Higher Still

Notes

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Higher

Information Systems

George Kinnear

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Higher Information Systems

Introduction

These notes were produced by George Kinnear, who is studying Higher Information Systems. The notes summarise the HSDU handouts given to him by his teacher.

We hope you find these notes useful, and we wish you all the best with your studies.

Please note

You can find Higher Still Notes for other subjects, such as Chemistry, on the web-site:

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Computer Application Software

Summary Notes

Computer Application Software

OUTCOME 1 – Select software for specific applications

a) Types of application software are correctly described.

Communication	**Database**	**Graphics**	**Financial**
Publishing	**Spreadsheet**	**Reference**	**Word Processing**

Main purpose – how software will be used
eg word processing – enter/edit/format/print text

Functional Characteristics – what the software is capable of

Help	On-line help; wizards/assistants
Filing	Proprietary/standard formats; other applications'
Editing	Changing spelling; resizing graphics
Sort and Search	Alphabetical/numerical order; automatic searching
Calculation	Page numbers; spreadsheets' advanced functions
Text manipulation	Appearance/formatting; copy/paste
Graphics	Paintings; drawings; charts
Formatting	Changing format/appearance
Page Layout	Orientation; margins; header/footer; columns
Viewing	Scaling; showing comments; colours
Proofing	Check for mistakes – spell check/grammar/thesaurus
Communications	LAN/Internet – e-mail, file-sharing
Printing	Sections of large documents; collating; page order
Customisation	Improve ease of use/productivity, reflect preference
Automation	Macros for frequently repeated actions

b) Factors affecting the choice of software are explained.

Compatability

Processor and Operating System
IBM compatible/Mac; Windows 98-XP/Linux/Mac – must match the system.

Memory
Minimum **available** memory requirement must be provided by the system.

Peripherals
eg CD-ROM, modem, graphics card – software often requires the system to have these available.

Backing Storage Space
Free hard disc space for installation/files must be available on the system.

Functionality

What facilities do you require?
Which software best matches these facilities?
Too much functionality wastes resources (memory, backing storage, money)

Cost

Balance cost against functionality. What can you afford?

c) A number of appropriate software products are considered and one is selected.

d) The selected software product is justified in terms of cost, compatibility and functionality.

OUTCOME 2 – Install and customise application software

a) The factors affecting the installation of software are known.

CPU

Software for an Intel processor (in IBM PCs) is unlikely to run on a Motorola processor (in Apple Macs). Also, the processor must have the required processing power or the software will not work properly.

Operating System (OS)

As newer software generally exploits modern OS functionality, older OSs will not be able to run the software. Different OSs will not run the same software (eg Windows/MacOS).

Peripherals

Input, output or backing storage devices required by the software must be present for it to operate – eg a CD-ROM drive is needed to install software supplied on CD; a mouse and keyboard are needed to use the operating system.

OS Configuration

Functionality such as file sharing (provided by the OS) must be enabled for software which requires it.

Availability of RAM

Available memory allows the program to be loaded into memory. **Physical memory** is the total amount of RAM installed in the computer – **available memory** is what is left after the OS and other background programs are loaded into memory. Available memory determines whether or not a program can be used.

Free Disc Space

To install software, files must be copied to backing storage – clearly there must be enough free space to accommodate it. Also consider space for files produced in the software to be saved (eg Word documents).

b) The range of customisation features is known.

Customisations must **improve user productivity**, **enhance ease of use** or **reflect personal preferences**.

Operating System Customisations

These are general in nature – they will affect all applications (eg mouse tracking, double click speed)

Application Customisations

Only affects the customised application. Options vary among programs:

Menus	Add or remove menu commands, or reorganise them.
Toolbars	Choose which toolbars to display; add/remove specific buttons
Keyboard	Add/remove keyboard shortcuts
Colours	Choose colour palate (graphics); change text display colour
Editing	'Drag and drop'; automatic selection
Printing	Proof/Full print; paper size/orientation; watermark
Dictionaries	Add new words to custom dictionary (eg proper names)
Viewing	Rescale the display (eg for visually impaired users)
Searching	Search options (eg whole word; case sensitive)
Formatting	Setting paragraph styles (eg Microsoft Word) – saves time
Templates	Letterhead or other commonly used document layout
Macros	Invoke complex or laborious tasks with a keystroke

c) The installation is completed without assistance and the installed software executes correctly and efficiently.

d) The customisations are carried out efficiently and effectively and improve productivity or enhance ease of use or reflect personal preferences.

e) Legal requirements are known and observed.

Freeware

No charge for the software. No restrictions on copying, distributing or installing. Still, cannot be altered without permission from the copyright holder.

Demonstration software

Usually only parts of the software are provided, in a format similar to freeware, to encourage the user to buy the full version. Functionality (such as saving) may be disabled, or a time limit imposed.

Shareware

'Try before you buy'. Software will be fully functional for a restricted time period – if you wish to continue using the package, you must pay a registration fee.

Commercial software

Software licensed from a company. Different licenses allow different numbers of installtions:

Single User License	Most common arrangement. The software may be installed on one system only. Most licenses allow a backup copy to be made.
Volume License	Allows the software to be installed on a specified number of systems.
Network License	Allows any station on a network to use the software, provided the number of simultaneous users does not exceed a fixed limit.
Site License	Allows the software to be installed on every computer on a specific site, eg school, college or office.

OUTCOME 3 – Explore the advanced features of contemporary application software

a) Use of documentation and on-line help is efficient and effective.

Documentation

Installation Guide	Shows the user how to install the software.
Tutorial Guide	Teaches the user the basic functions of the software.
Reference Guide	Contains descriptions of all the functions the software can carry out. Often runs to hundreds of pages.

On-line Help

Reference Guide	Similar to paper documentation, with the added advantage of fast searching. Harder to lose than the paper equivalent.
Wizards	Performs complex tasks by asking the user for some simple details.
Training	Takes the user through the steps involved in performing a particular task with the software.

b) Exploration is carried out with limited assistance.

c) Exploration is effective in identifying advanced features.

Example – Microsoft Word 97

Filing	Saving to many file types is possible, including files compatible with earlier versions. Word has an auto-save function, which saves a copy of the file periodically. Different versions of the document can also be saved in one file, to allow backups of previous versions to be loaded.
Editing	Text can be highlighted and dragged to a new position without using copy/paste. As mentioned previously, different versions can be saved in one file, so any editing can be reversed easily. Comments can easily be inserted, with comments from different people possible, allowing different proof readers to make remarks
Automation	Macros can be created fairly easily, and advanced users can edit the actual script, since the language used is Visual Basic. AutoCorrect will automatically fix common mistakes in typing/spelling. Templates can be easily saved and loaded, allowing letterheads or standard forms to be produced more quickly.

Communication There is strong Web integration, as hyperlinks can be created and used, and documents can also be saved as web pages (in HTML format). Files can be opened as read-only since only one user on a network can edit a file at any one time

Formatting Attractive templates and clipart are available to use easily. Complicated column arrangements are possible, with different sections having different numbers of columns. Text wrap can take several forms, including 'square', top and bottom' and 'tight' – where the wrap points can be customised to run the text round a graphic

Proofing Sophisticated spelling and grammar checks can be performed, and a thesaurus is available. Proofing comments can be inserted. Spelling or grammar errors are automatically underlined.

OLE Object Linking and Embedding is fully supported; Excel charts can be inserted, as well as music and images, or videos. Word documents can also be inserted into other applications.

d) Description of advanced features is accurate and concise.

OUTCOME 4 – Evaluate and compare software products

a) The products are evaluated in terms of key characteristics.

b) The products are compared in terms of key characteristics.

Cost

Compare the stated costs of the software (consult resources). To evaluate the cost, you must consider the other characteristics of the software – is the more expensive software worth the money?

Compatibility

Processor and Operating System

Compare the requirements of the software. Is it possible to exchange files with users of different OSs? What file formats is the software compatible with?

Memory

How much available memory does each piece of software require?

Peripherals

Does the software require special peripherals?

Backing Storage Space

How much space does the software take up?

Functionality

State any similarities in the features available, and then concentrate on the differences which exist.

Ease of use (including user interface)
Perhaps conduct a simple task in both packages and see how easy it is to do. Consider the menu commands and keyboard shortcuts available, and any notable features of the interface which you think make it easier to use.

Speed
This can be compared along with ease of use – is one package notably slower when performing certain functions?

c) The evaluations and comparisons are accurate and concise.

d) Use of technical terminology is correct.

OUTCOME 5 – Describe contemporary developments relating to application software

a) The developments relate to the application software and are non-trivial.

Speech-to-text	Embedded Hyperlinks	Embedded Artificial Intelligence
Ease of use	Functionality	Productivity

b) The developments are described in a historical context.

Using a microphone, a user can speak to the computer. The audio signal is processed and the computer software can recognise words in human speech – the software then enters this text as if the user had typed it. In order for the computer to accurately recognise words, users usually have to spend considerable time training the software by reading aloud set passages of text display on the monitor

Hyperlinks are pointers which direct users to other files or pages – when clicked, the browser takes the user to these files.

In applications hyperlinks can often be inserted, and which allows authors of word processing documents to refer to sources, or suggest further reading.

The AI checks the text input by the user as it is typed. In Microsoft Word, the AutoCorrect feature will automatically change common typing errors (eg "teh"→"the") and correct mistakes in grammar. These automatic changes reduce the time the user spends manually checking spelling and grammar, so allow the user to become more productive. The AutoComplete feature in Word also improves productivity since commonly used text can be easily inserted after only a few characters are input by the user. This also improves accuracy as the AutoText is perfectly duplicated, eliminating typing errors.

c) The stimulus to change is identified.

The technology needed to run such systems is largely in place, with good quality audio processing, sufficient processor power and free memory. Also, consumers are pushing the development – software developers will have a good market for their software, as it makes computing easier and more accessible to users. 71% of teenagers would prefer to speak than type.

As the Internet has grown in popularity (Bill Gates famously sending a memo to all Microsoft staff to announce the company's intention to lead the field) developers are being forced to include Web functionality in applications.

Developers of word processing software (eg Microsoft) were under pressure to create more functionality to increase user productivity, in order to gain a competitive edge in the market. For users, more advanced proofing tools were widely requested and developers used a form of artificial intelligence (AI) to provide these tools – the AI automatically checks and correct errors in the user's input.

d) The descriptions are accurate, concise and technically correct.

e) The social, ethical and legal implications of the developments are accurately described.

Ethical

This development may cause the forced redundancy of thousands of typists.

Legal

Users may unintentionally access illegal content on the Internet (eg pornography)

Social

Spelling and grammar will suffer since people will expect the AI to correct them – when there is no AI (eg writing), they may be unintelligible.