

Katrina Johnson

Unit 2.1.3 Drill

“Formulating Good Research Questions”

Instructions: Categorize each of the following research questions as “good” or “bad,” and provide alternative formulations for the bad ones.

1. What is the 1994 rate of juvenile delinquency in the United States?

Good Question

- The solution can be expressed numerically
- The question is limited in scope to the year 1994.
- The question is clearly articulated in one sentence.

2. What can we do to reduce juvenile delinquency in the United States?

Bad Question

- The solution will not yield a numerical result.
- The question is very general, or broad, in scope.
- Who are “we?” What are the tools and resources available at the disposal of this group?

Better Formulation

Which methods are most effective for reducing juvenile delinquency in the US?

3. Does education play a role in reducing juvenile delinquents’ return to crime?

Good Question - thought a little general

- Statistical (numerical) data can be used to work toward an answer
- The solution/answer can be expressed numerically, based on the numerical values expressed in the dataset(s)
- A binary outcome model may be used to express the solution/answer.
- The question is clearly articulated in one sentence.

Better Formulations

How much does vocational training at the secondary school level reduce juvenile delinquency in the US, if at all?

4. How many customers does AT&T currently serve in Washington, DC?

Good Question

- The solution may be expressed numerically using a model designed to continuous outcome data, and questions.
- The question is clearly articulated in one sentence.

5. How can AT&T attract more customers?

Bad Question

- The solution cannot be expressed numerically.

- The question is too general. What is the target market (ex. personal, business, etc...)? What is the target geographical region? What tools are at the company's disposal? What is the marketing budget for this goal? Which division(s) of AT&T will use this data to work toward the goal?

Better Formulation

Which five marketing and customer care practices are most likely to help AT&T attract more mid-sized businesses as clients?

6. What factors lead people to choose AT&T over other service providers?

Bad Question

- The question is too general.

Better Formulation

What are the 10 leading indicators that a small business will choose AT&T over other service providers?

7. Why did the Challenger Shuttle explode?

Bad Question

- The question is too general.
- The solution/answer may be expressed non-numerically.

Better Formulation

What is the probability that mechanical and electrical factors contributed to the Challenger Shuttle's explosion, and to what extent?

8. Which genes are associated with increased risk of breast cancer?

Good Question

- The question is concise.
- The question is specific.
- The solution can be expressed numerically.

9. Is it better to read to children at night or in the morning?

Bad Question

- The questions is too general.
- What is the desired effect the reading should have? In other words, what is the measurement of "better ?" Is it better for teaching literacy? Is it better for improving reading comprehension, etc...?
- What is the target group, (ex. inner-city children living below the poverty line, children on the autism spectrum, talented and gifted kindergartners, or children at the intersection of all three categories)?

Better Question

Which is a more significant predictor of learning to read before age five, reading to children ages three to five at night, or reading to them in the morning?

10. How does Google's search algorithm work?

Bad Question

- The question is too general.
- A key term is undefined. What is meant by "work?" Does this mean function in general, or "work" in terms of addressing a specific target goal or question?

Better Formulation

Which mathematical formulae and predictive models does the Google search algorithm rely on most to sort, and use, natural language data?