Course 2 Week 1 Notes

* **Focus on the ASK phase**
* How to ask effective questions that will provide insights
* **Structured thinking** – breaking down a problem into smaller steps, then coming up with a solution for these smaller steps
  + Tackle business problems with this
  + 4 key steps are
    - Recognize the current problem or situation
    - Organize the available information
    - Revealing gaps and opportunities
    - Identify your options
* 4 key things to remember
  + Ask effective questions
    - What are some common analysis problems
    - How do you solve them
    - What are some effective questioning techniques that can help guide your analysis
  + Make data driven decisions
    - Explore data of all kinds
    - Impacts of different types of data on decision making
    - Share data through reports and dashboards
  + Master spreadsheet basics
    - Why use spreadsheets
    - How does structured thinking help solve problems
  + Remember the stakeholder
    - Balance needs and expectations
    - Strategies to manage stakeholder expectations
* Learning objectives
  + How do data analysts solve problems with data
  + The use of analytics for making data driven decisions
  + Spreadsheets – formulas, functions
  + Dashboard basics – Tableau
  + Data reporting basics
* Skills:
  + Asking SMART and effective questions
  + Structuring how you think
  + Summarizing data
  + Putting things into context
  + Managing team and stakeholder expectations
  + Problem solving
  + Conflict resolution

**Quick rundown of the 6 step process and a general idea of what to do in each**

ASK PHASE: Analyzing the problem

* Define the problem you are trying to solve
* Make sure you understand the stakeholder’s expectations
* Focus on the actual problem and avoid any distractions
* Collaborate with stakeholders and keep an open line of communication
* Take a step back and see the whole situation in context
* Ask yourself
  + What are my stakeholders saying the problem is
  + Now that I have identified the issues, how can I help stakeholders resolve their questions

PREPARE PHASE

* Decide data that you need to collect
* What metrics to measure
* Locate data in your database
* Create security measures to protect the data
* Ask yourself
  + What do I need to figure out how to solve this problem
  + What research do I need to do

PROCESS PHASE

* Data cleaning
  + Rid of errors, inaccuracies, inconsistencies
* Use spreadsheet functions to find incorrectly entered data
* Use SQL functions to check for extra spaces
* Remove repeated entries
* Check as much as possible for bias in the data
* Ask yourself
  + What data errors might get in the way of getting the best possible answer to the problem I am trying to solve
  + How can I clean my data so the information I have is more consistent

ANALYZE PHASE

* Sort and format data to make it easier to perform calculations
* Combine data from multiple sources
* Create tables with your results
* Ask yourself
  + What story is my data telling me
  + How will my data help me solve this problem
  + Who needs my company’s product or service
  + What type of person is most likely to use this product or service

SHARE PHASE

* Summarize results with clear and enticing visuals
* Graphs and dashboards
* Show the stakeholders you have solved the problem and show them how you got there
* Help make better decisions
* Make more informed decisions
* Lead to stronger outcomes
* Successfully communicate your findings
* Ask yourself
  + How can I make what I’m presenting engaging and easy to understand
  + What would help me understand if I was the listener

ACT PHASE

* Take everything learnt from the data analysis and put it into use
* Provide stakeholders with recommendations based on your findings to make data-driven decisions
* Ask yourself
  + How can I use feedback received during the share phase to actually meet the stakeholder’s needs and expectations

**Common problems**

Making predictions

* Using data to make an informed decision about how things may be in the future
* Example:
  + Company wants to know the best advertising method to bring in new customers
  + Data on
    - Location
    - Type of media
    - Number of new customers acquired as a result of past ads
  + No guarantee but can help predict the best method
  + Or predict the best placement to reach the target audience

Categorizing things

* Assigning information to different groups or clusters based on different features
* Example:
  + Company’s goal to improve customer satisfaction
  + Analysts might classify customer service calls based on certain keywords or scores
  + Help identify top performing customer service reps
  + Help correlate certain actions taken with higher customer satisfaction scores

Spotting something unusual

* Identify data different from the norm
* Example:
  + Company that sells watches help monitoring people’s health
  + Interested in designing software to spot something unusual
  + Analysts who analyzed aggregated health data can help product developers determine the right algorithms to spot
  + And set off alarms when certain data doesn’t trend normally

Identifying themes

* Grouping categorized information into broader concepts
* A more detailed look into categorizing things
* Example:
  + Analyze user interaction data
  + Usability improvement projects might require analysts to identify themes that help prioritize the right product features for improvement
  + Themes help researchers explore certain aspects of data
    - Eg. User study, user beliefs, practices and needs
* Takes categories a step further by grouping them into broader themes

Discovering connections

* Find similar challenges faced by different entities and then combine data and insights to address them
* Example:
  + Third party logistics company working with another company to get shipments delivered to customers on time
  + Analyze wait times at shipping hubs can allow analysts to determine the appropriate schedule changes to increase the number of on time deliveries

Finding patterns

* Use historical data to understand what happened in the past and is therefore likely to happen again
* Example:
  + Minimizing downtime of machine failure
  + Analyze maintenance data to discover that most failures happen if regular maintenance is delayed by more than a 15 day window

**SMART Questions**

* Some questions are more effective than others
* Ineffective questions (avoid these)
  + Leading questions – make you answer a certain way
  + Close-ended questions – yes or no questions
  + Vague questions – too many ways to answer, not enough context
* SMART framework to craft effective, objective questions
  + Example Question: What features do people look for when buying a new car?
  + Specific
    - Simple
    - Significant
    - Focus on a specific topic or a few closely related ideas
    - Example: Does the question focus on a particular car feature?
  + Measurable
    - Questions that can be quantified
    - And assessed
    - Allows us to arrive at a concrete number/statistic
    - Example: Does the question include a feature rating system?
  + Action Oriented
    - Encourages change
    - Brings answers we can act on
    - Example: Does the question influence creation of different or new feature packages?
  + Relevant
    - Matter and important
    - Have significance to the problem we are trying to solve
    - Example: Does the question identify which features make or break a potential car purchase?
  + Time Bound
    - The time to be studied
    - Limits the range of possibilities
    - Focus on relevant data only
    - Example: Does the question validate data on the most popular features from the last three years
* Remember: Always go for open ended questions