

CAUSE AND EFFECT DIAGRAM

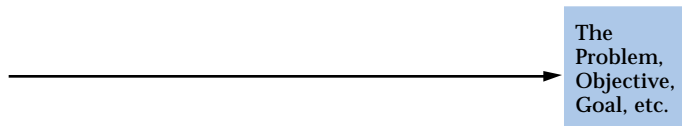
What it is:

Graphically illustrates the relationship between a given outcome and all the factors that influence this outcome. Sometimes called an Ishikawa or “fishbone” diagram, it helps show the relationship of the parts (and sub-parts) to the whole by:

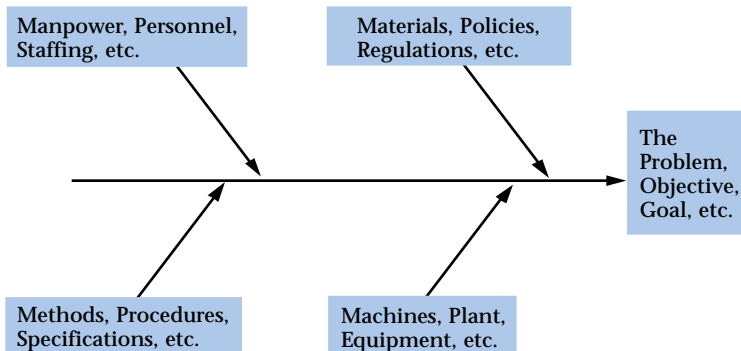
- Determining the factors that cause a positive or negative outcome (or effect)
- Focusing on a specific issue without resorting to complaints and irrelevant discussion
- Determining the root causes of a given effect
- Identifying areas where there is a lack of data

How to use it:

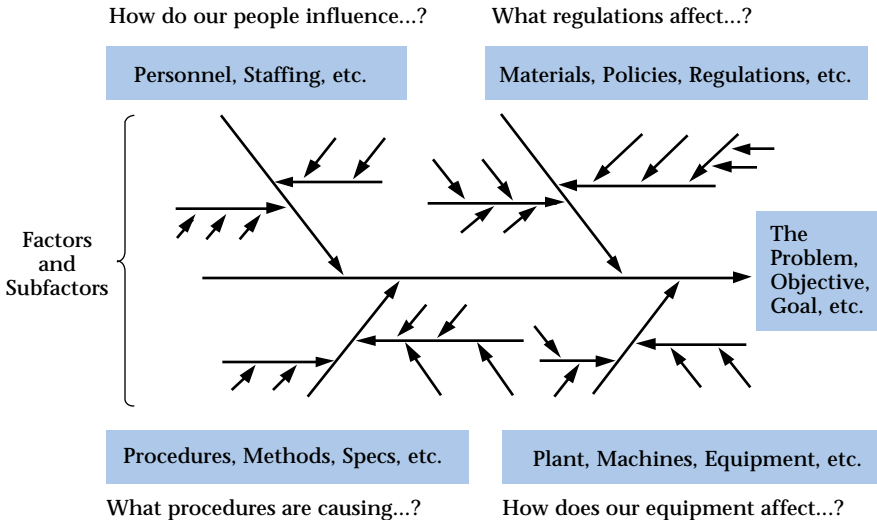
Specify the effect to be analyzed. The effect can be positive (objectives) or negative (problems). Place it in a box on the right side of the diagram.



List the major categories of the factors that influence the effect being studied. The “4 Ms” (methods, manpower, materials, machinery) or the “4 Ps” (policies, procedures, people, plant) are commonly used as a starting point.



Identify factors and subfactors. Use an idea-generating technique from Section 2 to identify the factors and subfactors within each major category. An easy way to begin is to use the major categories as a catalyst. For example, “What policies are causing . . . ?”



Identify significant factors. Look for factors that appear repeatedly and list them. Also, list those factors that have a significant effect, based on the data available.

Categorize and prioritize your list of causes. Keep in mind that the location of a cause in your diagram is *not* an indicator of its importance. A sub-factor may be the root cause to all of your problems. You may also decide to collect more data on a factor that had not been previously identified.

Helpful hint:

Consider using a positive effect (an objective, for example) instead of a negative effect (a problem, for example) as the effect to be discussed. Focusing on problems can produce “finger pointing,” while focusing on desired outcomes fosters pride and ownership over productive areas. The resulting positive atmosphere will enhance the group’s creativity.

Cause and Effect Diagram Example

The publication team for an engineering department wanted to improve the accuracy of their user documentation. As part of a first step, they created a cause and effect diagram to get a picture of what causes a document to be error-free. The diagram below illustrates what this particular team considered important at their first meeting.

