Unit 3: Computer Applications - Excel - Powerpoint & Access

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Section 3, Spreadsheets, Presentation Software and Introduction to Database

Department of Curriculum and Instruction

Belleville Public Schools

Curriculum Guide

Unit 3 -Computer Applications

Spreadsheets, Presentation Software and Database

Belleville Board of Education

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Unit Overview

Students should be asking, What is Microsoft Excel and What would I Use it for?

Here is the overview

Excel is an Electronic Spreadsheet Program.

An electronic spreadsheet is a computer software program that is used for storing, organizing and manipulating data.

Electronic spreadsheet programs were originally based on paper spreadsheets used for accounting. As such, the basic layout of computerized spreadsheets is the same as the paper ones.

Related data is stored in tables - which are a collection of small rectangular boxes or cells organized into rows and columns.

Current versions of Excel and other spreadsheet programs can store multiple spreadsheet pages in a single computer file.

The saved computer file is often referred to as a workbook and each page in the workbook is a separate worksheet.

Additionally -What is Microsoft PowerPoint? - How Do I Use PowerPoint?

PowerPoint is a presentation software program that is part of the Microsoft Office package.

PowerPoint uses a graphical approach to presentations in the form of slide shows that accompany the oral delivery of the topic. This program is widely used in business and classrooms and is an effective tool when used for training purposes.

PowerPoint is one of the simplest computer programs to learn. It is the **number 1** program used worldwide for presentations. Anyone can create stunning presentations that look like they were designed by a professional.

Enduring Understanding

Enduring Understandings for this section:

• MS Excel is a tool used to communicate data in an organized format in a variety of personal and professional situations.
• Data can be calculated, sorted and analyzed using MS Excel.
• MS PowerPoint can be an effective communication tool when used properly.
• MS PowerPoint is used as an enhancement for an oral presentation in professional situations.
• MS Applications are effective vehicles for communicating information for both personal and professional uses.
• MS Applications can enhance communications.
• Principles of Design must be considered in the creation of documents, spreadsheets, presentations and databases.

Essential Questions

ESSENTIAL QUESTIONS:
1.Can you explain what a spreadsheet is?
2.Can you identify the spreadsheet components in Microsoft Excel?
3.Can you navigate through a spreadsheet?
4.Can you explain the difference between a Label and a Value, and Formula and Formatting?
5.Can you enter data into a spreadsheet and create and align columns?
WHAT ARE YOU LEARNING TODAY?
I am learning how to properly navigate and enter data in a spreadsheet.
WHY DO YOU THINK THIS IS IMPORTANT?
This is important so that I may learn to use spreadsheets.
Spreadsheets are a very useful tool for “What If” analysis, and learning the proper usage and capabilities of spreadsheets will benefit me in the future, whether it is in my education or business life.

Exit Skills

Skills that the students should have obtained by the end of this unit are:

Modifying an Excel worksheet. Performance will be satisfactory when:
o learner opens and edits an Excel worksheet.
o learner inserts and deletes rows and columns in worksheet.
o learner changes worksheet settings including margins, page orientation, page alignment, etc.
o learner creates headers and footers for the worksheet.
o learner adjusts column width and row height.
o learner renames worksheet tabs.
o learner copies and pastes cell contents.
Applying Formats to an Excel worksheet. Performance will be satisfactory when:
o learner clears cell contents and formats.
o learner formats text for alignment.
o learner formats numbers in a cell.
o learner formats cells in a worksheet including borders, color, etc.
o learner uses Format Painter.
o learner applies conditional formatting
o learner applies text styles including bold, font size, and color.
o learner centers cell entries across columns.
Create formulas and identify function arguments. Performance will be satisfactory when:
o learner identifies the function arguments and enters function into the worksheet.
o learner uses different types of formula functions such SUM, AVERAGE, MAX, and MIN.
o learner enters formulas using the “point and click” method.
o learner uses AutoFill.
o learner applies proper relative and absolute cell references in formulas.
o learner uses the IF function to perform a logical test.
o learner uses the DATE function to perform a logical test [i.e. =NOW(), =TODAY()].
Create charts based on Excel worksheet data. Performance will be satisfactory when:
o learner distinguishes between the different types of charts.
o learner distinguishes between a chart embedded in a worksheet and one in a separate chart sheet.
o learner creates charts with the Chart Wizard.
o learner enhances charts with additional tools.

Create a PowerPoint Presentation. Performance will be satisfactory when:
o learner identifies parts of the PowerPoint window.
o learner creates, views, and edits a PowerPoint presentation.
o learner formats a presentation including changing fonts, applying styles and bullets.
o learner inserts and formats pictures and shapes.

o learner inserts and formats tables.
o learner inserts and formats charts.
o learner applies slide transitions.
o learner uses animation schemes.
o learner sets effect and timing options.
o learner prints PowerPoint slides, handouts, notes, outline.

New Jersey Student Learning Standards (NJSLS-S)

TECH.8.1.12.A.4	Construct a spreadsheet workbook with multiple worksheets, rename tabs to reflect the data on the worksheet, and use mathematical or logical functions, charts and data from all worksheets to convey the results.
TECH.8.1.12.A.5	Create a report from a relational database consisting of at least two tables and describe the process, and explain the report results.
TECH.8.1.12.B.CS1	Apply existing knowledge to generate new ideas, products, or processes.
TECH.8.1.12.B.CS2	Create original works as a means of personal or group expression.

Interdisciplinary Connections

LA.RST.6-8	Reading Science and Technical Subjects
9-12.HS-ETS1-4.5.1	Use mathematical models and/or computer simulations to predict the effects of a design solution on systems and/or the interactions between systems.
	Functions

Learning Objectives

To understand the practicality of Excel

To familiarize oneself with Excel's basic features

To appreciate what a spreadsheet is and how to analyze it

To recognize the difference between a formula and a constant

To become comfortable with the toolbars that are presented in Excel

To open, save, and print Excel worksheets with ease

To differentiate between an Excel worksheet and an Excel workbook

To feel comfortable inserting and deleting new rows and columns

To recognize the existence and importance of Excel's Office Assistant

To develop formulas to simplify calculations

To use Print Preview to examine a spreadsheet before printing

To create future Excel spreadsheets with ease and comfort

In Powerpoint, Students will learn to:

Identify parts of the Powerpoint Screen

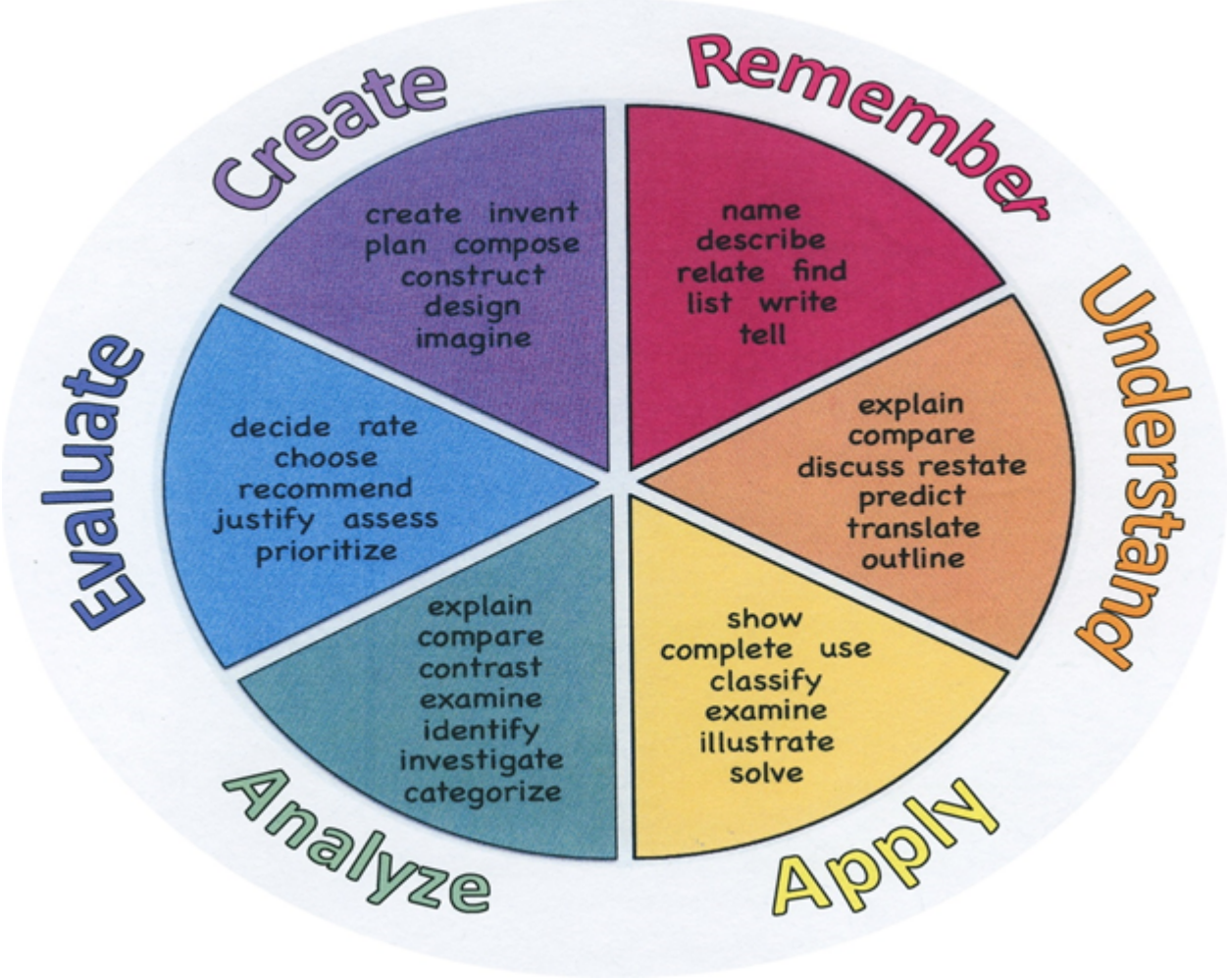
Work with menus, toolbars and task panes

Start and Run slide shows, Create Slide shows

Utilze multimedia - music and video in Powerpoint

Remember	Understand	Apply	Analyze	Evaluate	Create
Choose	Classify	Choose	Categorize	Appraise	Combine
Describe	Defend	Dramatize	Classify	Judge	Compose
Define	Demonstrate	Explain	Compare	Criticize	Construct
Label	Distinguish	Generalize	Differentiate	Defend	Design
List	Explain	Judge	Distinguish	Compare	Develop
Locate	Express	Organize	Identify	Assess	Formulate
Match	Extend	Paint	Infer	Conclude	Hypothesize
Memorize	Give Examples	Prepare	Point out	Contrast	Invent
Name	Illustrate	Produce	Select	Critique	Make
Omit	Indicate	Select	Subdivide	Determine	Originate
Recite	Interrelate	Show	Survey	Grade	Organize
Select	Interpret	Sketch	Arrange	Justify	Plan
State	Infer	Solve	Breakdown	Measure	Produce
Count	Match	Use	Combine	Rank	Role Play
Draw	Paraphrase	Add	Detect	Rate	Drive
Outline	Represent	Calculate	Diagram	Support	Devise
Point	Restate	Change	Discriminate	Test	Generate
Quote	Rewrite	Classify	Illustrate		Integrate
Recall	Select	Complete	Outline		Prescribe
Recognize	Show	Compute	Point out		Propose
Repeat	Summarize	Discover	Separate		Reconstruct
Reproduce	Tell	Divide			Revise
	Translate	Examine			Rewrite
	Associate	Graph			Transform
	Compute	Interpolate			

	Convert Discuss Estimate Extrapolate Generalize Predict	Manipulate Modify Operate Subtract			



Suggested Activities & Best Practices

https://www.microsoft.com/en-us/education/education-workshop

https://www.educationworld.com/sites/default/files/Lesson4_2007.pdf

Assessment Evidence - Checking for Understanding (CFU)

Unit test-summative assessment

Explaining-formative assessment

Written reports-alternate assessment

Create a Multimedia poster-benchmark assessment

- Admit Tickets
- Anticipation Guide
- Common Benchmarks
- Compare & Contrast
- Create a Multimedia Poster
- DBQ's
- Define
- Describe
- Evaluate
- Evaluation rubrics
- Exit Tickets
- Explaining
- Fist- to-Five or Thumb-Ometer
- Illustration
- Journals
- KWL Chart
- Learning Center Activities
- Multimedia Reports
- Newspaper Headline
- Outline
- Question Stems
- Quickwrite
- Quizzes

- Red Light, Green Light
- Self- assessments
- Socratic Seminar
- Study Guide
- Surveys
- Teacher Observation Checklist
- Think, Pair, Share
- Think, Write, Pair, Share
- Top 10 List
- Unit review/Test prep
- Unit tests
- Web-Based Assessments
- Written Reports

Primary Resources & Materials

Go Office 2013

Pearson

Ancillary Resources

GCF learn Free.org

Applied Educational Systems

https://support.office.com/en-us/article/excel-for-windows-training-9bc05390-e94c-46af-a5b3-d7c22f6990bb

https://digital.com/blog/excel-tutorials/

Technology Infusion

Technology Infusion and/or strategies are integrated into this unit to enhance learning

Khan Academy

Office 365

GCF Learn Free.org

MS Excel


Win 8.1 Apps/Tools Pedagogy Wheel
Podcasts
Photostory 3
Kid Story Builder
Music Maker Jam
Paint A Story
Office 365
MS PowerPoint
Stack 'Em Up
NqSquared Numbers
Physamajig
Xylophone 8
Wikipedia
Skydrive
Lync
SkyMap
Skype
Office 365
Puzzle Touch
Easy QR
Memorylage
Life Moments
Word Cloud Maker
Where's Waldo?
MS Excel
Office 365
Flipboard
Nova Mindmapping
Ted Talks
Record Voice Pen
Activities
Podcasts Texts
Digital Stories Apps
Notebooks Movies
Surveys Music
Presentations
Websites
Animations
Paintings
Blog Journal
Diagraming
Bing Search Documenting
Mind mapping
Commenting
Word processing
Social Networking
Recounting
Action Verbs
Transform
Imagine Teach
Design Construct
Rearrange
Invent
Recognise
Describe Identify
Infer Retrieve
Match Locate
List
Understand
Create
Evaluate
Apply
Analyse
Blogging
Commenting
Voting
Surveys
Quizzes
Peer assessment
Self Assessment
Debating
Collaging
Rate
Opinion
Critique
Collaborate
Assess Debate
Justify
Prioritise
Survey
Infer Deduce
Differentiate
Sequence Examine
Contrast Compare
Outline
Use Demo
Teach Record
Share Draw
Simulate
Create
Construct
Manipulate
Drawing
Diagraming
Animating
Journals
Photography
Movie Making
Music Making
Story Telling
Scrapbooks
Graphing Voting
Mindmapping Reading comprehension
Peer Assessment Judging Spreadsheets
Surveying Summarising Listening
Mapping Comparing
TED
TALKS
Originally taken from http://www.coetail.com/vzimmer/files/2013/02/iPadagogy-Wheel.001.jpg
And adapted for Windows 8.1 devices by Charlotte Beckhurst @CharBeckhurst

Alignment to 21st Century Skills & Technology

Mastery and infusion of **21st Century Skills & Technology** and their Alignment to the core content areas is essential to student learning. The core content areas include:

- English Language Arts;
- Mathematics;
- Science and Scientific Inquiry (Next Generation);
- Social Studies, including American History, World History, Geography, Government and Civics, and Economics;
- World languages;
- Technology;
- Visual and Performing Arts.

TECH.8.1.12.A.1	Create a personal digital portfolio which reflects personal and academic interests, achievements, and career aspirations by using a variety of digital tools and resources.
TECH.8.1.12.A.4	Construct a spreadsheet workbook with multiple worksheets, rename tabs to reflect the data on the worksheet, and use mathematical or logical functions, charts and data from all worksheets to convey the results.
TECH.8.2.12.E	Computational Thinking: Programming: Computational thinking builds and enhances problem solving, allowing students to move beyond using knowledge to creating knowledge.

21st Century Skills/Interdisciplinary Themes

21st Century/Interdisciplinary Themes that will be incorporated into this unit.

- Communication and Collaboration
- Creativity and Innovation
- Critical thinking and Problem Solving
- ICT (Information, Communications and Technology) Literacy
- Information Literacy

- Life and Career Skills
- Media Literacy

TECH.8.1.12.A.5	Create a report from a relational database consisting of at least two tables and describe the process, and explain the report results.
TECH.8.1.12.A.CS1	Understand and use technology systems.
TECH.8.1.12.A.CS2	Select and use applications effectively and productively.
TECH.8.1.12.B.CS1	Apply existing knowledge to generate new ideas, products, or processes.

21st Century Skills

21st Century Skills that will be incorporated into this unit.

- Civic Literacy
- Environmental Literacy
- Financial, Economic, Business and Entrepreneurial Literacy
- Global Awareness
- Health Literacy

LA.RST.6-8.1	Cite specific textual evidence to support analysis of science and technical texts.
CAEP.9.2.12.C	Career Preparation
CAEP.9.2.12.C.1	Review career goals and determine steps necessary for attainment.
CAEP.9.2.12.C.2	Modify Personalized Student Learning Plans to support declared career goals.
TECH.8.1.12	Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
TECH.8.1.12.A	Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations. Determining an output value for a particular input involves evaluating an expression; finding inputs that yield a given output involves solving an equation. Questions about when two functions have the same value for the same input lead to equations, whose solutions can be visualized from the intersection of their graphs. Because functions describe relationships between quantities, they are frequently used in modeling. Sometimes functions are defined by a recursive process, which can be displayed effectively using a spreadsheet or other technology.

Differentiation

The teacher will scaffold the lesson with a slow release from assisted support with guided practice to independent practice.

Students will have extra time or fewer assignments, one-to-one assistance, and group work will often be enlisted.

Differentiation in a lesson lies within content, process, and/or product.

Differentiations:

- Small group instruction
- Small group assignments
- Extra time to complete assignments
- Pairing oral instruction with visuals
- Repeat directions
- Use manipulatives
- Center-based instruction
- Token economy
- Study guides
- Teacher reads assessments allowed
- Scheduled breaks
- Rephrase written directions
- Multisensory approaches
- Additional time
- Preview vocabulary
- Preview content & concepts
- Story guides
- Behavior management plan
- Highlight text
- Student(s) work with assigned partner
- Visual presentation
- Assistive technology
- Auditory presentations
- Large print edition
- Dictation to scribe
- Small group setting

Hi-Prep Differentiations:

- Alternative formative and summative assessments
- Choice boards
- Games and tournaments
- Group investigations
- Guided Reading
- Independent research and projects
- Interest groups
- Learning contracts
- Leveled rubrics
- Literature circles
- Multiple intelligence options
- Multiple texts

- Personal agendas
- Project-based learning
- Problem-based learning
- Stations/centers
- Think-Tac-Toes
- Tiered activities/assignments
- Tiered products
- Varying organizers for instructions

Lo-Prep Differentiations

- Choice of books or activities
- Cubing activities
- Exploration by interest
- Flexible grouping
- Goal setting with students
- Jigsaw
- Mini workshops to re-teach or extend skills
- Open-ended activities
- Think-Pair-Share
- Reading buddies
- Varied journal prompts
- Varied supplemental materials

Special Education Learning (IEP's & 504's)

Use of digital audio-visual materials, such as YouTube, to assist the child with directions.

Students will have access to “How To” videos, so they may more easily follow along with directions for their assignments.

Special Education Learning adaptations that will be employed in the unit, using the ones identified below.

- printed copy of board work/notes provided
- additional time for skill mastery
- assistive technology
- behavior management plan
- Center-Based Instruction
- check work frequently for understanding

- computer or electronic device utilizes
- extended time on tests/ quizzes
- have student repeat directions to check for understanding
- highlighted text visual presentation
- modified assignment format
- modified test content
- modified test format
- modified test length
- multi-sensory presentation
- multiple test sessions
- preferential seating
- preview of content, concepts, and vocabulary
- Provide modifications as dictated in the student's IEP/504 plan
- reduced/shortened reading assignments
- Reduced/shortened written assignments
- secure attention before giving instruction/directions
- shortened assignments
- student working with an assigned partner
- teacher initiated weekly assignment sheet
- Use open book, study guides, test prototypes

English Language Learning (ELL)

Software applications have instructions available in other languages, and Google translate will be used as necessary. Students will be allowed to work with partners.

English Language Learning adaptations that will be employed in the unit, using the ones identified below.

- teaching key aspects of a topic. Eliminate nonessential information
- using videos, illustrations, pictures, and drawings to explain or clarif
- allowing products (projects, timelines, demonstrations, models, drawings, dioramas, poster boards, charts, graphs, slide shows, videos, etc.) to demonstrate student's learning;
- allowing students to correct errors (looking for understanding)
- allowing the use of note cards or open-book during testing
- decreasing the amount of workpresented or required
- having peers take notes or providing a copy of the teacher's notes
- modifying tests to reflect selected objectives

- providing study guides
- reducing or omitting lengthy outside reading assignments
- reducing the number of answer choices on a multiple choice test
- tutoring by peers
- using computer word processing spell check and grammar check features
- using true/false, matching, or fill in the blank tests in lieu of essay tests

At Risk

One-to-one conferences between teacher and student to determine specific challenges and troubleshoot ways to overcome them.

Intervention Strategies that will be employed in the unit, using the ones identified below.

- allowing students to correct errors (looking for understanding)
- teaching key aspects of a topic. Eliminate nonessential information
- allowing products (projects, timelines, demonstrations, models, drawings, dioramas, poster boards, charts, graphs, slide shows, videos, etc.) to demonstrate student's learning
- allowing students to select from given choices
- allowing the use of note cards or open-book during testing
- collaborating (general education teacher and specialist) to modify vocabulary, omit or modify items to reflect objectives for the student, eliminate sections of the test, and determine how the grade will be determined prior to giving the test.
- decreasing the amount of workpresented or required
- having peers take notes or providing a copy of the teacher's notes
- marking students' correct and acceptable work, not the mistakes
- modifying tests to reflect selected objectives
- providing study guides
- reducing or omitting lengthy outside reading assignments
- reducing the number of answer choices on a multiple choice test
- tutoring by peers
- using authentic assessments with real-life problem-solving
- using true/false, matching, or fill in the blank tests in lieu of essay tests
- using videos, illustrations, pictures, and drawings to explain or clarify

Talented and Gifted Learning (T&G)

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Teacher can use a pre-assessment to determine students' knowledge of standard being taught in lesson and then provide an extension activity for students

1. Compact lesson

2. Provide students with problem-based learning activity using multiple standards from the unit.

Talented and Gifted adaptations that will be employed in the unit, using the ones identified below.

- Above grade level placement option for qualified students
- Advanced problem-solving
- Allow students to work at a faster pace
- Cluster grouping
- Complete activities aligned with above grade level text using Benchmark results
- Create a blog or social media page about their unit
- Create a plan to solve an issue presented in the class or in a text
- Debate issues with research to support arguments
- Flexible skill grouping within a class or across grade level for rigor
- Higher order, critical & creative thinking skills, and discovery
- Multi-disciplinary unit and/or project
- Teacher-selected instructional strategies that are focused to provide challenge, engagement, and growth opportunities
- Utilize exploratory connections to higher-grade concepts
- Utilize project-based learning for greater depth of knowledge

Sample Lesson

Lesson Plan Title : Introduction to Microsoft Excel

Overview and Purpose: A basic review of excel toolbars, buttons, functions,cursors, and intro to the use of formulas.

Goals:

1.Each student will gain the basic skills needed to operate and navigate MS Excel.

2.Identify, gather and input data into a spreadsheet.

3.Successfully create, copy and paste formulas and functions.

4. to be able to work collaboratively with peers in groups.

5. Successfully print areas of the spreadsheet.

6. Identify Excel as a tool used for manipulating data.

Objectives:

1.Identify ways of utilizing Excel as a tool

2. Students will be able to identify and create a spreadsheet.

3. Students will successfully record data and be able to create, copy and paste formulas and functions.

4. Students will acquire information using various resources.

5. Review of standard and formatting toolbars and menus within Excel.

6 . Review of worksheets,workbooks,cells,columns,rows,and Excel cursors

7. Introduction of basic use of formulas in Excel.

R**esources:**

LCD Projector, handouts, audio equipment.

Students will be provided a computer workstation in the computer lab.

Students will utilize Microsoft Excel to develop a spreadsheet using the data they obtain.

Students will have access to the Internet.

Students will be given a copy of the rubric to refer to while working on this lesson.

A laptop/projector set up will be provided for presentation.

A flash drive will be used to save and copy student work onto the laptop.

A shared drive will be available to store completed spreadsheets.

Methods

Introduction:

1. First we will discuss uses of spreadsheets

2. A payroll with three records will be opened and cell contents identified.

3. Discussion on the data necessary to complete a payroll.

4. Request that students perform actions such as cell alignment, formatting cells,shading cells, placing borders around cells etc. individually.

5. Request that students exhibit knowledge of renaming worksheets,deleting worksheets, adjusting row heights and column widths etc.

Engagement:

1. As a class we will add one record of data.

2. Each student will verbally add their record (fictitious); the payroll now contains 10-12 records.

3. I will demonstrate formula building, copying, pasting and printing.

Class Practice:

1.Students will complete the payroll (pay).

2. Overtime, bonus will be added to the spreadsheet (use of absolute value)

3.They are encourage to look on each others screens and speak out loud.

4. Students will be given opportunity to print (print preview).

Independent Practice:

1.Students will create a spreadsheet from scratch(grocery budget,address list or book inventory a book inventory

2. They will create, copy an paste formulas and functions.

3.They are encourage to look on each others screens and speak out loud.

4. Students have been asked to complete a detailed budget exercise to exhibit gathered knowledge of MS Excel.

Accommodations (Differentiated Instruction):

1. Slow typists - they will be able to Open my completed spreadsheet (as emphasis in this class is not on typing)

2. Quick to create - we we add the overtime calculation and bonus (using absolute value)

3. Experienced in a payroll (completed examples of advanced payrolls will be on shared drive, to be explored during breaks)

Learning Checkup:

1. I will walk around the room as they create and work on their spreadsheets

2. Challenge students by changing the data (pay rate)- does the 'ripple down' effect occur?

Wrap Up:

1.Verbally as a class (encouraging them to speak out loud) describe (while I write on board) the steps to create a spreadsheet.

2.Students will reflect on what they have learned.

3. Teacher will review each students assignment individually to insure that they have a clear understanding of how to operate Excel.

As an instructor, I have never done this. The students have always evaluated me! Students will be evaluated using a rubric. I will forward each student's completed rubric via email.