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Information and communication technologies are not a panacea or magic formula. But they can improve the lives of everyone on this planet. Yet even as we talk about the power of technology, let us remember who is in charge. While technology shapes the future, it is people who shape technology, and decide what it can and should be used for. So let us embrace these new technologies. But let us recognize that we are embarked on an endeavour that transcends technology. Building an open, empowering information society is a social, economic and ultimately political challenge. There is no comparison between the technologies of the atomic age and those of the information age. Nonetheless, something written half a century ago by the American nuclear scientist J. Robert Oppenheimer seems strangely prescient and applicable today. And I quote: The open society, the unrestricted access to knowledge, the unplanned and uninhibited association of men for its furtherance ... these are what may make a vast, complex, ever growing, ever changing, ever more specialized and expert technological world, nevertheless a world of human community.

Kofi Annan, World Summit on the Information Society, Tunis, November 2005

Introduction

Information and Communication Technologies (ICTs) have over the years become indispensable management and communication tools. At the global level, the use of ICTs has become so central that the definition of literacy has become expanded beyond basic reading and reading skills to include ability to use ICTs in almost all activities.

This module gives basic skills in three areas of:

1. Spreadsheets;
2. Database management applications; and
3. Presentations.
I. ICT Basic Skills 3: Graphics and Information Management Systems

By Dr. Vitalicy Chifwepa, University of Zambia

II. Prerequisite Course or Knowledge

Before you embark on this module, you should have completed the following modules:

- Module 1: Introduction to ICT -- keyboard skills, operating systems
- Module 2: Text-based Productivity Tools -- word processing

III. Time

You will need to spend not less than 120 hours on this module

IV. Materials

In order to follow this module, you will need the following materials:

<table>
<thead>
<tr>
<th>Unit</th>
<th>Hardware</th>
<th>Software</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit 1: Working with spreadsheet software</td>
<td>A computer</td>
<td>Spreadsheet application software (for example Microsoft Excel)</td>
<td>• Tutorials and learning materials relating to the basic spreadsheet application (e.g. Microsoft Excel) functions. • Examples of spreadsheet applications such as class lists, school-based financial reports and stock charts.</td>
</tr>
<tr>
<td>Unit 2: Working with Database Management Software</td>
<td>A computer</td>
<td>Database management application software (for example Microsoft Access)</td>
<td>• Examples of a database management application (e.g. Microsoft Access) educational facilities such as class lists, school-based financial reports and stock charts.</td>
</tr>
<tr>
<td>Unit 3: Working with Presentation Software</td>
<td>A computer</td>
<td>A presentation application software (for example Microsoft PowerPoint)</td>
<td>• Resources on the basic functions of a presentations application (e.g. Microsoft PowerPoint) functions relating to the presentation of text, formatted and numerical, and graphical presentation of data. • Lesson plans, class notes, or seminar notes for use during teaching or seminar presentations</td>
</tr>
</tbody>
</table>
V. Module Rationale

Trainee teachers must have basic ICT skills. Spreadsheets and database management tools make it possible for you to manage teaching as well as other classroom elements, such as class lists and facilities. At school level the tools would be useful in the management of school resources. Presentation tools are a flexible way of making classroom and seminar illustrations. Therefore, you will find it important to learn how to use these management tools for your future ICT use.

VI. Overview

This course Module is the third in the collection of ICT course modules. It relates to your ability to use numeric data, database management, and presentation tools in educational communication. The main purpose of this course module, therefore, is to equip you with basic computer skills relating numerical data, database management and presentations.

6.1 Outline

In this module there are three Units, namely:

- Unit 1: Working with Spreadsheet Software
- Unit 2: Working with Database management software
- Unit 3: Working with Presentation software

You should spend the periods of time as recommended below on each unit.

<table>
<thead>
<tr>
<th>Units</th>
<th>Activity</th>
<th>Time in hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit 1</td>
<td>Working with Spreadsheet software</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>• Introduction to spreadsheets</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Using Microsoft Excel</td>
<td></td>
</tr>
<tr>
<td>Unit 2</td>
<td>Working with Database Management software</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>• Introduction to Database Management Systems</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Using Microsoft Access</td>
<td></td>
</tr>
<tr>
<td>Unit 3</td>
<td>Working with Presentation Software</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>• Introduction to Microsoft PowerPoint</td>
<td></td>
</tr>
</tbody>
</table>
6.2 Graphic Organizer

A graphic organiser is an instructional tool that is used to illustrate to a learner the prior knowledge or subjects that they must possess before they progress to the next levels. The organiser given below shows you the sequence in which the units in this module should be covered.

![Graphic Organizer](image)

**Figure 1:** Graphic organizer showing module progression

VII. General Objective(s)

By the end of this module you should be able to use:

- A numeric productivity tool (e.g. Microsoft Excel) as part of effective educational communication and the design of teaching and learning materials.
- A database management tool (e.g. Microsoft Access) as part of educational resources management system.
- A graphic productivity tool (e.g. Microsoft PowerPoint) as part of effective educational communication and the instructional design of teaching and learning materials.
VIII. Specific Learning Objectives (Instructional Objectives)

Unit 1

Working with Spreadsheet Software. By the end of this unit, you should be able to:
- Create and edit workbooks of data
- Enter and edit data and formulas
- Cut, copy, paste, and use files
- Explain and use absolute and relative cell references
- Create and modify charts
- Format and print spreadsheets and charts
- Use lists, databases, and AutoCorrect
- Work with paste, logical, financial, and date functions
- Link worksheets
- Save files as Web pages
- Work with data maps

Unit 2

Working with Database Software. By the end of this unit, you should be able to:
- Create an empty database and add tables using a Wizard and Autoform
- Work with tables
- Enter, import, sort, and delete data
- Create relationships
- Use forms and filter data
- Explore queries and use reports
- Use the Lookup and Input Mask wizards
- Add calculated controls to forms
- Create and work with queries
- Customize reports

Unit 3

Working with Presentation software. By the end of this unit, you should be able to:
- Create and edit presentation slides
- Use a presentations application to present lessons
- Import information from a word processor, spreadsheet and other application into presentation slides
- Implement slide automation and formatting
- Create a presentation theme in Science or Mathematics teaching and learning.
IX. Pre-Assessment

Title of Pre-assessment: Your current knowledge of graphics and information management systems.

9.1 Rationale

Let us start with where you are right now with respect to experience and knowledge of classroom and school resources management. The questions below will help you establish your level of knowledge of the applications that you will learn in this module. Later on in this module, you will use the answers to these questions to gauge how much knowledge you will have gained. Please put a cross (X) against your answers to the questions below.

QUESTIONS

1. What is data?
   a. Information collected from research only
   b. Any piece of recorded information
   c. What one reads from a textbook
   d. I do not know

2. What is a worksheet?
   a. It is like a piece of rough work
   b. A blank page of document
   c. A spreadsheet page that shows cells in form rows and columns
   d. I do not know

3. What is a formula?
   a. A calculation
   b. An expression of steps to be undertaken by a computer
   c. Only used in chemistry to make chemicals
   d. I do not know

4. What is a graphical chart?
   a. It is like a pie showing slices of phenomena
   b. It is like a flip chart showing points for discussion
   c. It is like a path to a place
   d. I do not know
5. **What is a database?**
   a. It is an exclusive collection of numerical information
   b. It is a geographical place where researchers work
   c. A collection of similar information arranged systematically
   d. I do not know

6. **I have seen people using computers and projectors casting things on a wall or screen but do not understand how it is done.**
   a. This statement is not true because I have seen it happen and I know how it is done
   b. The statement is completely true
   c. I know some aspects of what they do but not to do it myself
   d. I know some of things but not know how to make things move about on the screen

7. **Have you used a computer to create a list of items (such as furniture) before?**
   a. Yes
   b. No
   c. Too long ago I do not remember
   d. I have just seen it happen but have not done it myself

8. **A class register is a good example of a database. This statement is:**
   a. True
   b. False
   c. Partly true
   d. I do not know

9. **Have you used a spreadsheet application before?**
   a. Yes
   b. No
   c. Too long ago I do not remember
   d. I have just seen it happen but have not done it myself

10. **Have you used a database application before?**
    a. Yes
    b. No
    c. Too long ago I do not remember
    d. I have just seen it happen but have not done it myself
11. **Have you used Microsoft PowerPoint before?**
   a. Yes
   b. No
   c. Too long ago I do not remember
   d. I have just seen it happen but have not done it myself

12. **Computers cannot be used in a similar manner as flip charts. This statement is:**
   a. True
   b. False
   c. Partly true
   d. I do not know

### 9.2 Answer Key

1. Data is the smallest unit of information that could be further processed. For example, the number of pupils, number of girls and number of boys. When processed the data is transformed into information.

2. A worksheet is a grid of rows and columns, and the intersection of a row and column is a cell.

3. A formula is an expressed calculation of data. This calculation could be addition, division, multiplication, or subtraction. It can also be a combination of one or more of the mentioned operators.

4. A graphical chart presents information into graphs such as a pie chart showing how many students are male and how many are female. Bar charts could be a good presentation of class performance.

5. A database is a collection of related information in one or more files or tables. Information in a file or table is described, by one or more attributes, in a systematic and consistent way.

6. Used to classify level of knowledge (marks ranging from 1 – 4 where full knowledge is 4)

7. One example of a database is that of a class register in which records similar information for each pupil. This information could be name, sex, age, and attendance.

8. Used to classify level of knowledge (marks ranging from 1 – 4 where full knowledge is 4)

9. Used to classify level of knowledge (marks ranging from 1 – 4 where full knowledge is 4)

10. Used to classify level of knowledge (marks ranging from 1 – 4 where full knowledge is 4)
11. Used to classify level of knowledge (marks ranging from 1 – 4 where full knowledge is 4)

12. There are some applications, such as Microsoft PowerPoint that could be used to make presentations in a manner that some people use flip charts and/or blackboards.

9.3 Pedagogical Comment For Learners

You have established your current levels of knowledge and experiences with the use of spreadsheets, database management tools and presentation tools. This knowledge is very important as a beginning point for teaching and learning. It indicates the areas that you will need to concentrate on in order to increase you knowledge and use of ICT in teaching and learning. As a teacher you will need to know the areas that learners want emphasis to be laid. The following sections will introduce the key concepts to you and how they will be applied in this module. You will also be introduced to specific functions of spreadsheets, database management and presentations with practical examples of specific applications.
X. Key Concepts (Glossary)

1. **Database**: A database is a collection of related information in one or more files or tables. Information in a file or table is described, by one or more attributes, in a systematic and consistent way. One example is that of a class register in which each pupil or student has the same information about them. This information could be name, sex, age, and attendance.

2. **Database management system**: refers to any software, or application, that is used to manage a database, that is, create, edit and manipulate information.

3. **Field**: A field is a basic unit of entry of data in a record. It is defined to hold specific type of information such as name, sex, age, etc.

4. **File**: A file is a single unit of information that has been created and saved using an application. For example a database file of class A, a worksheet of information can be saved as one file.

5. **Formula**: Is an expressed calculation of data. This calculation could be addition, division, multiplication and subtraction. It could also be a combination of more than one of the said operators.

6. **Functions**: A function is a ready to use formula that you can use to perform a calculation on the data (source: Toot, Michael S., 2005, p. 232)

7. **Presentation**: Is like a note or notes written on the blackboard or flip chart in the process of seminar presentation or class room lecture.

8. **Record**: A record is a single entry of a subject, item, individual or activity in a database. For example, in a class register, each pupil is entered or kept as a record that contains attributes like name, age, sex, etc.

9. **Table**: A table contains rows and columns of information where a row is a horizontal line of cells and a column is a vertical row of cells. A cell is where rows and columns intersect (Toot, Michael S., 2005, p. 114)

10. **Worksheet**: A single working space that is used to create tables of information, it can store a unit or a number of units of information such as one table or two tables that are related in the type of information that is catered for.
XI. Compulsory Readings

Reading #1

**Complete reference:** Microsoft Excel Modules
http://www.internet4classrooms.com/on-line_excel.htm If you do not have access to the internet you will find the reading attached

**Abstract:** The reading gives explanations and tutorials on the use of the basic Microsoft Excel.

**Rationale:** You will find easy to use guidance and tutorials on the activities that you will be introduced to in this module.

Reading #2

**Complete reference:** Graham, Yvette, n.d. Using Access
http://www.internet4classrooms.com/using_access.doc. A Word document by Yvette Graham, also available offline on this CD

**Abstract:** A step by step introduction to MS Access with illustrations of the dialogue boxes that you will interact with when using Access.

**Rationale:** It is an easy to read and follow guide to using Access. You will find additional examples to what has been provided in this module.

Reading #3

**Complete reference:** Graphics Intensive Handout for PowerPoint Training,
http://www.internet4classrooms.com/handout_pp.htm . If you do not have access to internet, click here

**Abstract:** Handouts to be used to support teaching of Creating a short slide presentation including all graphics.

Internet4classrooms i4c helping teachers use the internet effectively: Microsoft PowerPoint, http://www.internet4classrooms.com/on-line_powerpoint.htm, The reading is also available here, offline

**Abstract:** A series of topics and tutorials on using PowerPoint.

**Rationale:** The two reading will give you more information on how to produce well-designed slides that you could use in seminars as well as classrooms.
XII. Compulsory Resources

**Resource #1**

**Complete reference:** Introduction to gender.ppt

**Abstract:** A PowerPoint lesson on introduction to gender. The lesson shows the use PowerPoint in presenting a lesson and also gives basic concepts on gender as a cross cutting subject.

**Rationale:** The lesson gives a practical example of the use of PowerPoint in teaching. Gender as a subject can be replicated with any topic or subject in the use of the application.

**Resource #2**

**Complete reference:** Database-Design-2000.com Also available offline on CD

**Abstract:** A simplified step-by-step lesson on database designing and date formatting using the MS Access examples.

**Rationale:** Some practical examples in one database management application, access. It gives outline of how such an application could be used in real life situation.
XIII. Useful links

Useful Link # 1

**Title:** Online technology practice modules: Microsoft Excel Modules

**URL:** http://www.internet4classrooms.com/on-line_excel.htm

**Screen capture:**

**Description:** In this website you’ll learn about the basics of Microsoft Excel, how to use it, and the relevant vocabulary. You will find out how the spreadsheet can be used in a variety of circumstances and you can organize information. The page gives a lot of practical skills.

**Rationale:** You will find more hands-on examples on how to use Microsoft Excel.
Useful Link # 2

Title: Using Microsoft access

URL: http://www.internet4classrooms.com/using_access.doc

Screen capture:

Description: A paper with notes on how to use access. Includes some screen captures of the stages in the use of access.
Useful Link # 3

Title: Online technology practice modules: Microsoft PowerPoint

URL: http://www.internet4classrooms.com/on-line_powerpoint.htm

Screen capture:

Description: The tutorial link below will provide you with step by step directions in using this program. It has a number of lessons in the various aspects of PowerPoint.

Rationale: The site and resource gives you step by step practice on developing presentations. It gives you practical examples as well.
Useful Link # 4

Title: Biology paired powerpoint presentations
URL: http://teachersnetwork.org/NTNY/lessonplans/fusco.htm

Screen capture:

Description: An example of how PowerPoint could be used in planning and delivering a lesson in Biology

Rationale: The site gives an illustration of the use of PowerPoint and how a teacher could engage the students in both learning the application and using it as a learning and teaching aid.
Useful Link #5

**Title:** Microsoft excel tutorial: excel 2003/ 2002  
**URL:** http://www.baycongroup.com/el0.htm  
**Screen capture:**

![Screen capture of Microsoft Excel tutorial](http://www.baycongroup.com/el0.htm)

**Description:** Four lessons on entering data into cells, performing calculations, formatting of cells and creating charts using excel.

**Rationale:** In addition to the activities that have been given in this module, you will find more tips and practical examples on excel from this link.
Useful Link #6

Title: Microsoft PowerPoint tutorial: PowerPoint 2002
URL: http://www.baycongroup.com/powerpoint/00_powerpoint_tutorial.htm

Screen capture:

Description: Three lessons on introduction to powerpoint presentations, the screens and manipulations, also has lessons on poerpoint overview and a step-by step guide on how to create and print slides.

Rationale: You will find useful tips on slide creation, formatting and using templates
Useful Link #7

Title: Microsoft access 2000

URL: http://www.bcschools.net/staff/AccessHelp.htm

Screen capture:

Description: An illustrated series of topics on the access database management application. The topics range and include starting up with access, creating tables, formatting and using wizards in database creation.

Rationale: The tutorial is comprehensive and expands on the topics that are included in the learning activities of the module. It has illustrations and examples.
Useful Link #8

Title: PowerPoint in the classroom
URL: http://www.actden.com/pp/

Screen capture:

Description: Seven lessons on the use of powerpoint with emphasis on classroom usage. It also has teachers’ guide and tutorial that could be printed.

Rationale: The lessons are not only an expansion of the activities in the module, but they have been simplified into a natural conversational language.
Useful link #9

Title: Online practice modules

URL: http://www.internet4classrooms.com/on-line.htm

Screen capture:

Description: A collection of practice modules. In addition to the PowerPoint and excel that have been covered in this module are other reading of interest to teachers.

Rationale: You will find it interesting to explore other applications for future study in the use of ICT in teaching.
Useful link #10

Title: Online technology tutorials around the world

URL: http://www.internet4classrooms.com/on-line2.htm

Screen capture:

Description: Another selection of applications and tutorial. This is more comprehensive as it has links to some of the lessons done in earlier modules within the set of the introduction to ICT.

Rationale: The collection also has further readings given at the end of the link as well as at the end of each of the tutorials.
XIV. Learning Activities

Title: Introduction to spreadsheets

Specific teaching and learning objectives:

By the end of this activity, you should be able to:
- Explain what a spreadsheet is
- Create and enter data and formulas in worksheets
- Copy, paste and cut cells of data and formulas in worksheets
- Explain and use absolute and relative cell references
- Use lists and AutoCorrect
- Link worksheets
- Work with data maps

Summary of the learning activity:

In this activity, you will learn the basic principles of, and steps involved in, creating a workbook of numeric information. You will also be exposed to manipulation of data in a workbook.

Key concepts:

- **Cell**: an intersection of a column and row in a spreadsheet. This is the area that holds a value of information or data.
- **Formula**: an expression that gives an instruction for a calculation
- **Spreadsheet**: a sheet, which contains rows and columns where the information and formulas are put, within application
- **Workbook**: refers to a number of worksheets that are together in the same file
- **Worksheet**: is the same as the spreadsheet defined above.

List of relevant readings:

Microsoft Excel Modules

Detailed description of the activity:

As you teach, you will need to keep records of information about pupils and other resources. These records are indicators of the teaching, learning and management of resources that take place in a class and school in general. The records
would be used in future to show pupil progress and accountability of resource management.

Imagine you have a science class of 54 pupils. Out of this number of pupils, 27 are girls and 27 are boys. You need to create a table showing information about the class. This table should show the following information on each of the pupils: name, sex and marks obtained in the four tests that you have given them. You also want to show individual marks in each of the tests, the totals for each of the pupils and the average mark. You will also need to show difference in performance, if any, between boys and girls with a view to putting in measures to reduce the differences.

Picture that each one of the pupils is a case: a case with a name, sex, and has obtained marks in the four tests in science. The whole class picture can be viewed as a table in which there are 54 cases.

The table can be drawn and kept using a word processor or hand written. In both cases, you would have to calculate the total marks and average marks for each of the cases manually. Using a word processor you probably have to remember to sort the lists of the cases in an alphabetical order. However, a hand written list would need a lot more time to prepare.

In the lessons below, you will learn how to use a spreadsheet to create a worksheet of the information, and how to make basic calculations.

Table 1 shows an outline of the class performance list that has been described above.

<table>
<thead>
<tr>
<th>Name</th>
<th>Sex</th>
<th>Test 1</th>
<th>Test 2</th>
<th>Test 3</th>
<th>Test 4</th>
<th>Total Marks</th>
<th>Average Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Akabondo, Janice</td>
<td>Female</td>
<td>65</td>
<td>70</td>
<td>56</td>
<td>70</td>
<td>251</td>
<td>62.75</td>
</tr>
<tr>
<td>Bhebhe, John</td>
<td>Male</td>
<td>60</td>
<td>68</td>
<td>50</td>
<td>73</td>
<td>251</td>
<td>62.75</td>
</tr>
<tr>
<td>Chirwa, Banda</td>
<td>Male</td>
<td>66</td>
<td>70</td>
<td>60</td>
<td>69</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kakuba, Harriet</td>
<td>Female</td>
<td>66</td>
<td>73</td>
<td>64</td>
<td>70</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Using spreadsheets

In order to use a computer to create and manipulate the class performance information, the applications you will need to use are Spreadsheet Applications or Database Management Systems. In this Unit you are going to learn how to use spreadsheets.

What is a spreadsheet?

According to the web-based dictionary (the Webopedia), a spreadsheet is, “A table of values arranged in rows and columns. Each value can have a predefined relationship to the other values. If you change one value, therefore, you may need to change other values as well.” (source: Webopedia, http://www.webopedia.com/ Consulted in August, 2006)

The computer programmes that are used to create and manipulate spreadsheets are called spreadsheet applications or spreadsheet programmes.

According to the webopedia, these Spreadsheet applications (sometimes referred to simply as spreadsheets) are computer programs that let you create and manipulate spreadsheets electronically. In a spreadsheet application, each value sits in a cell. You can define what type of data is in each cell and how different cells depend on one another. The relationships between cells are called formulas, and the names of the cells are called labels (source: Webopedia, http://www.webopedia.com/TERMS/spreadsheet, Consulted in August, 2006).

The science class performance list can, therefore, be turned into a spreadsheet using a spreadsheet application. Is the word spreadsheet confusing you? It should not. The word is used to mean the table of information as well as the programme or application that is used to create the tables or sheets of information. In order to avoid any confusion, you may use spreadsheet to refer to the product and spreadsheet application or programme to refer to the programme.

Using the spreadsheet you can make calculations to give you the results that you want. For example, you do not need to use a calculator or any mental additions to give the total marks for your students in the performance table. The spreadsheet application can do it for you. However, you would need to put a formula in the cell where you want the result or the information to be placed. Using the formula you will be able to tell the spreadsheet to make the calculation and give you the result. According to the webopedia (Online), a formula is:

(1) An equation or expression.

(2) In spreadsheet applications, a formula is an expression that defines how one cell relates to other cells.
A formula uses the following operators:
- Start with an equal sign: =
- Additions: +
- Subtraction: -
- Multiplication: *
- Division: /
- Brackets: ( ) are used to nest some operation especially if you are using more than operators in one expression.

To multiply the value in one cell by that of another, you need to identify the cells by their coordinates. For example: =A2*C2 means to multiply the value in cell A2 by the value in cell C2, the answer will be in cell D2.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10</td>
<td>12</td>
<td>14</td>
</tr>
<tr>
<td>2</td>
<td>13</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 2: An example of a part of a worksheet

**Using Microsoft Excel**

Now, let us use one of the spreadsheet applications, called Microsoft Excel, to create the class performance worksheet.

Learning activities:

**Problem**

Using the Microsoft Excel programme, create a worksheet of your class, indicating the column labels showing name, sex, test 1, test 2, test 3, test 4, total marks, and average mark from cell A1 to H1. Enter the cases in the rows below the labels and use formulas to give the total marks and average marks.

**Required facilities**
- Either actual or made up class performance list
Procedure

1. Start Microsoft Excel. A blank worksheet looks like the one below

   Figure 3: A typical Microsoft workbook or worksheet (screen capture)

   The worksheet shows that the Label “Name” is cell A1; the Label “Sex” is in Cell B1

2. Enter the labels up to cell H1

3. Enter all the cases (information about each pupil) according to the labels starting from cell A2 ending in cell F2. Your worksheet should look like the one below

   Figure 4: An example of a filled Workbook or Worksheet

4. Use the *enter* and *tab* keys to move from one cell to another as you enter data.

   Very good, you have now been able to enter data in cells. Now, let us move on to using formulas.
Using formulas

You are now going to complete entering information under the columns “total marks” and “average marks” of the worksheet.

1. Put the formula in cell G2. In essence, the formula must add up all the marks that have been obtained in the four tests. This means that you have to find the sum of the four marks.

There are two ways of doing this: one of the ways is adding up all the cells like this =C2+D2+E2+F2

The other way of adding up a series of cell values is by using the SUM function. Do you remember, from your knowledge of arithmetic, what SUM means? It means adding up some figures. You want to find the sum of the values in C2, D2, E2 and F2. The formula is:

=SUM(C2:F2)

The means, find the sum of values in the range of cells from C2 to F2. You use this function when there is no cell in between the cells (C2 and F2) that must left out. Have you noticed how brackets have been used? You will learn about the use of brackets in the next few moments.

2. Repeat the above steps, using either of the two expressions (cell n + cell n, etc. or SUM(celln:celln), in the column of cells F3, F4 and F5.

Finding the Average

How would you find the average marks, in column G? You need to remember the meaning of the term average. It is the sum of a number of values divided by the number of the values. In this case it means the sum of marks in the four tests divided by four. This essentially means the sum of values in columns C, D, E, and F, then divide the final value by 4.

How many operations can you identify in this operation?

That is right, there are two operations: addition and division. You need to use brackets. There are three possibilities:

1. =(C2+D2+E2+F2)/4

2. =SUM(C2:F2)/4

Have you noticed any familiarity with the part of adding the cells C2 to F2?
That is correct! That is what you did in column G.

The third method of finding the value in column H is: =cellG/4, =G2/4 would do it.

**Activity:**

Fill in the column H from H2 to H5

Now that you have learnt how to use addition, division and brackets, you should be able to use the subtraction and multiplication functions.

**Editing, Copying Cells and formulas**

Working on the same worksheet, put your cursor on cell G2. Pay attention to the pane just above A1: you will notice the indication of the Cell where your cursor is: G2, That part of the sheet is called Name Box. Next to it you will see the information or formula that is the cell G2. That part of the sheet is called Formula bar.

![Figure 5: Illustration of name box and formula bar](image)
You can copy the value of a cell or formula in a cell and paste it in another cell. However, you should remember that if you put a cursor in one cell if you type anything in that cell, what was there is replaced. Try that in one empty cell, say J2. To avoid over-writing what is in a cell, click and work from the formula bar to edit what is in a cell.

**Copying cells**

1. Put your cursor in cell J2 type =C2. This means that the value in J2 should be the same as what is in C2. Press the enter and do the same for J3 =C3 up to J5.

That is a way of copying information from one cell to another.

**Copying formulas**

Formulas are copied a little differently from cell values.

2. Put your cursor in G2 and Click edit in your control panel followed by copy. G2 will look active with what appears to be running dots.

3. Put your cursor in G6 and click edit followed by paste, then press the enter key. The formula and not value will be copied. The value will be different.

**Activity:**

Now that you have learnt how to copy cell values and formulas, complete the whole class performance worksheet. Use the copy and paste technique to complete this task.

**Using cell references**

Up to this time in your module, you have learnt, among other things, cells and how to refer to them. You use their positions in terms of their Columns and Rows. For example the first cell in a worksheet is A1 (intersection of A column and Row 1). You have also learnt how to refer to a range of cells. Do you remember this when you were carrying out the sum operation? You referred to a range of cells like C2:F2 to refer to the values in the cells C2, D2, E2 and F2, thus from cell C2 to F2. This was a range of cells in Row 2.

Well, there are more ways of referring to cells. The examples are given in the manuals of Ms Excel (Source: Click Help from the menu bar, then Microsoft Help or F1, then type the word “references”) you will find a table like the one below.
Table 2: References (Source: MS Excel Help)

<table>
<thead>
<tr>
<th>To refer to</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>The cell in column A and row 10</td>
<td>A10</td>
</tr>
<tr>
<td>The range of cells in column A and rows 10 through 20</td>
<td>A10:A20</td>
</tr>
<tr>
<td>The range of cells in row 15 and columns B through E</td>
<td>B15:E15</td>
</tr>
<tr>
<td>All cells in row 5</td>
<td>5:5</td>
</tr>
<tr>
<td>All cells in rows 5 through 10</td>
<td>5:10</td>
</tr>
<tr>
<td>All cells in column H</td>
<td>H:H</td>
</tr>
<tr>
<td>All cells in columns H through J</td>
<td>H:J</td>
</tr>
<tr>
<td>The range of cells in columns A through E and rows 10 through 20</td>
<td>A10:E20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Name</td>
<td>Sex</td>
<td>Test 1</td>
<td>Test 2</td>
<td>Test 3</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Jane</td>
<td>F</td>
<td>10</td>
<td>20</td>
<td>30</td>
<td>=SUM(C2:E2)</td>
</tr>
<tr>
<td>3</td>
<td>Joan</td>
<td>F</td>
<td>40</td>
<td>50</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>John</td>
<td>M</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 6: Example of a formula

There are two types of references: relative and absolute cell references.

If you copied the formula that is in cell F2 and pasted it in cell F3, the values C2 and E2 would change in cell F3 to reflect the cell which are related or near the formula to make it applicable to the values near it. The formula in F3 would, therefore show as =SUM(C3:E3). This is referred to as **relative reference**.

If you do not want the formula to adjust its cell references then you have to turn the expression from relative to **absolute reference**. For example:
Figure 7: Illustration of references

If you were to copy the formula (=C2*D2) and you did not want to change the value of the cell C2, then you would have to change what goes into E2. To turn it into an absolute reference you would edit the formula to put dollar signs before the parts of the reference that should not change. It would, therefore read =$C$2*D2. On coping this formula to E3 it would result in =$C$2*D3. So where as D2 has been changed to D3 you will notice that $C$2 remained the same.

You have now created one worksheet in your workbook. You are going to create another worksheet but in the same workbook. Save your work and give it a name. Remember file names should refer to the type of work you have created.

At the bottom of the workbook that you have been working on, right at the foot of the screen, you will notice that there are tabs labelled Sheet 1, Sheet 2, and Sheet 3. Right click on the tab Sheet 1 and Rename the sheet to Science class.

Activity

From your science class, it is important to keep gender desegregated data that would make it possible for you to show the difference in performance between the girls and boys so that you will be able to take any remedial measures.

Click on Sheet 2 and create a sheet showing the following: The number of boys and girls that have got the following grades A, B, C and D from your science class.

Using the average marks of each pupil, give the pupils the grades of A, B, C and D according to ranges used in your school system. Break this information into columns that show Boys and Girls. 1. Use the formulas to give the totals. 2. Create a bar chart to show the distribution of grades and class performance. The table below shows the number of pupils (boys and girls) that got grades A to D.
Table 3: Table showing performance statistics

<table>
<thead>
<tr>
<th>Grade</th>
<th>Boys</th>
<th>Girls</th>
<th>Total Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>8</td>
<td>10</td>
<td>18</td>
</tr>
<tr>
<td>B</td>
<td>10</td>
<td>8</td>
<td>18</td>
</tr>
<tr>
<td>C</td>
<td>4</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>D</td>
<td>5</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>27</td>
<td>27</td>
<td>54</td>
</tr>
</tbody>
</table>

Procedure

1. Highlight the block of cells that contain the values, including the total marks column **and not** the Total Row.
2. Click Insert and select Chart.
3. Select columns.
4. Select the type of bar chart you want from the templates given by the wizard, and click next.
5. Click on the Series tab to label the series of Boys by typing “Boys” in the space that says Name.

![Figure 8: showing a step for labelling series](Image)
6. For the Category (X) labels, Click on the icon in the field spaces, pointed at as category X, then select the cells that contain the grades A to D in the grade column of your table. That will enter something like: =Sheet2!$B$10:$B$13. In this case it is the range of values from cell B10 to B13 as absolute references. That is where the grades A to D are in the example above.

7. Click on Series 2, for Girls and Series 3 to label the other two series

8. Click next

9. Label the Chart by giving the appropriate chart title, X-axis, which is Grades, and Y-axis, which is Number of Pupils or Frequency.

10. Click Next and select to save the chart as a new Chart, and click Finish. The chart should look like the one below

![Figure 9: The final chart of science class performance](image)

Well, congratulations! You have just created an impressive worksheet and chart showing gender-desegregated data using a graph as an illustration.

How many worksheets do you have in your workbook? How about charts? Look at the bottom of your workbook for that information. Rename the sheets and chart to reflect the information you have. Please save your work.
**Formatting and Printing**

**Formatting**

Formatting of sheets and charts involves changing the characteristics of your worksheet to make it look the way you want. You can change column sizes. Here is how:

1. Click on the letter that represents the column at the top of the column. It becomes shaded.
2. Either double click on the top part of the column or use the cross your cursor has become, to drag the column to the size you want.

For other types of formatting, click on Format, in the task bar, and select the types of formatting you want.

**Formatting numbers**

One important level of formatting is that of numbers. You can format numbers to make them display as decimal, currency, date, and others. Select a column of your worksheet and click on **Format** and **Cells**.

Unless changed, the date number is set in one way. Try to type the date in any cell by tying a number from 1 to 12, slash and any other number between 1 and 31. What do you notice? Use the format date function and see how to change the formatting.

**Activity**

Open a new worksheet, in the same book by clicking on sheet 2, 3 or 4 at the bottom of the workbook, rename the sheet from sheet n to **formatting**. Enter any labelled data and format the date, currency, and decimal points.

Create a simple list of subscription to show the names, individual subscription, date paid, amounts paid and total amounts paid.

**Printing**

You can print the sheets and charts using the print function, just as you learnt on word-processing. However, it is possible to print only certain areas in Excel. Here is how:

1. Select an area you want to print, by dragging the areas
2. Choose File, Print
3. Deselect the print area or change where it says print what. Click on selection
4. Choose whatever, other options and click OK

You are almost at the end of this Unit now. However, you have at this point got the basic steps in using Microsoft Excel. The remaining topics on **AutoCorrect**, **Linking worksheets**, and **Working with data maps** should be easy.
Autocorrect is a feature that enables the programme to correct words or items that may be wrongly spelt. You can set autocorrect to enable Excel to correct words as you are typing.

Click on Tools and select Autocorrect to see how you could set up the system for autocorrect. It is helpful if you want to avoid retyping or checking spellings every so often. Autocorrect would correct you as you type according to the parameters that you set.

**Linking worksheets**

This function enables you to link the various worksheets and workbooks that you create. This facility helps you to move from one sheet to another by clicking on certain designated texts. For example to link a sheet a to another sheet b Type a text that you would want to use click in order to move. Click in that cell and click insert and hypertext. Find, by browsing the file that has the sheet that you want to link to. Click on the relevant word under Browse for (either a file or a web site).

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Name</td>
<td>Test 1</td>
<td>Test 2</td>
<td>Total</td>
<td>CA</td>
</tr>
<tr>
<td>2</td>
<td>George</td>
<td>57</td>
<td>61</td>
<td>118</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Mary</td>
<td>60</td>
<td>58</td>
<td>118</td>
<td></td>
</tr>
</tbody>
</table>

For example, to link the workbook on *class performance* to another workbook, say on *school facilities*, firstly there must be such a file (on school facilities) already existing. Try to create one, if you do not have one. Somewhere (one cell) in your class performance worksheet type a word Class facilities. Put your cursor in the cell where the text Class facilities is and click, Insert, then click hypertext, Click File under browse for in order to browse and to find the workbook School facilities to which you want to create a link. Then click ok. The text will change colour to blue to show that it has been linked. For example the text CA in E1 is linked to a web site.

**Maps**

Maps are used to work with geographical information. For example, if you want to create a map of data from countries or regions of a country. One of the columns would have geographical data and the next information from or about the countries.

<table>
<thead>
<tr>
<th>Name</th>
<th>Sex</th>
<th>Nationality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marg</td>
<td>Female</td>
<td>Kenyan</td>
</tr>
<tr>
<td>Noel</td>
<td>Male</td>
<td>Zambian</td>
</tr>
</tbody>
</table>
For more information on how to work with maps, click Help, select index, and then type in Map.

**Using the Help function**

For details see the reading at the Internet4classroom i4c - helping teachers use the Internet effectively: Microsoft Excel web site: (http://www.internet4classrooms.com/on-line_excel.htm). If you do not have access to the Internet you may also find the readings on Excel by clicking here.

For immediate help functions within Microsoft Excel, please click the Help Key of your Excel toolbar. Type the word or first few letters of the function you want help on.

**Formative evaluation:**

Your school has asked you to make an analysis of the final year examination results over the last two years in the major subjects. In the analysis you have been asked to remember the element of gender: you should show if there has been relational differences in performance between male and female candidates.

Use the existing information in the school to answer:

1. Using worksheets and charts, please calculate and show the performances over the last two years. Discuss this problem with at least one of your fellow students.

2. (Optional) As you were learning how to use Excel, you may have encountered some challenges or problems. What were these problems? What challenges do you think you would face in teaching the application to secondary school pupils? Discuss this question or set of questions in an essay of not more than 600 words.
Activity 2

Title: Introduction to Database management systems

Specific teaching and learning objectives

By the end of this unit, you will be able to:

- Create a simple database
- Work with tables
- Enter, import, sort, and delete data
- Create relationships
- Use forms and filter data
- Work with queries
- Customize reports

Summary of the learning activity:

In this activity, you will learn how to use a database management system to organize information in a systematic and consistent way. As a teacher you will be able to manage such information as pupils records and records of classroom facilities. In addition, you will be able to retrieve such stored information much more efficiently. You will also be able to create reports based on the information that is stored in a database.

Key Concepts

- **Database**: a collection of related information that is built for a given purpose. The information is systematically arranged and described so that every item included is described in the same way and related to the others.
- **Field**: an area in the database where specific elements of information are entered when describing an item in a database. For example, information on pupils, will be broken and described using elements like name, sex, age, etc.
- **Record**: an entire item that has been stored using a number of fields. All the elements, making up information about a pupil, are stored as a record.

Requirements

- A class register or list of all pupils that shows information about each pupil that the school keeps.
Relevant reading:

Using microsoft access (Using Access http://www.internet4classrooms.com/using_access.doc). A Word document by Yvette Graham, also available offline on this CD.

List of relevant resources:


This is a web-based encyclopedia that gives meanings and background information on terms and concepts on line. Type in a term and click search.

Detailed description of the activity:

In the previous activity, you learnt how to use spreadsheets to process and present information. In this activity, you are going to learn about database management. In the previous activity data was stored in a spreadsheet. In this activity data will be stored in a database. There are a lot of times when you want to view individual records or cases as opposed to seeing the entire picture. There are times when you want to retrieve information about cases in a much more effective way. You may not want to calculate anything but keep information in order to retrieve at a later stage. You may also want to have similar data that is stored and acted on in the same way.

Use a computer to keep the register of students in a class. It might not be an attendance register but a record of a number of pupils that contains such attributes as next of kin, addresses and number days of attendance in a school calendar term or semester.

What is a database?

The web-based encyclopaedia called Wikipedia, defines a database as: “a collection of logically related data designed to meet the information needs of one or more users. The term originated within the computer industry, but its meaning has been broadened by popular use, to the extent that the European Database Directive (which creates intellectual property rights for databases) includes non-electronic databases within its definition. This article is confined to a more technical use of the term; though even amongst computing professionals, some attach a much wider meaning to the word than others” (source: Wikipedia, http://en.wikipedia.org/wiki/, consulted in August, 2006).
Does this remind you of the Science Class list, or not? Well, the encyclopedia goes on to say that, “One possible definition is that a database is a collection of records stored in a computer in a systematic way, so that a computer program can consult it to answer questions. For better retrieval and sorting, each record is usually organized as a set of data elements (facts). The items retrieved in answer to queries become information that can be used to make decisions. The computer program used to manage and query a database is known as a database management system (DBMS)” (source: Wikipedia, ibid.)

From this definition, you can relate a database to what was created using a spreadsheet. Whereas, we called an entry, in the spreadsheet a case, databases refer such information as records. Consider a record to be information that has been subdivided into specific elements such as name, sex, address, pupil number, next of kin, and any other attributes that a school might want to keep about a pupil. The information is being stored in a systematic way, such that you would keep the same information or attributes, about each and every pupil.

You would be able to query the database and retrieve required information. For example you will be able to answer such queries as: How many pupils, in the school or class, have a next of Kin called Chifwepa? You could query for such information and retrieve the relevant records only if you had one of the attributes called next of kin. Aah! so you need to plan in order to design the database; you need to plan in order to think of the type of attributes, also known as fields, that would define each record.

A database, therefore, stores records using attributes called fields. Fields are like labels, in a spreadsheet. It can be saved as a database file with a file name. For example, you could have class database file.

**Planning a database**

Before you design the database you need to plan. You need to think of the information attributes that you would like to use to store and, therefore, query the database with. These are the elements that would help you to describe the records. Would you like to keep records of achievements or penalties that a pupil might obtain during his or her term in the school? Well, then you would need to have fields where you would record such data about each pupil.

Planning involves asking oneself certain questions. The major questions would be:

1. What is the purpose of the database?
2. Are there databases that exist that keep such information?
3. How would you like to describe the information that is to be stored in the database or how would you like to interact with the database? What information about each record would you like to keep?
4. What fields will you use?
5. From among the fields, is there one that is key? Is there one that will be unique and differentiate each individual record from the others?

Each database will have a unique field or key that will describe each record individually; there should be no two or more records, whatsoever, that will have the same information in the key field. The key field will contain information like pupil number, passport number and any other identity number that is unique. This is called a **Primary Key**.

**Activity**

From what has been discussed so far, get a pen and piece of paper. Use your own words to:

1. Define a database
2. Explain what a record is
3. Explain what a field is
4. Identify a key field in a school register.

**Types of databases**

There are two major types of databases that you would typically use in a classroom or school. These are **relational** and **non-relational databases**.

What you have learnt about so far is a non-relational database. It is a stand-alone database that does not work or relate with any other database. A class register is an example of a stand-alone register. A relational database is one that stores information and is able to share or use information from another database. For example, you can have a database of books that could be lent out to pupils. For this activity to happen, you need three database files. One that will contain the books, another containing the pupils or borrowers, and a third that will keep records of the transactions of circulation of the books. As you may imagine the transaction or circulations database file will contain information that is mainly found in the pupils and books database files. Because it is relational, you will not need to re-enter or repeat entering the information that is the source files (pupils and books). The circulations file will be able to see and use the data that is in the source files.

**Types of database management systems (DBMS)**

Some database management systems cannot create and manage relational databases. They are therefore called **non-relational database management systems**. Those that can manage relational databases are called **relational database management systems**.
Working with Microsoft Access

Microsoft Access, in short referred to as Access, is one of the relational database management systems. You will use it, in the module to learn the functions of DBMS. A lot of the functions are found in the other similar systems.

Activity

Create a class register, showing pupil number, name, sex, age, next of kin, and address fields.

Procedure

The examples are based on Microsoft Access XP. The principles in higher or lower versions of Access will be similar with a few enhancements depending on the version.

1. Using file management skills you learnt in Module 1 and Module 2, create a folder, where you will be putting all the Access projects.
2. Start Access the programme. Select create a blank database file and save it as Pupils in some folder you created in step 1.
3. Double click create table by using wizard option. You will have a screen like the one below.

![Figure 10: Starting Access (screen capture)](image-url)
4. The wizard gives sample tables from which you could choose according to the type of database you want to design. Remember, however, that the field names it gives you could be edited to suit your situation. For example, if you select Address from the sample table, the wizard gives you some predetermined fields.

5. Move each field from the sample fields, for example AddressID to the fields in my table are; click the rename button below the area and rename the AddressID to PupilID.

6. Complete by moving all the fields required, renaming where necessary, into the fields in my table area.

7. Click Next, name the database Pupils, set the primary or key field to Pupil ID, and finish the database following the options that follow.

You have just completed creating one database.

**Activity**

Follow the steps that you took in creating the pupils database file and create another database for Books. Remember to include the primary key.

**Working with tables**

Have you noticed that Access creates databases in tabular form? Well, you remember that when you started creating the database you had options on how to create the tables. Using the table of information that you have entered, you can search or find information. You can sort the information using any order of fields.

**How to search**

You can search records or specific data of records using the Find function. It is labelled with Binocular. Click that symbol and dialog box like the one below appears.
In the dialogue box, you have to type in what you want to search in the space "Find what." "Look in" asks you to specify the database file to search. "Match area" is where you specify which field to search, a specific one or all fields. "Search:" is where you indicate whether to search the entire database (All) or up/down. It is advisable to uncheck the Match case area to allow searching for both upper and lower cases.

**Sorting data**

You can sort the records using any of the fields. In the table click the top of the column and click the sort symbol A to Z or Z to A.

**Practicing the relational database**

**Activity**

Make the two databases (pupils and books) related in such a way that a pupil could borrow a number of books, but obviously one book cannot be borrowed by more than one person.
Procedure

1. Remember the primary keys for both database files.
2. Edit the Book database file to include the PupilID (primary key from the Pupils database file) by:
   a. Closing the databases
   b. Clicking the open file icon or function
   c. Click on the Books database file so that it looks like the figure below

![Design Dialogue Box]

Figure 12: design dialogue box

a. Click the Design icon on the database dialogue box and add the PupilID field
b. Make the PupilID field a number type.
2. Close the design dialogue box
3. Click on the Books database file
4. Click on the Tools function from the menu and select relationships
5. A box with the two database fields will appear.
6. Double click on the PupilID and have another dialog box.
7. Click “Create new” for new relationships
8. Drop down the labels to indicate the tables that are on the left and on the right
9. Select the Pupil ID from both tables (Pupils and Books)
10. Click Create to finish
To lend books to a pupil with an ID number 1, follow the following steps:

1. Open the Books database and type in 1 in PupilID field in the books table. To return the book, delete the Pupil ID in same field in the Books table.
2. View the tables and click the + sign preceding the Pupil’s name to show if a pupil has borrowed a book or the + sign preceding the book to show if a book has been borrowed.

Please read the document: Using access, http://www.internet4classrooms.com/using_access.doc, a Word document by Yvette Graham, also available offline on this CD for more information on access.

You will find additional information on:

- Using forms
- Queries and reports
- Lookups and masks, and
- calculated controls

**Formative evaluation:**

As a teacher, you manage a classroom in which there are pupils and resources for both yourself and your pupils. There are various ways and tools used to manage them. One of the factors that determine the methods of managing the information is how you would like to use it.

Make a list of all the resources that will be under your responsibility as a classroom teacher. What use will you put these resources to? Which of the two applications that you have learnt would you use to manage them? Would you use different applications for the different resources? Explain your answers in an essay of between 500 and 1000 words. You may discuss the reflection with a colleague.
Activity 3

Title: Working with presentations

Summary of the learning activity:

This learning activity enables you to create computer based slide presentations. You may have used the chalkboard or flip charts to make illustrations and or points for discussion. Presentation applications enable you to use the computer to make even more effective illustrations and presentations.

List of relevant readings:


If you do not have access to the Internet, please read the attached document Microsoft PowerPoint.

Detailed description of the activity:

As a teacher, you are required to use a number of teaching aids. Some of the classrooms based teaching aids are chalkboard, flip charts, models, maps and graphs. The evolution of information and communication technologies (ICTs) has made it possible to make the teaching aids more illuminating.

Use a presentation programme to create slides of a lesson. The slides should include graphs and other objects that make it easy for pupils to visualize and understand the subjects.

Specific teaching and learning objectives

By the end of this unit, you should be able to:

- Create slides
- Use the formatting toolbar
- Integrate graphics in a presentation
- Create an animated lesson

Key concepts

Animation: Making objects of slides dynamic or move in a certain way

Graphics: refers to any image or graphs that are used to illustrate a subject or item
**Slide**: a single page in presentations that could be used to present information

**Slide transition**: is progressive movement from one slide to the next, in a single presentation

**Template**: refers to an already made design of slide, which you could adopt for the format, colour, and general design of your slides.

**Introduction to the activity**

Every teacher uses one kind of teaching aid or other. They are used to illustrate a point or to make an impression. One computer tool that can be used for illustration is a **presentation**. You can deliver the presentations through various media, namely: television, computer, overheads projectors, printouts and on the web. The computer based slides can be advanced, from one to the next, manually or automatically.

Through this activity, you are asked to turn one of your lessons into slides.

**Using Microsoft PowerPoint**

PowerPoint application is one of the applications that are in the Microsoft Office suite. The others that you have learnt, so far are: Access, Excel, and Word.

Here are some tips in slide creation:

1. Your are communicating using the slides, be as clear as possible
2. Do not over-crowd a slide with too much text or information
3. Each slide must be simple, clear, and coherent.
4. Avoid having more than one subject or issue on one slide. You may have a few but clear bullets on a slide
5. Follow a logical sequence of new slides according to the subject under presentation as you progress in your presentation.
Starting PowerPoint

1. Plan the presentation: What type of presentation? How many slides will you need? What information will be on each slide? What information will be on each slide?
2. Start PowerPoint. The first screen will look like the one in Figure 13

![Figure 13: Starting PowerPoint](image)

3. Click *Blank* presentation to start the slide creation.
4. Select the layout of slide that looks like the one you want to create
5. Type your text as indicated in the layout.

6. Click insert and select new slide to create the next slides up to the end.

7. Save the presentation.
Please read Microsoft PowerPoint (http://www.internet4classrooms.com/online_powerpoint.htm) for more tips on how to create and format slides. If you do not have access to the Internet, please read the attached Microsoft PowerPoint.

**Activity**

Use one lesson in a subject of your choice; make a plan of topics and their logical flow. Create a timed slide show. Please read the notes referred to above to find tutorials on PowerPoint.

Here is an example of a timed slide show on introduction to gender

**Formative evaluation:**

1. You have been asked by your school management board to make a presentation on the school how the school has fared in terms of acquisition and maintenance of furniture, equipment and buildings. The report should also include the changes, if any, in school enrolment especially with respect to the education for all principle that has been embarked by the Ministry of Education. Use Microsoft Word to prepare the report that should include tables of figures.

Make a PowerPoint presentation to help you present the report at the next Parent Teachers’ Association Annual General Meeting.

2. (Optional) Please discuss how you would use the PowerPoint application to improve your teaching and learning activities. Which specific functions make the applications have an advantage over the chalkboard and which ones do not? Are there any areas that are still challenging with respect to making teaching aids more effective and efficient? Please show your responses to these questions to your instructor.
XV. Synthesis of the Module

You have now come to end of the module. The module should have contributed to your ability to be an efficient teacher that is able to use ICT as a teaching aid. As a teacher, you know that teaching aids such as chalkboards make it easier to illustrate a point or subject. Presentations make it even easier to make illustrations in much more effective ways. A learner will be able to view a presentation over and over again if the presentation is computer based.

You have also learnt two ways of managing information in such a way that the information could be retrieved much faster. The numerical information can be managed more efficiently using spreadsheets while databases can be used to store units of information in a systematic manner.

You have learnt how to use the graphics and information management systems for purposes of teaching and managing resources. You should be able to move on to advanced subjects and courses on the use of ICT in specific subject areas such as Mathematics and Science.
XVI. Summative Evaluation

You have completed three activities in this module on spreadsheets, database management systems and using presentations. By this time, you are expected to be able to create spreadsheets, use them in classroom management and create various types of reports. You are also expected to be able to use a database management application to store and manage information on classroom and school resources. Lastly, you are expected to be able to use a presentation application to create and present a lesson.

Please write three essays on:

a. What spreadsheets are and how you could use them as teaching aids and management tools. Pay particular attention to the attributes of information that you would use in the planning and management of the school as you write this essay.

b. What database management systems are and how you could use them as tools in teaching and school management. In your essay consider the opportunities that the application provides in storing and retrieving information that is related such as pupils, books and other resources.

c. With the use of PowerPoint as an example, make a lesson plan and notes that you would use to teach introduction to ICT. What opportunities and challenges arise from the point of view of teaching methodologies can you identify?

Discuss the answers with a colleague and show them to the instructor near you.
XVII. References

DatabaseDev.co.uk (nd.) Relational database design basics (http://www.databaseDev.co.uk/design_basics.html) (accessed on 9th December 2006)


Handouts to be used to support teaching of Creating a short slide presentation - including all graphics, but none of the navigation links found on each page.

Internet4classrooms i4c helping teachers use the internet effectively: Microsoft PowerPoint, http://www.internet4classrooms.com/on-line_powerpoint.htm,


Winter, J.D. (n.d.) How to use a spreadsheet http://www.whitman.edu/geology/winter/Excel.pdf (accessed on 8th December 2006)
XVIII. Main Author of the Module

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