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Using Microsoft applications

Information and advice for learners

Using Microsoft Office applications

Introduction

This section assumes that you already know the basic features typically available on computer word processing packages such as Microsoft Word. If you do not yet use a computer for word processing, we recommend that you quickly arrange to acquire these skills. If you do not already have keyboard skills it may be slower to type up your work than to write it; however, in the long term you will save time. It is easier to produce well-presented work with a computer because you can keep on changing what you write to the point at which you print it. Word processing skills will also be very useful for your research dissertation, which will be between 20,000 and 25,000 words long.

This section gives you a few tips about some of the more advanced features offered by word processing software. In particular, it will introduce features that are likely to be useful to you when writing up your dissertation. Use of some of the features can save you a considerable amount of time. This setion partly refers to use of Microsoft Word 2010 (hereinafter referred to as Word 2010). If you are using an earlier version of this software then much of what is written here is still relevant but the way of accessing the features is usually different.

The university's IT Services have produced guidance on the use of Office (a suite of software programmes that includes Word) at http://www.lboro.ac.uk/it/student/software/office2016/. *Here you may be able to access MS Office for free.*

In these notes, *italic text* is used to refer to the specific location of the menus needed to apply some of the features found in Word 2010.

The section does not aim to tell you how to use the various options, but only to make you aware that they exist. You can usually find out more about the features by using the on-screen help menu usually supplied with the word processing software. *(It is accessed via clicking on the question mark at the top right-hand corner of the screen in Word 2010).* However, if you can, also get advice from someone who already uses the feature.

Backing up

Eventually most computers will 'crash' (i.e. the computer will freeze and cease to function, either because of an internal problem or because of a power failure). If this happens when you have not taken appropriate backup precautions (i.e. you have not recently saved your work), you can lose hours, days or even months of work! Therefore, it is important that you backup properly. It does not take long and can save a lot of frustration! MS Word provides an emergency backup feature that will save a copy of your current file if the power fails, and let you recover that work when power returns. However, this will not work if your computer malfunctions because of an internal failure — all will be lost!

Note that last-minute computer or printer problems are not an acceptable excuse for late assignment hand-in or for an 'impaired performance' claim. This is another reason to always keep a backup copy of your work and to print off what you need in good time.

Some malicious people create 'computer viruses' that attach themselves to files and email attachments you may receive. These viruses can corrupt the hard disk of your computer, sometimes making it unusable; so it is worth installing a virus checker, preferably one that can be kept up to date via the Internet. Such software should protect your hard disk from becoming corrupted by a virus. The university IT Service automatically checks for viruses attached to emails that pass through the university's email service.

In addition to the normal saving of files to your computer, at the end of each day, or more frequently if you want to play safe, also save the files you have been working on onto a USB memory stick, or to the remote individual workspace store that the university provides for each student on the university server (see see http://www.lboro.ac.uk/services/it/student/storageandsharing/). If you have separate Internet Provider or email-service provider, you may also be able to use remote storage via the Internet (e.g. 'cloud storage'). Storing copies of files separate to your computer will mean that your work will be accessible even if, due to some major problem, your computer becomes unusable.

Keep a backup copy of everything you have produced relating to coursework and your research dissertation. It is safest to have a minimum of three backup USB sticks. In rotation, use one of these each day to make an end-of-day backup copy of essential files. This will offer you some safety in case a stick, or file, becomes corrupted. When you next want to work on a file that you have backed up, first open it from your backup USB memory stick to check that you can use it. If for some reason you cannot open the backup file, then hopefully, it is also already saved in your computer's hard drive. If, unluckily, the file in the hard drive is also unusable, then at least you will

have a copy of an earlier version of that file stored on another backup system. This will minimize the amount of work that you lose to one day at the most. Use names for your backup copies that will help you easily identify the latest versions, although this can be identified from the 'date modified' entry on the file manager listing shown for the place where you have stored it. (The files are listed via Windows Explorer if you are using MS Office).

Store your USB sticks separate from your computer so they and your computer are not both damaged at the same time by a fire, flood or theft!

If, for some reason, you have to save a new backup onto the same USB stick that holds the previous backup, then save the new copy using a different filename. Then the new backup will not overwrite your previous version of the file. However, if this stick becomes damaged, both versions may be lost, so try to always use a second stick.

In addition, print sections of the document from time to time so you can see how the work will look and keep the latest copies to hand. Bear in mind that using a different printer at a later stage can introduce unwanted changes because of different allowable lengths of page.

Useful features of Word

Spelling check

The spelling check is a useful feature. Make sure that it is turned on, by purposely misspelling some words and seeing if these mistakes are highlighted by underlining *(with a wavy red line in Word 2010)*. Some spelling checks do not check words in capital letters (like, for example, chapter headings) unless you specify that this is required. Do not rely on the spelling check alone, since it does not recognize valid words shown in the wrong context. For example, the spell check will not know that you mean 'their' when you actually type 'there'!

In Office 2010 you can set the primary language to 'English UK' via the 'Control Panel'/'Region and Language' menus that are accessed via the Start menu (the circular Microsoft flag button at the bottom left of the screen). If you use another language on your computer, there are ways of ensuring that your computer recognizes both languages.

If the spelling check software does not recognize some words that are in fact correct, you can add them to the electronic dictionary so that it will recognize them in future. This will make it easier at a later stage to locate other misspelled words, since fewer words will be highlighted.

Some packages have grammar checks, but many people do not find these useful. *In Word 2010 it underlines grammar queries with a wavy green line.* It would probably be better to

get someone who has a good command of English to check your work, particularly your research dissertation report. Before you give it to them, check it carefully yourself. Most people find that they spot more mistakes when they look at a printed copy that when they read text on a computer screen.

Styles

It is helpful to set up a 'style' for a certain type of text that you want to always appear in the same format. This is useful for headings, but can also be used for titles to figures (diagrams) and tables, or for smaller text used in tables. Give each style a name that will help you recognize it in the styles list. You can define your own styles rather than just accepting those that are automatically suggested by the software. *In Word 2010 there is a 'Styles' menu tab on the 'Home' tab.*

Some word processing software has ready-prepared 'templates' for a 'thesis' type of document. These may not suit the expected style of presentation for your research dissertation, but may be useful to show you some of the features that your software offers.

It is also helpful to use 'heading styles' and automatic numbering. As explained below, this will ensure that sections are automatically renumbered whenever you insert or remove a section that has a heading.

Once you have set up styles, any typed text that is highlighted can be changed into the appropriate style by clicking on the appropriate style name in the style box (which is usually displayed at the top of the screen).

Editing the formatting of a style, but leaving its name unchanged, will change all the text throughout the report that has that style.

You can set up paragraph formatting for lines of text, or for paragraphs, to insert, automatically, a space before or after each paragraph (or line in a list).

Viewing in 'Outline view' (available via the 'View' tab) allows you to move whole sections around the report by dragging the title to that section.

Format painter

The 'format painter' allows you to copy the style or format of one piece of text and then to apply it to another piece of text so it appears in the same style. This feature shows up as a yellow paintbrush on the relevant menus, and can sometimes be seen in a faint menu that shows up above your cursor.

The menu will be revealed if you click the right button on your mouse. One click of the brush after highlighting an existing format in your document means that you can subsequently 'paste' the formatting once by highlighting another section of text and clicking on it. That changes the text to the new format. Two clicks on the brush means that you can subsequently paste

the formatting any number of times – until you push the 'Esc' button on your keyboard to stop this feature.

Automatic numbering

Automatic numbering of sections and sub-sections when using heading styles has already been mentioned. It is also a useful feature for numbered lists. You can define the starting number and, if you wish, assign a prefix letter to the number. *Numbering is accessed via the 'Paragraph' menu on the 'Home' tab or via the menu that appears when you right click on the mouse.*

Automatic lists

Most word processing software allows you to automatically insert a list of contents near the start of your report. This option lists, in the right hierarchy, any section headings in your report that have been formatted with the appropriate heading style(s). This contents list will automatically show the page numbers. *Holding the 'Ctrl' button down on the keyboard and clicking the mouse button whist the cursor is above the page number in the list automatically takes you to the relevant section.*

Other lists such as a list of figures or list of tables can also be generated as long as the title to the figures (or tables) is given a unique style or you add the text using the 'Insert Caption' feature. *You can automatically produce a list of references using the 'Citation and Bibliography' menus found under the 'References' tab.* This bases the references on details of documents that you have already entered into a personal 'master list' of sources held on your computer. See References, on page 5 for more details about this.

The 'Table of Contents' and 'Table of Figures' are available from the 'References' tab.

You may need to update such lists, after introducing changes and before you print the final copy of your report by right clicking on your mouse in the list and then choosing the relevant option from the menu that appears.

Searching and global edits

Word processor packages also have an edit feature, which allows you to search for and, if necessary, replace any particular group of letters or words. This means that when writing a report you can use an abbreviation and later replace it with one or more words. Alternatively, if you misspell anything, say an author's name or date of publication, you can use the global edit feature to find and replace every time that it is incorrectly typed *(See 'Find', and 'Replace' on the 'Editing' menu of the 'Home' tab).*

Alphabetic listing

If you enter your list of references as rows in a table, *you can sort them alphabetically by using the 'AZ' feature in the 'Paragraph' menu of the 'Home' tab.*

Keeping titles together with text

Most word processing software allows you to link titles and text together, so that you do not have titles appearing at the bottom of one page, which refer to text at the top of the next page. Likewise, lines of text can be kept together on one page, rather than having just one or two lines on one page and most of the rest of the text on another page. *Access this feature via the 'Line and Page Breaks' tab in the 'Paragraph' menu under the 'Home' tab.*

Multiple windows and split screen

You can have two (or more) documents open at the same time on one screen. You can then choose to copy or move text from one document to the other. You can also split your screen, so one part of a single document appears at the top and another part at the bottom (or they can be shown side by side). *Access these features via the 'Windows' menu under the 'View' tab.*

Compare

With the 'Compare' feature you can highlight differences between two versions of a document. You can even scroll through two documents simultaneously with the documents side by side. *Access this feature via the 'Compare' menu under the 'Review' tab.*

Cross-referencing

If you wish to cross-reference in one section of your report to text in another section of the report then you can make a 'live link' to that section number. This means that the number of the section shown in your text will automatically be updated if, at a later stage, that section is automatically assigned a different section number. The same feature can be used for cross-referencing to tables or figures. *Access this feature via the 'Cross-reference' shown in the 'Links' menu of the 'Insert' tab.* After you have added a new numbered section you need to save your file, close it, and then reopen it to ensure the any live cross-references to that section are updated.

Footnotes

Footnotes, if used, can be linked to the text they refer to so that they will always appear on the same page, at the end of the chapter or at the end of the report. *Insert them via the 'Footnotes' menu under the 'References' tab.*

References

As mentioned earlier, *using 'Insert citation' you can cross-reference to an item from a bibliography that you create, and from which the relevant items will be taken to create a list of references for that particular document. To get the list appearing in the WEDC recommended format, choose the 'ISO 690 1st element & date' style, which corresponds to Harvard.* However, one difference to the WEDC recommendations for referencing is that the date also appears at the end of the reference, which is not necessary.

Colour and highlighting

Use of colour for digitised photographs, graphs and diagrams in your research dissertation can improve clarity. However, colour printing can be expensive. If you do not print a coloured image in colour then you should bear in mind that different coloured lines on a graph (or coloured shades on a chart) may look the same when printed in black/white/grey. Likewise, differentiating between coloured lines and shades is likely to be difficult if an original colour printout is then photocopied in black and white.

In draft copies of your text you can highlight sections of text by changing the colour of the font. Alternatively, you can highlight the background to the text in colour by dragging the cursor over the sentence(s) with the 'Highlight' feature turned on. This highlighting feature is useful for marking sections of your text that you know will need some subsequent attention, for example, because a figure number, or cross-reference is not yet available. In a similar way in your draft, or the notes you make when you are doing the literature search for your research dissertation, you can choose to use a particular colour for some parts of the text to show the types of subject matter it covers.

These features are available via the right click menu, or the 'Font' menu of the 'Home' tab.

Headers and footers

You can show information, such as the report or chapter number and/or title, in the top 'Header,' which is near the top of the page and above the text. Likewise, information such as the page numbers can be shown in the 'Footer,' which is at the bottom of the page, below the text. If you wish to change this information partway through a document (e.g. because you start a new chapter) then you will need to include a 'section break' at the end of the preceding section. A different style can be used for odd pages to that used for even pages.

Scanned drawings and photographs

Scanned drawings and photographs can take up a lot of file space. Ensure that the resolution of the picture is not unnecessarily high for the size at which you will reproduce it.

Try to use the JPG (i.e. 'JPEG') format for images, since this is more economical in file size than most other formats. Often you can also use a 'compress' feature to reduce the definition of a picture or diagram from photo-quality to a lower quality which is still acceptable. This can be done for all photographs in a file at the same time.

In your text, you can provide a link to a file containing a picture rather than 'embedding' that picture into the document. This should make your text files a more manageable size. Ensure that all such links work in the electronic copy of the research dissertation that you send to WEDC at the end of that module. You can do this by copying the files containing the pictures onto the USB memory stick you provide to WEDC and then remaking the links. Alternatively, change the links to embed the pictures into the file just before you save the complete file.

Snipping tool

Microsoft Office has a very useful 'Snipping Tool' that you can install on your 'Toolbar'. This allows you to 'cut' out part of something that is shown on your screen and to 'Paste' that from your 'Clipboard' (where it is automatically stored) into any document that you have open on your computer. The Snipping Tool is very useful for copying illustration (or parts of them) from one file, or from the Internet, to paste them as an image into another file. However, remember to cite the sources that you copy from! See Section 8 of this *Study Guide* for advice on citing.

MS Excel

The section is not designed to teach you how to use spreadsheet software, like Microsoft Excel, but rather to make you aware of some of its potential, so you can decide to explore it further. These notes mention features used in the Microsoft Excel spreadsheet software as examples, but similar features should be available in other spreadsheet programs.

There are two common types of computer software that allow a user to store and manipulate a large amount of data: these are databases (such as Microsoft Access) and spreadsheets (such as Microsoft Excel).

A database is a system for storing, managing and retrieving data. It consists of multiple tables and can contain a variety of data types, including text, numbers, images, etc. A spreadsheet is one of the simplest forms of database.

A spreadsheet is a way of storing and manipulating a large amount of data (particularly, but not exclusively, numbers). It allows a large number of repetitive calculations to be rapidly carried out and the results to be presented in a variety of ways such as tables of numbers, graphically (line graphs, pie

charts, bar graphs etc.) or even tailor-made letters/forms such as invoices. Because the calculations are so fast, once an appropriate spreadsheet is prepared it is very useful for exploring the effect of a change in one or more variables that is finding the answer to 'What if …?' situations. This makes it useful for sensitivity analysis, i.e. checking the effect of a change in an assumed variable, such as the foreign exchange rate, on, say, the total cost of a proposed project. Excel also includes a drawing package and allows links to animation using '.gif' images.

Some students start studying with WEDC never having used a spreadsheet programme such as Excel. If you are in this position, we recommend that you put aside time to learn at least the basics of Excel because it is likely to be useful now and in your future professional life. While studying with WEDC you may find Excel useful to check some of the calculations you will need to carry out for your assignment coursework.

Towards the end of an MSc course, during the *Research Dissertation* module, use of a spreadsheet may be essential to help you analyse the data collected. Even if you do not use it for calculations, you may wish to use it for presenting results in various graphical formats that are automatically generated by Excel.

This section refers to features found on Microsoft Excel 2010. In places, direction to specific Excel 2010 menus is made *using text in italics.*

Some of the features of Excel

Calculations

You can do virtually any calculation in Excel. However, you need to be careful about the order in which you input a mathematical equation. Excel guides will tell you about this. You will often need to use brackets to keep parts of the formula together or the calculation it carries out will not be the one you expect! (e.g. (2+4)*3 = 18 whereas 2+4*3 = 14). Always do a manual check on one of the answers generated by the spreadsheet to check that you have not made a mistake in inputting your formula.

Naming cells

Rather than referring to cells by their grid reference (e.g. column A row 3 is cell A3) you can give the cell a name that will then appear whenever you use that cell reference in a formula. For example, if a cell contains the external diameter of, say, a well ring, the cell can be called 'external diameter'. This can make it easier for someone else to understand the formula used in a spreadsheet, and it will act as a reminder to you. *You can give a name to a cell via the 'Defined Names' menu of the 'Formulas' tab menu.*

In-built functions and 'Summary statistics'

Excel is pre-programmed to allow you to carry out a number of standard calculations used in statistics, trigonometry, finance etc. *To see what is available visit the 'Function Library' section of the 'Formulas' tab menu.* There are many options including finding the maximum, minimum or average from a range of cells, or just counting the number of cells in the selection that contain a number or are blank.

Circular references

Where a formula has the same variable on each side of the equation you can instruct the computer to carry out a 'circular calculation' which will change the variable until both sides of the equation are equal and so find the value of the variable that satisfies the equation. (In hydraulics, this calculation is necessary if you are going to use the Colebrook-White equation to find the friction coefficient 'lambda').

Conditional functions

In your spreadsheet you can enter conditional functions. That is you can specify that IF a certain logical test is true (e.g. the number in a cell in the spreadsheet is greater than 10) THEN a certain calculation applies, and/or a certain answer or certain words are shown. If it is not true then you can also specify another action to take place. *To see what is available visit the 'Logical' menu in the 'Function Library' section on the 'Formulas' tab menu.*

Sorting

Tables of data can be sorted alphabetically or numerically. *Use the 'AZ Filter' button in the 'Sort and Filter' section of the 'Data' tab.*

Spelling check

There is a spelling check available under the 'Proofing' menu of the 'Review' tab.

Search and replace

Using the 'Find and Select' menu under the 'Editing' menu of the 'Home' tab you can search your spreadsheet for a certain word or value. This can help you find something in a large spreadsheet. You can also automatically replace all occurrences of one word with another one.

Hiding and showing rows and columns

On a large spreadsheet, you can make certain rows or columns disappear so that you can see just the parts of the spreadsheet in which you are interested. *This is available under the 'Window' menu of the 'View' tab.*

Freezing panes

An ability to 'freeze panes' is useful on a large spreadsheet where you will lose sight of the column titles (or row titles) when you are some way down (or across) the spreadsheet. To avoid this you can choose to freeze the panes above and to the left of any point you choose. *This is available under the 'Window' menu of the 'View' tab.*

Splitting the worksheet

On a large worksheet, you can split your screen into two parts so on the same screen you can see areas that are very far apart on the spreadsheet. *This is available under the 'Window' menu of the 'View' tab.*

Rotating a table so columns become rows

To rotate a table, or row, through 90 degrees, select the whole table (or row), *choose 'Copy' from the 'Clipboard' menu on the 'Home' tab, then select the position you want the top left corner of the rotated table (or row) to be positioned and then from the same 'Clipboard' menu, click on the arrow under 'Paste', and choose the 'Transpose' option in the dialogue box.*

Macros

If you perform a task repeatedly in Excel, you can automate the task with a macro, but this is getting quite advanced so is not covered in this brief introduction.

Pivot Table

A 'Pivot Table' is a table that automatically summarizes large amounts of data quickly. This is also quite advanced. If you want to know more, look at the guidance available from other sources.

Plotting graphs

Once you have input numerical data, Excel is ideal for showing relationships between the data in the form of various graphs. These include two- and three-dimensional bar graphs, line graphs and pie charts. *This feature is accessed from the 'Charts' menu on the 'Insert' tab.*

# Sources of further information

You can find additional information from a variety of sources:

• Make use of the onscreen 'Help' facilities.

• Another way to learn about the word processing or spreadsheet software you are using is to buy an appropriate book or to borrow one from a library.

• You can find many online guides, including videos, on the Internet.

Correct use of the features mentioned above may not be as straightforward as it sounds. Try to get advice at an early stage from an expert, or assign time to reading the help available on the Internet for the software you will be using. Then try the features out to check that they work as you expect.

Give yourself plenty of time at the end of writing your research dissertation to compile, proofread, finalize the formatting and print your final report. Also, allow time to create the electronic copy of the report that you need to submit to WEDC with your project.
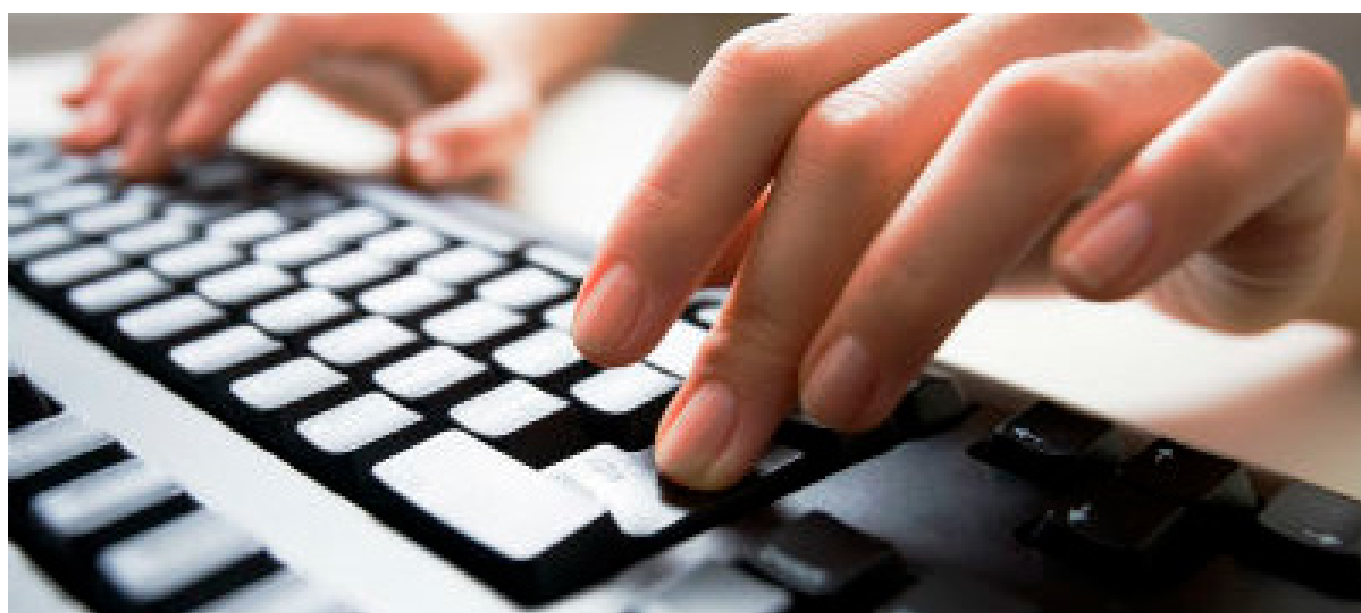
What our students say

" I've come to appreciate the social, technological, economical, institutional, environmental and political dynamics involved in the provision of sustainable WASH facilities and services in low- and middle-income countries. Professionally, I am a more disciplined person with a better sense of time management and self-control. Due to my enhanced capacity in the WASH sector, my career growth has been steady over the last three years from a Water and Sanitation Engineer to a Project Manager and now currently a Senior Programme Coordinator. I am optimistic that more is yet to come."

"It is, and has been, of significant value to my current position to say the least and has turned out to be an extremely interesting course so far. I feel that I have greatly increased my understanding of some fundamental issues relating to management in a development country context as well as boosting my personal confidence. This is paying dividends in my work and in people's opinion and confidence in me!"

"The distance learning modules undertaken so far have been very useful and I have applied a lot of the knowledge to my work."

"It was a great experience ... and I have fully enjoyed and benefited from the course materials provided for various modules."

"Well structured, clearly presented."

"My WEDC studies are not complete but, boy, have they prepared me already for this!"

"I'd like to thank you for all the support you've been giving throughout this course, turning it into a very useful experience."

"The programme has benefited me to significantly improve my technical capacity in all dimensions of water and sanitation fields. The programme has helped me to plan, implement and monitor WASH activities in a more effective manner. I have supported technically other partners working in my area through provision of training, designing of WASH facilities and planning and responding to WASH emergencies."

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