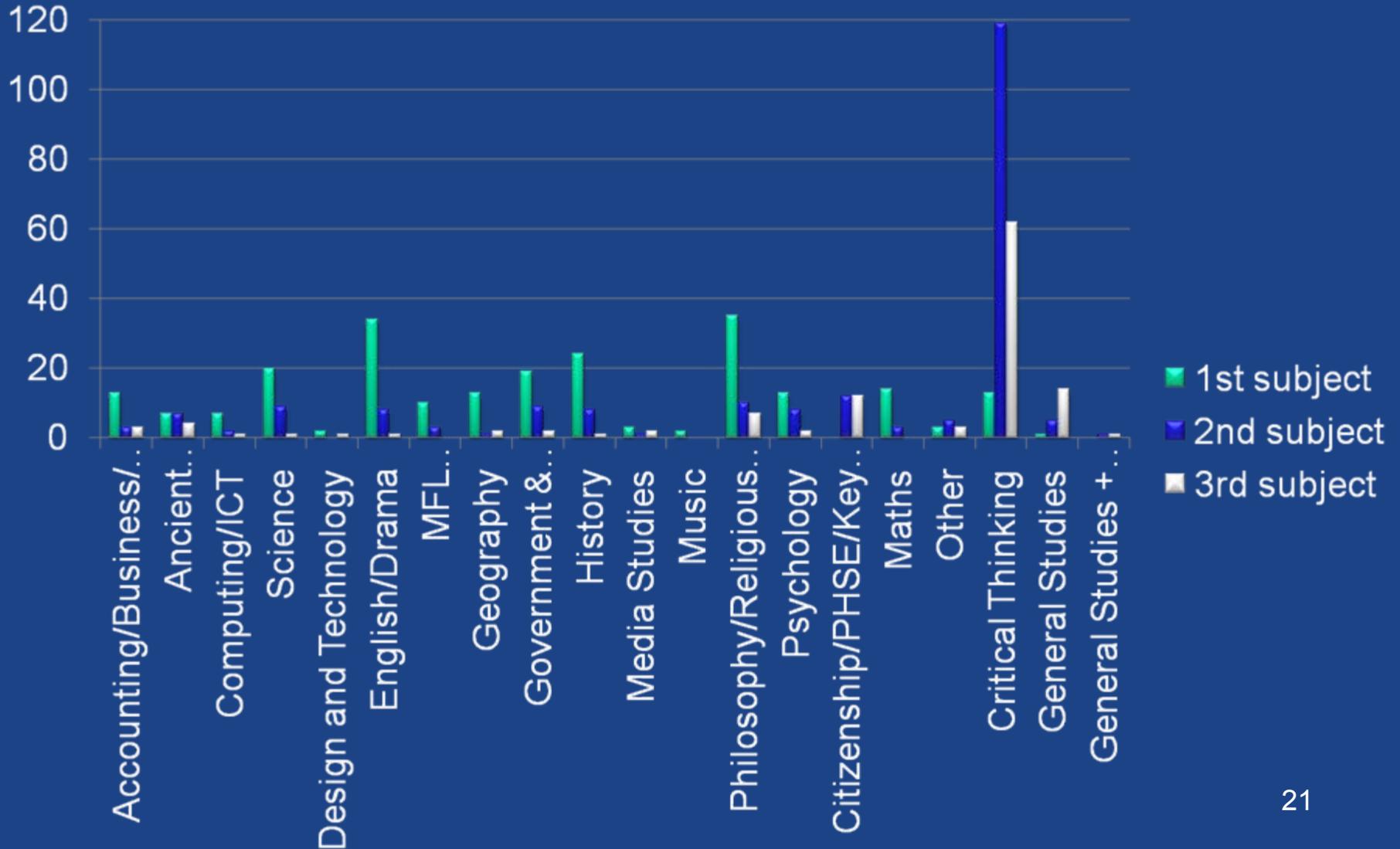


CT in schools

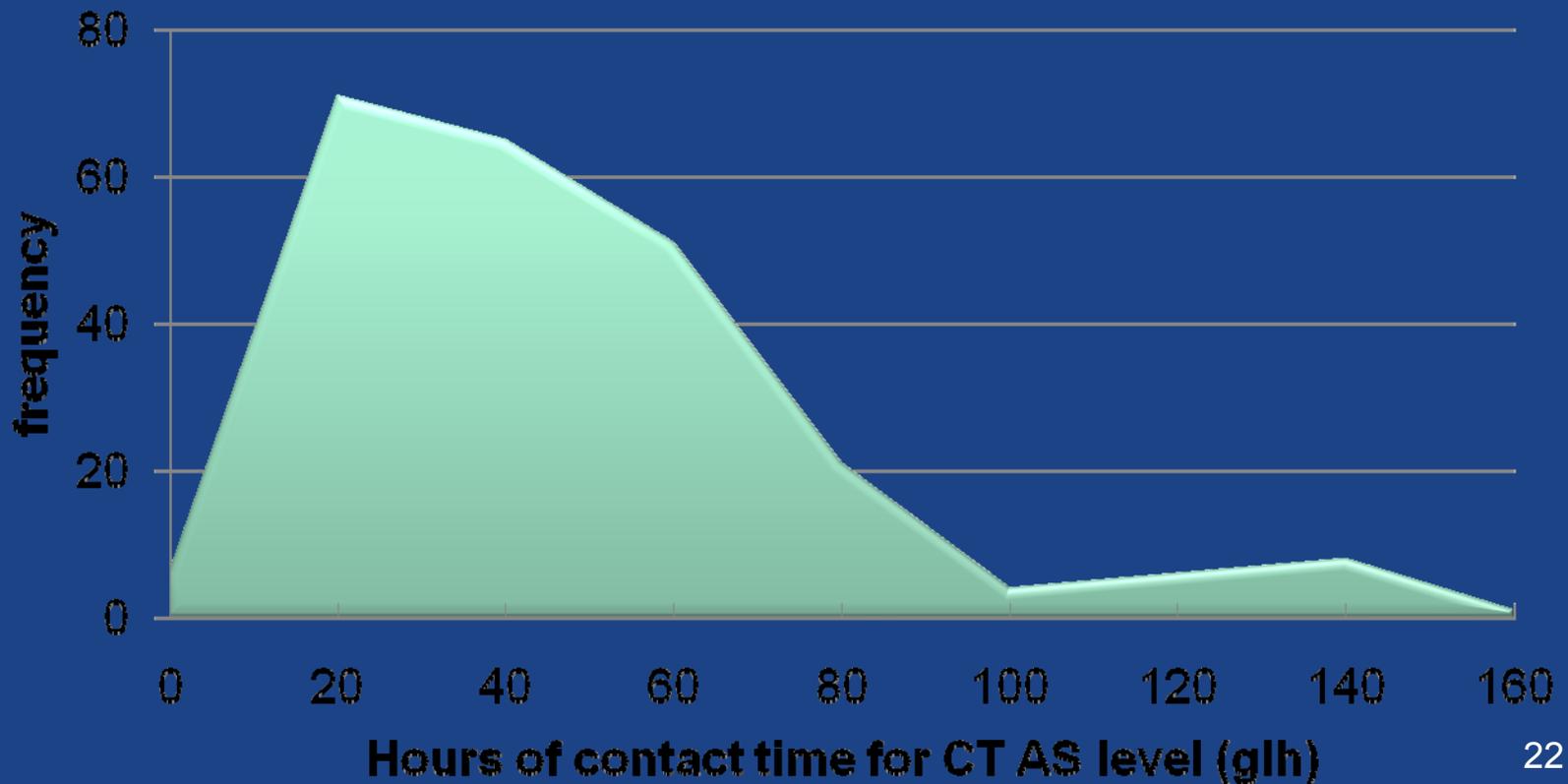
- How is CT delivered?
- Who is teaching CT?
- What do teachers think about CT?



CT in schools



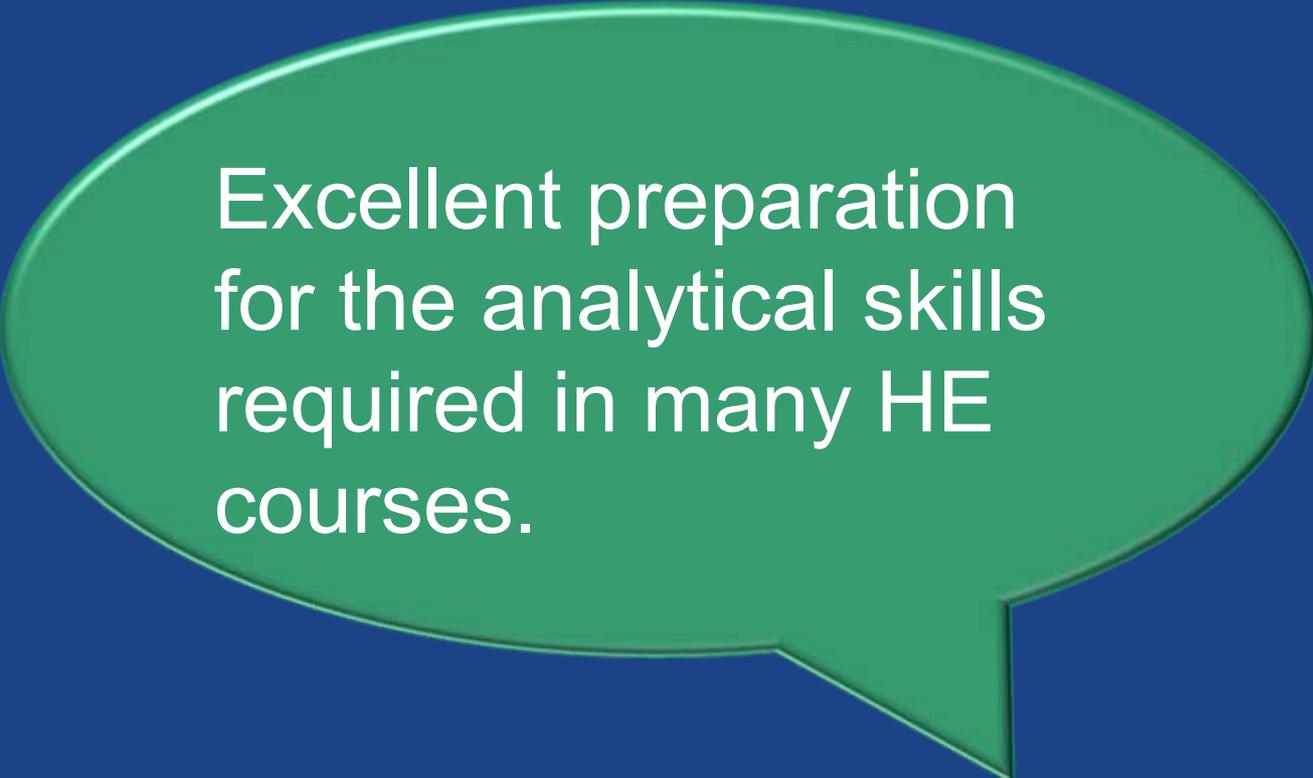
CT in schools





CT in schools

- Strong teacher advocates



Excellent preparation
for the analytical skills
required in many HE
courses.



CT in schools

- Appetite for CT in the system...

I enjoy the freedom from the drill of a body of knowledge but enjoy the discipline the skills provide...

It seems to me that this subject develops the skills that have been squeezed out of other subjects...



CT in schools

- Appetite for CT in the system... though not necessarily the right climate.

Our students are mainly motivated by the possibility of top grades. In a high achieving school like ours, they may be discouraged from doing CT in case they get a B or lower – this would be a stain on their record. Only the very top students welcome the challenge. (Sad, but true).

CT in schools

- Challenges of teaching CT
 - Perception of difficulty amongst students
 - UCAS points recognition
 - Teaching priorities
 - Resources and training



CT in schools

- Resources / training

None, I have done it all by myself.

I had to pay for the course myself.



CT in schools

- Resources / training

There is a desperate need for far more training for people who, like me, are 'flung in at the deep end'...

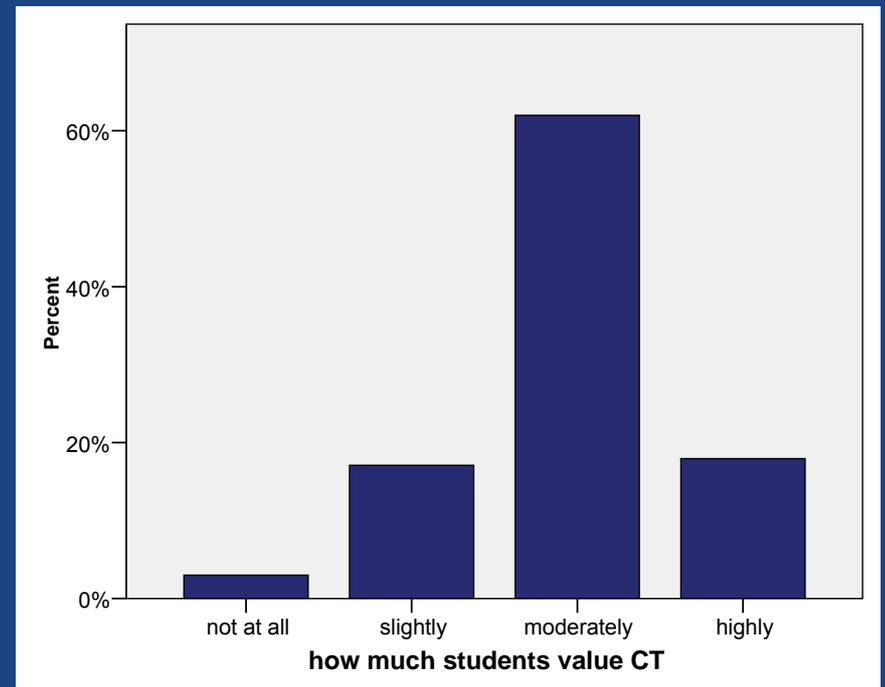
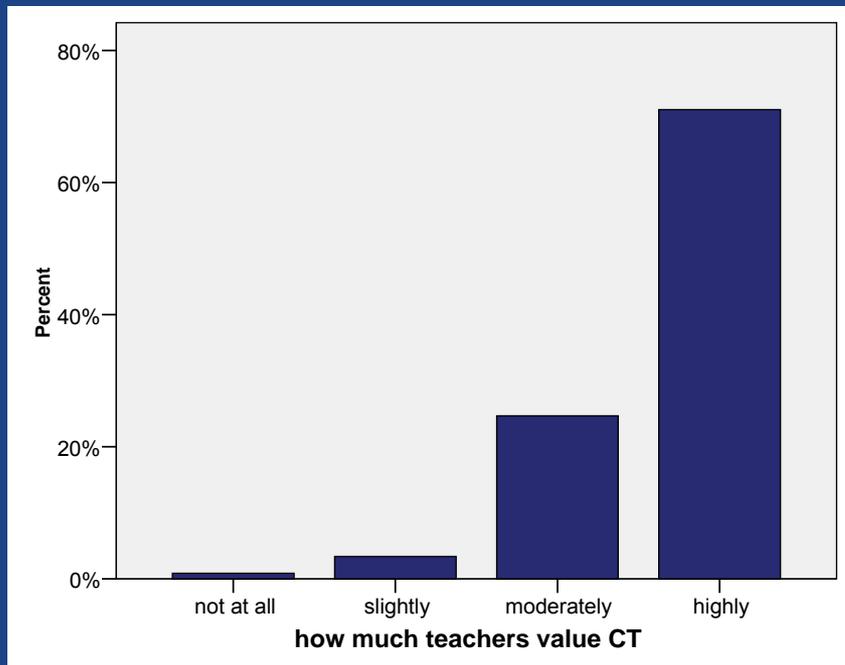


CT in schools

I would LOVE to teach CT properly. But I am not given the time on the timetable, the teacher-resources, or the support I require in the school either to teach my own classes or to co-ordinate the delivery of it school-wide

CT in schools

- Value of CT





CT in schools

- Value of CT

In the future we will not really be able to know everything there is to know. Quite often we will have to make judgements based on the information we are given and be able to account for judgements we have made and the actions we have taken. This will be a fundamental skill for the workforce of the 21st Century.



CT in schools

- Transferability of CT

Many subjects call for reasoned arguments. What better way to prepare them?

Many of our “most-improved” students in year 13 took CT in their year 12, perhaps due to developing transferable skills.



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- Culmination of work on definition and taxonomy
- Purpose and audience

ad hoc

brought in for the purpose

An *ad hoc* move in reasoning is a defence of a belief or argument in the face of evidence or challenges or difficulties. The immediate and intended result of the *ad hoc* move is that the belief can be accommodated after all. Suppose, for example, that a politician was arguing that all forms of gambling are undesirable. It is pointed out to him that he has expressed support for the introduction of the national lottery. On being reminded of this he responds that all forms of gambling, *except when they are state-run* are undesirable. That would be an *ad hoc* move, and it would weaken his original argument.

The distinguished Victorian naturalist, Philip Gosse, responded to Darwin's theory of evolution in a famously *ad hoc* manner. He was a member of the Plymouth Brethren and accepted unconditionally a literal interpretation of the creation story in Genesis. However, he needed to respond to the fossil evidence which appeared to show that life forms of increasing complexity developed over time. He was too well informed to reject the fossil record out of hand. So instead, he squared his literal belief in creationism with an acceptance of the fossil record by adding the third, *ad hoc*, claim that God had created fossils in this order as a test of faith. This is clearly *ad hoc* reasoning.

See also: flaw; counter-example; post hoc, ergo propter hoc.

ad hominem

Latin for 'at, or towards, the man', this is an attempt to weaken the opposing position by directing your attack at the person who put forward the argument rather than at his or her argument.

The truth of a claim is logically independent of its origins; put another way, the competence or credibility of the speaker has no relevance to the truth of what they say.

The soldier claimed that his decision to shoot was justified as it was in response to enemy gunfire. But soldiers only say what they are supposed to say, and therefore we cannot accept his argument.

Of course, the credibility of a claim *is* affected by its source. However, just as it is fallacious to assume that because an expert holds a particular view, the view must be correct (see *appeal to authority/expertise*), it is also fallacious to assume that because someone lacks credibility, the claim must therefore be false. Moreover, if the person has provided reasons for the claim, but these reasons are not considered on the grounds that the arguer lacks credibility, then what was a relevant attack becomes *ad hominem*. (If it is not the conclusion but the reasons themselves, or an individual claim which is being objected to, then the 'attack' is often more relevant: 'We should not trust her statement entirely as she is clearly biased on this issue' – see *credibility*. However, dismissing someone's whole argument on the grounds that they lack credibility on an issue, without even considering what they say, is a clear case of flawed *ad hominem* reasoning.)

Not all critical references directed 'to the person' are fallacious. For instance, if I accuse someone of hypocrisy or inconsistency on the grounds that in the past they have said or done something that warrants this claim, then I am arguing *ad hominem* but not necessarily committing a fallacy. The person's record in such a case is germane and arguing from it is legitimate.

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Final comments

- Definition and taxonomy and glossary
- Impact

Future challenges

- HE recognition
- Training and resources

Thank you

links to reports:

<http://www.cambridgeassessment.org.uk>

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