

Computers and Jobs

Contents: A series of exercises and a design task concerning the impact of computers on jobs.

Time: 1 to 4 periods, depending on how many parts are attempted.

Intended use: GCSE Physics, Integrated Science, Computer Studies and Electronics. Links with work on applications of electronics. It is assumed that students will already have had some experience of computer use and will have some awareness of the potential of computers.

Aims:

- To complement and extend prior work on the uses of computers
- To develop understanding of some of the applications of computers
- To develop awareness of the impact of computers on jobs, and the forces operating to encourage and discourage the introduction of computer technology
- To provide an opportunity to practise skills in communication and problem-solving.

Requirements: Students' worksheets No. 507

This unit is in three parts:

Part 1 Comparing humans and computers

Part 2 Barnes Book Club — a suitable case for computerization?

Part 3 Computers, jobs and society — some points to discuss.

It is not intended that the unit should be used 'cold', but that it should extend prior 'computer application' work.

Part 1

The first exercise should be tackled in pairs. A class list can then be compiled on the backboard or overhead projector. This can stimulate valuable discussion to clarify what we mean by 'human', 'computer' and terms such as 'memory'. Pairs could then answer questions 1 to 3.

Part 2

Part 1 should be completed before this part is attempted, in order to establish the role, strengths and weaknesses of the computer. Tasks 1 to 6 can be tackled by students working in pairs. Following this work, designs for the new system can be compared, perhaps by bringing pairs together in small groups. In appropriate cases, a simple program could actually be written to show how the new system would work.

The teacher may wish the class as a whole to adopt one of the designs and discuss its implications. A role play might be used, with management and worker representatives negotiating about the introduction of the new office system.

Part 3

This part can be used in a variety of ways, including group discussion and written work.

Notes on questions 1 to 3

Qs 1 and 2 Computers can offer efficiency, accuracy, consistency and speed of working on repetitive, high volume jobs. For example, the production of invoices, processing of orders, control of stock and monitoring of routine manufacturing processes all lend themselves well to computerization. There is also a growing trend towards the use of computers to *assist* humans in jobs, as distinct from replacing them — for example, in computer-aided design and computer-assisted learning. With rapid increases in the memory capacity of computers, it will soon be possible to develop 'artificial intelligence' which will further increase the range of jobs that can be done by computers.

Q.3 Jobs relying on human contact lend themselves least to computerization, for example, welfare work and nursing, though even here computers can be used for routine diagnosis. The consistency of the work done by computers can be a disadvantage as well as an advantage, because of the inflexibility that may be involved. Humans can respond far more flexibly and sensitively than computers.

Notes on some of the tasks

Task 1

Customer records would be held on a computer file. Other details such as prices and stock levels would also be held on file. The computer would have a terminal in the Accounts Department and another terminal, with printer, in the Warehouse to print delivery notes.

Working at the computer terminal, the clerk would:

- (a) Check whether it was an existing or a new customer
- (b) If new, set up a new customer record
- (c) Enter the books ordered and money sent.

The computer would:

- (a) Update the customer record to show what books had been ordered
- (b) Prepare a delivery note and print it at the Warehouse terminal
- (c) Keep a track of stock levels of books
- (d) Automatically price the order and check against the money sent.

Task 3

Students' answers are likely to vary widely. The following figures are offered for the teacher's guidance.

With the computerized system a clerk might process an order in around 2 minutes. Before computerization it might have taken 20 minutes. Thus the number of clerks could, in theory, be reduced to a tenth of the old number, that is two. In practice four might be more realistic.

Tasks 5 and 6

Points in favour of using computers include a saving of human labour (and therefore wages) and a faster, more efficient customer service. Against using them must be counted the cost of installing and servicing: this will be high, so there will not necessarily be an overall saving of money. There are also the possible problems caused by the loss of human flexibility, and of course the redundancies entailed: in a small firm it would be difficult to absorb the redundant clerks in other departments. Thus it is likely that, broadly speaking, management would favour computerization more than the clerks — though it should be added that the office managers might view it with some initial trepidation, and those clerks remaining after computerization would be likely to find their work more interesting.

COMPUTERS AND JOBS

In this unit we will be looking at the impact of computers on people's jobs. What jobs do computers take over, and why? Should we encourage more computerization, or should we resist it?

The unit is in three parts:

- Part 1* Comparing humans and computers
- Part 2* Barnes Book Club — a suitable case for computerization?
- Part 3* Computers, jobs and society — some points to discuss



Figure 1 A modern computerized office

Part 1 Comparing humans and computers

Work in pairs.

Think of the differences between a human being and a computer. List as many differences as you can think of. You might make a list like the one started below.

<i>Human</i>	<i>Computer</i>
Has emotions and feelings	Can carry out calculations very fast

When your list is complete, compare it with those of other class members. Use your lists and your knowledge of computers to discuss questions 1 to 3.

Questions

- 1 For what reasons might computers be used to replace human labour?
- 2 What types of jobs are most likely to be computerized?
- 3 What types of jobs are least likely to be computerized?

Part 2 Barnes Book Club — a suitable case for computerization?

Barnes Book Club is a mail order company which supplies science fiction books. They advertise widely in newspapers and magazines for people to become members of the book club. Members pay an annual subscription of £5.00. They have to order at least one book every three months. Every three months members receive a catalogue of the books on offer. The books are sold to club members at greatly reduced prices.

The company employs 50 people:

- 10 working in Management, Administration and Marketing
- 5 working as secretaries
- 15 working on packaging and distribution in the Warehouse
- 20 working as clerks in the Accounts Department

Computerization of the Accounts Department

The company management is planning to computerize the Accounts Department. It is your job to advise them on the best way of using computers. Figure 2 shows the layout of part of the Accounts Department.

The job of a clerk in the Accounts Department is outlined in points **A** to **H** on the next page. Read the information, then carry out Tasks 1 to 6.

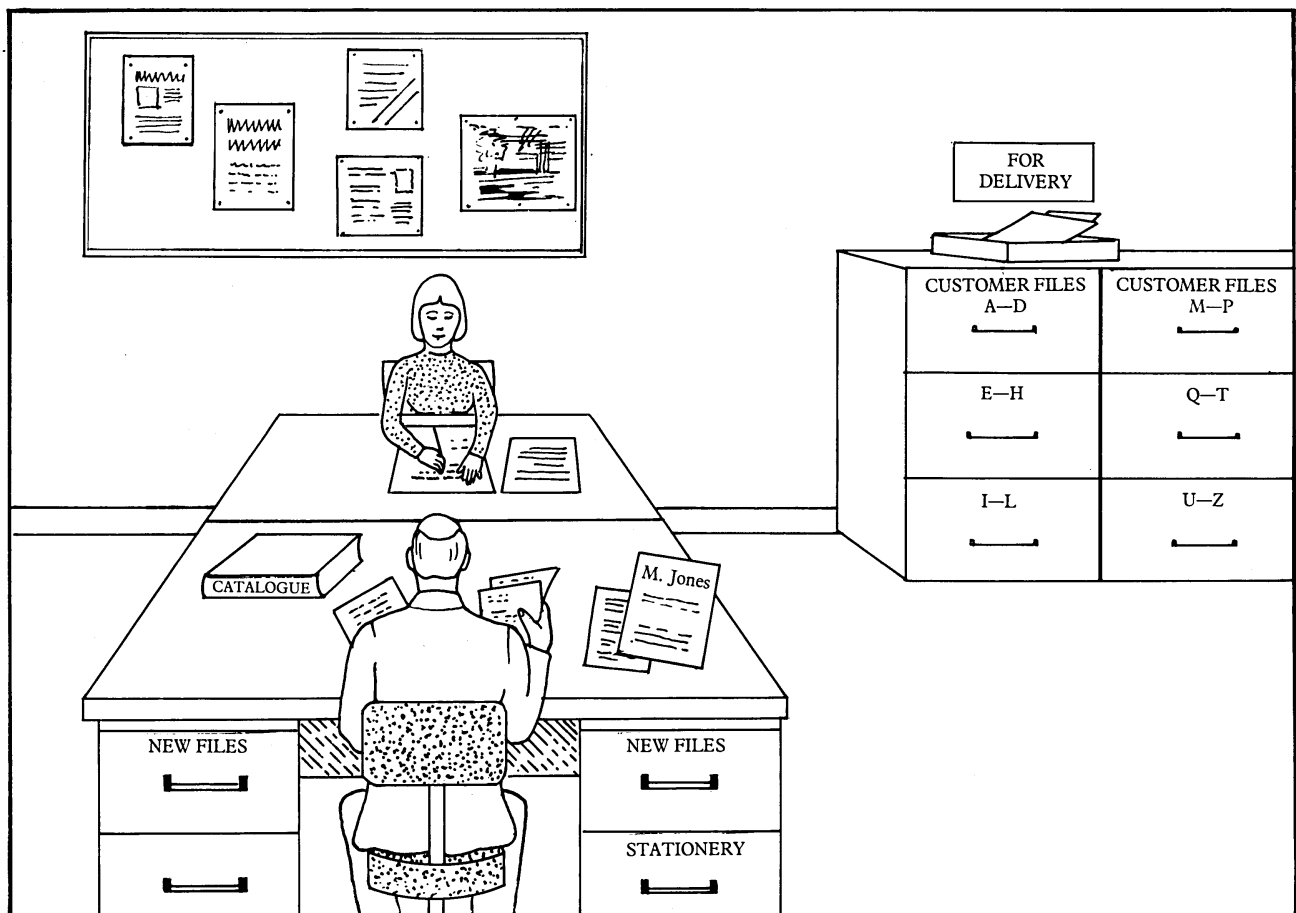


Figure 2 Part of the Accounts Department at Barnes Book Club

- A** The clerk receives the customer's order by post.
- B** The clerk looks up the price of the books in the catalogue and checks that the customer has sent in the right amount of money.
- C** If it is a new customer who is not a book club member, the clerk makes out a new customer file.
- D** If it is a customer who is already in the book club, the clerk walks over to the filing cabinets and takes out the customer's file.
- E** The clerk returns to the desk and write the details of the books ordered and price in the customer's file.
- F** The clerk writes out a delivery note to tell the Warehouse to pack up the books and send them to the customer.
- G** The clerk gets up and takes the delivery note to a tray from which it will be collected and taken down to the Warehouse.
- H** The clerk puts a copy of the delivery note in the customer's file and returns the file to the filing cabinets.

Tasks

Work in pairs.

- 1 Discuss how a computer could be used in the Accounts Department. Which of the jobs **A** to **H** would the computer do?
- 2 Outline the way the work of the Accounts Department would be carried out following computerization. Make it clear which jobs would be done by the clerk, and which by computer.
- 3 Twenty clerks were employed in the Accounts Department before computerization. How many do you think would be needed after computerization?
- 4 Compare the job done by a clerk before and after computerization. How do they compare with regard to
 - (a) how interesting they are
 - (b) the amount of skill needed?
- 5 What reasons can you think of
 - (a) for
 - (b) againstthe company using computers?
- 6 How might you feel about computerization if you were
 - (a) a manager
 - (b) a clerkin the company?

You could try acting out a meeting between managers and workers to discuss computerization in the company.

Part 3 Computers, jobs and society — some points to discuss

- What are the forces in society (technological, social, economic and political)
 - (a) encouraging the wider use of computers
 - (b) holding back the use of computers?Which of the two (a or b) is stronger at present? Is the balance likely to shift in the future?
- 'The government of this country should do everything possible to encourage the use of computers in industry'. Do you agree?
- Computer scientists are now working on developing computers with 'artificial intelligence'. What does 'artificial intelligence' mean? What might these computers be able to do that present computers cannot do?
- Will we ever reach a time when *all* jobs are done by computers?
- The year is 2020. Write a short story about what you think life will be like and the role computers will be playing. (If it is good it might even be published by Barnes Book Club!)