5 THE HISTORY OF ICT

5.1 Vocabulary

word sets: synonyms, antonyms, etc. • describing trends

A Look at the pictures on the opposite page.

1 What do they have in common?
2 Put them in the order of development.

B Study the words in box a.

1 Find pairs of words with similar meanings.
2 What part of speech is each word?

a

architecture calculate change complex configure convert create design develop engine knowledge machine precision record set up sophisticated stage step store tolerance understanding work out

C Study the Hadford University handout on this page. Find pairs of blue words with similar meanings.

D Study the words in box b.

1 Find pairs of opposites.
2 Group words together to make sets.
3 Try to give a name to each word set.

b

academic addition analogue civilian commercial current decode decrypt digital division encode encrypt fixed flexible limited military multiplication multi-purpose obsolete portable specialized subtraction

E Work with a partner.

1 Choose an image on the opposite page. Use words from box b to describe it.
2 Your partner should guess which image you are talking about.

F Look at Figure 1.

1 How would you describe the graph?
2 What do each of the lines on the graph show?

G Study the description of Figure 2 on this page. Write one or two words in each space.

HADFORD *University*

Faculty: ICT

Lecture: *The history of computing*

In order to fully understand the current state of the computer, it is essential to know about the key stages in its technical evolution. This introductory lecture will look at these stages, beginning with the abacus – first used to calculate taxes in Babylon in 2500 BCE – and continuing up to the present.

The lecture will examine how, over time, new calculating engines were developed for specific purposes by inventors. It will look at the way in which the architecture of the machines was limited by the tolerance with which parts could be made, using the technology at the time.

The lecture will also explore how machines became more complex as inventors' understanding of computing developed. This includes the kind of machines which had to be configured for each task, as well as machines which were programmable. In addition, it will look at how data was stored and converted into input types suitable for the computer. Finally, it will examine why computers have become necessary in war and how military needs in the 20th century were responsible for so many new developments.

Figure 2 shows changes _____ _____ number and cost of transistors _____ 1971 _____ 1985. Up to 1979, there was a _____ _____ in the number of transistors. During the same period, prices _____ _____. From 1979 to 1985, the cost of the transistors showed a _____ _____. At the same time, the number of transistors _____ _____.

5.2 Listening

lecture organization • 'signpost' language

A You are going to hear a lecture about the development of computers. Look at the lecture slides. What will the lecturer talk about? Make a list of points.

B Listen to Part 1 of the lecture. How will the lecture be organized? Number these topics.

- computing in the Second World War ____
- mechanical computing ____
- rise of the Internet ____
- pre-mechanical computing ____
- electronic computing ____

C Study the topics in Exercise B.

1. Write some key words for each topic.
2. Can you match the topics with Slides 1–4?
3. What is a good way to make notes?
4. Make an outline for your notes.

D Listen to Part 2 of the lecture.

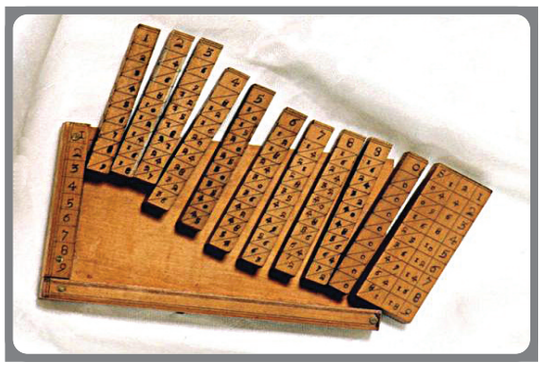
1. Add information to your outline notes.
2. Which of the topics in Exercise B are discussed? In what order?
3. Why was the Jacquard Loom important?

E Listen to Part 3 of the lecture. Make notes.

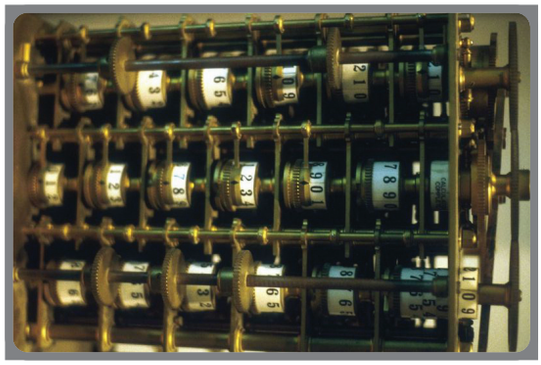
1. Which topics in Exercise B are discussed?
2. Which topic has not been mentioned?
3. What challenge helped computers develop in the late 19th century?
4. How did computer development during the Second World War move technology forward?

F The lecturer used these words and phrases. Match synonyms.

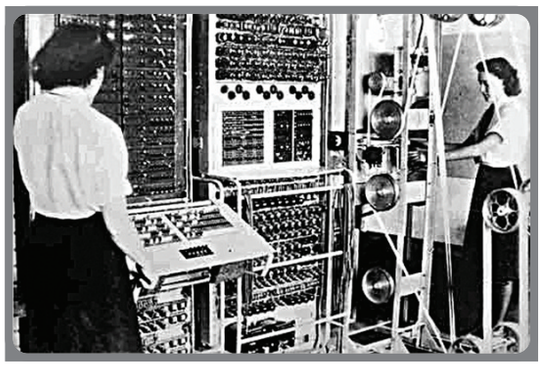
1 key concept	a calculating
2 adding	b do
3 important people	c machine
4 jump ahead	d important point
5 perform	e key figures
6 invented	f move forward
7 device	g created



Slide 1



Slide 2



Slide 3

Slide 4

5.3 Extending skills

note-taking symbols • stress within words • lecture language

A Look at the student notes on the right. They are from the lecture in Lesson 5.2.

1 What do the symbols and abbreviations mean?
2 The notes contain some mistakes. Find and correct them.
3 Make the corrected notes into a spidergram.

Mechanical computing
(i) Hollerith – late C19th, tabulating machines using gears & paper tape. Used US Census 1880 and ↓ time by 7 yrs. Company became IBM.
(ii) 1932 – Bush (MIT) – Differential Analyzer comm. use = elec. motors & gears, binary
WW2
(iii) WW2 – UK, Turing broke German code using Colossus = 1st electronic computer, analogue, used valves + relays. Innovative, e.g., punched card input, enormous impact on war.

B Listen to the final part of the lecture.

1 Complete your notes.
2 Why does the lecture have to stop?
3 What is the research task?

C Listen to some stressed syllables. Identify the word below in each case. Number each word.

Example: You hear: *1 crypt* /krɪpt/
You write:

arithmetic	___	chip	___	digital	___	programmability	___
addition	___	computation	___	magnetic	___	subtraction	___
calculation	___	cryptography	1	mechanical	___	transistor	___

D Study the extract from the lecture on the right.

1 Think of one word for each space.
2 Listen and check your ideas.
3 Match words or phrases from the blue box below with each word or phrase from the lecture.
4 Think of other words or phrases with similar meanings.

basically by that I mean for example
for instance in fact possibly probably
some people say that is to say
to put it another way we can see that
we won't spend too much time on this

The computer is _____ the most important piece of technology in modern society, but it _____ has a very long history, in fact going back almost 5,000 years. It starts with the early Babylonians, who used simple arithmetic to count and keep a record of their goods.

As their wealth grew and they had more and more goods to record, *it* _____ *that* they would try to develop tools to make this work easier.

A *good* _____ *of* one of these tools is the abacus, used as a basic calculator – *in* _____ *words,* a computer. *What I* _____ *is that*, as in a computer, data is input by moving the beads. It is stored by the position of the beads and the output or answers can then be read off. Five beads per line are often used, just as there are five fingers on a hand. _____ , *moving* _____ to the early 17th century, we find a different type of computer.

E Discuss the research task set by the lecturer.

1 What kind of information should you find?
2 What do you already know?
3 Where can you find more information?

5.4 Extending skills

making effective contributions to a seminar

A Study the graph on the opposite page.

1 What does it show?

2 What is the connection between the graph and the development of the Internet?

B Listen to some extracts from a seminar about the creation of the Internet.

1 What is wrong with the contribution of the last speaker in each case? Choose from the following:

- it is irrelevant
- the student interrupts
- the student doesn't contribute anything to the discussion
- it is not polite
- it is relevant but the student doesn't explain the relevance

2 What exactly does the student say, in each case?

3 What should the student say or do, in each case?

C Listen to some more extracts from the same seminar.

1 How does the second speaker make an effective contribution in each case? Choose from the following:
He/she …

- asks for clarification
- paraphrases to check understanding
- brings the discussion back to the main point
- disagrees politely with a previous speaker
- brings in another speaker
- gives specific examples to help explain a point

2 What exactly does the student say, in each case?

3 What other ways do you know of saying the same things?

D Make a table of **Do**'s (helpful ways) and **Don't**s (unhelpful ways) of contributing to seminar discussions.

Do's	Don'ts
ask politely for information	demand information from other students

E Work in groups.

1 Look at the pictures on the opposite page. Decide which sets of data in Figure 1 the pictures relate to.

2 Which of the three elements shown in the graph helped contribute most to speeding up the development of the Internet? Look at the graph and make sure you can justify your decisions.

3 Conduct a seminar. One person should act as observer.

F Report on your discussion and present the feedback from your group, giving reasons for your decisions.

G Work in groups of four. Each person should research and discuss one of the four main types of research. The teacher will give you a *discussion task card* with more instructions.

- Student A: find out about *secondary research* (information on page 102)
- Student B: find out about *primary research* (information on page 102)
- Student C: find out about *quantitative research* (information on page 105)
- Student D: find out about *qualitative research* (information on page 106)