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| **TEXAS CTE LESSON PLAN**  [www.txcte.org](http://www.txcte.org) | |
| **Lesson Identification and TEKS Addressed** | |
| **Career Cluster** | Business Management and Administration |
| **Course Name** | Business Information Management II |
| **Lesson/Unit Title** | Enhancing Business Communications |
| **TEKS Student Expectations** | **130.137. (c) Knowledge and Skills**  (1) The student demonstrates professional standards/employability skills required by business and industry. The student is expected to  (A) communicate effectively with others using oral and written skills  (4) The student creates, evaluates, and uses information resources to accomplish specific occupational tasks. The student is expected to  (A) create and interpret items such as tables, charts, infographics, and figures to accomplish specific occupational tasks  (7) The student designs solutions to mathematical business problems using advanced spreadsheet technologies. The student is expected to  (A) recognize and apply spreadsheet items such as lookup tables, what-if and built-in functions, macros, and advanced charts, graphs, and functions |
| **Basic Direct Teach Lesson**  (Includes Special Education Modifications/Accommodations and  one English Language Proficiency Standards (ELPS) Strategy) | |
| **Instructional Objectives** | Students will understand how tables, charts, and figures support and enhance oral and written communication among co‐workers and customers.   * Create and interpret tables, charts, and figures * Develop solutions to business problems through the use of tables, charts, and figures * Create and understand lookup tables, functions, and macros * Understand uses of spreadsheets with various currencies * Develop financial statements |
| **Rationale** | The main purposes of this lesson are to help students understand the following concepts:   * that there are features in spreadsheet software that can turn complex calculations into easy‐to‐ understand documents, and * that tables and charts can add to the effectiveness of business documents. |
| **Duration of Lesson** | When taught as written, this lesson should take approximately five to six days to complete. |
| **Word Wall/Key Vocabulary**  *(ELPS c1a,c,f; c2b; c3a,b,d; c4c; c5b) PDAS II(5)* | * Functions‐ a preset formula (as opposed to having to type in each part of the formula) * Web query‐ a way of dividing a website into tables and importing the data in the table into a spreadsheet application * PV‐ “present value” / what future payments are worth now * FV‐ “future value” / what an investment is worth in the future * RATE‐ interest rate / can be used to calculate a loan payment or to calculate an investment goal in the future if a certain rate is earned * NPER‐ number of payments / refers to the number of periods an investment is to be held or a payment is to be made * PMT‐ payment / calculates an amount per period based on an interest rate * Conditional formatting‐ a type of cell formatting where certain formatting takes place if certain criteria is met |
| **Materials/Specialized Equipment Needed** | **Instructional Aids**   * Instructor Computer * Online Websites |
| **Anticipatory Set**  (May include pre-assessment for prior knowledge) | * **Ask** students if they know of different examples of more complex spreadsheets. * **Ask** students if they know there are over 100 different functions that can be used in spreadsheets. |
| **Direct Instruction \*** | Spreadsheet software can facilitate complex calculations. Once you get your spreadsheet organized, the functions actually become easier. Explain to students that functions are the same as formulas except that they are preset.  I. Types of Functions   * + 1. Financial     2. Logical     3. Text     4. Date & Time     5. Lookup & Reference     6. Math & Trig     7. Other        1. Statistical        2. Engineering        3. Cube        4. Information   II. Financial Functions   * + 1. PV‐ present value / what future payments are worth now     2. FV‐ future value / what an investment is worth in the future     3. RATE‐ can be used to calculate a loan payment or to calculate an investment goal in the future if a certain rate is earned     4. NPER‐ refers to the number of periods an investment is to be held or a payment is to be made     5. PMT‐ calculates an amount per period based on an interest rate   Teacher Note: Financial functions are appropriate for many reasons. Ask students if they can think of activities involving money that may require  calculations. Then demonstrate some of the common functions such as finding a student loan payment. For example, if the amount (PV) is $20,000, and the interest rate is 4% (put /12 so it ends up being divided by 12), the term (NPER) is 48 (as in months). Put a negative sign before the $20,000. Spreadsheet programs know that a loan is a liability and that the payment would be subtracted from your income, so you need to include the minus sign (‐).  III. Logical Functions  Teacher Note: Logical functions are a very efficient way for companies to calculate a variety of things such as raises and bonuses.   * 1. IF‐ calculates a value based upon certain conditions being met   2. Three parts of an ‘IF’ statement   1. the test—or condition—such as if you have worked for a company for >10 years the value if true, such as if you meet the condition above, and then you receive a bonus of 5% of your annual salary  2. the value if false, and if you do not meet the condition, then your bonus is zero (as an example—another example may say your bonus could be 1% of your salary)  3. Three parts always separated by a comma  Teacher Note: If, for example, certain conditions are met, then an employee can receive a certain raise. If not, they may receive no raise or a different raise. Create a small spreadsheet with the following salaries: 25,000, 30,000, and 40,000. In the next column type in the years of employment these fictitious employees have: 8, 4, and 1. The test will be that if they have worked for the company >5 years, they will get a 3% raise. If they haven’t, they get a raise of zero. Then when you insert the “IF,” function click on the appropriate cells, copy the formula, and you will see who receives a raise and who does not.  IV. Common Cell Formatting   * 1. Date formats   2. Number formats   3. Percentage   4. Currency   5. Text   6. Custom formats   7. Conditional formatting   Teacher Note: Spreadsheets should look attractive and neat. This makes them easier to read and to interpret information. You may right‐click on cells to format or click **Format Cells**.  V. Web Queries   * 1. Basically turns sections of websites into tables   2. Import a selected table from a website into your spreadsheet software   3. Use the data as desired to format or create charts—all without having to type pieces of information manually   Teacher Note: Web queries are a way to use Internet data to process information. Instead of typing in the data manually, web queries use imported data.  VI. Steps to Creating a Web Query   1. Select a website to use. 2. In the spreadsheet program, click **Data** > **Get External Data** > **From Web**. 3. Paste the URL of the website you want to use. Then click **Go**. 4. Click the yellow arrow next to the data you want to use. Click **import**. 5. The data appears on the blank spreadsheet so you can now format it or create charts (as you deem necessary).   Teacher Note: Be sure to give credit to the website that you use. If you create charts from that data, you can use it to support other documents as well. Again, if the chart is exported or copied to another document, give credit to the Internet source.  *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*  None |
| **Guided Practice \*** | Direct students to the NOAA.gov website where there is a great deal of data on hurricane history. Search for “hurricane data,” and select the data you want to use in a web query (review how to create a web query prior to this activity). Make sure students are with you at each step. After you have imported the data, decide what data you want to use and then create a graph to show students how it is done—although they should already have knowledge of creating graphs.  *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*  None |
| **Independent Practice/Laboratory Experience/Differentiated Activities \*** | Have students practice looking at different websites to see if they can complete the import of a web query. They can go to any website that will provide statistical information that can be used effectively in a spreadsheet program. Walk around the room to see that each student has imported data on their screen. Try to have students go to different sites and avoid duplicate sites.  *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*  None |
| **Lesson Closure** | Question #1: What is the difference between a formula and a function?  Answer #1: A function is a prewritten formula, which means that you do not have to type every character in the formula. Once you select the function, options to click are provided for you.  Question #2: What is a financial function?  Answer #2: A financial function can make calculations such as loan payments, present and future value, payments, and interest rates.  Question #3: What is a web query?  Answer #3: A way to import data from a website into a spreadsheet program to be analyzed, graphed, etc.  Question #4: Why is conditional formatting effective?  Answer #4: Conditional formatting is a way to visually differentiate values that you want emphasized in a spreadsheet.  Question #5: What is the benefit of using an “IF statement”?  Answer #5: An “IF statement” (or formula) is useful in electronically determining if certain criteria are met to see which action can be taken, depending on whether or not the specified criteria are met. This is opposed to visually looking at a large spreadsheet and manually determining if the criteria were met. |
| **Summative / End of Lesson Assessment \*** | Have students practice obtaining data (on any topic) from the Internet and experimenting with different types of conditional formatting using that data. They can do this in pairs if it helps them understand the concept better.   * **Conditional Formatting Assignment #1**   Students will conduct Internet research on the nutritional data of fast food restaurants. They are to create a spreadsheet containing data such as: the name of at least three fast‐food restaurants, calories for at least five comparable items from each restaurant, and at least one other criteria, such as fat grams or protein amounts for those comparable menu items. The students will determine the conditional formatting rule they will use (for example, highlight cells rule possibly with calories greater than a certain amount, or icon sets for the same type of data).   * **Web Query Assignment #2**   Students will perform a web query on any appropriate topic they choose and create a chart of their choice displaying pertinent data. For example, they can create a web query using fast food statistics, salary statistics, or college statistics. The chart they create will be included in a one‐page, organized report on the topic they select. The reference for the data they get from the Internet must be included as a caption for the chart in the one‐page report.   * **Financial Function Assignment #3**   Students will research the price of at least five different automobiles. They will create a spreadsheet containing the following columns: Car Make and Model, Car Price, Number of Payments, Interest Rate, Down Payment, and Monthly Payment. They should also check several banks online to determine their auto loan rates; these will be good indicators. Then enter your findings in the spreadsheet under the column headings. When you begin to fill in the blanks under the Monthly Payment column, click in the appropriate cell and Insert Functions, and type in or click PMT. Fill in the appropriate blanks by clicking on the correct cells (do not type in values), making sure that for interest and nper (number of periods), you divide by 12. When you get to the blank with PV, click on the first cell under the Price label and make sure you type in a negative sign before the cell address, for example, ‐B3. This is because a loan payment is a liability and your spreadsheet program will think of it as a negative number because it is subtracted from your income. Copy the formula to the cells below. At the bottom of your spreadsheet, summarize which car is the best buy for you and why. Make your spreadsheet attractive and easy to read.  *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*  **Accommodations for Learning Differences:**  It is important that lessons accommodate the needs of every learner. These lessons may be modified to accommodate your students with learning differences by referring to the files found on the Special Populations page of this website. |
| **References/Resources/**  **Teacher Preparation** | **Preparation**   * Review and familiarize yourself with the terminology, website links, and proper spreadsheet functions and formulas. * Have materials, websites, and lesson ready prior to the start of the lesson.   **References**   * http://alex.state.al.us/plans.php#.UfwUWeQo6P8 * 0135108411, *Learning Microsoft Office 2010 Advanced Skills*, Pearson |
| **Additional Required Components** | |
| **English Language Proficiency Standards (ELPS) Strategies** |  |
| **College and Career Readiness Connection[[1]](#footnote-1)** | **English‐English I**   * 110.31(b)(1)   Reading/Vocabulary Development. Students understand new vocabulary and use it when reading and writing.   * 110.3(b)(11)   Reading/Comprehension of informational text/procedural texts. Students understand how to glean and use information in procedural texts and documents.  **Math‐Algebra I**   * 111.32(b)(1)(C)   Interpret and make decisions, predictions, and critical judgments from functional relationships.  **Social Studies‐ World Geography**   * 113.34(c)(20)(A)   Describe the impact of new technologies, new markets, and revised perceptions of resources. |
| **Recommended Strategies** | |
| **Reading Strategies** |  |
| **Quotes** |  |
| **Multimedia/Visual Strategy**  **Presentation Slides + One Additional Technology Connection** |  |
| **Graphic Organizers/Handout** |  |
| **Writing Strategies**  **Journal Entries + 1 Additional Writing Strategy** |  |
| **Communication**  **90 Second Speech Topics** |  |
| **Other Essential Lesson Components** | |
| **Enrichment Activity**  (e.g., homework assignment) | Students should speak with a loan officer at a bank or at a car dealership (someone who is familiar with making auto loans). Ask them what methods they use to calculate payments—whether it is a payment calculator online or a spreadsheet program. |
| **Family/Community Connection** |  |
| **CTSO connection(s)** | Business Professionals of America  Future Business Leaders of America |
| **Service Learning Projects** |  |
| **Lesson Notes** |  |

1. Visit the Texas College and Career Readiness Standards at <http://www.thecb.state.tx.us/collegereadiness/CRS.pdf>, Texas Higher Education Coordinating Board (THECB), 2009. [↑](#footnote-ref-1)