

## **Introducing a new subject and its assessment in schools: the challenges of introducing Critical Thinking AS/A level in the UK**

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## **Abstract**

In the UK, there has been the (optional) provision of national assessment at AS/A level in Critical Thinking (CT) since 2001. While many commentators note the importance of Critical Thinking in the curriculum (e.g. Yang & Chung 2009; Black and Gill, in prep; Baumfield et al, 1998; Abrami et al 2008), and its uptake has been popular – candidate numbers have risen from 2,500 (2001) to 22,000 (2009) – candidate ‘success’ at Critical Thinking (in terms of proportion of grade As and passes) remains relatively low.

Explanations for why this may be the case fall broadly into three types:

1. Performance standards exhibited by candidates reflect low level or poor quality of teaching provision.
2. Performance standards exhibited by candidates reflect low level of candidate motivation to achieve in this discipline.
3. The high demand of the discipline

While there is some evidence for the second type of explanation (see Vidal Rodeiro, 2007), this paper will seek to explore the evidence for the first type of explanation in particular. This is of some significance when considering that no teacher has a degree in Critical Thinking, no teacher training qualification in the UK includes Critical Thinking, and that as a school subject it has grown so rapidly that few current teachers are likely to be in a position to benefit from years of experience. There may be parallels with other new assessments introduced in schools such as that of citizenship (Richardson 2008).

This paper will consider the difficulties of introducing a new subject and new assessment into the curriculum through an exploration of the results of a survey of 236 teachers of Critical Thinking and will report on the ways in which centres have implemented the provision of this new school subject in terms of teacher and student recruitment and model of delivery.

## Introduction

Thinking Skills, and more specifically, Critical Thinking (CT) as “the analytical thinking which underlies all rational discourse and enquiry” (Black 2008), is often noted as an important ingredient of the school experience; an essential skill for the knowledge age. Thus, ‘good thinking’ is often an ‘avowed claim of education’ (Pithers and Soden, 2000). It is often claimed to have wider educational benefits in terms of (for example):

- achievement in other measures of skills and academic performance (Topping and Trickey, 2007; Trickey and Topping, 2004; Gill and Black, in prep; Zohar, Weinberger, and Tamir, 1994);
- stretching higher ability students (e.g. Vaughn, Feldhusen and Asher, 1991);
- helping minority students (Yeh, 1998) and
- helping under-achieving and/or special educational needs students (e.g. Baumfield and Devlin 2005).

However, the lack of these thinking skills is often lamented by employers or HE institutions (e.g. Sharpe 2009).

This paper will focus on the introduction of Critical Thinking AS level<sup>1</sup> into schools in England. As an AS level, it is a qualification, with a specification (syllabus) which prescribes the ‘content’ that will be examined. As such, it does not itself provide a ‘programme of instruction’, though perhaps it has been the catalyst for the largest scale introduction of critical thinking into schools in England. In 2001, 130 schools entered in total just over 2,000 candidates for the whole AS level. By 2009, this had increased to over 1000 schools<sup>2</sup> entering over 22,000<sup>3</sup> candidates.

However, candidate ‘success’ at Critical Thinking (in terms of proportion of grade As and passes) has remained relatively low.

Hypotheses or potential explanations for why this may be the case fall broadly into three types:

1. Performance standards exhibited by candidates reflect low level or poor quality of teaching provision.
2. Performance standards exhibited by candidates reflect low level of candidate motivation to achieve in this discipline.
3. The high demand of the discipline

While this paper seeks to explore evidence for the first type of explanation in particular, we will briefly turn to the evidence for the other two types of explanation.

In terms of hypothesis 2, there is some evidence to support this in Vidal Rodeiro’s (2007) survey of students’ A level choices. Over 6000 students were surveyed about factors affecting their AS and A level choices. Of the students surveyed, 5.1% were taking Critical Thinking AS level, and nearly half of all the centres in the study offered Critical Thinking as an AS level. While Chemistry, Mathematics, English and Biology were seen as some of the most important subjects at AS level, Critical Thinking was seen as one of the least important (above only Citizenship and General Studies). Of the students taking Critical Thinking, nearly 58.9% rated it as their least important AS subject (Citizenship and General Studies were 66.7% and 69.2% respectively), and only 8.9% rated it as their most important subject (Citizenship and General Studies were 16.7% and 6.7% respectively; in contrast, Mathematics was 76.8%). While this research does not allow us to understand the finer details of how students

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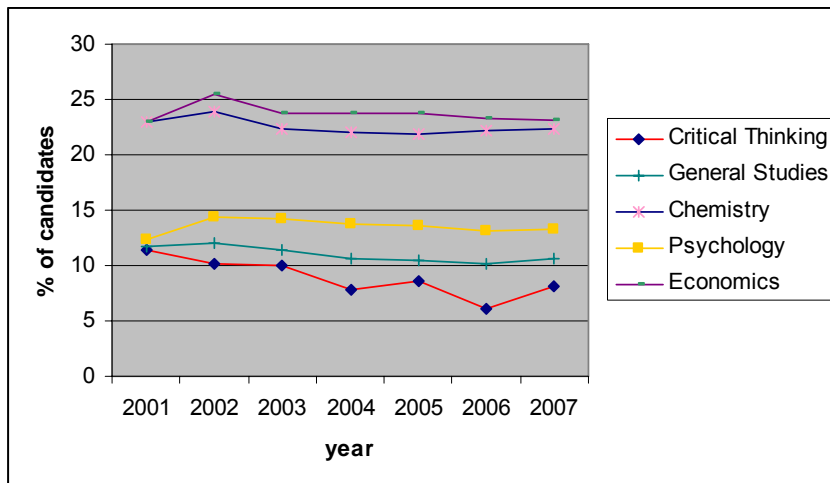
<sup>1</sup> AS (Advanced Subsidiary) level represents the first half of an Advanced Level General Certificate of Education (A level GCE) qualification. AS and A levels are the most popular post-16 educational route in England, Wales and Northern Ireland. The full A level typically requires two years of study beyond General Certificate of Secondary Education (GCSE) levels (which are taken by all students in mainstream education at age 16 years in England, Wales and Northern Ireland). Typically, students take 4 AS levels in their first year of study, and continue three of these to the full A level.

<sup>2</sup> About a third of centres offering AS/A levels in England enter candidates for Critical Thinking.

<sup>3</sup> For context, some other AS subject entries for 2009: Chemistry 58,473, Economics 27,714, French 19,122, English 107,124.

may have construed the term ‘important’ (e.g. ‘important for me to get a good grade’ / ‘important in terms of the significance of its subject matter’ etc.), this research does indicate that there is likely to be lower motivation in this subject than in others. This current research project also aimed to find out about student motivation – though only indirectly through the reports of their teachers.

In terms of hypothesis 3, there might be a *perception* that Critical Thinking is difficult because of the relatively low proportion of candidates, in comparison with other subjects, who receive a grade A (see figure 1 below)<sup>4</sup>.



**Figure 1: proportion of candidates who have received a grade A in various AS subjects between 2001 and 2007.**

Critical Thinking, from a cognitive point of view, might be considered more difficult than some subjects since it necessarily requires abstract, rather than concrete, thinking. For instance, conceptualising the subject in terms of Bloom’s taxonomy (Bloom, 1955), it could be said Critical Thinking is characterised by higher-order processes such as evaluation, analysis, synthesis and application.

There is also some support for the idea of Critical Thinking as a difficult subject as shown in the “ALIS grade predictions” below (see figure 2). ALIS<sup>5</sup> is predicated on the idea of subject difficulty at A level in terms of prior attainment. Thus, from the figure below, we can see that students with a mean GCSE<sup>6</sup> score of 5 would be predicted to get a borderline E/D grade in Critical Thinking, a D in English Literature, a C in Art-Photography or a borderline U/E grade in Biology. A mean GCSE score of 8 (equivalent to all A\* grades at GCSE) would predict borderline A/B in Critical Thinking, an A in Art-Photography and Biology and most other subjects on the chart. This seems to indicate that Critical Thinking is a ‘more difficult’ subject.

The ALIS data, however, is not incompatible with other explanations – since it might be that this data need not (and should not) be interpreted purely in terms of intrinsic subject difficulty. It could be that even students with a very good GCSE profile do not achieve well in Critical Thinking because they are poorly motivated, or they have not had access to the best possible resources (learning materials etc.) or that the quality of teaching is generally less adequate than in other subjects. It is these explanations which this paper will explore more fully.

As a school subject, Critical Thinking has grown so rapidly that few current teachers are likely to be in a position to have the benefit years of teaching experience in the subject. In any subject, there are undoubtedly difficulties in delivering something new.

<sup>4</sup> However, qualification outcomes in terms of % of candidates at or above particular grades, may affect the perception of difficulty, but does not necessarily mean that a subject is ‘easy’ or ‘difficult’. There is a distinction to be made between ‘grading difficulty’ and ‘intrinsic difficulty’.

<sup>5</sup> ALIS stands for Advanced Level Information System and provides performance indicators for post-16 students in the UK. It is a value-added monitoring system run out of the Centre for Evaluation and Monitoring (CEM) of Durham University.

<sup>6</sup> General Certificate of Secondary Education (GCSE) qualifications are taken by all students in mainstream education at age 16 years in England, Wales and Northern Ireland. Students usually take between 7 to 10 GCSEs.

## ALIS Grade Predictions

The graphs below show what grades pupils are likely to obtain in the major AS-levels (A1s) and 3-unit VCEs, depending on achievement at GCSE as calculated from the ALIS database (2003).

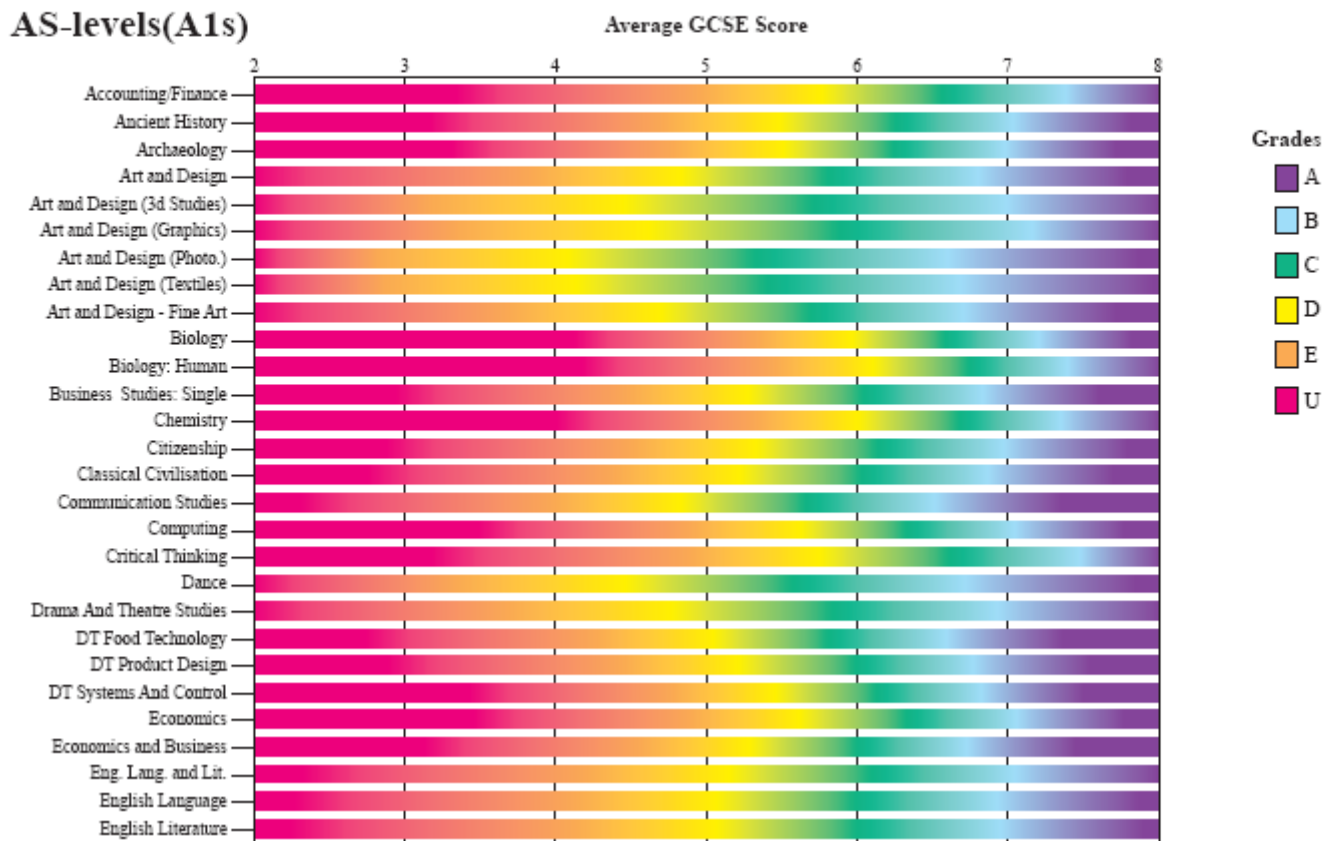


Figure 2: ALIS Grade Prediction chart

In the US, where Critical Thinking programmes of instruction have been around for much longer, Sternberg (1987) identified “eight easy ways to fail before you begin” – eight ‘fallacies’, peculiar to Critical Thinking, which ‘obstruct the teaching of critical thinking ... and make it easy to fail’. These include the following (sometimes interrelated) ‘fallacies’:

- teachers who assume they have nothing to learn from students, whereas teachers need themselves to be receptive to new ideas;
- assuming that Critical Thinking is the task only of the student; instead the teacher also has to think out responses;
- that what really counts is the right answer – in Critical Thinking it is the thinking behind the answer which is important;
- that class discussion is just a means to an end – in Critical Thinking, “the processes of thought and their expression in class discussion are legitimate and important ends in their own right”;
- that the job of a course in Critical Thinking is to teach Critical Thinking – Sternberg’s point here is that students and teachers both have to think for themselves and thus the role of the teacher in the classroom is more of a facilitator than a didact.

Sternberg concludes that teaching Critical Thinking, though possible and desirable, is not simple. Some common ideas that teachers hold about teaching and learning, while they may be applicable in the normal course of classroom events, do not apply in the Critical Thinking classroom. This suggests that the struggle of introducing Critical Thinking is not just that of introducing a new subject – it requires a fundamental re-orientation prior to teaching.

This point resonates with the findings of a case study of the implementation of three different Thinking Skills programmes in a UK context (Baumfield and Oberski, 1998). Although they found that the

instigation of the programmes was a response to dissatisfaction with the prevailing mode of teaching and learning, it was difficult for teachers to entirely shake off that prevailing mode. The programmes afforded greater opportunities for group work and discussion (and this was seen as important by both students and teachers), but some teachers found this sometimes difficult to manage. In particular, not having a “solid body of content” and trying out new ideas for the first time created some insecurity. There was a tendency, therefore, to resort, at times, to more familiar modes of teaching in terms of what a productive and meaningful lesson should be. Again, for Baumfield and Oberski, this raised the issue of planning and previous inattention to this in terms of their original inquiry. But they conclude:

*“if conventional modes of planning using aims/objectives/outcomes are based, albeit loosely, on behaviourist models of learning, we would anticipate some incompatibility with the constructivist orientation of thinking skills programmes”.*

Both Sternberg’s and Baumfield and Oberski’s papers suggest that the introduction of Thinking Skills / Critical Thinking as a new subject may be more problematic than other new subjects might be by virtue of its nature.

Richardson (2008) describes some of the difficulties of introducing another new subject into schools – Citizenship – which possibly has some shared issues with that of Critical Thinking, such as difficulties in defining the construct (Black, 2008; Kerr and Cleaver, 2004). The teaching and assessment of this subject was adversely affected by lack of time and resources which meant that teachers were prevented from developing the curriculum as much as they would have liked. Lack of training was also cited as an issue for teachers of citizenship (House of Commons Select Committee: Citizenship Review, 2007, cited in Richardson 2008). And this is potentially an issue for Critical Thinking too. Certainly, no teacher has a degree in Critical Thinking, no teacher training qualification in the UK includes Critical Thinking. In the US, there is a growing bank of evidence that advance training in preparation for teaching Critical Thinking skills has a significant impact upon the success of the programmes (in terms of student gains in Critical Thinking skills) (Abrami et al, 2008).

The present research considered the difficulties of introducing a new subject through an exploration of the results of a survey of 236 teachers of Critical Thinking and reports on the ways in which centres have implemented the provision of this new school subject in terms of teacher and student recruitment and model of delivery.

## Method

### Sample

As the main medium for collecting data was an electronic questionnaire, we attempted to contact all centres (n=1096) with entries for OCR AS level Critical Thinking units in the June 2007 by email. Email addresses / teacher contacts were obtained from the following sources:

- OCR list of contact emails for centres
- Recruiting appropriate respondents via examiner standardisation meetings
- Publicising the questionnaire (and electronic link) through the OCR<sup>7</sup> e-forum for Critical Thinking teachers.
- Contacting OCR Critical Thinking centres via their websites.
- Using contact details for Critical Thinking teachers who had attended INSET and who had agreed to be contacted by OCR/Cambridge Assessment for other purposes.

In all, about 900 centres were contacted either directly to a teacher or via the general email during June 2007.

There were 236 responses from teachers, representing just over 20% of all OCR Critical Thinking centres and 34.3% of AS candidate entries for 2007. In general terms, this represents a good response rate.

### Devising the questionnaire

A draft version of the questionnaire was piloted in two stages. The purpose of this part of the research activity was to ensure the questions did not contain any ambiguity or sensitivities, and could maximise the information to be captured.

Firstly, two schools both with substantial candidature were approached and the lead teacher/teacher in charge of Critical Thinking agreed to complete the questionnaire and be interviewed afterwards regarding the usability and clarity of the questions, questionnaire length, and whether the questionnaire was able to capture all likely answers. Secondly, after some aspects of the questionnaire were modified it was then circulated to three more teachers for further feedback.

### The questionnaire

The questionnaire was available for online completion using a specialist provider called SySurvey<sup>8</sup>. For those that requested, a paper version of the questionnaire was made available. The majority (n=226) opted for completing the electronic version.

The questionnaire consisted of a total of 50 questions, a mixture of closed and open format questions divided into 6 subsections:

#### *Section A: Background information about respondent*

This included questions about job title, centre name, centre type, years in teaching generally and years of experience of teaching Critical Thinking and in what role (e.g. sole teacher, co-ordinator etc).

#### *Section B: Timetabling and delivery time of Critical Thinking*

This section included questions about number of hours per week and per course, how it was timetabled (e.g. officially in timetable, lunch time or after school, or as part of Tutorial time), whether the total amount of teaching time was adequate, and amount of homework set per week.

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<sup>7</sup> OCR stands for Oxford, Cambridge and RSA and is one of the three unitary awarding bodies in England. Until 2009, OCR offered the only AS / A level qualification in Critical Thinking.

<sup>8</sup> See <http://sysurvey.com/> for further details.

**Section C: Student recruitment**

Including how Critical Thinking was offered to students (e.g. part of main 3 or 4 AS level programme, additional and optional or additional and mandatory, or to Year 10/11 students), reasons for students choosing Critical Thinking, whether any particular groups were encouraged to take the subject.

**Section D: Student motivation**

Including ratings of student engagement and interest, motivation to achieve a good exam result, attendance ratings and attendance relative to other subjects offered in the school.

**Section E: Resources and training for Critical Thinking teachers**

Including materials used in lessons, uptake of training (e.g. INSET<sup>9</sup>), prior education of use to delivery of Critical Thinking.

**Section F: Other questions**

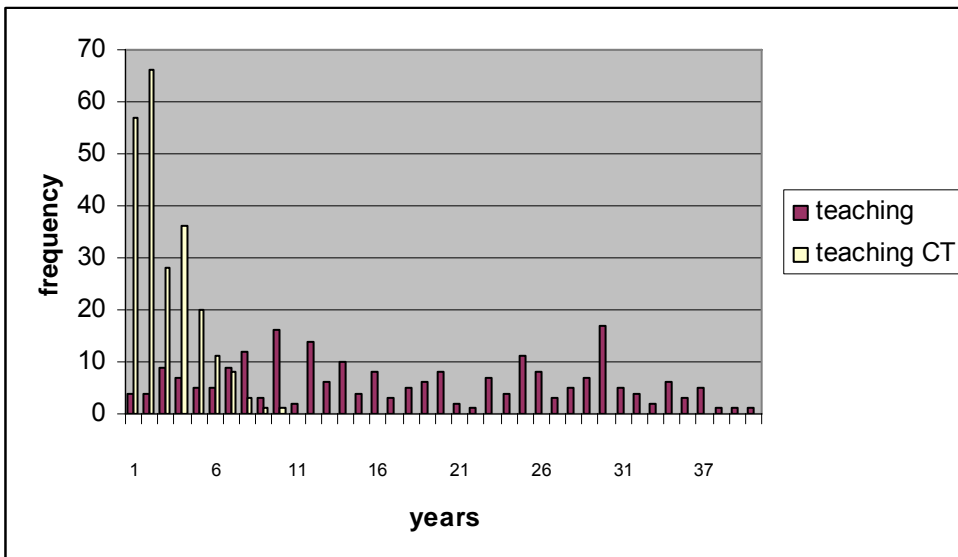
In general, these questions were designed to gauge how much the respondent and their centre valued Critical Thinking as a discipline. Questions included whether the respondent's centre had plans to integrate Critical Thinking skills into other lessons, whether the teacher used Critical Thinking techniques in other subject lessons, how much they enjoyed teaching it, and whether they believed it could benefit candidates in their other AS/A levels.

All questions were optional and the software was deliberately set up to allow the respondent to continue if they had chosen not to respond to any particular question or questions.

**Results**

**Section A: Background information of respondents**

Respondents were overall very experienced teachers (mean teaching years = 18.00) (see figure 3). Given the newness of Critical Thinking, it is unsurprising that the distribution is so skewed (mean years teaching Critical Thinking = 2.95).



**Figure 3: Frequency bar chart of number of years teaching Critical Thinking compared with number of years teaching overall.**

<sup>9</sup> INSET stands for In Service Training and is the term commonly used to refer to training courses for teachers. Much INSET is subject and syllabus specific and is provided by awarding bodies such as OCR. INSET is generally a half or one day course.



Respondents were asked to list the subjects they taught and the hours devoted to each per week in their timetables. Figure 4 below shows the respondents' main subjects (i.e. the greatest amount of teaching/contact time), second and third subjects.

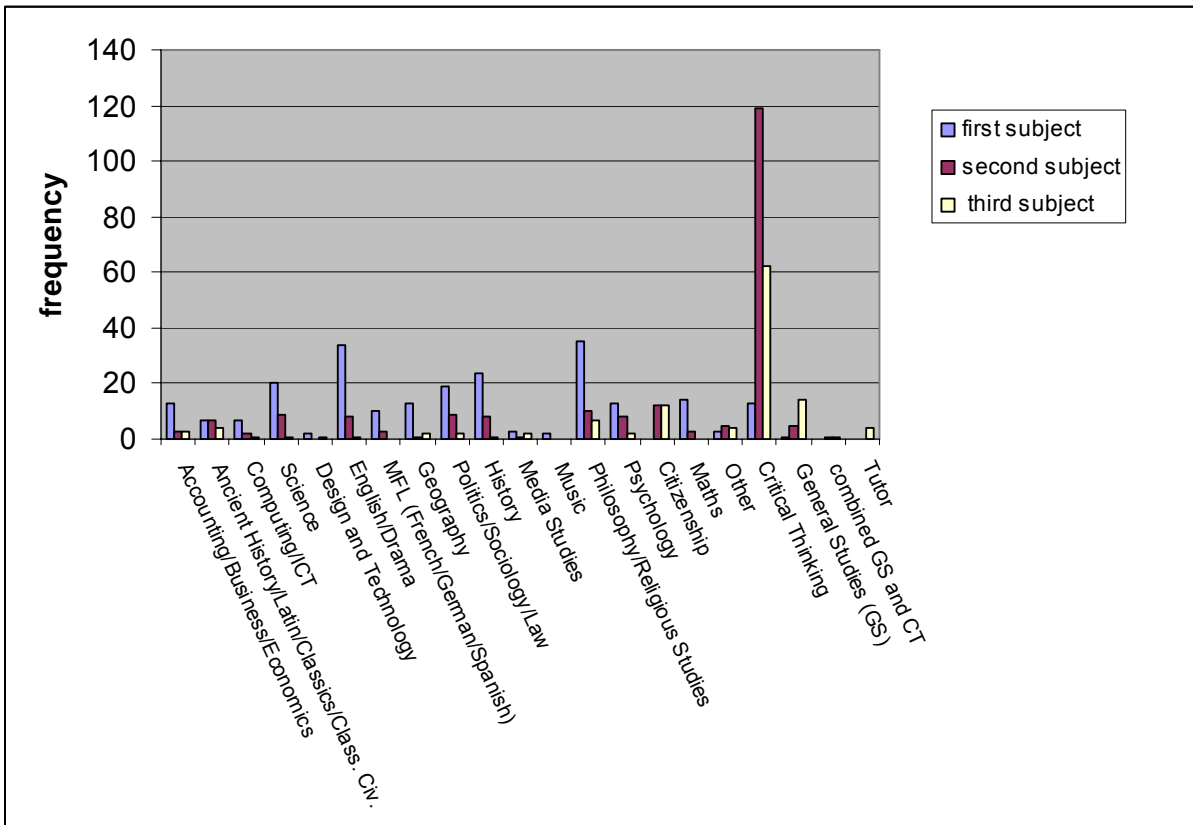


Figure 4: frequency bar chart showing respondents' first, second and third subjects.

In terms of main subject, the respondents came from a variety of subject backgrounds. Teachers of Religious Studies / Philosophy, English, History and Science accounted together for more than 50% of the respondents.

We can also see that Critical Thinking was rarely cited as their main subject, but much more frequently as a second or third subject. Looking at contact teaching hours for Critical Thinking as a proportion of overall hours, more than two thirds of respondents reported that Critical Thinking constituted less than 20% of their teaching time table (see figure 5 below). Only for a minority (n=15; 6.36%) did Critical Thinking constitute 50% or more of their timetable.

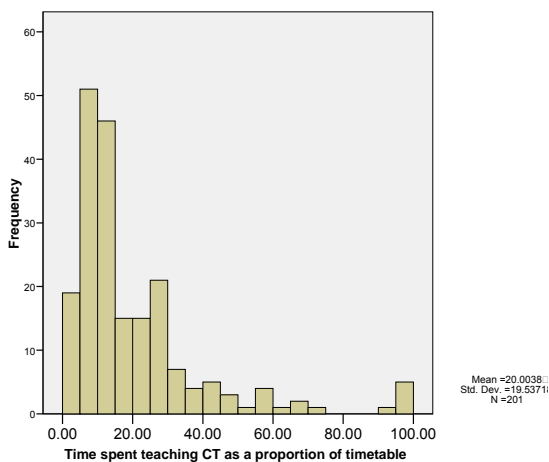


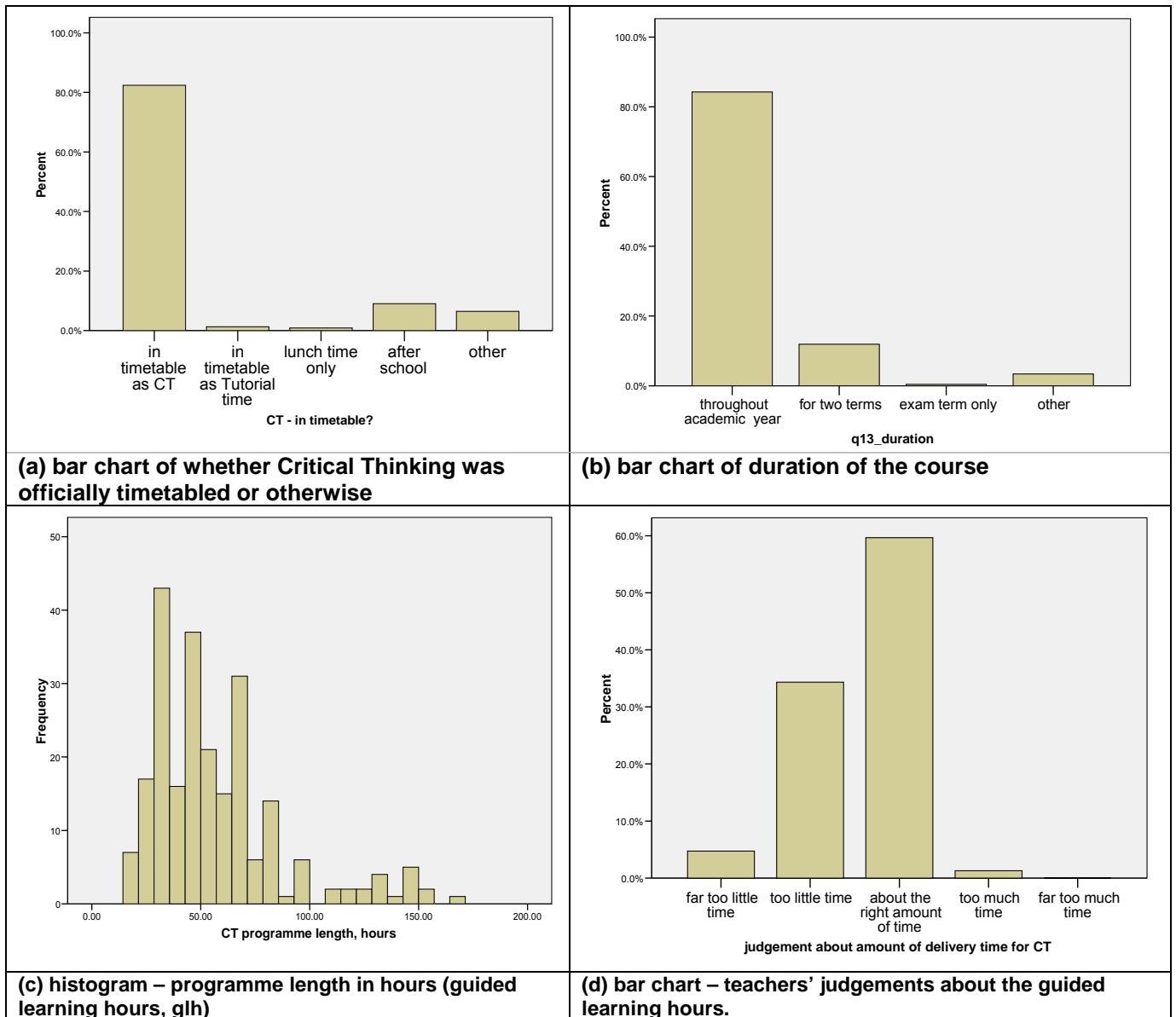
Figure 5: bar chart showing time spent teaching Critical Thinking as a proportion of teachers' timetable.

We might speculate that it is likely that teachers may find it difficult to prioritise Critical Thinking when it forms such a small part of their timetable (see page 18 for more).

**Section B: Timetabling and delivery time of Critical Thinking.**

Having looked at contact time from the teacher’s point of view, we will consider the number of contact hours (sometimes called ‘guided learning hours’) devoted to Critical Thinking per class. The way in which it is timetabled for students gives an indication of the centres’ commitment to Critical Thinking.

The majority of teachers (81.4%) reported that their centres timetabled Critical Thinking in the main timetable as Critical Thinking (see figure 6a). Respondents were also asked about the duration of the provision – most responded that Critical Thinking lessons were held throughout the school year (three terms), although just under 17% reported more condensed courses of two terms or less (figure 6b).



**Figure 6: Critical Thinking in the timetable**

The mean number of teaching hours for the AS course was 57.12 hours (see figure 6c), equivalent to an average of 1.5 hours per week. To provide some context, AS specifications in general suggest that they require approx 140-160 guided learning hours, and Critical Thinking is no exception. Thus, it seems that in the majority of centres, Critical Thinking provision was very much attenuated. Teachers were also asked how they regarded the amount of contact time per class and were asked to rate their view of the total amount of teaching time on a 5 point scale. As figure 6(d) shows above, none of the respondents indicated that they had ‘far too much time’; the modal response was ‘about the right amount of time’. 40% of respondents thought that there was not enough time (too little or far too little time) per class for the delivery of Critical Thinking.

*Section C: Student Recruitment and the place of Critical Thinking in the curriculum/who the course is aimed at.*

This section of the questionnaire aimed to find out how centres were offering Critical Thinking to students and whether there were formal or informal recruitment policies – in other words, who were they aiming the course at?

Respondents were asked about their recruitment policies (see table 1 below). The options provided were not all mutually exclusive and/or it was possible that centres had more than one target recruitment (e.g. offered to both year 12 students as well as year 10 gifted and talented students). Thus, respondents were able to select more than one response.

**Table 1: practice within centres – how Critical Thinking is offered in the overall structure of the school's curriculum**

<i>Response</i>	Frequency	%
CT is offered to students as <b>one of their main</b> 3 or 4 AS levels	33	14.0
CT is offered to students as <b>additional</b> to their main 3 or 4 AS levels and is <b>optional</b>	135	57.2
CT is offered to students as <b>additional</b> to their main 3 or 4 AS levels and is <b>mandatory</b>	35	14.8
Students have to <b>choose</b> between General Studies AS level and CT.	25	10.6
Students are <b>allocated</b> to either General studies or CT by the school/college.	19	8.0
CT is offered to Year 10/11 students as part of the provision for Gifted and Talented.	33	14.0
Other	27	11.4

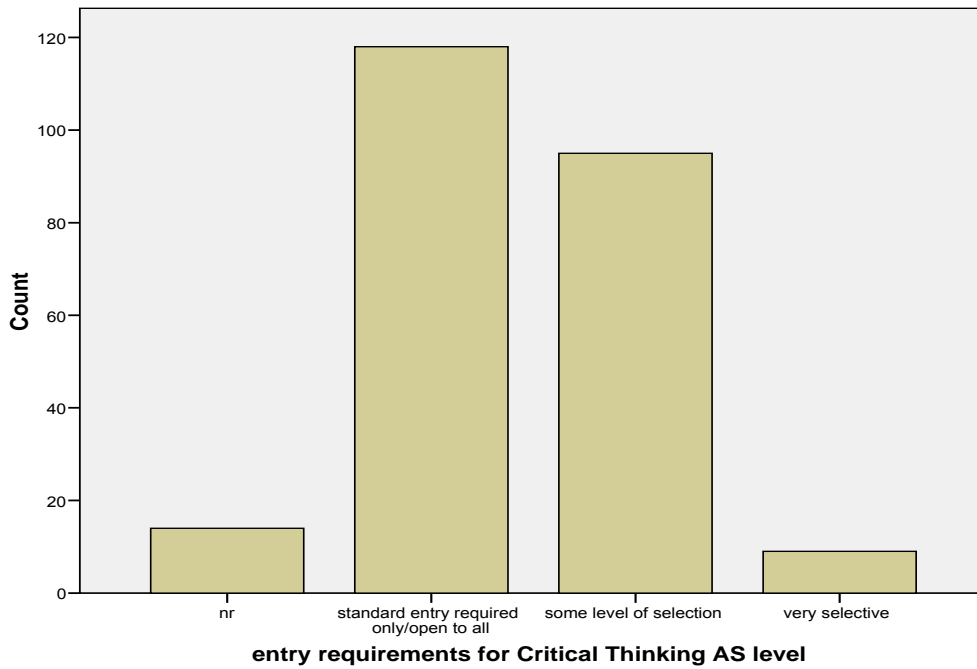
The most common response was that Critical Thinking was offered as an additional subject to the main 3 or 4 AS levels, and as optional. Only 15% of respondents indicated that it was a mandatory course in the sixth form, (though because these centres tended to enter larger numbers of candidates, these respondents corresponded to 25% of candidates represented by the survey).

Centres reported a range of formal and informal recruitment processes. Formal processes consisted of formal entry requirements to the course. Open responses were coded into three categories:

1. *standard entry requirements / open to all*. This category was used where the response indicated that the entry requirements were the same as that for entry into the sixth form, or was judged to be likely to be the same (e.g. 5 GCSEs A\* to C); or that the response indicated that any student on the roll was able to opt for the course.
2. *some level of selection*. This category was used where the response indicated that entry requirements were a bit more stringent and thus was not open to all (but not *highly* selective). For example, if they required a particular GCSE grade (often a B in English); a particular grade profile (e.g. "GCSE mean point score in excess of 6.3"[equivalent to mainly As and Bs]; high TMG<sup>10</sup> of at least a B or C); or some additional hurdle for potential students (e.g. taking some sort of test).
3. *highly selective*. This category was used where the response indicated a high level of selection verging on elitism, such as, a requirement for all As or A\*s at GCSE, being an Oxbridge candidate, or a response indicating very selective percentage top-slicing of the cohort (e.g. "the top 5% of the Year 12s according to mean GCSE score").

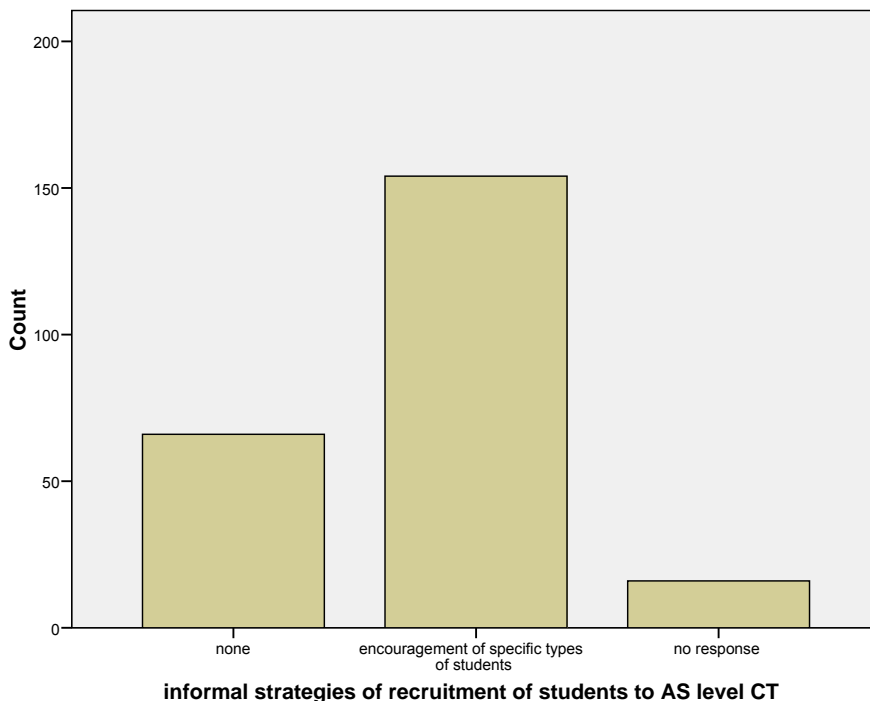
The most common response indicated that Critical Thinking AS courses were open to all (49.6%) (see figure 7 below; however see comment on informal strategies later), though 44.5% of respondents indicated that some sort of selectivity in entry requirements was applied over and above the normal requirements for the year group, and that, of these, 3.8% were highly selective.

<sup>10</sup> Target Minimum Grade (TMG) is a grade calculated by value added systems, such as ALIS, which indicate the 'likely' grade a candidate should receive at AS / A level on the basis of their prior academic performance at GCSE.



**Figure 7: frequency bar chart of the entry requirements for Critical Thinking AS level.**

We also asked whether there were any particular type or types of students encouraged to take Critical Thinking. In other words, in addition to any formal selection/entry criteria, were there other, more informal strategies of recruitment?



**Figure 8: frequencies of informal strategies of recruitment.**

As we can see from figure 8 above, many respondents reported encouraging specific groups of students. Of those 154 respondents who were coded as encouraging some specific sorts of students, some specific types were explicitly mentioned. The main ones are displayed in table 2; (with some respondents mentioning more than one particular feature. Some, other types of students were mentioned (e.g. English, Science, Philosophy, Humanities), but less commonly.

**Table 2: Type of students who are encouraged to take Critical Thinking.**

Type of student explicitly mentioned	Frequency	% of all respondents
More able	82	34.7
Less able / people who need to fill up timetable	7	3.0
Medical / veterinary applicants	65	27.5
including explicit mention of BMAT <sup>11</sup> candidates	14	5.9
Law applicants	65	27.5
including explicit mention of LNAT <sup>12</sup> candidates	16	6.8
Competitive / higher status university applicants	43	18.2
including explicit mention of Oxbridge	39	16.5

Some examples of responses regarding informal recruitment strategies:

*Students aiming for Medical/Veterinary or Law courses are encouraged to take CT...otherwise if it appeals to the student.*

*The more able students were 'advised' to opt for critical thinking.*

*open access*

*Available to all members of sixth form but marketed towards the more able.*

*The students choose between Critical Thinking and General Studies.*

*The course is open to all without prejudice*

*Top students (Oxbridge Medics) are particularly suited to CT. However I would like to encourage weaker candidates to do CT to benefit their general education*

*BMAT. LNAT/Oxbridge students are encouraged (for the sake of their interview)*

*Despite published material to attract the "intellectually agile", the main college admissions procedure criteria is financially driven. The drive is to maximise student numbers by enrolling students on course.*

*Able students although all students selected complete the course in order to develop skills and improve success in their core subjects*

*Medics and Oxbridge are pushed to do it.*

*Weak students particularly those who have dropped a subject. However from September we are offering AS CT to all our intake as one of their AS options and delivering to a group of gifted and talented students.*

These sets of responses, in general, indicate that the recruitment processes, both formal and informal, involve a considerable degree of thoughtfulness on the role that Critical Thinking can play for

<sup>11</sup> BioMedical Admissions Test (BMAT) is used by a number of medical and veterinary courses as part of their process of admission, including the University of Cambridge and University College London. The test is administered by Cambridge Assessment.

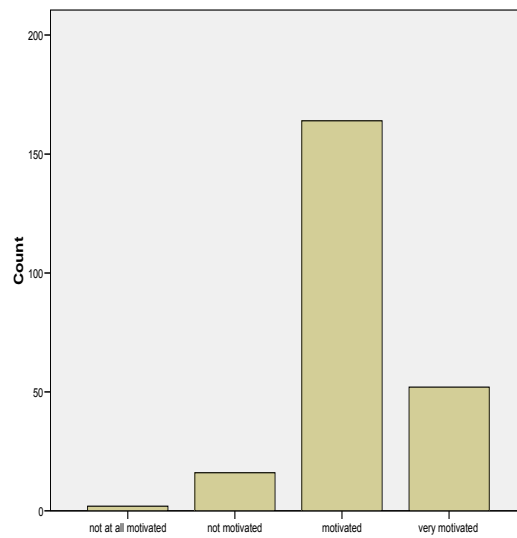
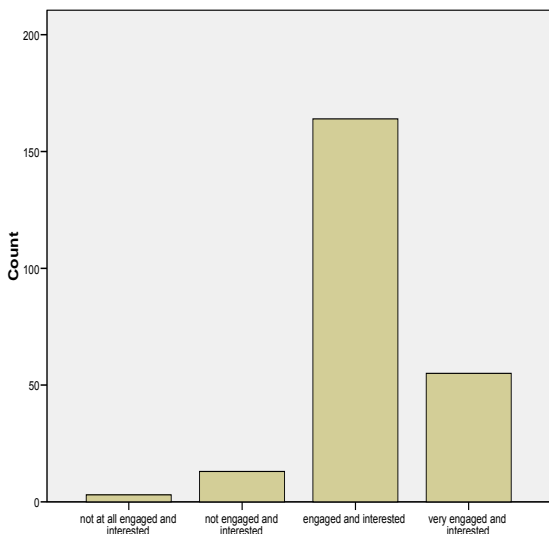
<sup>12</sup> Law National Admissions Test (LNAT) is used by a number of law courses as part of their process of admission. The test is currently run by a consortium of UK universities and administered by Pearson International.

particular types of candidates and how offering Critical Thinking may match specific school strategies (e.g. Gifted and Talented provision). Critical Thinking occupies a specific niche, is often targeted at perceived individual learner needs. It is only a minority of centres who apply a blanket policy of mandatory entry for all candidates. Also, the responses seem to be more geared towards selecting high achieving students (e.g applicants for competitive university courses), rather than people looking for a ‘timetable filler’. Finally, it is worth mentioning that of the 118 respondents who had previously said there were no formal recruitment strategies, only 49 of these also said there were no informal recruitment strategies. Thus, only 20.7% of respondents identified themselves as having neither formal nor informal recruitment strategies.

*Section D: Student motivation*

This section of the questionnaire aimed to investigate levels of student motivation, and, as such, included teacher ratings of student engagement and interest, motivation to achieve a good exam result, and attendance ratings.

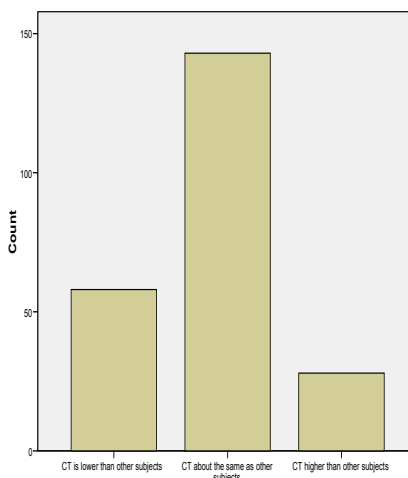
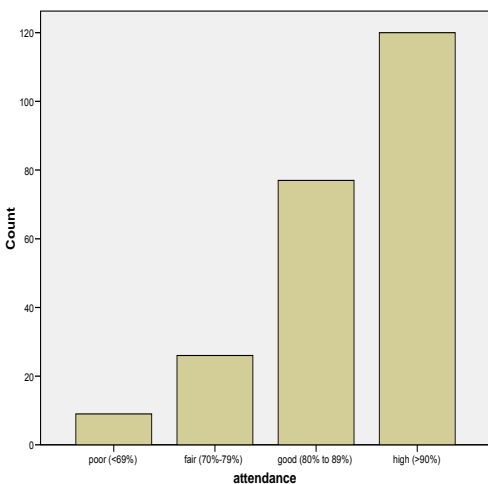
In brief, teacher reports of student engagement and motivation to achieve a good grade were mainly positive (see figure 9a and b below), as were those for attendance (see figure 10 a and b below). Attendance can be viewed as an indication, or behavioural measure, of motivation.



**(a) bar chart of respondents’ reports of student engagement and interest in CT.**

**(b) bar chart of respondents’ reports of student motivation to achieve a good exam result in CT**

**Figure 9: respondents’ reports of student motivation**

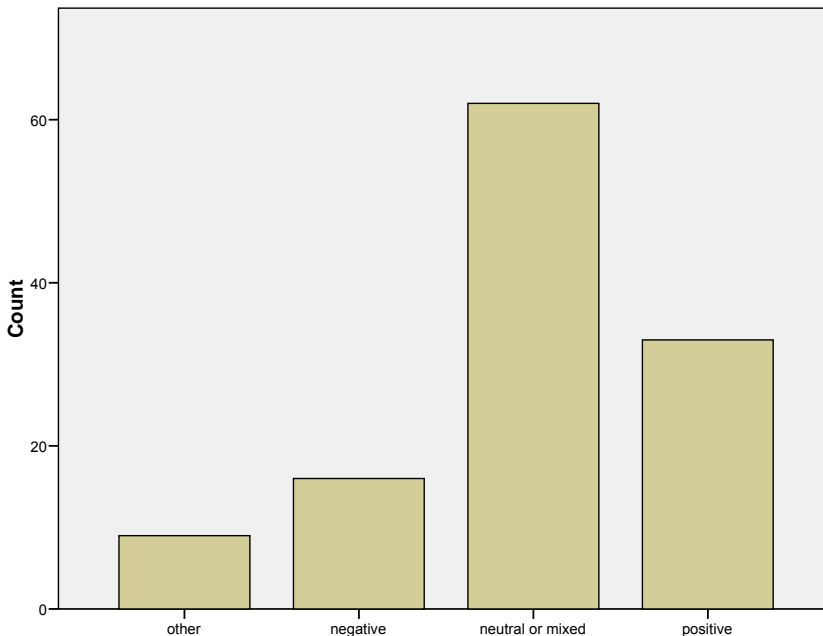


**(a) bar charts of respondents’ reports of student attendance for CT.**

**(b) bar charts of respondents’ reports of student attendance for CT relative to other subjects.**

**Figure 10: bar charts of respondents’ reports of student attendance for CT.**

Respondents had the opportunity to write further comments about students' attitudes and motivation towards Critical Thinking. Over 51% of respondents added a comment, and these were categorised in the first place as either 'positive', 'negative' or 'neutral/mixed', or, in a few places as 'other' where the comment did not directly relate to student attitudes / motivation. Figure 11 below represents the distribution of these categories and shows that most respondents recounted both positive *and* negative aspects of student motivation (51.7% of responses to this question). Just over a quarter of respondents to this question (27.5%) were wholly positive, more than twice as many than those who were wholly negative (13.3%).



**Figure 11: categorisation of additional comments about CT students' attitudes and motivation towards the subject**

The comments provide a huge amount of insight into the delivery of Critical Thinking and student motivation and so it is worth considering these comments in some depth.

Many of the positive comments make a point about general enjoyment of the lessons/subject (n=31)

*Students enjoy the fact that this is a different approach to learning from the majority of their subjects*

*They enjoy the topical aspect we can bring to the course*

Some teachers (n=9) reported that students could see the benefit (transferability) to their other A levels / GCSEs:

*... [students] see it as helpful in life and other areas (e.g. debating) as well as useful skills for their other subjects.*

*Students enjoyed the course. While many found it intellectually challenging and may come out with low grades there was a real sense of achievement for completing the year. All students felt it helped them in other subject areas.*

One particularly positive response:

*Students seem to value the subject as being different; they enjoy the immediacy of its challenges; they enjoy the way it enhances their ability to win arguments; they like the fact that*

*there are no essays to write and not too much homework; they appreciate the way it helps them in other subjects; they think its "cool".*

However, a number of positive responses about student motivation were tempered with other issues. Some of these themes are reported below. First of all, a very prevalent theme was the priority students gave to Critical Thinking when demands of other A levels (or GCSEs) increase (n=33). E.g.

*When taken as an extra there are always problems around pressure times such as coursework deadlines*

*It is classed as an extra subject and so is the first to suffer if there is any pressure from what are considered their "real" AS exams.*

A number of responses (n=13) noted the problems of timetabling the subject outside of normal teaching hours or not having its own designated time (e.g. in tutorial time), or simply not having enough time. Responses seem to indicate that such practices can effectively sabotage the course.

*attendance was an issue for a significant minority in that it crowded out other activities students committed to e.g. rehearsals for stage productions or rugby trials etc. which also took place on the Wednesday after school.*

*The lack of time to teach the whole course means the students have to work harder in CT lessons than they might normally and we do not have enough time to do some of the more enjoyable aspects as often as they (and I) would like.*

These responses seem to indicate that the constraints placed upon teachers by their institutions can make the experience of Critical Thinking less than ideal for students. For some teachers, the mandatory nature of the course and removing student's ability to opt for the subject, had a negative effect on motivation (n=9).

*Whilst the majority of the students see it as beneficial there are some that resent having to do a compulsory subject once they are in the 6th Form ...*

*The students see it as something without value that they are forced to do.*

Related, though less commonly reported, were problems with the motivation of the teachers themselves (n=4) who themselves may have had Critical Thinking imposed upon them like their students.

*As they [students] don't choose this subject as a main AS they give the subject very low priority. Interest in the subject depends very much on who is teaching it. Often staff who are uninterested in the subject are asked to teach CT to fill their timetable.*

Perceived subject difficulty was mentioned in a number of responses (n=23), sometimes along with its impact upon motivation and/or attendance or retention.

*Attendance is much better than for other enrichment options. Students recognise its value but worry about the effect it has on their grade profile as they are used to getting grade As*

*and there are many who do not perform as well in CT as they do in their other subjects and lose interest and motivation. ... if they are not going to get an A or B they aren't prepared to work at it.*

*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).*



The latter two comments are quite interesting in motivational terms. They reveal that, to some students, acquiring Critical Thinking skills has no intrinsic value, is not an end in itself, but is only worth persevering with if it were a means to some other end. In this case, getting a top grade as an outcome is the (only) incentive.

Following on from this, a number of respondents commented upon the perceived value of Critical Thinking, frequently identified in terms of UCAS points, though not always.

*Students don't like the subject. They find it boring and don't see the value as it does not count towards many University applications.*

... though some respondents (n=2) who mentioned this regarded the situation as gradually changing:

*It has traditionally not been a high status subject although there has been evidence of this changing.*

*Motivation has been good in year 12. Students become less interested when their offers from university do not require CT e.g. "ABB or 240 points not including Critical Thinking or General Studies". When unis accept it more, as seems to be the growing trend with Critical Thinking, then students will be engaged for both years.*

There seems to be strong picture emerging that Critical Thinking, though with much potential to be rewarding and engaging, is often faced with difficulties which affect motivation. We will return to some of these issues later.

#### *Section E: resources and training for teachers of Critical Thinking*

Respondents were asked about frequency of resources used in the classroom. The most popular resources were past exam papers, text books and resources developed by the teacher (by self or in group). Teachers were less likely to report using resources developed by a local network, provided at INSET or brought in by students. Teachers frequently reported using television programmes and newspaper articles.

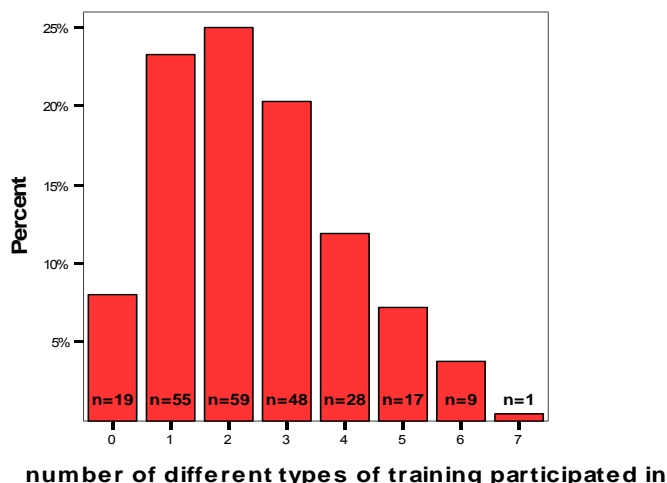
In terms of training events, teachers were asked about specific types of training events available and the data is presented in table 3 below.

**Table 3: % of respondents receiving or attending the various forms of formal and informal training.**

	Attended %	Not attended %
OCR INSET	71.2	28.8
Mill Wharf INSET	54.7	45.3
Non-OCR INSET	46.6	53.4
Group of teachers within centres	55.5	44.5
Local network	28.0	72.0
Web-based forum	41.1	58.9
'Other'	6.4	93.6

Predictably, OCR Inset was found to be the type of training most attended (see table 3). Of those teachers who had indicated earlier in the survey that they were not just the sole teacher in the centre, over a third (n=48) indicated that they had not participated in any meetings within the centre with other teachers to discuss the teaching of Critical Thinking.

A picture begins to emerge of Critical Thinking teachers as largely self-taught with, more often than not, only a handful of relatively brief experiences of formal or informal training (see figure 11 below).



**Figure 11: number of different types of training which respondents reported participating in.**

Some of the comments on training provide some insight, especially into some of the difficulties encountered.

*The teacher with responsibility has attended Mill Wharf training and is a CT examiner for OCR. He disseminates ideas and material to the other 3 CT teachers. I do have the opportunity to attend inset but my other subjects and classes take priority and I have not yet felt I can fit in a training session for myself.*

*Perhaps the most useful training has been in my role as an Assistant Examiner. This has enabled me to develop an excellent understanding of what is required by students in order for them to achieve top grades.*

*There are 2 of us teaching the subject but we have each taken different units so the opportunity to share resources / ideas etc is limited.*

*Only I went on Mill Wharf training - the other 5 teachers have not had any inset!*

*None. It was hard enough to wangle the money for 2 OCR seminars out of the college.*

*None I've done it all by myself!*

*I had to pay for course myself.*

*I feel there is a desperate need for far more training for people who like me are 'flung in at the deep end' and have little clue of what they are expected to deliver! I have had one useful day of training with a trainer bought in by our new HT who recognised the lunacy of what was happening ( i.e. go teach this with no training) and one day which was really too advanced for where I was at the time. There are courses but not enough and not often enough or regional enough and I suspect from what I see that more and more people are being drafted in at short notice to teach this course and will like me be desperate for support and training very quickly! Not much point of a course in March if you have to start teaching it in September!*

*I am not aware of much support out there for CT. I produce my own resources or use textbooks. CT is low priority in terms of training so I have only attended 1 inset session in 4 years when I initially set up the course.*

*At my first INSET course I asked the [chief examiner] how I should prepare for teaching it in September. He said take the exam in January (2003). This I did and then I took each of the new 4 Units as they became available. I found this extremely useful. I would never have developed these skills if I had not studied it myself under some pressure! I sent for my scripts to be returned and studied the marking. Again most useful.*

The final question in this section asked about whether there was any part of their education or training which had helped them to teach Critical Thinking. 52% of respondents answered positively. Most frequently, respondents reported that a degree (or part of a degree) in logic and/or philosophy had been useful (see figure 2 earlier - many Critical Thinking teachers are primarily Philosophy or Religious Studies teachers). However, there was a wide range of responses across the range of arts, humanities and science domains.

A few respondents elaborated on *how* their degree or what particular aspect of it had helped. For instance:

*Psychology involves a critical approach to both data and written argument*

*Level of critical analysis needed to write PhD thesis*

*Theology degree - many units considered the nature of arguments concept of proofs etc*

*Economics - the analytical requirement of the subject*

*All social science academic education develops a critical awareness.*

*Mathematician - naturally logical!!*

*... through immersion in literature and language in my degree. Not labelled CT - but I have the skills - which now I teach more explicitly.*

*I think that the critical skills in examining historical and political source material are highly transferable to CT.*

These quotes suggest that some teachers have been able to see the relationship between Critical Thinking skills and how they are (non-explicitly) embedded within their own education and the structure of a particular discipline.

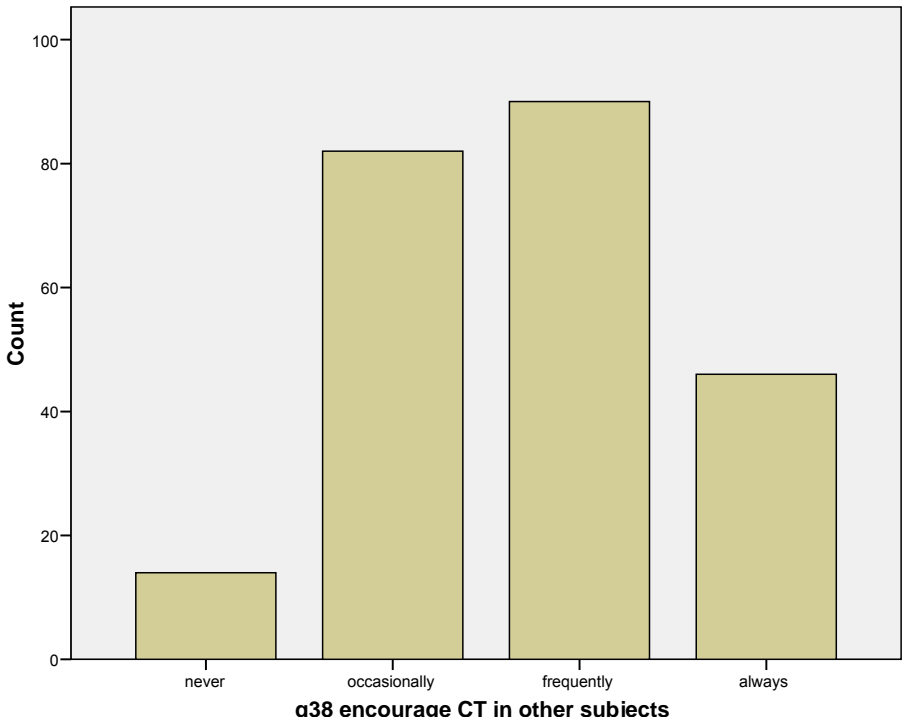
#### *Section F: Other questions*

This final section of the questionnaire asked questions aimed to investigate wider attitudes towards Critical Thinking, both their own attitudes and their students'.

Teachers were asked whether they encouraged students to apply Critical Thinking techniques or think more critically in the other subjects that they taught. As figure 12 below shows, teachers generally gave positive responses. 185 respondents provided particulars, which typically referred to multiple Critical Thinking skills (argument, analysis, evaluation, consideration of bias/credibility etc.). Some of these comments are included in order to illustrate how teachers have found that Critical Thinking skills can have a useful application in different subject domains.

*In my science lessons when considering social impact / consequences of things - e.g. Genetic medication or choosing the location of chemical plants.*

*when listening/reading a text in French AS/A2 we approach it from critical thinking perspective of key purpose. reasons used assumptions made inferences drawn etc. this helps student*



**Figure 12: bar chart – whether teachers encourage students to use CT techniques in other subjects.**

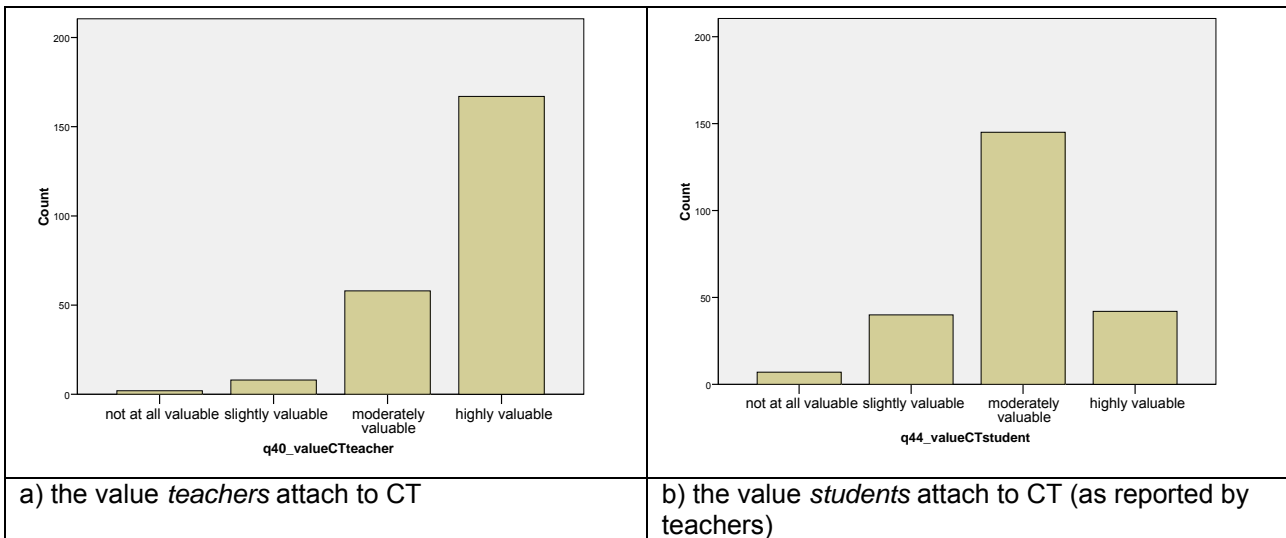
*focus on the underlying meaning of the material as opposed to surface 'translation' of meaning. It also models the type of reasoning they need to use in their own essay writing.*

*In English: To think about their arguments in essays and the ways in which they present their views trying to provide strong evidence/reasons to back up their conclusions.*

*When looking at Historical Evidence or when trying to formulate an argument in an essay.*

*In sociology I have highlighted types of flaws in arguments; I always encourage to structure arguments carefully.*

Respondents were asked about whether they and their students value Critical Thinking. Results are presented in figure 13 below.



**Figure 13: value attached to CT by both teachers and students (as reported by teachers)**

While both teachers and students (according to teachers' reports) show more positive than negative graphs, there does seem to be some discrepancy between the two. On the whole, teachers say that they highly value Critical Thinking, frequently backed up by additional comments which show great enthusiasm for the subject:

*In 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 the judgements that we have made and the actions we have taken. This will be a fundamental skill for the workforce of the 21st Century.*

*Its value lies primarily in that it is applicable to every other academic school subject I have come across and many of those that pupils will not encounter until university or later life. Rigorous thinking is rigorous thinking period!*

*The pupils have poor analytical skills and believe most conspiracy theories and media headlines shown to them. They are reluctant to analyse what they read on the web in particular. This should be a growing concern and CT combats this to some extent.*

*The skills are essential to developing complex argumentative essays. Weaker students need to be explicitly taught these skills at a basic level. Very able students who already possess these skills benefit from opportunities to develop and hone them.*

*I believe it has a lot of potential but I have been working largely in the dark this year with next to no budget so it has been a steep learning curve.*

Of the teachers who reported that they thought that Critical Thinking was 'not at all' or 'slightly' valuable (n=2 and n=8 respectively), some quotes are included.

*Only done really as a means to a qualification and to help Oxbridge students with tests and interviews. Might be more useful if done at greater length for other reasons.*

*The narrow subject specific definitions used limit its usefulness in other subjects.*

*It gets some young people to question things they hear on the radio or see on TV or read in the papers. It helps in their opinion formation because it introduces current affairs to many students who'd otherwise only ever read The Sun. It improves students' analysis - breaking down arguments into a clear structure.*

*I feel that the course is based around a particular way of thinking which does not match my own approach to analysis and evaluation.*

Some of the comments on why students find it highly or moderately valuable include:

*Those attending see it not just as an extra AS but as an opportunity to discuss debate and generally have their minds expanded by exposure to materials which challenge and focus their thinking skills without distraction by masses of subject-specific rote-learning.*

*Where else do you get to argue openly with a teacher?! "I can out-argue my Dad now" "I can see when people are trying to pull the wool over my eyes"*

*There is a small proportion of pupils each year who do not engage with the work: they presumably do not share my upbeat assessment of its value*

*They vary. Some think it's crap. Others really see the point of questioning the propaganda and the spin.*

*They no longer blindly accept what they are told. It sparks discussion and debate.*

*They transfer the skills to other subjects and are aware that in combination with subject knowledge they can develop a powerful tool for analysing discourse.*

*They agree that it helps develop rational argument and reasoned thinking. One said it significantly contributed to his success in an Oxbridge interview.*

*The other subjects don't use enough text to enable them to make full use of it*

*Students will not so readily accept learning for learning sake. they want some form of reward and usually this is orientated towards UCAS applications. If they perceive it as useful towards uni entry or useful towards other subjects they will far more readily accept it.*

A common theme reported was that students can see or have reported beneficially transferring the skills into other subjects (n=20) or simply enjoying the subject and/or lessons (n=24). Another common theme (as mentioned earlier in the section on motivation, p17) was that for students, the value of the (any?) subject lies within its currency for a university place, though there were divergent views on whether Critical Thinking added to their application or not. Consider the juxtaposition of the following two quotes:

*Feedback from students has been positive. They understand the value placed on Critical Thinking by FE and HE organisations and many have commented on how it has strengthened their understanding in other subjects.*

*They see it as a good A level to have until some unis unhelpfully say they will not consider it.*

Some of the comments accompanying less positive student ratings are included below. Common themes once again include identifying the value of the subject with UCAS points, perceived difficulty, and an instrumental approach to learning. A few responses alluded to the nature of the assessment limiting the students' ability to engage with the subject.

*The science and maths students do not see it as useful as the humanities students...*

*the vast majority of pupils regard "usefulness" as meaning "is it useful to the UCAS process?" and the overwhelming feedback they ( and we) seem to get is that universities are not interested in it*

*They tend to think in an instrumental way and not think about learning as an activity that has intrinsic value*

*They often don't see how the skills are useful in real life and treat it as another exam to pass.*

Another theme was that low valuation on behalf of the students was (partly) a result of the limited timetabling:

*It only takes a look at the timetable for students to make up their mind about how valuable the subject is in comparison with other subjects.*

*One hour a week over 2 yrs not enough to make an impact - yet...*

The most negative comments alluded to students feeling forced into taking Critical Thinking.

*They see it as a forced option and hate it. lessons not particularly stimulating as a 1-term rush inevitably has to be focussed on exam-practice*

Finally, a quote which encapsulates how a nexus of factors can contribute to a negative valuation of the subject:

*I fear that their utilitarian attitude to exams/courses rather holds them back. They are so highly examined - rather trapped in the system to the extent that they can not always see the point of doing anything that 'doesn't count' on August 16th. Also the disappointing results have been a real blow. They ask what is the point of doing a hard subject. They only want As and Bs and see anything else as an insult. About 50% withdrew after the Jan. module this year.*

186 respondents provided comments regarding their enjoyment (or lack of) teaching Critical Thinking. These were often highly interesting and provide much insight. All the responses were coded and a frequency count of each codable element is displayed in table 4 below . (Many of the respondents (n=95) provided multiply codable elements in their responses).

**Table 4: comments regarding the enjoyment of teaching CT: frequency table of codable elements.**

Codable element / theme	Frequency
more freedom in teaching due to being skills based/lack of factual content	40
lessons are fun / enjoyable	33
something fresh / new to teach	28
challenging/stretching for students	23
CT is worthwhile / relevant / benefits students in other subjects / real life	23
challenging/stretching for teacher (positive)	21
helps weaker students	17
CT fosters different teaching styles – more student centred.	17
It has developed me as a teacher / developed my own ability to think clearly	15
Students are motivated / engaged	10
Brings teacher into wider range of students	4
Nerve wracking	2
just / still getting to grips with teaching CT	8
depends upon students / class	7
Is too challenging / a lot of work	9
I am not intelligent / capable enough	1
I have not had enough training	1
It is low down in my list of priorities	3
Lack of factual content is a problem	2
feel isolated / have to do all prep on own	3
students poorly motivated	8
Limitations placed on me by centre are a problem (e.g. lack of timetabled hours).	11
Problems with the materials (availability or 'too dry')	12
teaching to the exam is limiting / the exam is limiting	17

Many of these comments were particularly insightful into their experiences of teaching Critical Thinking.

Many teachers' enjoyment of Critical Thinking derived from their view that it is 'new', 'different' or 'fresh' (n=28):

*It's been a "shot in the arm" for a teacher who needed a new stimulus.*

*It is refreshing to be able to encourage children to actually use their brains rather than just worry about memorising information and ' getting the right answer'. It is exciting to see them grow in confidence and skills.*

... or simply just fun / enjoyable (n=33):

*It allows me to indulge myself in the "Dead Poets Society" aspect of teaching which I particularly enjoy.*

In particular, (and this was the most common theme) teachers tended to describe a greater freedom or creativity in choosing materials to teach Critical Thinking because of its skills-based nature and lack of 'factual' content (n=40).

*... with so many subjects having to teach so much content it is refreshing to have the freedom to teach a skill and apply it to relevant issues that students face in the modern world - any newspaper provides much to analyse and debate*

*I enjoy the freedom from the drill of a body of knowledge but enjoy the discipline that the skills provide. It seems to me that this subject develops the skills that have been squeezed out of other subjects by the national curriculum*

*I enjoy the flexibility regarding choice of topics and materials given that the course is 100% skills-based. I enjoy the challenge of having to think on my feet when unexpected questions/responses come up. CT has sharpened my own skills greatly.*

However, not all teachers responded so positively to this aspect of teaching the discipline. Two respondents found the lack of 'factual' content a drawback:

*I enjoy helping the students to challenge the evidence put forward especially in the media and helping them develop their evaluative skills. Don't like teaching a skill based subject that does not have any subject content.*

*I enjoy teaching it but find it very challenging and it definitely moves me out of my comfort zone. Not having specific content or definitive answers takes some getting used to.*

Frequently, teachers referred to the benefits for the students (such as supporting other subjects and the transferability of skills into other subject domains), and the perceived 'worthwhile' nature of the subject (n=23). A number of teachers highlighted the enjoyment they derived from challenging, stretching and encouraging thinking in students (n=23), often (though not always) stating or implying that there was more potential for this sort of challenge in Critical Thinking in comparison with other lessons.

*It gives me the opportunity to challenge the brightest students and to develop their intellect far more than is possible at KS4*

*Ability to enable Gifted and Talented students in Years 10 -12 11 stretch their minds unlike the present GCSE/AS*

*I like encouraging thinking - education should as Hemingway put it "make you a good crap detector"...*

A number of teachers (n=21) commented that their enjoyment stemmed from being stimulated and challenged themselves (in a positive way):

*It provides me with intellectual stimulation.*

*... Having taught for 23 years it is a new challenge to me (and I do find it challenging at times) and I am learning a lot myself through teaching it - that is very much part of the enjoyment.*

As with the last quote, a number of teachers believed that through teaching Critical Thinking they were developing professionally: they were upskilling in terms of their own thinking skills as well as professional situations (n=15). This is a potentially an important and unanticipated collateral benefit of teaching Critical Thinking and possibly warrants further investigation.



*It has made me a more efficient and organised teacher of English. It has given me the skills to help direct discussions e.g. at staff meetings - and suggest ways in which dilemmas can be resolved or how an argument has its weaknesses. Hopefully all this is done with the necessary tact and diplomacy required on these occasions!*

*Teaching this subject has altered the way I think. I find myself using the skills not only in the classroom but also in meetings and other aspects of my life.*

*Made me be more rigorous in my own thoughts*

Additionally, on a professional front, teachers reported enjoying that teaching Critical Thinking allowed them to adopt different teaching styles/pedagogical techniques – more student-centred (n=18), interactive and less didactic. This finding echoes the findings of Baumfield and Oberski (1998) that (broader) thinking skills approaches in classrooms were popular with teachers because they foster changing patterns of interaction in the classroom. Some teachers commented that adopting this different role in the classroom meant that they learnt a lot themselves from the students, and that this style of teaching involved much more unpredictability and ‘uncertainty’ in lessons – in a positive and dynamic way.

*It's a subject you can 'discuss'; it requires little didactic teaching which is good.*

*I really like challenging myself in the teaching and sometimes I do not know the answers and work them out with the students. I find that very powerful as a teaching tool and a model for learning.*

*I have as much to learn as the students. Their answers are often as equally valid as mine. I enjoy debate and am lucky enough to teach some very bright and interesting young people.*

*The chemistry between students and students-tutor brings a levelling as ideas and argument can arise from any of many sources. The tutor as 'facilitator' is attractive and (when it works!) is very fulfilling.*

*More unanswerable questions are raised than in other subjects and there is a real opportunity to challenge and explore each other's points of view.*

*Every lesson is different - I am always surprised or stimulated by student responses.*

However, taking such a role and operating in a more ‘uncertain’ classroom was not comfortable for all respondents:

*It's not like teaching other subjects where you can hide being wrong or not knowing: students lose faith in your ability to teach; this has implications for the senior role I play in college*

This interesting comment resonates with Blagg’s observation (1991) that the feeling of being ‘deskilled’ is more of a threat to an experienced teacher than it is for a novice.

A number of factors were mentioned for tempering or, in a few cases, eliminating enjoyment of teaching the subject. One common ‘negative’ theme was encountering problems with the materials – either accessing materials or that the materials available were considered too ‘dry’ (n=12)

*Materials available are generally 'dry' and formulaic*

*Need far more resources than are at present available*

*Difficult to engage students with material provided as it is very boring. [They] only show an interest when I provide material I've adapted - which is very time consuming to produce.*

As referred to in some of quotes above, there were also some issues with time limitations. Some respondents identified timetabling limitations imposed upon them by their institution as a reason for limiting their enjoyment of Critical Thinking:

*With very limited time available I have not been able to do many of the activities I would have liked to do.*

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

Indeed, lack of support or training was mentioned by other teachers, in some cases implying that the senior management in some centres were not fully committed to the delivery of the qualification:

*I would have enjoyed it more had I been part of a team teaching it and if my school had provided more resources for developing it. Often want to discuss areas of the course that I find difficult but there is no one locally with whom I can do this.*

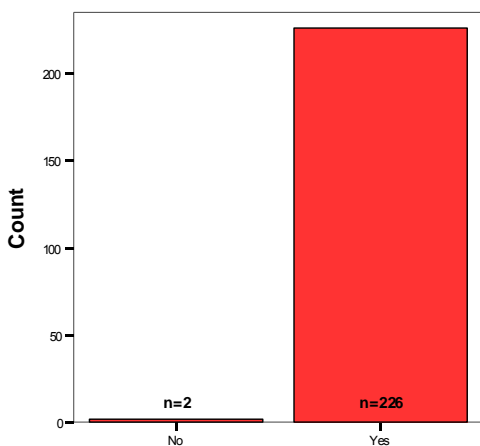
As we know, for many of the teachers, Critical Thinking was their second or third subject, and some noted that, as a result, it did not have the highest priority (n=3), with two of the respondents acknowledging that this was not an ideal situation for the students.

*I do enjoy teaching CT but as my other subjects (History and Politics GCSE and A Level) take priority. CT is often an afterthought in terms of planning and resources. Therefore I feel the students do not always get the best deal in CT lessons.*

*I am not trained to teach it. It is not my priority. Students attend poorly and show little interest.*

Finally, the last fixed-choice question in this section asked whether respondents believed that Critical Thinking skills can benefit students in their other AS exams.

The overwhelming majority of respondents answered yes (see figure 14 below).



does CT benefit students in their other AS subject:

**Figure 14: frequency bar chart of respondents' views on whether CT benefits students in their other AS subjects.**

Respondents again were given the opportunity to support or explain their answer with a comment, and a few of these follow. The responses (n=186) were mainly positive (or very positive), with only a few showing some equivocation. Comments tend to highlight subjects that can particularly benefit and/or

the skills which are particularly transferable, or in some cases describe how other staff or students themselves have ascribed increased performance in other subjects to Critical Thinking.

*It can but I am not sure it does. The Heads in both schools where I teach Critical Thinking believe it improves A Level results. I don't have the data.*

*Yes - CT skills could form the core of an evaluative approach in many other disciplines. The increasingly 'trained' approach to passing exams in formulaic ways mitigate against this.*

*Understanding information and being able to organise your thoughts is important in any subject. Since Critical Thinking deals specifically with these skills it helps with all of them.*

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

*Making cross curricular links is highly useful. It also encourages them to think more broadly about their work and how to approach it.*

*... the majority[of students] find it quite useful and they now write better essays or think more logically. One said 'It has changed my whole way of thinking' (for the better I assume!)*

*Complements analytical requirement in many subjects directly e.g. History English Psychology Geography etc. Many of our "most-improved" students in year 13 took CT in their year 12 perhaps due to developing transferable skills.*

Many of these assertions indicate that Critical Thinking is, or at least, is believed to be a powerful educational force.

## Discussion

Because the respondents were self-selecting, it is more than likely that they do not represent the full range of teachers of Critical Thinking. Many of the respondents identified that they were the co-ordinator or the sole teacher of Critical Thinking in the centre. It seems likely that the ordinary foot soldier is under-represented in the sample. This possibly may explain the variance between Vidal Rodeiro's findings that Critical Thinking is often poorly valued by students, and the findings from this research. Certainly, in this study, the centres where Critical Thinking was mandatory reported significantly lower levels of student motivation, attendance and enjoyment.

The research identifies a series of obstacles and challenges which teachers of Critical Thinking have been faced with, many of which interact together. A frequent theme was the value placed upon Critical Thinking (c.f. Vidal Rodeiro, 2007). Interestingly, while Richardson (2008) notes that, for Citizenship, formal summative assessment was perceived as being needed in order to 'credentialise' a new subject, this research makes it clear that formal summative assessment is far from sufficient. In order for the subject to acquire the same 'credentials' as other AS qualifications, it is not enough that there is an exam, and that the subject / exam is perceived to be difficult. It needs endorsement from universities' admissions policies, as well as centres themselves offering the course in a fully endorsed way in terms of full timetabling and resourcing. Evidently though, some teachers can overcome some of these obstacles by promoting the perceived intrinsic value of the subject and in some instances, appear to be passionate advocates of the value of the discipline both in terms of its life skills and transferability to other academic subjects. This report shows that many of the respondents have been (and have had to be) very resourceful in terms of training themselves in this new subject, responded positively to the greater freedom in lessons and have altered their teaching styles in order to deliver it (c.f. Baumfield and Oberski 1998; also noted in Blagg, 1991). There is some evidence that by teaching Critical Thinking, teachers themselves were developing professionally: they were up-skilling in terms of their own thinking skills, in using greater analysis and evaluation skills in other subject

lessons as well as in other professional situations. This is a potentially an important and unanticipated collateral benefit of teaching Critical Thinking and possibly warrants further investigation.

The challenge to any new subject lies in it finding its 'niche' within the curriculum. As for AS Critical Thinking, it is in a paradoxical position. It is like other AS levels in that it leads to the 'same' qualification – an AS level. And yet, it does not have true parity with them because of the nature of its subject matter (it has a higher focus upon skills and lower focus upon content), it is often delivered in much less contact time, and, given its current status with universities, many students would probably want to avoid taking Critical Thinking as one of their main AS levels. However, if it were not an AS level, it is probably true to say that many fewer students would have had the opportunity to study Critical Thinking.

We might speculate what the future might hold for Critical Thinking in schools. As time goes on, teacher experience and expertise in the subject will accumulate, a greater range of resources will be available. This should have a positive impact upon teaching and learning. However, this can only happen if the strategies in schools permit it. Thus, where schools 'drop teachers in the deep end' at the beginning of the school year (as several respondents reported), do not support teachers in terms of funding resources, sufficient timetabling or training days (again, reported in this study), this vital accumulation of expertise is prevented from happening.

Perhaps the key matter for the future success of Critical Thinking AS level is for it to gain greater acceptance with universities. Currently, its acceptance as part of a 'main offer' is very patchy. As reported above, this is a significant source of frustration for teachers who *do* see its value, but who have to deal with students' consequential low motivation. If universities were to more widely acknowledge its value and endorse its status, the future for Critical Thinking would be much more secure.

## Conclusions

This project found that, as a new subject, there are numerous obstacles and challenges amongst introducing Critical Thinking in schools and which are likely to have had some impact upon the rates of candidate success in this subject. These include:

- perception of difficulty amongst students;
- priority – Critical Thinking is more likely to be a teacher's second or third subject than their first;
- lack of teaching time and other timetabling issues;
- support from schools' senior management teams in terms of resourcing and training;
- mandatory;
- lack of endorsement from UCAS;
- motivation of students can be problematic given instrumental approaches to learning in terms of grades and UCAS points.

However, many teachers were persuaded of the benefits of teaching Critical Thinking, both for themselves and for their students, in terms of the following:

- the importance of the skills;
- collateral benefits to teachers in terms of enriching their teaching and understanding of how students think;
- different style of lessons (more student-centred, and greater flexibility in designing lessons) was often perceived as energising;
- transferability of skills to enhance performance in other subjects.

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