REPUBLIC OF KENYA
MINISTRY OF EDUCATION

DIPLOMA IN EDUCATION LEADERSHIP AND MANAGEMENT
MODULE 5: LEADERSHIP AND MANAGEMENT OF ICT INTEGRATION IN EDUCATION

KENYA EDUCATION MANAGEMENT INSTITUTE

COMPUTER APPLICATION PROGRAMS

UNIT 2





- Information and Communication Technology (ICT) plays an important role in the education sector.
- ICT is considered to be the key to unlocking the skills and knowledge of our learners.
- It is also considered to be a gateway for learning the 21st Century skills.
- Computers have application or productivity programs which are basically tools used to create documents for presenting the information.
- They are usually in different formats such as tables, charts and graphs.
- In this unit, you will learn more about word processors, spreadsheets, presentation software, databases, desktop publishing and cloud productivity tools.

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Learning Outcomes

Upon completion of this unit you will be able to:

a) Apply word processing skills to generate documents for use in day-to-day life
b) Make use of spreadsheet program skills in data management
c) Use presentation program skills to prepare presentations for use in learning
d) Demonstrate understanding of the use of database program where appropriate
e) Demonstrate understanding of the use of desktop publishing programs in day-to-day life
f) Make appropriate use of cloud productivity tools.
g) Appreciate the role played by productivity tools in the learning process.

Word processors

- A word processor is a specialized program that allows one to write, edit and produce documents such as letters, reports, and books through the use of a computer program or a complete computer system designed to facilitate rapid and efficient manipulation of text.
- It also has tools for inserting graphics, charts and tables into the documents under development.
- A word processor program enables one to make notes, prepare tests, stories and make lesson plans.
- Additionally, a number of tools such as spelling and grammar checkers are also available in word processors.
- It is easy to make changes to existing documents and produce multiple documents that have only slight differences, for instance, while using mail merge, one can send a standard letter to many people by just changing the different individual's details.
- Industry-standard word processing software packages include Microsoft Word, Corel WordPerfect, WPS writer among others.

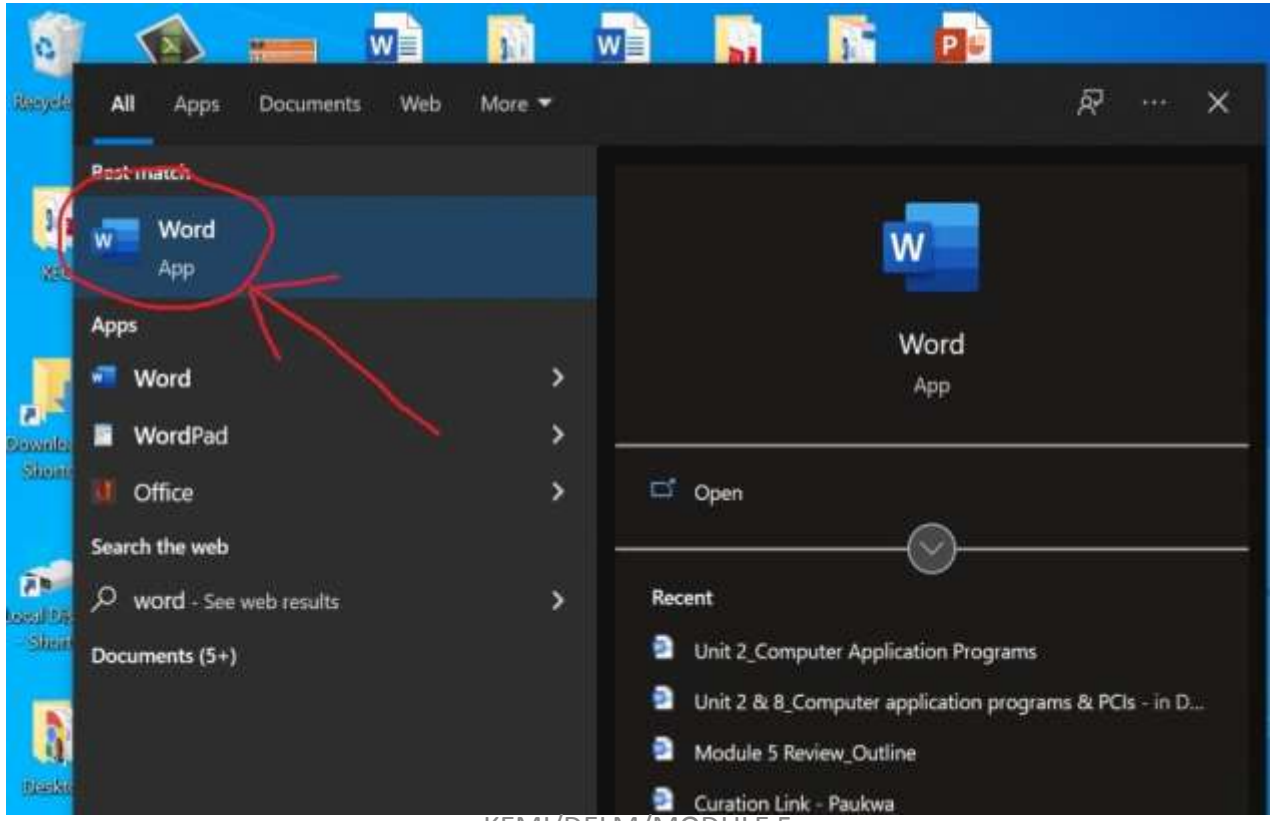


Benefits of a word processing program

- Spelling and grammar tools
- Cut and paste features
- Page formatting features
- Character formatting features
- Text alignment features
- Sorting facilities among others.

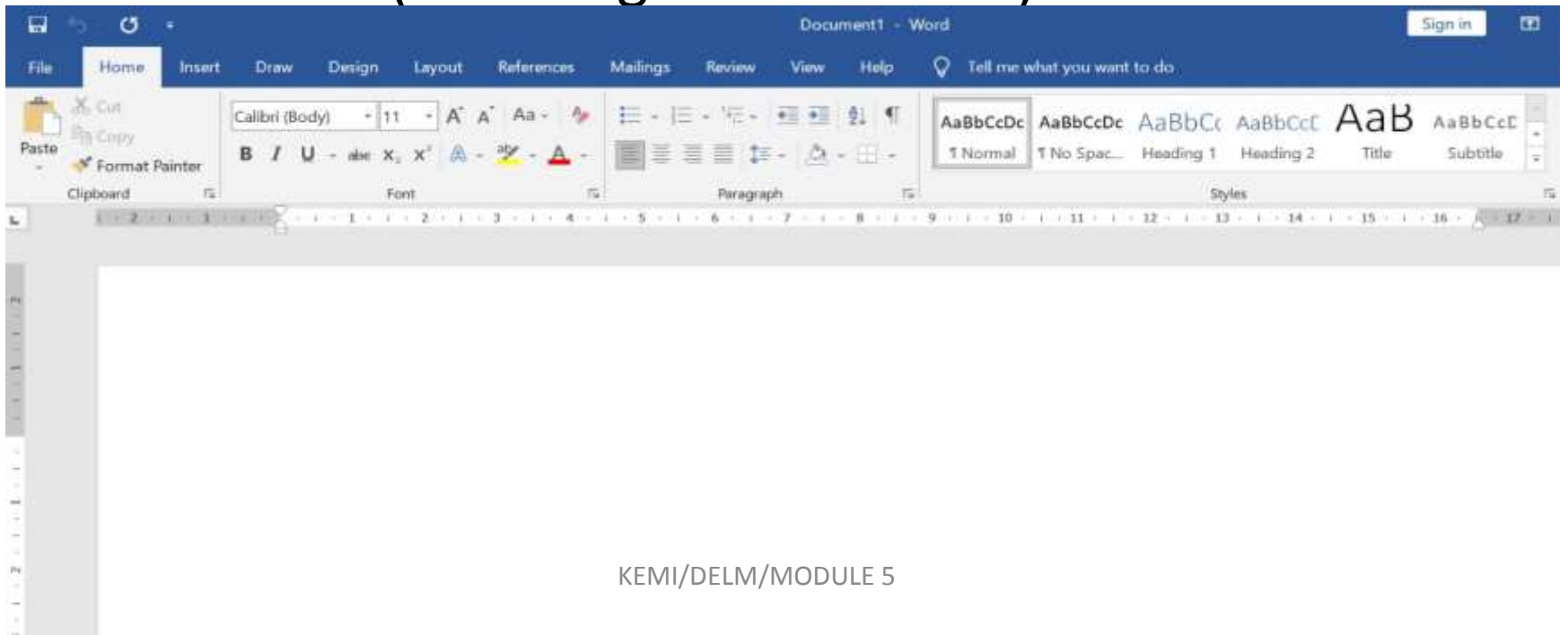
Usage of word processors

- **Step 1:** Go to the desktop or from your Start menu and double click on “Microsoft Word” to launch the program.



Step 2:

- Microsoft Word will open up a blank document automatically.
- The blank document will be ready for one to start typing.
- The blank document looks like a white sheet of paper and it takes up most of the window (see image that follows).

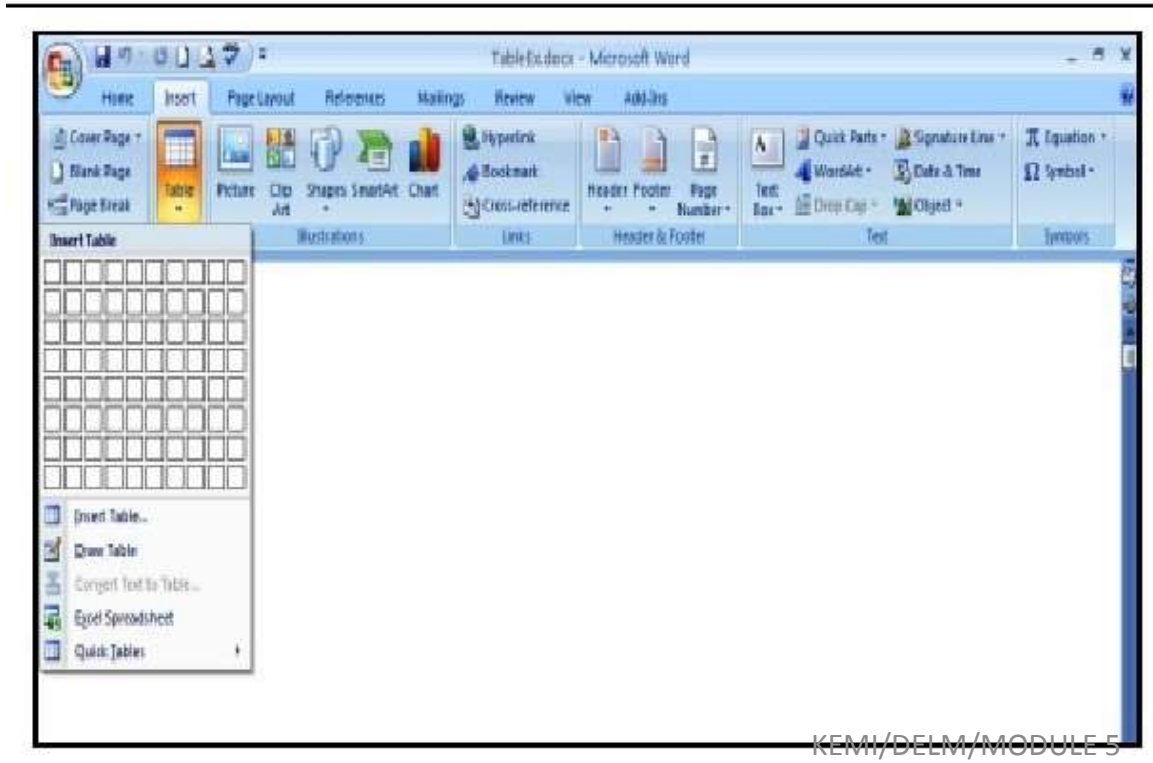


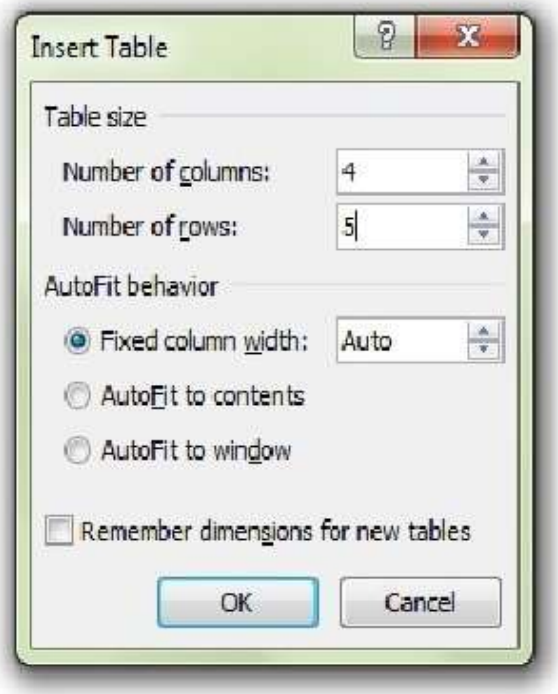
Step 3: Start typing:

- In the document, look for the cursor (a blinking vertical line that shows you where the content you type will appear on the page).
- If one wants to start typing further down the page instead of doing it at the very top, the ENTER key on the keyboard should be pressed until the cursor is where one wants to type.
- When you start typing, the text you type pushes the cursor to the right. If you get to the end of a line, just continue to type.
- The text and the insertion point will move on to the next line for you. Once you've finished typing your first paragraph, you press the ENTER key to go to the next paragraph.
- If you want more space between the two paragraphs (or any two paragraphs), press ENTER again and then start typing your second paragraph.
- If you make an error while typing, just press the BACKSPACE key to erase the incorrect characters or words.

Step 4: Creating a table:

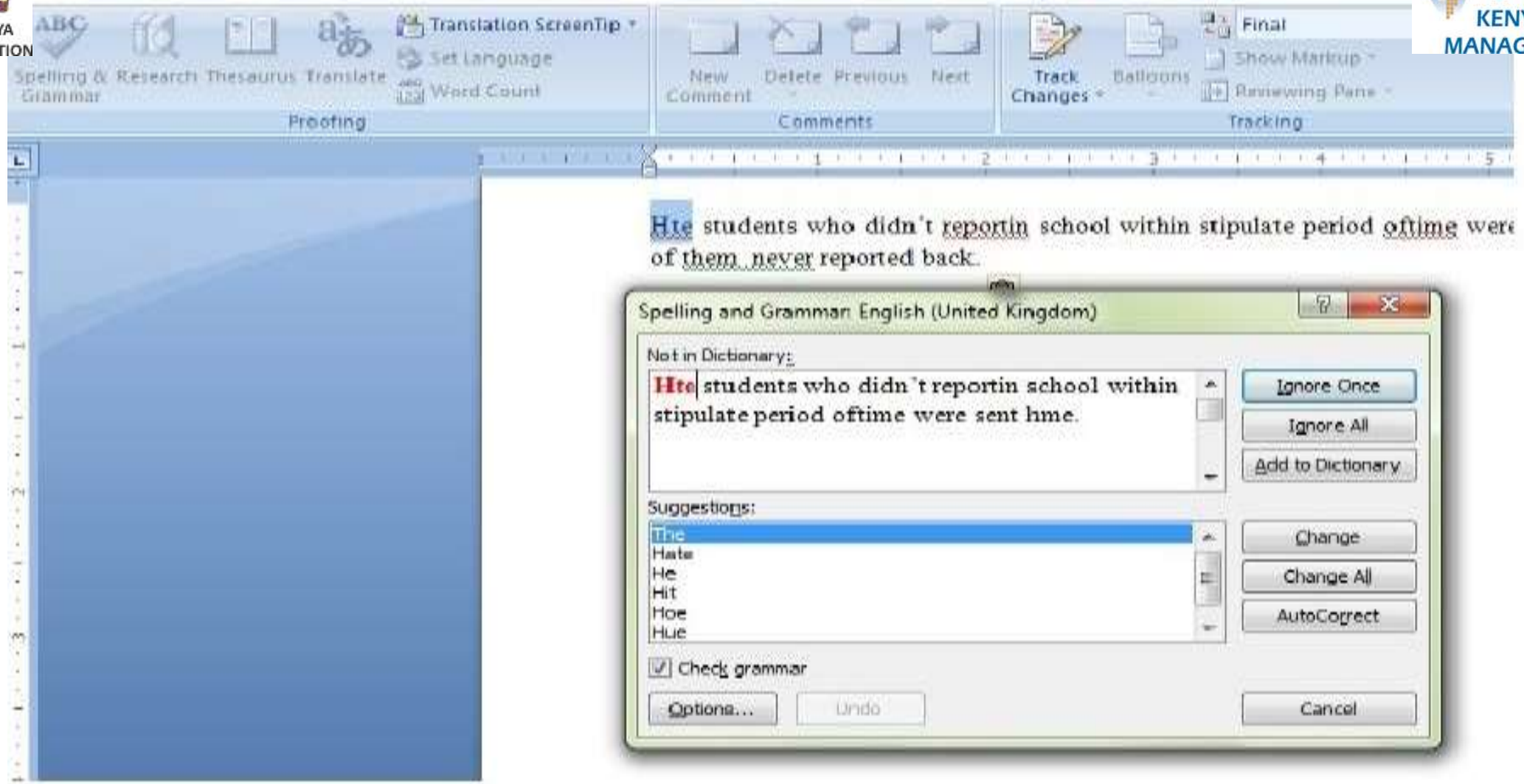
To create a table in a Word program, go to the ribbon and click on the Insert tab. Click on the “table button” and hover the mouse over the table configuration of rows and columns that you wish to insert.





Step 5: **Spellcheck:**

- While typing, the word processing software has features that enable one to do spell checking and they also check out editorial errors.
- These tools are able to highlight sections within the text with errors by either underlining the misspelt words in a different colour, e.g. red colour.
- To correct the highlighted errors, right-click an underlined word to see suggested revisions.
- If you prefer not to stop every time you see wavy underlines, you can just ignore them as you go.
- When you are through, you can tell Word to check for grammatical and editorial errors at once.


Spelling & Grammar
Research
Thesaurus
Translate
Translation ScreenTip
Set Language
Word Count
Proofing
New Comment
Delete
Previous
Next
Comments
Track Changes
Balloons
Final
Show Markup
Reviewing Pane
Tracking
Hte students who didn't reportin school within stipulate period oftime were
of them never reported back.
Spelling and Grammar: English (United Kingdom)
Not in Dictionary:
Hte students who didn't reportin school within stipulate period oftime were sent hme.
Ignore Once
Ignore All
Add to Dictionary
Suggestions:
The
Hate
He
Hit
Hoe
Hue
Change
Change All
AutoCorrect
Check grammar
Options...
Undo
Cancel

Step 6: Formatting text:

- Highlight the text you have typed and then go to the Home tab.
- Several buttons and commands perform a specific action on your document.
- For example, the Bold, Italicize, underlining buttons are available.
- There are also buttons to change the font size and colour of the text. Explore the other icons on the home tab and discover the different ways they can help you while formatting text.

Step 7: Saving a document:

- To have your work stored for future use, you have to save it and it is never too early to do that.
- On the ribbon, you click the first tab, the File tab. In the left column, you click Save.
- A smaller window, called a dialogue box, opens. You use this box to tell Word where you want to store the document on your computer, and it also gives you room to give your document an appropriate name.

Step 8: Print:

- When you are ready to print, click again on the File tab (the first tab).
- In the left column, you click the Print command. A large window opens, and you click the “Print button”.
- To print, you will need to have a printer connected to your computer.

Activity:

Step 1: Create a lesson plan in a learning area of your choice using a word processor

Step 2: Create a subfolder called “Courseactivities” on the desktop and save your lesson plan.

Step 3: Share your lesson plan through email or WhatsApp to five participants of your choice taking this course for peer assessment. (The peers are expected to go through the lesson and give their feedback aimed at adding value to the draft lesson plan and send the reviewed lesson to their owners).

Step 4: Create a folder named “Peerfeedback” on your desktop. Download the reviewed lesson and save them in the folder titled “Peerfeedback”.

Step 5: Go through the peer-reviewed lesson plans and review your initial lesson plan based on your peers’ feedback.

Spreadsheets

- Spreadsheets are mainly used to organize and analyze data and may be found in various Operating Systems.
- It has inbuilt features and tools such as functions, formulas, charts and data analysis tools used to handle large amounts of data. It is a table that can be used to organize and store data.
- Additionally, it can also perform numeric calculations.
- Spreadsheets allow a user to quickly calculate numerical data, perform “what if” scenarios, represent data with charts and extract and print data quickly.
- Spreadsheets can be used to organize and analyze data, create documents and reports, provide data for mail merges and tables, and create charts.

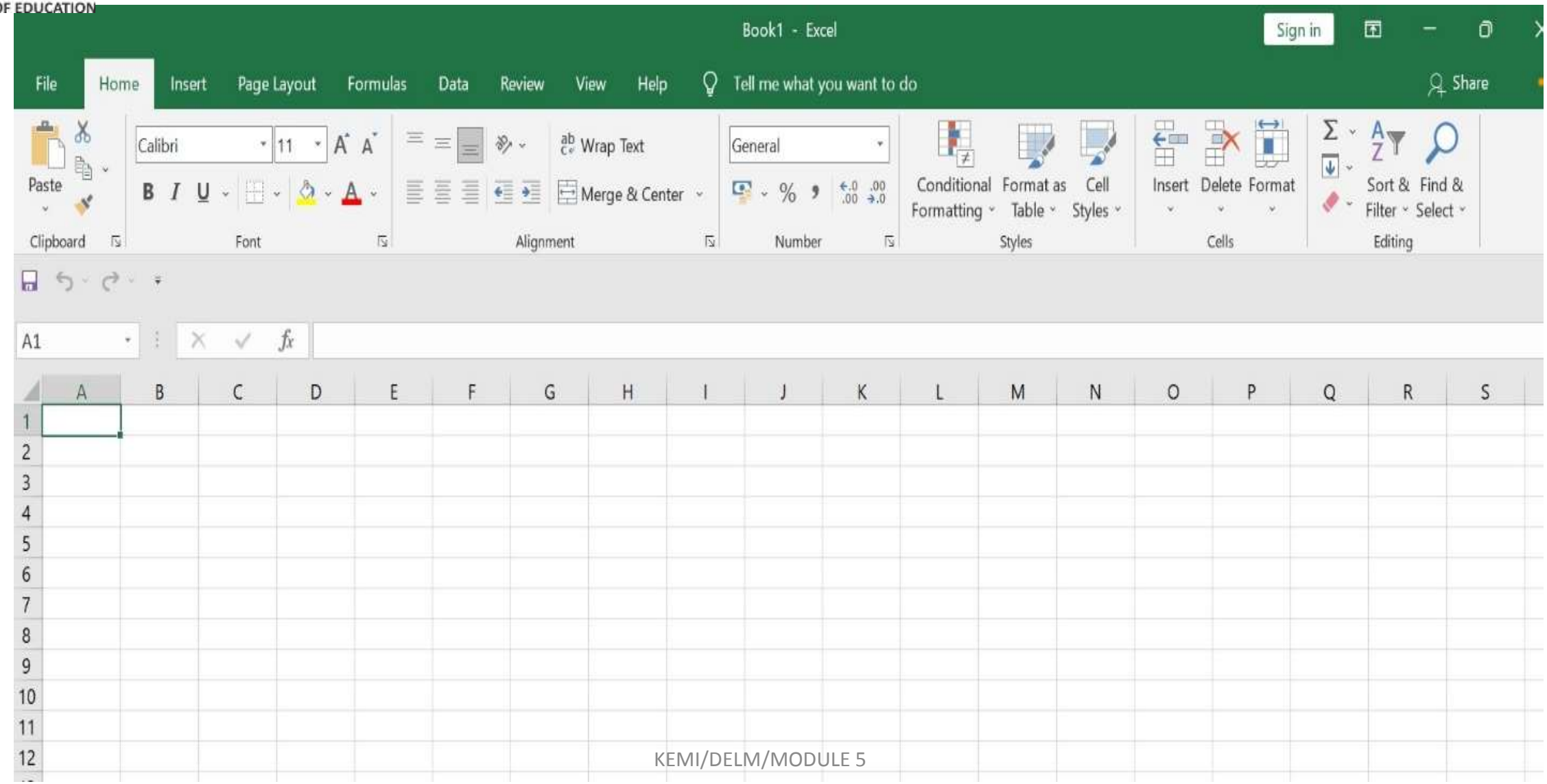
Features of a spreadsheet package

- Formulas to perform different types of Mathematical calculations and expressions
- Editing facilities with auto text
- Cut and paste features
- Page formatting features
- Character styling features
- Text alignment features among others.

Usage of spreadsheets

Step 1: Go to the desktop or from your Start menu and double click on "Microsoft Excel" to launch the program.

Step 2: Microsoft Excel will open up a blank document that one can be working on. The blank document will be ready for one to start typing. The blank document with empty cells (empty grid) is in the following image.


Book1 - Excel
Sign in
File
Home
Insert
Page Layout
Formulas
Data
Review
View
Help
Tell me what you want to do
Share
Paste
Calibri
11
Wrap Text
General
Merge & Center
Conditional Formatting
Format as Table
Cell Styles
Insert
Delete
Format
Sort & Filter
Find & Select
Clipboard
Font
Alignment
Number
Styles
Cells
Editing
A1

Important features on the open excel worksheet

i. **Ribbon:** Ribbon is like an expanded menu. It depicts all the features of Excel in easy to understand form. Since Excel has 1000s of features, they are grouped into several ribbons. The most important ribbons are - Home, Insert, Formulas, Page Layout and Data.

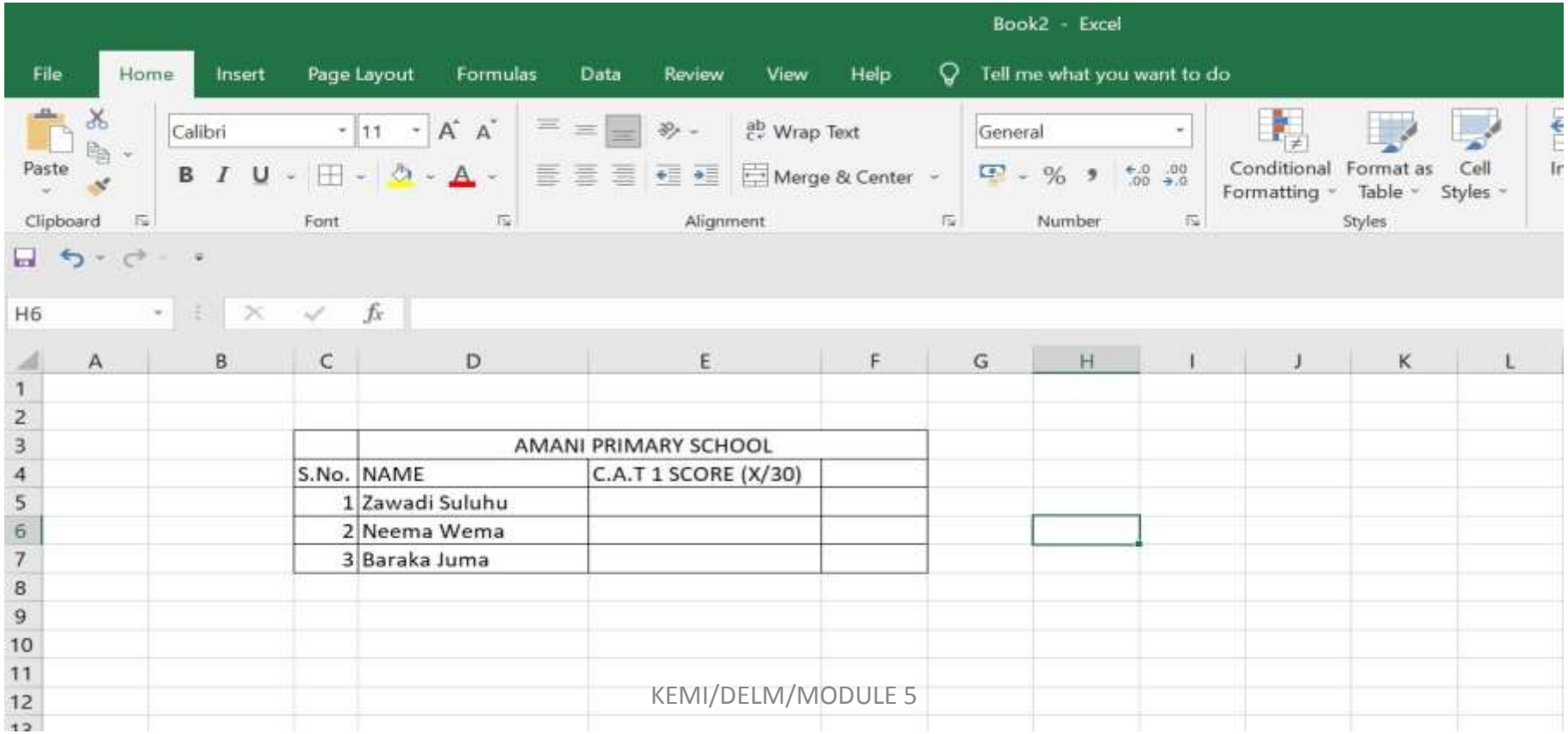
ii. **Formula bar:** This is where any calculations or formulas you write appear.

iii. **Spreadsheet grid:** This is where all your numbers, data, charts and drawings will go. Each Excel file can contain several sheets. But the spreadsheet grid shows a few rows and columns of an active spreadsheet. To see more rows or columns you can use the scroll bars to the left or at the bottom. If you want to access other sheets, just click on the sheet name (or use the shortcut CTRL+ Page Up or CTRL + Page Down).

iv. **Status bar:** This tells us what is going on with Excel at any time. You can tell if Excel is busy calculating a formula, creating a pivot report or recording a macro by just looking at the status bar. The status bar also shows quick summaries of selected cells (count, sum, average, minimum or maximum values). You can change this by right-clicking on it and choosing which summaries to show.

Step 3: Start working on your worksheet.

- For example, you can enter the marks scored by learners in your classroom in a certain learning area in an excel worksheet.



	AMANI PRIMARY SCHOOL		
S.No.	NAME	C.A.T 1 SCORE (X/30)	
1	Zawadi Suluhu		
2	Neema Wema		
3	Baraka Juma		

Step 4: To save your work, you have to save it.

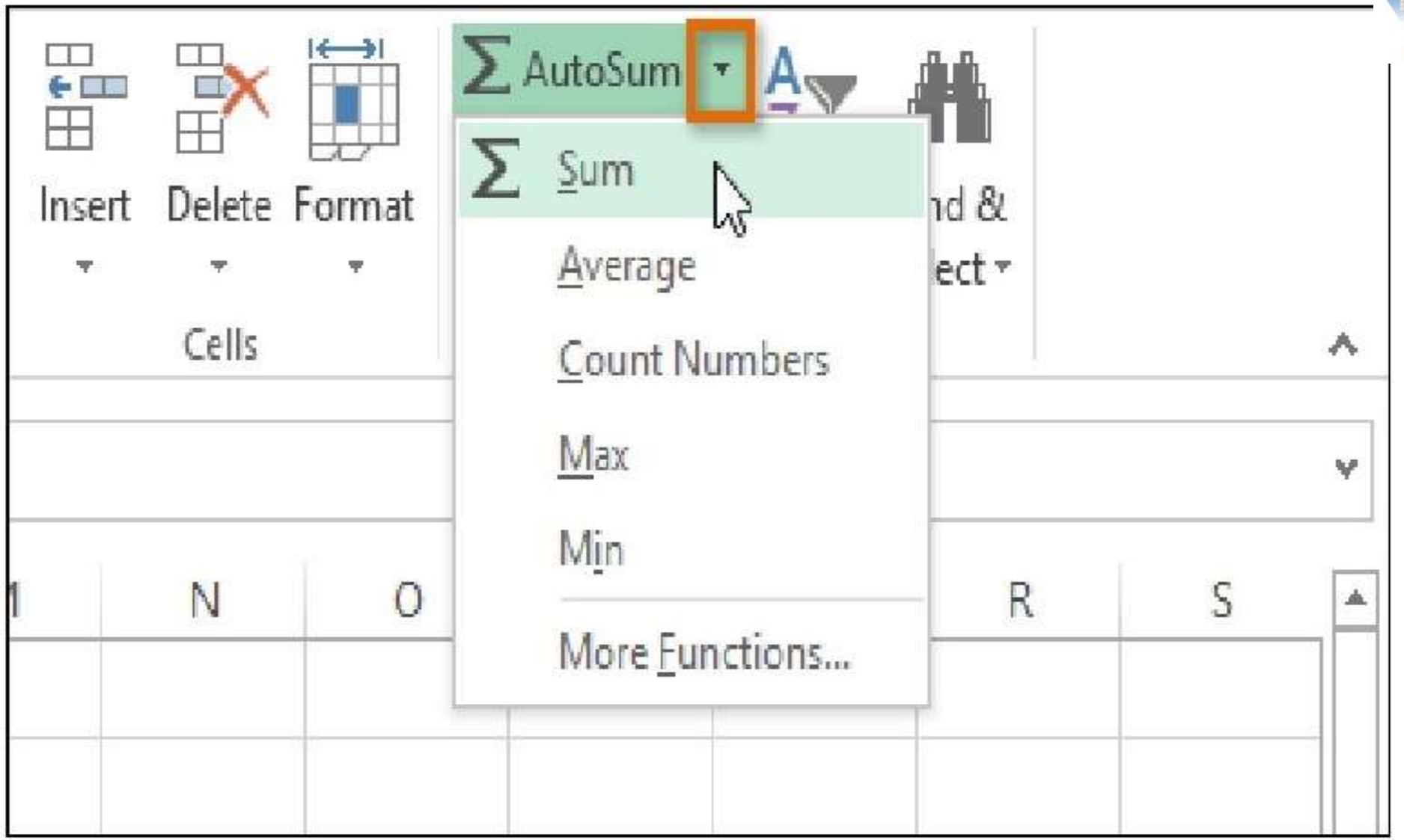
- On the ribbon, you click the first tab, the File tab. In the left column, you click Save.
- A smaller window, called a dialog box, opens.
- You use this box to state where you want to store the document on your computer.
- It also gives you room to give your document an appropriate name. Please note that the steps followed while saving a worksheet are similar to the ones followed when saving a word document.

Data analysis

- Once you have entered the data you need to calculate the overall results using formulas in a spreadsheet.
- It is a way for you to make calculations on data that is already written in the spreadsheet.
- The good thing about formulas is that they are linked to the data in such a way that if the data changes, it will show you an updated result, reflecting the change.

Sum

- Since adding rows and columns of numbers is one of the most common operations in Excel, Microsoft has included a shortcut to make the job easier.
- You need to highlight all the values contained in the cells that you want to add then click the Formulas-AutoSum button on the toolbar. (It is a sigma symbol ∑).
- Then you click the “AutoSum” button and it automatically adds up the values in the selected cells and places the result in the cell immediately below.
- You can use the same technique on a horizontal row of values and AutoSum will place the result in the next cell to the right of the selected numbers


Insert
Delete
Format
Cells
AutoSum
Sum
Average
Count Numbers
Max
Min
More Functions...
N
O
R
S

Average:

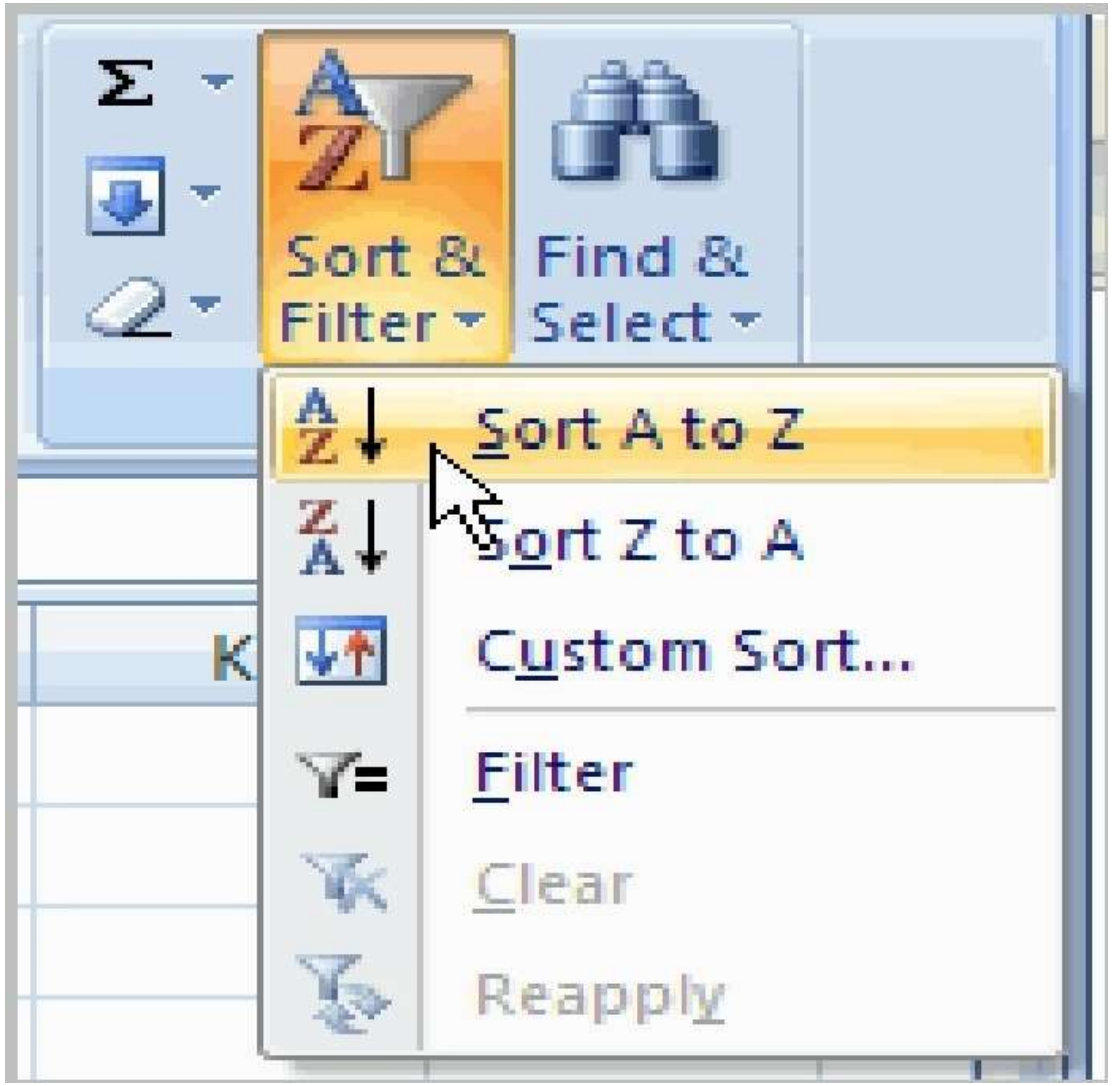
- You need to highlight all the values contained in the cells that you want to average then click the Formulas-AutoSum button on the toolbar. (It is a sigma symbol and it looks like this: ∑)
- Then click the button that reads —average' and it automatically does an average of the values in the selected cells and places the result in the cell immediately below.

Sorting data

- Sorting data is an integral part of data analysis.
- You might want to put a list of names in alphabetical order or compile a list of product inventory levels from highest to lowest.
- Sorting data helps you quickly visualize and understand your data better, organize and find the data that you want, and ultimately make more effective decisions.
- In this case, you need to select a column of numeric data in a range of cells and then click on the Data tab, in the Sort & Filter group, and then do one of the following:

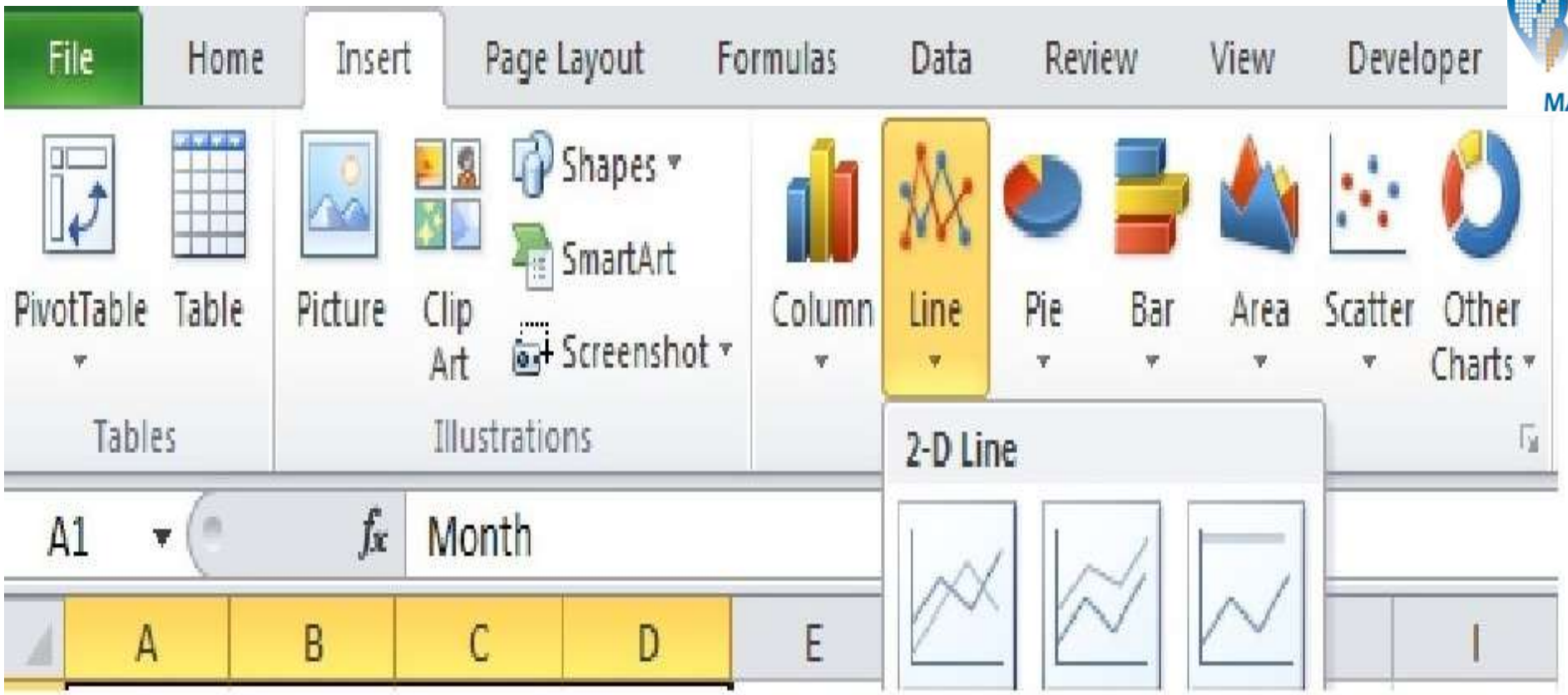
To sort from low numbers to high numbers, click 

To sort from high numbers to low numbers, click 


Sort &
Filter
Find &
Select
Sort A to Z
Sort Z to A
Custom Sort...
Filter
Clear
Reapply
K

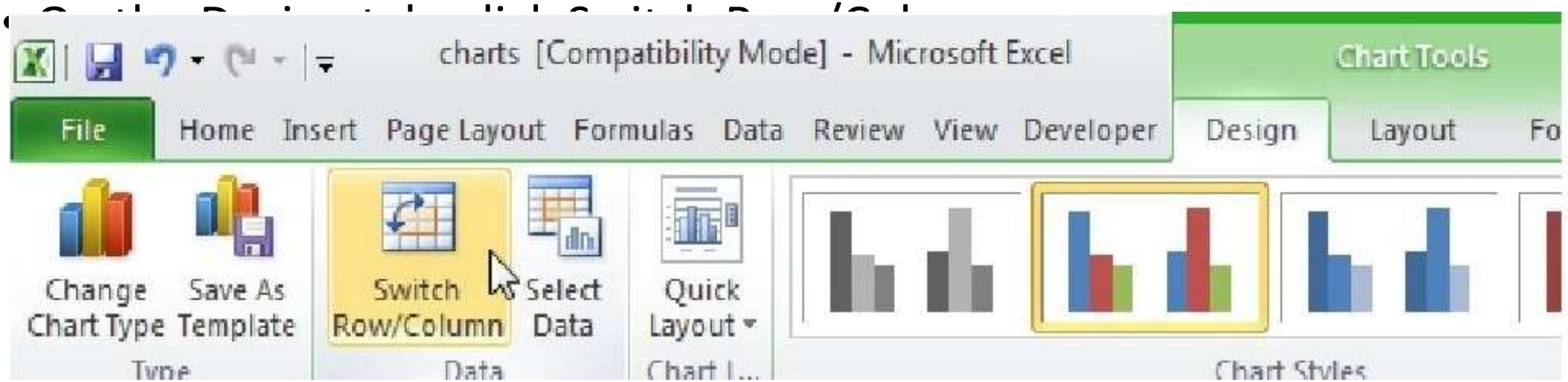
Graphs and charts

- With a spreadsheet program, such as Excel, you can represent numeric data in the form of charts.
- These charts are useful when you want to show the trends in data.
- It is easier to understand numbers when they are displayed as a chart.
- You can choose from a variety of chart types, such as pie, line, and bar, based on your needs.
- For example, if you want to create a graphic presentation from data on a spreadsheet: select the range of data you want to be included in the chart, then click on the Insert tab, then select the type of table or chart you want to use to display your data.

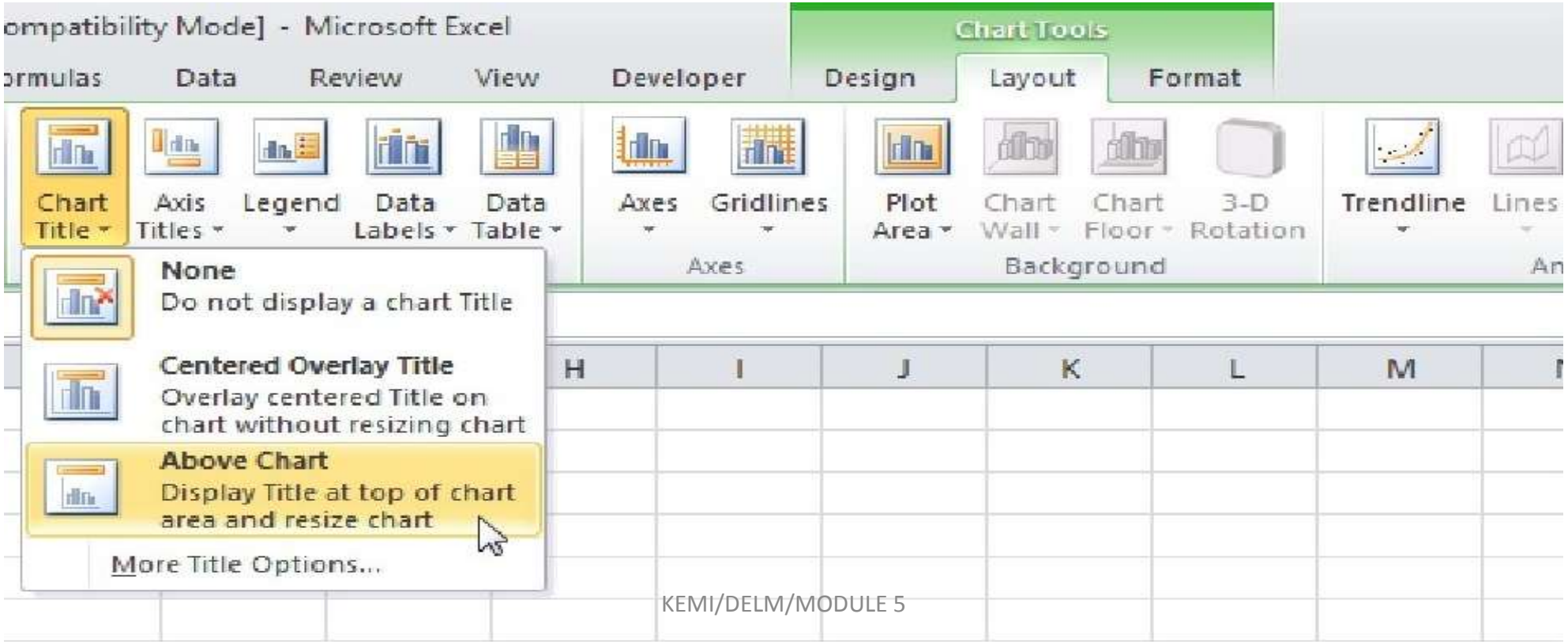

File
Home
Insert
Page Layout
Formulas
Data
Review
View
Developer
PivotTable
Table
Tables
Picture
Clip Art
Shapes
SmartArt
Screenshot
Illustrations
Column
Line
Pie
Bar
Area
Scatter
Other Charts
2-D Line
A1
Month
A
B
C
D
E
I

Switch Row/Column

- If you want to switch the data in the vertical axis with the data in the horizontal axis execute the following steps.
- Select the chart. The Chart Tools contextual tab activates.



- **Chart Title:** To add a chart title, execute the following steps.
- Select the chart. The Chart Tools contextual tab activates.
- On the Layout tab, click Chart Title, Above Chart.



Activity

- **Step 1:** Key in marks of your learners in five (5) learning areas or subjects.
- **Step 2.** Get the total marks for each learner using a relevant formula.
- **Step 3.** Name your file as “spreadsheet” and save it in the folder named “Courseactivities”.
- **Step 4:** Share your spreadsheet with five (5) of your peers. Encourage them to review it and give constructive feedback citing how it can be improved and then send it back to you.
- **Step 5:** Download the reviewed worksheets and improve on your initial worksheet based on the peers’ feedback.

Presentation Packages

- A presentation program helps you to create visual presentations and incorporate a variety of media, such as text, graphics, charts, and video, into a single presentation. The program displays information within the slides prepared.
- It has three major functions: an editor that allows text to be inserted and formatted, a method for inserting and manipulating graphic images, and a slide-show system to display the content. To use a presentation program, you may sometimes need to use a projector so that the presentation can be viewed by everyone. You can make printed copies of selected portions of your presentation and distribute them to the audience.
- Examples of a presentation program include Microsoft PowerPoint, Apple Keynote, Google slides among others.

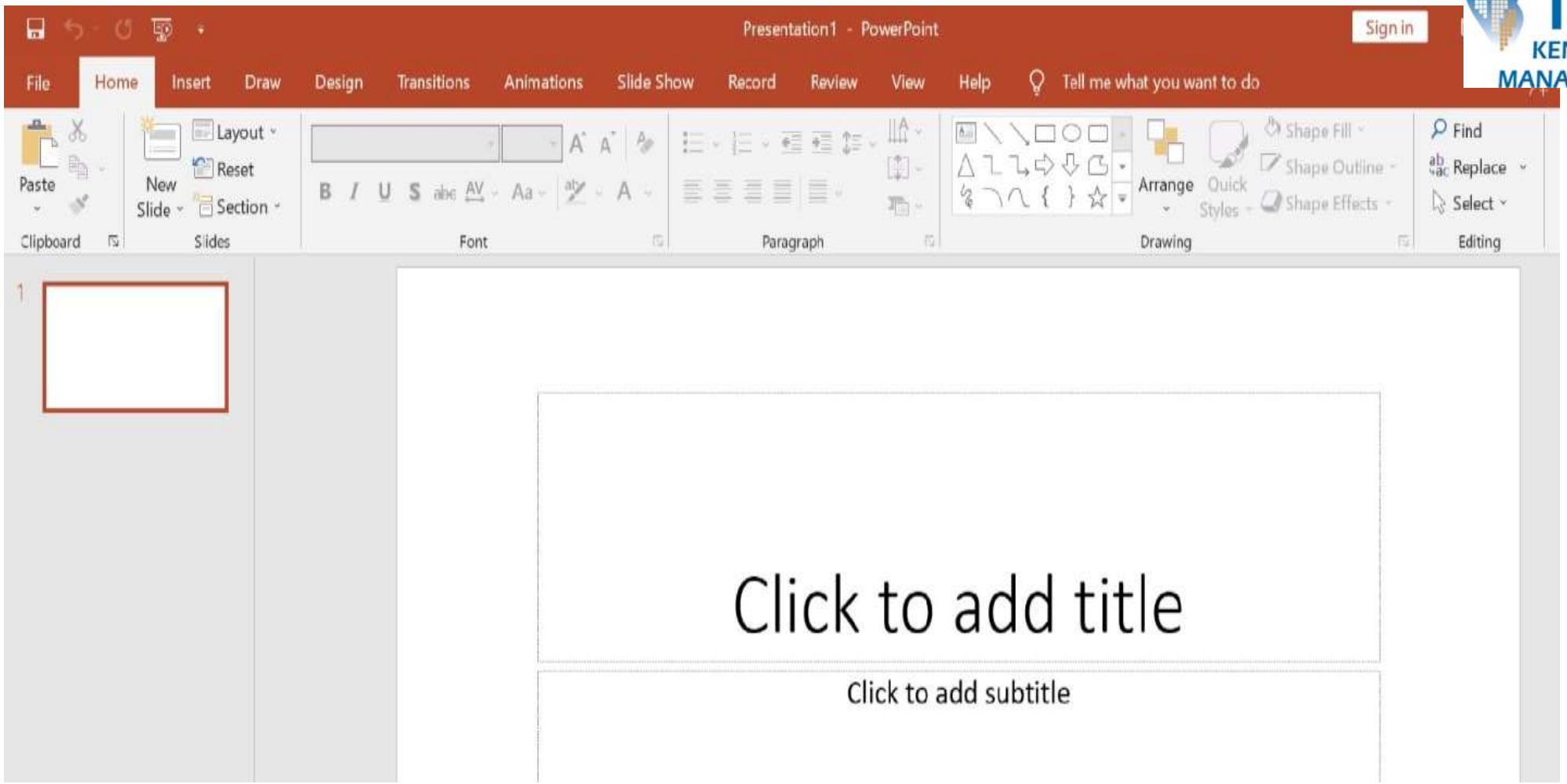
Qualities of a good presentation

- **Quality fonts**: This improves readability speed so it is suitable for texts of sentences. The minimum text size for any text should be 30 pt. This will help your PowerPoint presentations to get the message across efficiently.
- **Design**: Keep it composed and analyzable. Keep it clean, bullet your lists, and be consistent on fonts, colour and background. Limit punctuation and avoid putting words in all capital letters. Empty space on the slide will enhance readability. Use contrasting colours for text and background. Dark text on a light background is best.
- **Keywords:** Use the only key information
- **Slide transitions:** Moderate use of animations and sound effects in a presentation can make your presentation more interesting. However, it is important to note that the value in the content will always impress your audience the most.
- **Images:** Only use high-quality images. Low-quality pixelated photos will only weaken the message.

How to create a presentation

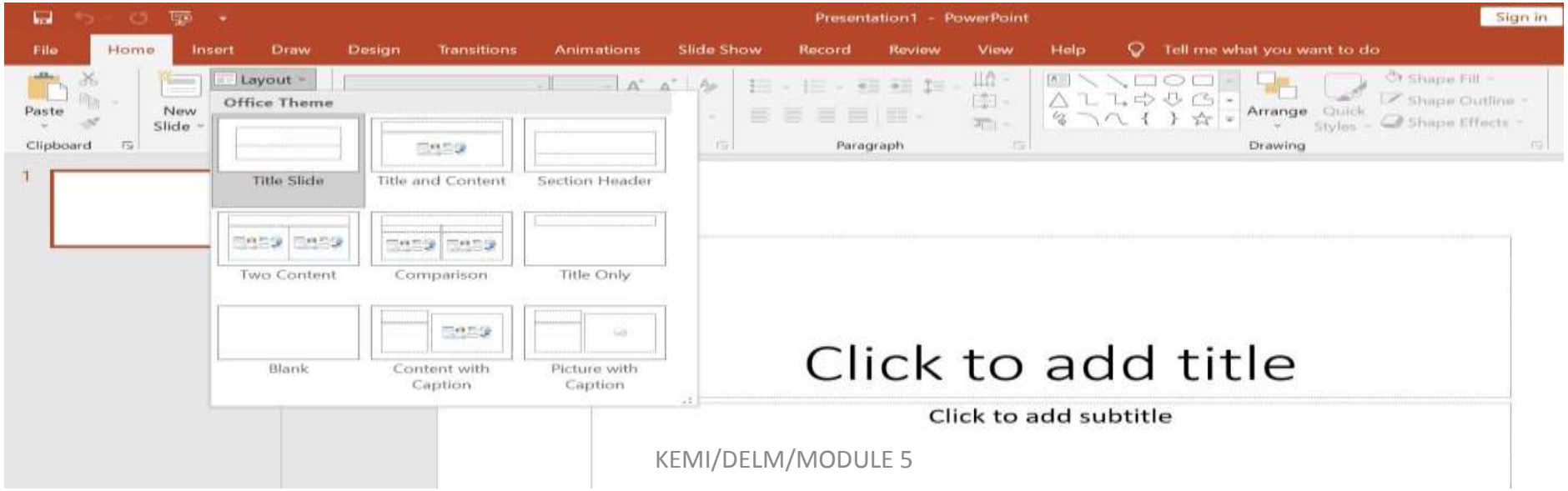
Launching PowerPoint:

- Go to the start menu and click on “PowerPoint”.
- Open the blank PowerPoint program. PowerPoint automatically opens a new presentation.
- A new title slide will appear for you to work with.
- You can use this page to begin creating your presentation right away.
- You can put a title and subtitle in the boxes if you want to (click inside and type), but you could delete them and insert anything you want.


Presentation1 - PowerPoint
Sign in
File
Home
Insert
Draw
Design
Transitions
Animations
Slide Show
Record
Review
View
Help
Tell me what you want to do
Paste
New Slide
Layout
Reset
Section
Clipboard
Slides
Font
Paragraph
Arrange
Quick Styles
Shape Fill
Shape Outline
Shape Effects
Drawing
Find
Replace
Select
Editing
1
Click to add title
Click to add subtitle

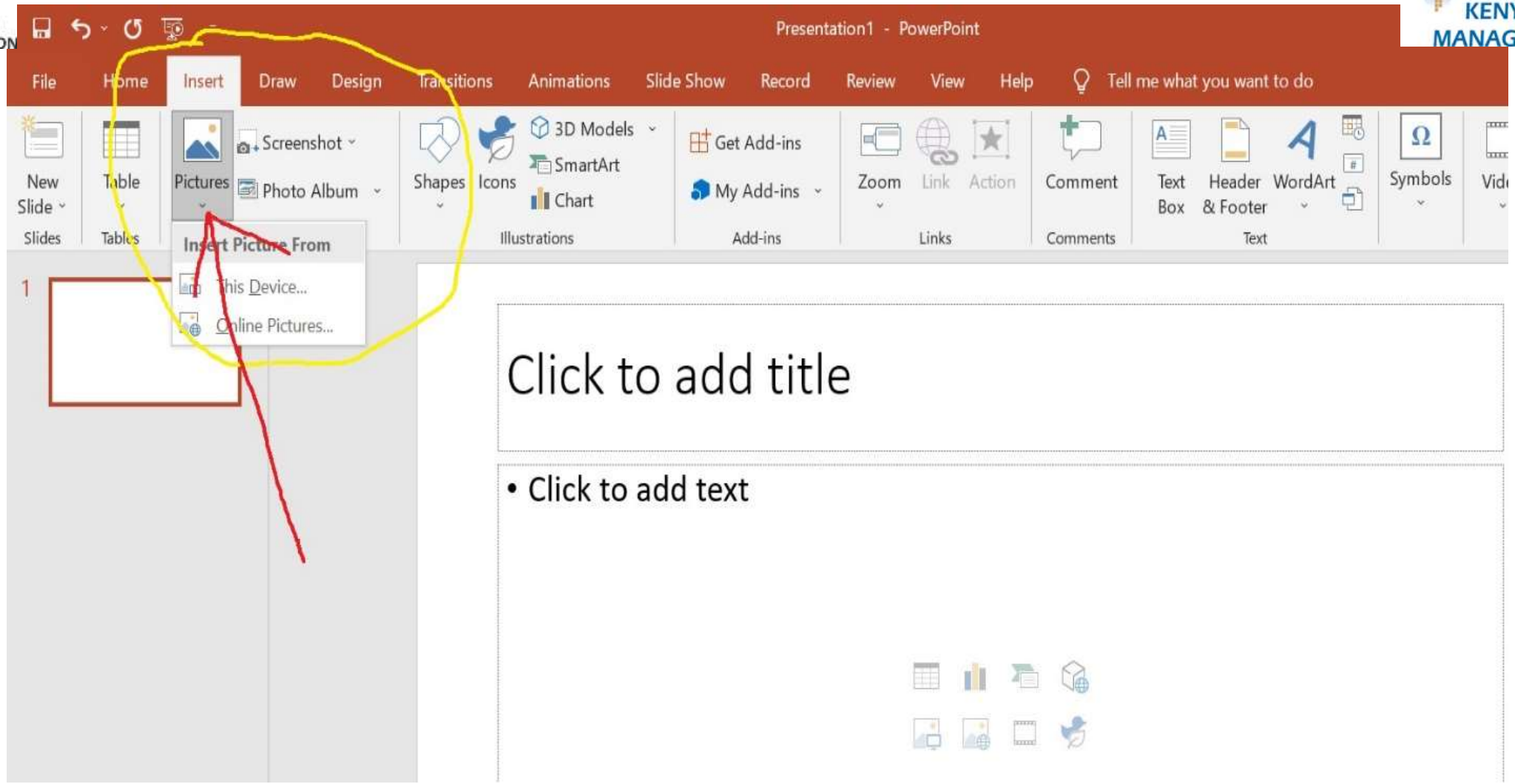
Changing Slide Layout:

- Now that you have a great-looking title slide, you can create more presentation pages.
- Go to the menu bar at the top of the page and select Insert and New Slide.
- Choose the next slide from 9 pre-designed layouts provided by PowerPoint (as illustrated in the following image).



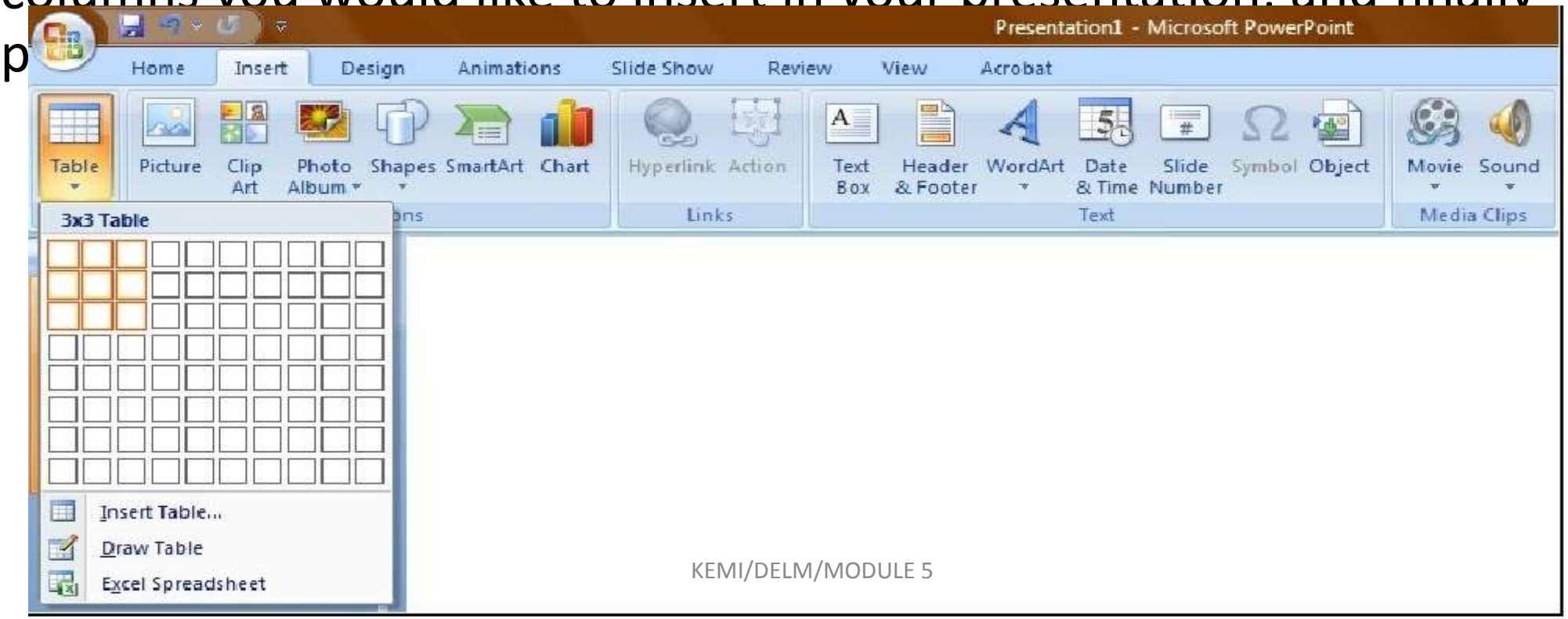
Inserting graphics:

- You can add graphics and multimedia elements to a presentation by using the tools provided in a presentation program, such as PowerPoint.
- To put a picture into this space, go to Insert on the menu bar and select Picture.
- The picture you want to use should be clear in your mind. Ensure the picture you want to insert is saved in a file and select it from the list.
- Select the picture and resize it by grabbing the edges with your pointer and dragging it (see the following illustration).


Presentation1 - PowerPoint
File
Home
Insert
Draw
Design
Transitions
Animations
Slide Show
Record
Review
View
Help
Tell me what you want to do
New Slide
Slides
Table
Tables
Pictures
Screenshot
Photo Album
Shapes
Icons
3D Models
SmartArt
Chart
Illustrations
Get Add-ins
My Add-ins
Add-ins
Zoom
Link
Action
Links
Comment
Comments
Text Box
Header & Footer
WordArt
Text
Symbols
Insert Picture From
This Device...
Online Pictures...
1
Click to add title
• Click to add text

Inserting a table:

- If you want to add a table to your presentation, select the Insert tab, then select the Table icon, and then choose the number of rows and columns you would like to insert in your presentation, and finally p



Inserting a video clip:

- If you want to add a video clip to your presentation, you can search for one in PowerPoint's Microsoft Clip Gallery. You can choose from many clip art video files.
- To add one of these video clips to your presentation, click on the Insert tab.
- Go to the Sound button in the Media Clips Group. Click on the arrow beneath the word Movie. From the drop-down list, select Movie from Clip Organizer. (See the following image)

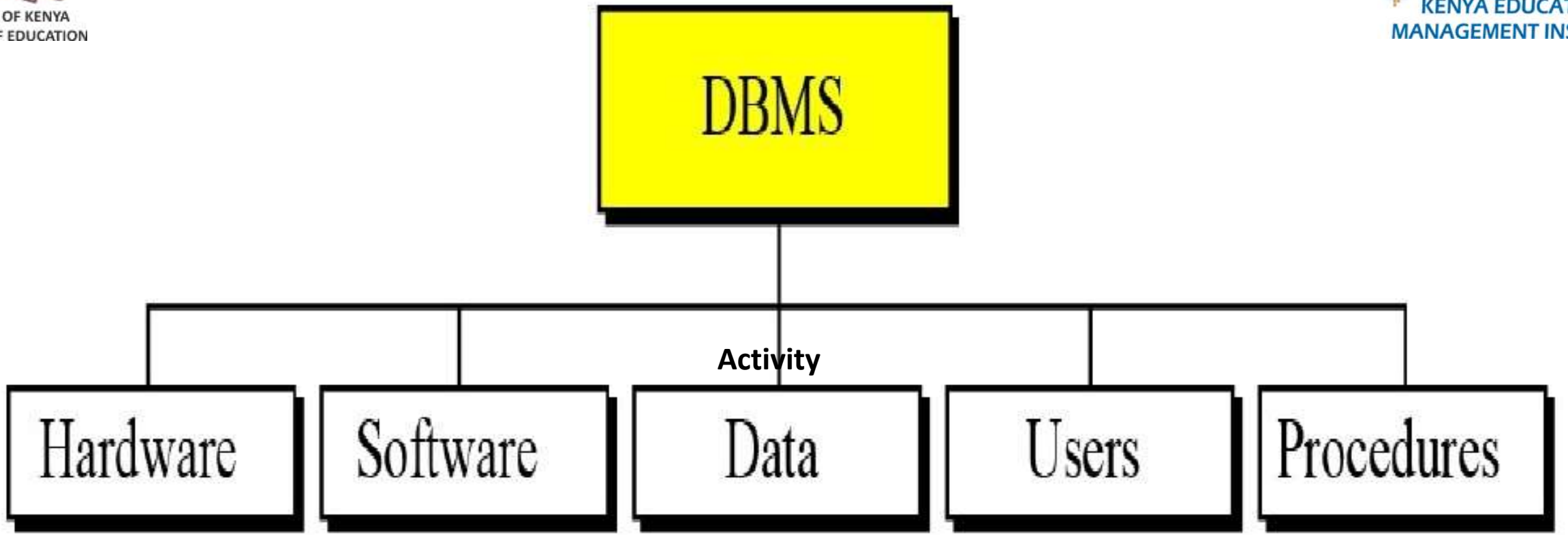


Activity

Step 1: Create a slide presentation using the final lesson plan in the folder named “Courseactivities”.

Step 2: Create and save your presentation as “mylessonpresentation”

Step 3: Share your presentation with at least three (3) participants of your choice.



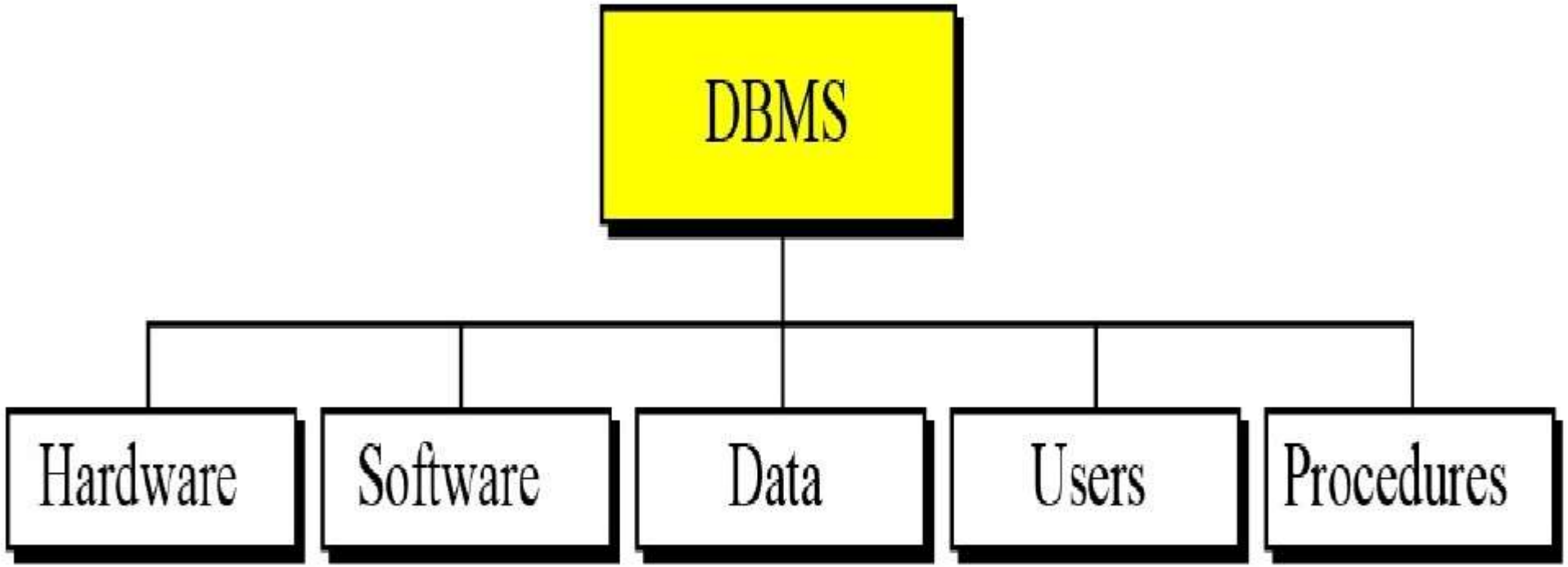
Activity

There are two main types of computerized databases:

- **Flat file:** All data is simply stored in one table and can be accessed from this single table. In a flat-file system, there is a lot of redundancy. For example, in the flat file system for a school, the names of teachers and students are in separate files. If the same piece of information is stored in more than one place, then any changes in the data need to occur in all places that data is stored.
- **Relational:** Data can be shared with or "related" to other multiple tables in the same database.

Database Programs

- Data refers to factual information about objects and concepts, such as measurements, statistics among others.
- A database is a set of organised data. A database is a storage space for content/information (data).
- A table is the primary unit of physical storage for data in a database. Usually, a database contains more than one table.
- A Database Management System (DBMS) refers to collection of programs that enables users to create and maintain a database. It defines, creates and maintains a database.
- The DBMS also allows controlled access to data in the database. A DBMS is a combination of five components: hardware, software, data, users and procedures (see the following image).


DBMS
Hardware
Software
Data
Users
Procedures

Functions of a database

The following are the basic functions of a database:

- Define a particular database in terms of its data types, structures, and constraints
- Constructor Load the initial database contents on a secondary storage medium
- Manipulate the database: Through Retrieval: Querying, generating reports;
- Modification: Insertions, deletions and updates to its content; and Accessing the database through Web applications.
- Share a database allows multiple users and programs to access the database simultaneously

Characteristics of a computer database

- **Flexible:** Are organised in a more flexible form to allow easy updating, presentation and reporting of data
- **Retrieve and Store:** Have far superior means of retrieving and analysing the stored information using advanced search methods
- **Large Data:** Are designed to handle large amounts of data efficiently (imagine updating 10,000 records in a paper database!)
- **Processing Data:** Can perform many processes very quickly, such as sorting records in alphabetical order
- **Complex Relationships:** They can accurately maintain complex relationships between different groups of data
- **Sharing Data:** They allow sharing of data. Data can be stored once and accessed by many different people. This helps control data redundancy (repetition) and consistency.

Activity

- Identify different types of data that a school is supposed to handle.
- Discuss benefits of using data base programs for data management

Desktop publishing (DTP)

- Publishing refers to the process of producing publications such as cards, pamphlets, pictures, calendars, certificates among others that have the special text and graphical layouts and designs.
- Nowadays, computers and printers are used to prepare and print high-quality text and graphics.
- All the publishing processes can be done on a desk within the school environment.
- Desktop publishing refers to the process of producing publications by designing their text and graphics layout using special desktop publishing software installed on personal computers.
- The text and graphical objects can then be inserted, edited, formatted and printed.

Examples of desktop publishers include the following:

- Adobe Photoshop - mainly used for editing & formatting photographs
- Adobe illustrator - used for creating complex freehand artwork such as drawings & logos
- CorelDraw
- Microsoft Publisher among others.

- A school can utilize desktop publishing to prepare brochures to disseminate information about it. During important school functions like funds drive, desktop publishing can be used to prepare invitation cards.

Activity

Follow the following steps to develop a funds drive card

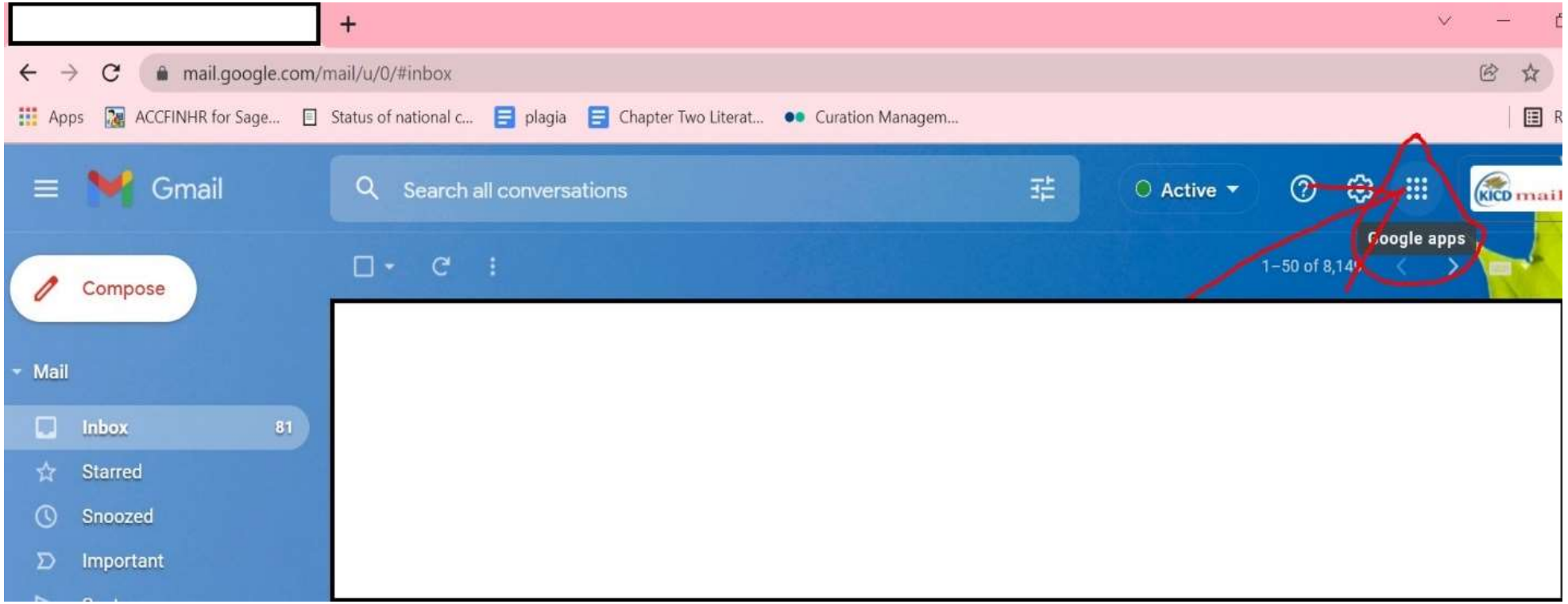
- **Step one:** Visit your browser and search for an appropriate search engine.
- **Step two:** Search for steps to be followed while developing a card using the DTP program installed in your computing device. Document the steps in your notebook.
- **Step three:** Follow the steps documented to design your card. Share the developed design with your peers and encourage them to review your designed card and give constructive feedback.
- **Step four:** Review the designed card based on your peers' feedback. Finalise on the card and print.

Cloud Productivity Tools

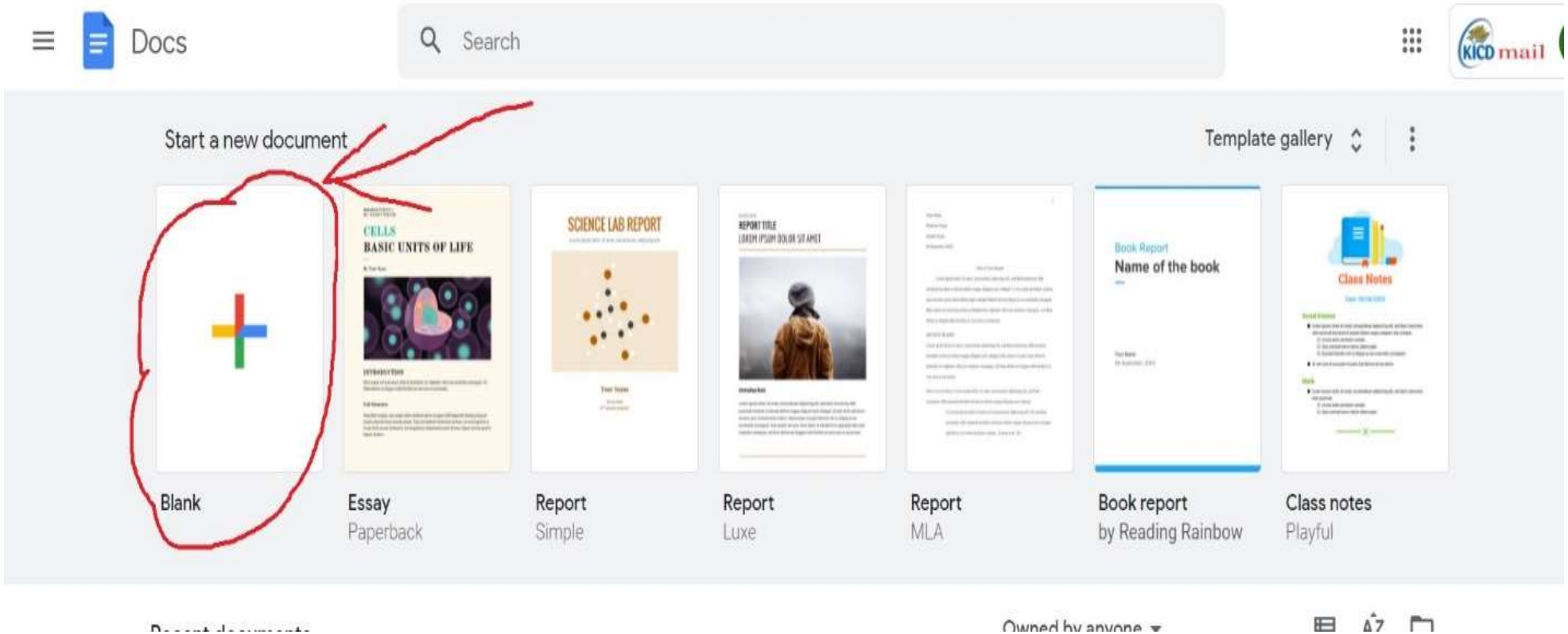
- Cloud computing is gradually changing the way schools operate by making them move away from locally installed tools and resources to utilising the power of the Internet.
- Not only can the cloud help schools to deliver and manage lessons, but it can also help to manage your infrastructure, provide secure off-site back up and enable you to communicate and collaborate in a big way.
- Currently, some of the leading cloud productivity tools used for education are Office 365 and G- Suite for Education.
- In the G-suite we have Google Docs, Google Sheets, Google slides among others which offer a cutting-edge level of communication and collaboration.
- The features in these cloud productivity tools are similar to their corresponding application programs residing in the computing devices.
- For you to use products in the G-suite including Google docs, you should have a Gmail account.

Usage of Google docs

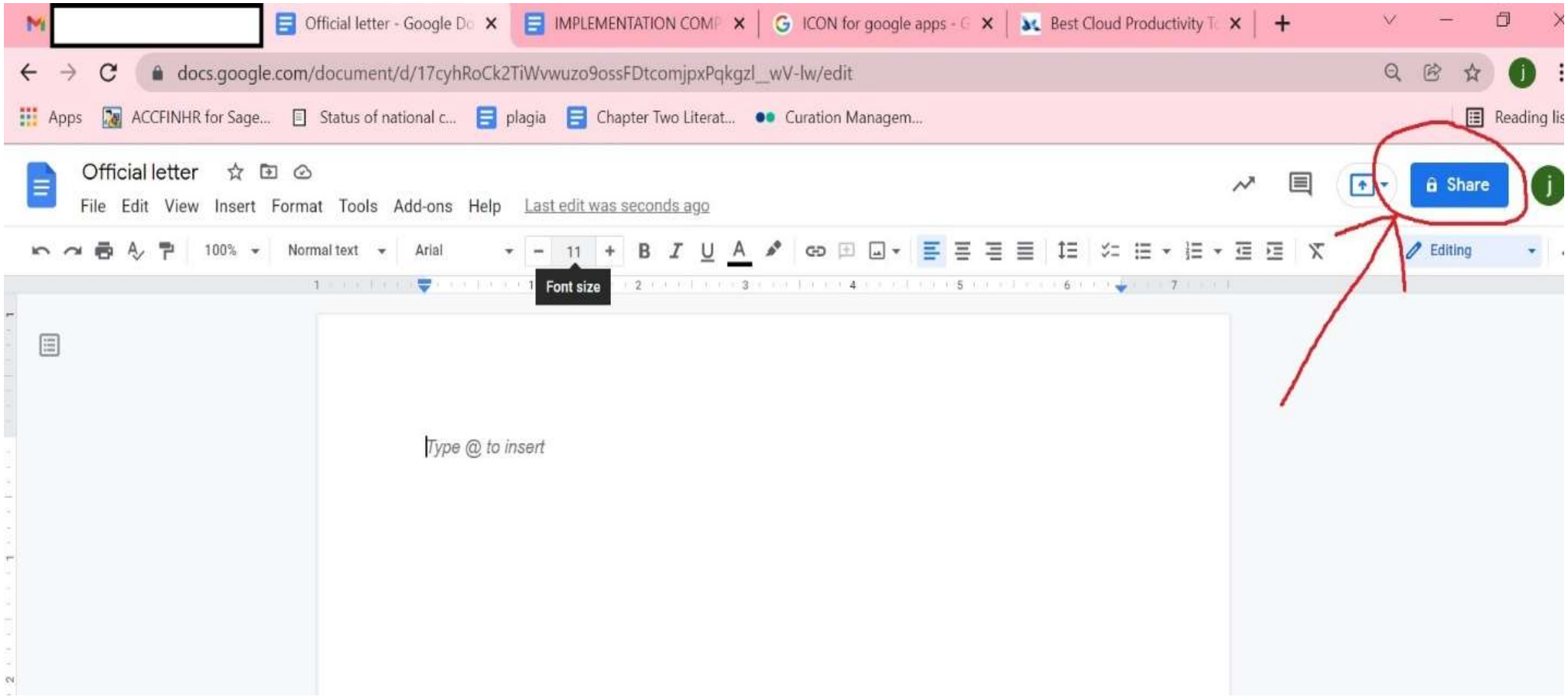
Step 1: Open your Gmail and click on the Google apps icon at the top right corner as shown in the following image.



Step 2: Open the icon titled “Docs”. Click on the icon “Blank” with an addition sign (+). This will open a google document where you can start typing.



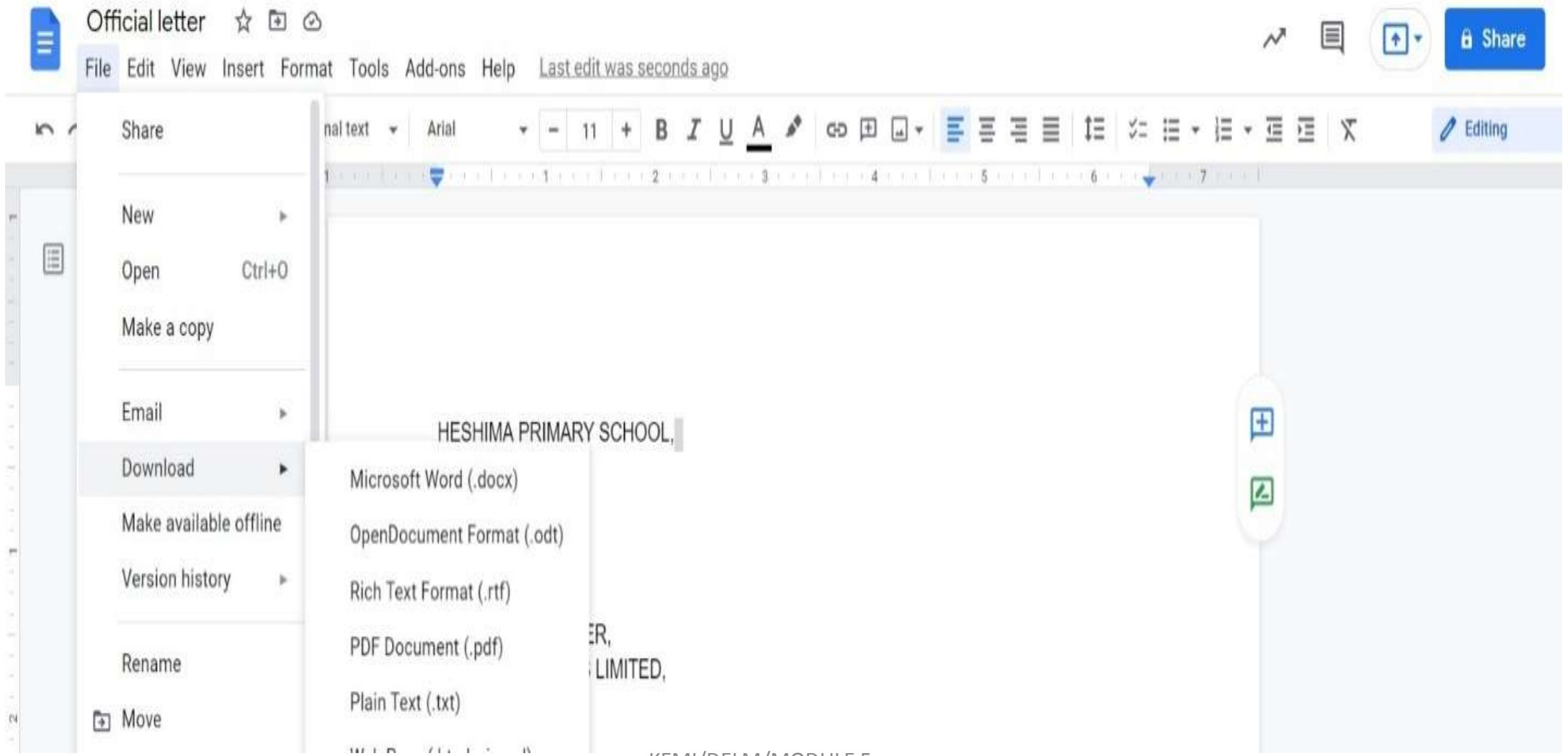
Step 3: Click on the icon labeled “Share” to invite your peers. A dialogue box will be opened where you can input the email addresses of the peers you want to invite. Invite them by clicking “send”.



- **Step 4:** Develop an official letter collaboratively with your peers.'

Note: The team members can agree on the different areas of the letter each member will be working on.

- **Step 5:** Download the complete official letter and save it using the name "Ourofficialletter" within the folder named "Courseactivities". To download, click on "File", then select "Download" then click on "Microsoft word (.docx)".


Official letter
File Edit View Insert Format Tools Add-ons Help Last edit was seconds ago
Share
Editing
Share
New
Open Ctrl+O
Make a copy
Email
Download
Make available offline
Version history
Rename
Move
Microsoft Word (.docx)
OpenDocument Format (.odt)
Rich Text Format (.rtf)
PDF Document (.pdf)
Plain Text (.txt)
HESHIMA PRIMARY SCHOOL,
ER,
LIMITED,

Activity

- **Step 1:** Launch Google sheets from G -Suite and prepare a mark sheet for your learners.
- **Step 2:** Insert a totals column and an average column and compute the same for all learners.
- **Step 3:** Share your sheet with at least two (2) peers and allow them to critique your work by giving some constructive feedback.
- **Step 4:** Improve the contents of your work based on the feedback received from your peers.



- In this unit we have learnt more about word processing, spreadsheet programs, presentation programs, database programs, desktop publisher and cloud productivity tools.
- We have also learned how these programs can be used for learning purposes.
- There are many benefits that can accrue from use of the application packages we have discussed in order to enhance efficiency and effectives in teaching and learning.