Inquiry and Analysis- Assessment Tool

This assessment tool was created for Harry S Truman College, one of the City Colleges of Chicago, to study the college's general education goal of Inquiry and Analysis. Each of the Case Studies has between 3-6 questions associated with it and each is aligned with the college's expected student learning outcomes

Case Study #1

1. Students have been studying the effects of social media on their own study habits, particularly the frequency with which they stop or delay studying to look at social media. One group is studying the effects of Twitter, another is studying the effects of Instagram, and the third group is studying the effects of TikTok. Their professor has asked that together they design a research study to look at the usage of all three social media platforms.

SLO #1- Use appropriate research methodologies	To get the *most reliable* data, the groups should use the following methodology: a. Design a research process collaboratively to ensure they are all completing the research in the same way. b. Have each group design a research study and once they have collected their data, share it with the other groups. c. Ask classmates to complete a survey about their time spent on social media. d. Assume that all students use social media in some way or another, so the research design does not need to consider any other variables if they only use students in their research.
SLO #2 - Collect, organize, and analyze information	Six students volunteered to collect data about their TikTok use. Over three consecutive evenings, from 7-10PM they measured the time they spent looking at TikTok rather than studying. They averaged their times over the three nights and reported the following. Student #1 – 125 minutes on Tik Tok Student #2 – 45 minutes on Tik Tok Student #3 – 100 minutes on Tik Tok Student #4 – 25 minutes on Tik Tok Student #5 – 40 minutes on Tik Tok Student #6 – 90 minutes on Tik Tok Minutes Spent on Tik Tok STUDENT VOLUNTEER / MINUTES SPENT ON AVERAGE Student #1 – 125 Student #2 – 45 Student #3 – 100 Student #4 – 25 Student #5 – 40 Student #6 – 90

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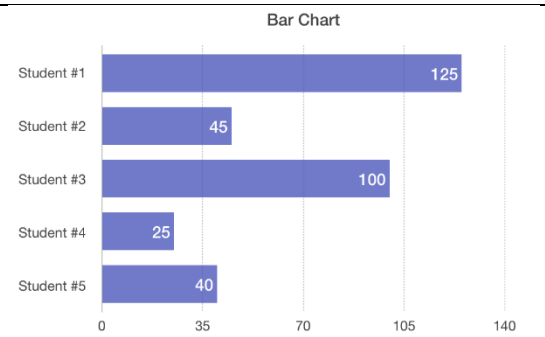

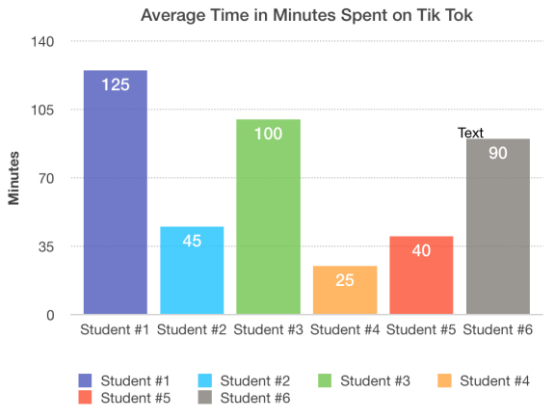

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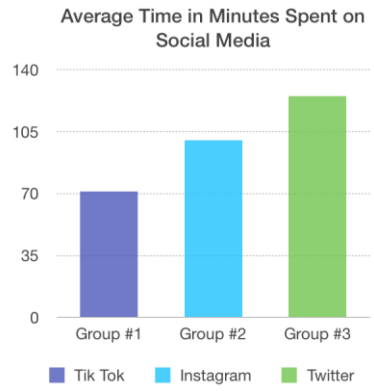
<td>SLO #3 - Identify patterns and relationships</td>
<td>Each group of 6 students completed the study in the same way. After completing the study, the students developed the following graph to describe their research.



Which statement correctly describes the data contained in the graph?
1. Students are twice as likely to spend time on Twitter than they are on Tik Tok when they are supposed to be studying.</td>
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	2. Students are more likely to spend time on Instagram than they are on Twitter while they are supposed to be studying. 3. The six students who recorded their time on Tik Tok, spent, on average, 25 minutes less time than the six students who recorded their time on Instagram. 4. Social media is a major distraction for students.
SLO #4-Draw appropriate conclusions from the data	Using the same graph, what conclusions can be made from the data? (Choose all that apply.) 1. While studying, students are distracted by social media. 2. Twitter is a more dangerous social media platform than Instagram is. 3. The data is inconclusive, and little can be learned from it. 4. The students from this class spend less time on Tik Tok than on Instagram or Twitter.

Case Study #2

2. A group of concerned citizens has come together to investigate a crosswalk near the local public school where several accidents have occurred over the past year. They believe that with the appropriate data, they can sway the Street and Sanitation Commissioner to replace the stop sign with a traffic light. Using tally marks, they counted the number of cars that stopped completely at the stop sign, slowed down and rolled through the stop sign, or ran through the stop sign during 5-minute intervals during the half hour period before the start of school.

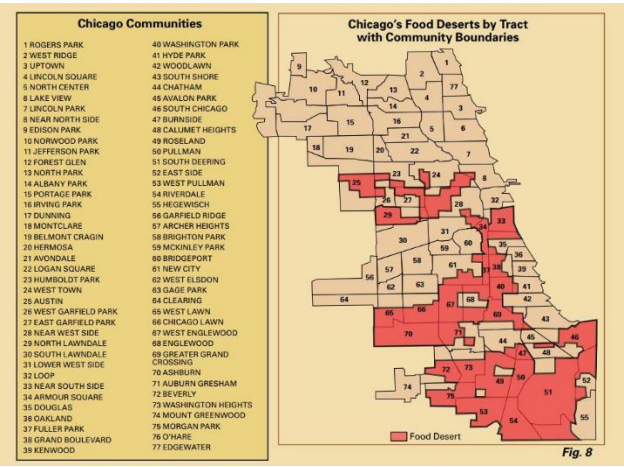
5-Minute Time Period	# of cars that stopped completely	# of cars that slowed down and rolled through the stop sign	# of cars that ran through the stop sign	Total number of cars that passed through the intersection
7:30-7:35	|||	𝍸	|	9
7:35-7:40	𝍸 ||	||		9
7:40-7:45	𝍸 𝍸 |	||||	||	17
7:45-7:50	𝍸 𝍸 |||	𝍸 ||		20
7:50-7:55	𝍸 𝍸 𝍸	|||	|	19

SLO #4- Draw appropriate conclusions from the data	Analyzing the data in Table 1.1, what can the group report conclude about this crosswalk? (Choose all that apply) 1. Overall, less than 10% cars *ran* through the stop sign the morning the group collected the data. 2. More cars stop at the stop sign than roll through or run through combined. 3. Fewer cars pass through this intersection at 7:30 than at 7:45. 4. Cars that slow down but do not completely stop are more dangerous than cars that run through the stop sign.
SLO #3 - Identify patterns and relationships	To present the results of the study to Streets and Sanitation, the group looked for patterns in the data. Choose the statement below that correctly describes a pattern in the data. 1. Cars ran through the stop sign, slowed, and rolled through the stop sign and stopped at the stop sign consistently during the half hour time segment. 2. Traffic increases as it gets closer to the start of the school day. 3. The more cars that pass through the intersection, the more likely it is that cars will not stop. 4. The data did not provide any observable patterns.
SLO #5- Design and execute studies using discipline-specific research projects/scientific reasoning	Streets and Sanitation has agreed to replace the stop sign with a traffic light because of this research. They have asked for an additional study about this intersection to be completed over the next three years. How should the group design the follow-up study? 1. They should design a longitudinal study to examine the traffic patterns at this intersection over time. 2. They should spend another morning collecting data in the same way once the traffic light has been installed. 3. They should interview parents from the school to find out how they feel about the new traffic light. 4. They should ask the police if they notice fewer accidents at this intersection.
SLO #2 Collect, organize, and analyze information	To perform the second study, students debate the best way to collect and organize the new data. Which systems are appropriate for the follow-up study? (Choose all that apply.) 1. One student suggests changing the time period to intervals of 10 minutes. 2. One student suggests combining the number of cars running through the intersection with the number of cars rolling through the intersection because both actions are dangerous. 3. One student suggests the study should last over a whole semester.

	4. One student suggests that a second study should be done the same as the first.

Case Study #3

The following is a map of Chicagoland area communities. A food desert is described as an area that has limited access to affordable and nutritious food.



SLO #3 - Identify patterns and relationships	Choose the statement that *best* describes the relationship between food deserts and Chicago neighborhoods. 1. Food deserts can be found primarily on the northside of Chicago. 2. The further south you travel in Chicago, the more you will encounter food deserts. 3. There is no relationship between food deserts and the city of Chicago. 4. Food deserts are evenly spread throughout the city.
SLO #1 - Use appropriate research methodologies	To better understand food deserts in Chicago, which of the following would be an appropriate method to research access to grocery stores throughout Chicago? 1. Choose one of the food desert neighborhoods from the map and count how many grocery stores there are within the boundaries of the neighborhood. 2. Use the Internet to investigate access to grocery stores in each of Chicago's 77 neighborhoods. 3. Ask classmates to complete a survey about their grocery store preferences. 4. Study the rising cost of groceries over time.
SLO #5- Design and execute studies using discipline-specific research projects/scientific reasoning	A sociologist tasked with designing a follow-up study to the food desert map above, decides to use interviews as a methodology. Which of the following would be the *least* effective in obtaining useful data? 1. Interviewing community members concerned with their lack of available nutritious food. 2. Interviewing government leaders about their work advocating for greater food resources in Chicago. 3. Interviewing recent hires at Whole Foods in Edgewater. 4. Interviewing social workers who oversee food assistance programs.
SLO #4- Draw appropriate conclusions from the data	Analyzing the map above, answer the following question(s) about food deserts in Chicago? 1. The largest food desert is in the _____ community. A. Austin B. South Deering C. West Englewood D. Washington Park 2. The data indicates that communities numbered 1-24 are food deserts. A. True B. False 3. Neighborhoods on the east side (along Lake Michigan) tend to mostly be food deserts. A. True B. False

4.Case Study #4

In Biology 101, Professor Q has asked students to design a scientific study to determine if the new environmentally friendly spray cleaner is as effective at killing bacteria as the previous spray cleaner was. Using the scientific method, students planned a research study to investigate the hypothesis that "the new environmentally friendly spray cleaner is as effective at killing bacteria as the previously used spray cleaner."

SLO #5- Design and execute studies using discipline-specific research projects/scientific reasoning	Put the following research study steps in the correct order. 1. Is the new environmentally friendly spray cleaner as effective as the previous spray cleaner? (question) 2. Investigate the existing research on spray cleaners (do background research) 3. The new environmentally friendly spray is as effective at killing bacteria as the previously used spray cleaner. (hypothesis) 4. Measure the number of Colony Forming Units (CFUs) on two identical surfaces after using both sprays. (research) 5. Compare the results of the measurements. (data interpretation) 6. Draw conclusions about the effectiveness of the cleaners. (Conclusions)
SLO #2 Collect, organize, and analyze information	Which of the following is an appropriate way to collect and analyze the samples? (Choose all that apply.) 1. Swab a test site and create a "before" slide for comparison. 2. Swab different surface areas at various times of the day to create "control groups." 3. Use exactly the same amount of each disinfectant on each area. 4. Analyze the data using a computer program, such as Microsoft Excel, or the like.
SLO #1 Use appropriate research methodologies	As the students developed their research methodology, they brainstormed a list of important things to consider. Which of the following should not be included in their research process? (Choose all that apply.) 1. Control the variables as much as possible. 2. Prepare the samples in a controlled environment. 3. Use protective equipment while handling the samples and the disinfectant. 4. Vary the amount of disinfectant used on each site.