What teachers think about IT.

Reference details:
Cuthell, J. P. (1998). What Teachers Think About IT. (1998) Computer Education. Issue 88 Computer Education Group

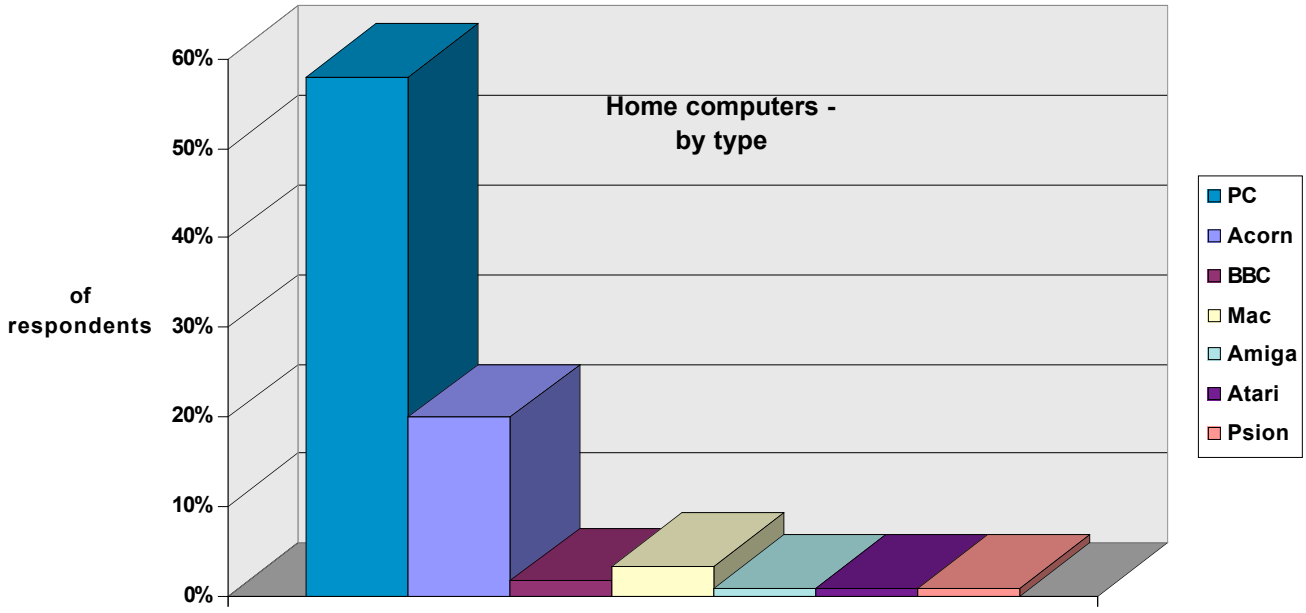
During the academic year 1996/7 a sample of teachers in the Leeds L.E.A. was surveyed to identify perception of the impact of computers on students' work. The survey was carried out at Boston Spa Comprehensive School, City of Leeds School and Elmete, a Leeds L.E.A. professional development centre.

The scope of, and background to, the sample.

Number of respondents: Boston Spa=**61**; City of Leeds=**24**; Elmete=**31**
Teachers were asked whether they had a home computer and, if so, what type it was and the purpose for which it was used.

Overall ownership patterns:

PC	Acorn	BBC	Mac	Amiga	Atari	Psion
58%	20%	1.7%	3.4%	0.9%	0.9%	0.9%



Responses to the survey.

1. **What do you feel has been the main impact of computers on students' work?**

Whilst some teachers failed to respond to this question, others cited more than one area in which they felt computer use had benefited student work.
Teachers across all subject disciplines noted the effect of computers on the presentation of student work: more specific comments tended to be related to the curricular area for which the teacher had responsibility. This also applies to responses to Question 3.

Impact	All (Total=116)
Presentation	37% (43)
Motivation	17% (20)
CD-ROM Research	10% (12)
Word-processing	4% (5)
Project work - documents	3% (4)
Computer Literacy	1.7% (2)
Control Technology	1.7% (2)
Integration of syllabus topics	1.7% (2)
Understanding of concepts	1.7% (2)
Computer as an extra tool	0.86% (1)
Drafting to improve content	0.86% (1)
Stats modelling	0.86% (1)
Variety of teaching styles	0.86% (1)

2. **Do you feel the quality of the work has been improved by the use of computers?**

Yes = 80% **No = 16%** **No response = 4%**

3. **What aspects of students' work has been improved by the use of computers?**

Similar comments apply to responses for this section as for Question 1.

Aspect	All (Total=116)
Legibility	66% (76)
Organisation of work	56% (65)
Spelling	41% (48)
Integration of text, tables & charts	41% (47)
Grammatical structures	10% (12)

Design graphics	**2.5% (3)**
Increased problem-solving skills and statistical application	**2.5% (3)**
Application to detail	**1.7% (2)**
Increased output & volume of work	**1.7% (2)**
Detailed research	**1.7% (2)**
Examination revision	**0.86% (1)**
Enhanced self-esteem	**0.86% (1)**
Enhanced conceptualisation	**0.86% (1)**
Use of evidence	**0.86% (1)**

The teachers' perceptions, therefore, are focused on the work which students generate, and the ways in which its elements are integrated. The predominance of word-processing in computer uses cited by staff respondents (71%) would correlate with this.

4. Can you quantify the improvement in terms of marks?

% improvement:

	0-15%	**16-25%**	**26-50%**	**50%+**
ALL:	**21% (23)**	**16% (19)**	**4% (5)**	**2.6 (3)**

Age of students affected:

KS3	**KS4**	**16+**
53% (61)	**65% (75)**	**35% 41)**

5. Do you feel that the use of computers has had a negative effect on students' work?

Y	**N**	**No response:**
15% (17)	**78% (91)**	**7%**

Some **7%** of teachers (8) identified the problem of 'Computer as scapegoat', in that students were able to use the computer as a reason for failing to submit work to deadlines. The limitations imposed by inadequate word-processing skills were also seen as a problem, together with an apparent lack of sequencing of work by some students. The use of inappropriate charts in documents was also seen as one of the negative affects produced by computers on students' work, where the focus was often on presentation, rather than content. One teacher commented that computers did not

"…help…handwriting skills. Poor handwriting is not improved."

Among other negative factors identified was the transfer of work away from school for those who had a home PC, and the accompanying disadvantage of those without home facilities. Those who were reliant on school machines took a long time to complete a task:

"…they spend a long time writing up assignments."

6. **What are the benefits of encyclopedias and reference works on CD-ROM?**
   Positive Responses = 72% (84)
   Benefits cited included:

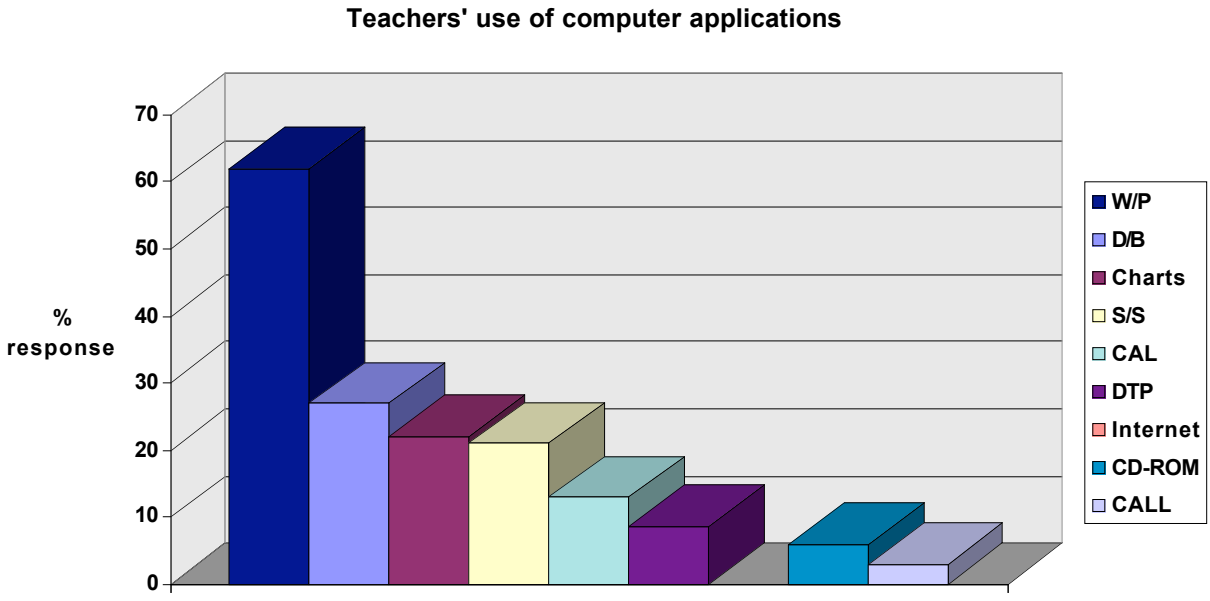
Improvement in information seeking	Motivation
Ease of access	Stimulating learning
Ease of cross-referencing	Up-to-date and relevant

7. **Are there any drawbacks to these?**
   Unselective use of material with no editing or integration
   32% (37)
   Also cited as drawbacks were theft of CD-ROMS and the 'play' factor.

Teacher computer use.

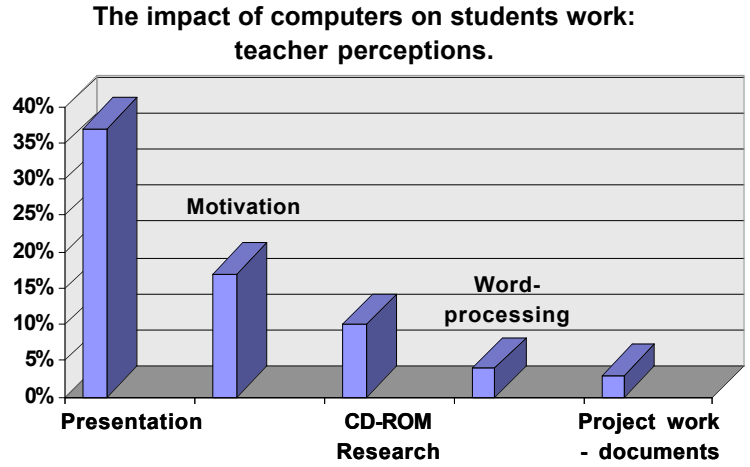
Teachers were asked to indicate uses to which they put computers at school, for personal and curricular outcomes. The curricular applications were then grouped in terms of the software used by teachers with students.

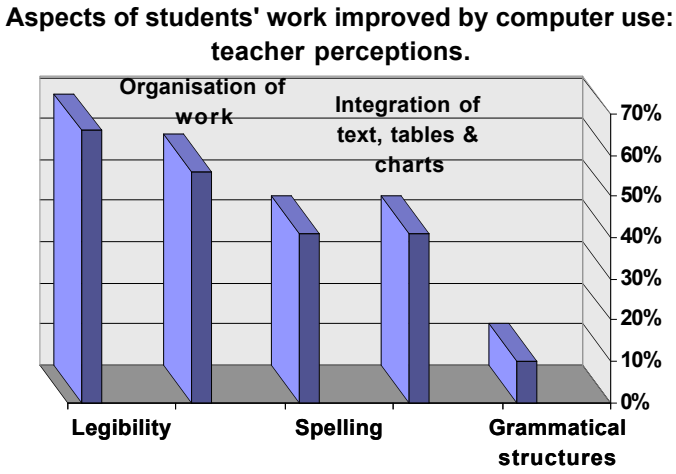
Leeds sample: Staff curricular computer use								
W/P	**D/B**	**Charts**	**S/S**	**CAL**	**DTP**	**Internet**	**CD-ROM**	**CALL**
62% (72)	**27% (31)**	**22% (26)**	**21% (24)**	**13% (15)**	**8.6% (10)**	**7% (8)**	**6% (7)**	**3% (4)**



From this information, therefore, we can see that the majority of teachers focus on IT activities that produce short-term, measurable outcomes. These activities are also those undertaken at home, and ones with which the teachers themselves are most familiar.

The focus on short-term, measurable outcomes carries across into the way in which teachers perceive the utility of what students do with computers. The responses as to the impact of computers on student work, and aspects to which they relate, can be grouped as transactional, cognitive or affective. Not surprisingly, the most frequently cited set of responses fall into the category of transactional factors.




Aspects of students' work improved by computer use: teacher perceptions.
Organisation of work
Integration of text, tables & charts
70%
60%
50%
40%
30%
20%
10%
0%
Legibility
Spelling
Grammatical structures

What teachers think: an analysis.

Transactional factors:

The main impact of computers on student work	Total=116
Presentation	37% (43)
Motivation	17% (20)
CD-ROM Research	10% (12)
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Aspect of work improved by student computer use	Total=116
Legibility	66% (76)
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Design graphics	2.5% (3)

These figures confirm teacher perceptions of the effects of computer use on students' work. 36% of teachers surveyed felt that work was improved by up to 15%. It is factors such as legibility, organisation of work, spelling, integration of text and tables and overall presentation that differentiate student work within mark schemes. The outcomes are based on recognisable IT skills, by teachers who do not use computers as well as those who do.

The implication of this, however, is that those teachers who do not teach their students who to use information technology to produce their work are effectively disadvantaging them. Further, schools that fail to provide access to their students who do not have access to a machine at home are compounding the disadvantage.

Cognitive factors:

The main impact of computers on student work	Total=116
Computer Literacy	1.7% (2)
Integration of syllabus topics	1.7% (2)
Understanding of concepts	1.7% (2)
Computer as an extra tool	0
Drafting to improve content	0.86% (1)
Stats modelling	0.86% (1)
Variety of teaching styles	0.86% (1)

Aspect of work improved by student computer use	Total=116
Grammatical structures	10% (12)
Increased problem-solving skills and statistical application	2.5% (3)

Cognitive factors cited by teachers as being improved by computer use are limited. Although eight items received mention, an improvement in the use of grammatical structures was the most frequently cited benefit (12), and it could be argued that the provision of grammar checking tools in word-processors were responsible for that benefit. There was no suggestion that this gain transferred itself into other writing environments.

Teachers' perception of the cognitive benefits of computer use, then, tend to be limited, subject specific and measured in terms of the curriculum element for which the teacher has responsibility. There is no evaluation of overall cognitive benefits for students.

Affective factors

:

Aspect of work improved by student computer use	(Total=116)
Application to detail	1.7% (2)
Increased output & volume of work	1.7% (2)
Detailed research	1.7% (2)
Examination revision	0.86% (1)
Enhanced self-esteem	0.86% (1)
Enhanced	0.86% (1)

conceptualisation	
Use of evidence	0.86% (1)

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The contribution of computer use to the enhancement of affective factors was implicit within many of the comments made by teachers. The increased motivation of many students when they were able to work on computers was seen as crucial to the improvement of the work. In the same way in which students were able to invoke the computer as scapegoat, this same process enables a more impersonal, functional view to be taken of work. Changing text and reprinting work is easy: this encourages re-drafting of work and increases output.

Staff perceptions: a summary

Positive perceptions:

- 80%+ agreed that students work was improved by computer use. Teachers stressed legibility, presentation and organisation of work as the main areas of improvement.
- 36% of all teachers stated that work was improved by up to 15%.
- More than 70% of respondents cited use of CD-ROMS as beneficial.

Negative perceptions:

- The use of computers and CD-ROMs highlighted inadequate information handling skills. Whilst students were able to access and retrieve far more information by using CD-ROMs, there was limited integration of this information into the students' work.
- Reliance by students on computers for the production of work failed to develop other skills, such as handwriting.
- Students would often convert data into inappropriate charts.
- Equal opportunities issues for those without a home PC.

Teacher perspectives:

- 62% of the sample stated that they used computers in the curriculum for word-processing, although no frequency of use was cited.. A 1996 survey of more than 3,400 teachers by Keele University cited 70% as using the computers 'very infrequently'.
- The teachers' main use of a computer was for word-processing (71%). This activity was, however, often cited as 'typing'.
- When teachers own a PC the site of production for work-related documents moves from school to home - as happens with many students.

What computers don't do.

They don't prevent students from doing any of the following

- evading responsibility - technical failure, networking problems and lack of access are all plausible reasons for students to avoid deadlines;
- failing to make sure that they have adequate word-processing skills before they produce a piece of work;
- failing to use appropriate charts when they convert data;
- not using computers to improve their handwriting skills;
- often spending too much time 'writing up' assignments;
- using CD-ROMS unselectively when producing assignments;
- using games-playing techniques with educational computer programs;
- stealing CD-ROMS;
- preferring to work at home if they have a PC, rather than at school;
- being disadvantaged if they don't have a PC at home.

What the use of computers by students does, however, is to throw these issues into relief. They are central to the ways in which students learn, and are taught. They provide a focus for the ways in which teachers assess work.

The most significant issue, however, is the way in which productive capital, cultural capital, symbolic capital and educational capital are converging. Computers have become the site of conflict on which the class battles of the information age will be fought.