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Excel for Real-World data: Introduction to Excel

SUBJECT AREAS:

Technology

ACTIVITY DESCRIPTION:

Learning the basics of Excel, a spreadsheet program from Microsoft Excel that allows users to format, organize, and calculate data in a spreadsheet.

OBJECTIVES:

- Data entry and formatting;
- Creating simple formulas;
- Navigating the Excel interface;
- Managing worksheets;
- Presenting data in basic visual charts.

MATERIALS:

Projector and screen for group discussion and content display, tablets or computer with Excel, phones, data science base, notebooks, pens.

GRADE/LEVEL:

Secondary school (15-18)

DURATION:

Preparation time: 15 min.

Activity time: 60 min.

PLACE:

Classroom

AUTOR:

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INTRODUCTION:

Excel is an incredibly powerful tool for getting meaning out of vast amounts of data. But it also works really well for simple calculations and tracking almost any kind of information. The key for unlocking all that potential is the grid of cells. Cells can contain numbers, text, or formulas. You put data in your cells and group them in rows and columns. That allows you to add up your data, sort and filter it, put it in tables, and build great-looking charts. Let's go through the basic steps to get you started.

BACKGROUND:

Microsoft Excel can be used as a powerful analysis tool which is capable of handling large data sets. Its wide range of functions enables users to perform data analysis, identify trends, and make informed decisions. For businesses, this translates to improved efficiency and better strategic planning.

Excel can be used to analyze scientific data, such as weather patterns or plant growth, and then connect these findings to social studies topics like climate change or agricultural practices. Students can create graphs to visualize data and write reports linking their findings to broader societal impacts Excel is a database platform that has multiple uses in schools but is also an essential tool that students should master, it can be good for their professional life.

Procedure:

- The teacher will use a short 5-10 minute period of the lesson to inform the students, without giving too many explanations and thus feeding their curiosity, that during the lesson they will have to work on their tablets or computers.
- The teacher will explain - that the details of the given area, that is, the work in Microsoft Excel will be explained to them first by the teacher. The introduction to working with Excel is found in Chapter 1. At the same time, the teacher emphasizes the importance of applying this tool in everyday life, in terms of every part of the business and above all in comparing and extracting statistical data that are necessary.
- Then the teacher will divide them into groups of two students to repeat the procedure that was previously presented to them by the teacher, and as a help they can also follow the instructions given on the following link. https://support.microsoft.com/en-us/office/basic-tasks-in-excel-dc775dd1-fa52-430f-9c3c-d998d1735fca
- After the students have completed the given task, they will save it on their electronic devices - tablets, computers, according to previous instructions given by the teacher and will send it electronically to the teacher.
- In the next step, each group will present to the students their thinking on the importance of this tool and its application in environmental protection.

FUN FACTS:

- ***The Origin of the Name "Excel"***
  Naming History:
  - The name "Excel" was chosen to convey a sense of "excellence" and superiority over other spreadsheet programs.
  - Initially, Excel was code-named "Odyssey" during its development.
- ***Excel Supports Over a Million Rows***
  Capacity:
  — Modern versions of Excel can handle up to 1,048,576 rows and 16,384 columns per worksheet.
  — This vast capacity allows users to manage and analyze large datasets efficiently.
- ***Excel's Impact on the World***
  Global Usage:
  - Excel is used by businesses, educational institutions, governments, and individuals across the globe for a variety of purposes, from simple budgeting to complex financial modeling.
  — It has become an essential tool in many industries, including finance, healthcare, engineering, and marketing.

ASSESSMENT:

During class, students should complete the exercise given to them in Worksheet 1. They should send it to the teacher.

EVALUATION:

Ask your students what is the importance and applicability of Excel in processing and analyzing data on sustainability and environmental protection?

Chapter 1. Spreadsheet programs

A file created in MS Excel is called a workbook and consists of multiple worksheets. Each worksheet is divided into rows and columns, at the intersection of each row and each column there is a cell. The address of a cell is composed of a column label (letter) and a row label (number) in which it is located.

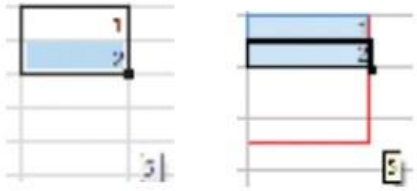
By clicking on the cell it becomes active and its content can be edited (entered, changed or edited). The content of a cell can be data or a formula, that is, a function. Data can be text, number, date, time and more.

When entering data, text is automatically aligned on the right and numbers on the left. Arithmetic operations can be performed with numerical data (numbers). When entering numeric data into a cell, only digits, the decimal point and the minus sign (-) are allowed. The appearance of the cell its content is most easily edited in the Format cells window.

In spreadsheet applications, formulas are very important. Formulas can be user defined or built into a function form.

Each function has a name and arguments that are written in parentheses after name. In MS Excel, some of the most commonly used functions (SUM, AVERAGE, MIN, MAX and COUNT) can be entered through the list obtained by clicking the arrow next AutoSum 22 button, after which a window opens from which the arguments of the function can be selected.

Autofill of cells can be used when entering data. This is most easily done by pulling the autofill handle. In the same way, a formula or function can be extended from one cell to other cells.



Automatic filling of cells in MS Excel (left) and in Calc (right)

Data from tables can be presented graphically with different types of charts. The most commonly used charts are: the line chart, the bar chart, and the pie chart. In MS Excel, the chart is inserted into the worksheet by clicking one of the buttons * from the Charts group, on the Insert tab.

Entering formulas

The basic rules for writing and applying formulas and functions are:

- Any formula or function entry begins with equal sign (=). Any entry that begins with an equal sign (=) tells the program that there is a formula in the cell and that it needs to perform some calculations. The instructions on which calculations should be performed, and on which data, are given precisely by the formula.

- Operations used in a formula or function are performed respecting the usual mathematical order (priority).

- If the formula or function contains cell addresses, they can be entered via the keyboard or by selecting the desired cells with the mouse.

- After writing a formula or function, press the Enter key. Then the result of the formula or function is displayed in the cell, and its entry can be seen in the formula bar. For example, The formula =A1+B1, entered in cell C1, sums the values in cells A1 and B1 and displays the result in cell C1.

Formula in MS Excel (left) and formula in Calc (right)

- The formula can also be entered as follows: type the equal sign (=) in cell C1, then click in cell A1, type the addition operator, then click in cell A2.

Worksheet 1.

On one street, a survey was carried out on how many vehicles and of which type pass by one hour. The following results were obtained:

1	Kind of vehicle	Number of vehicles for 1 hour	Number of vehicles for 1day
2	A car	29	
3	Vans	11	
4	Engine	18	
5	Bicycle	8	
6	Bus	3	
7	TOTAL		

- According to the date create a bar chart in Excel;

- In cell B7, write a function the will calculate the total number of vehicles that pass in one hour on the street;

  - What does the function sound like? _____

  - What is the result of the function? _____

- In column C, write a formula with which you will calculate for each type of vehicle how many vehicles pass in a day;

  - What is the formula for cars? _____

  - What is the score for buses? _____

- Save the workbook as Traffic and send to teacher.