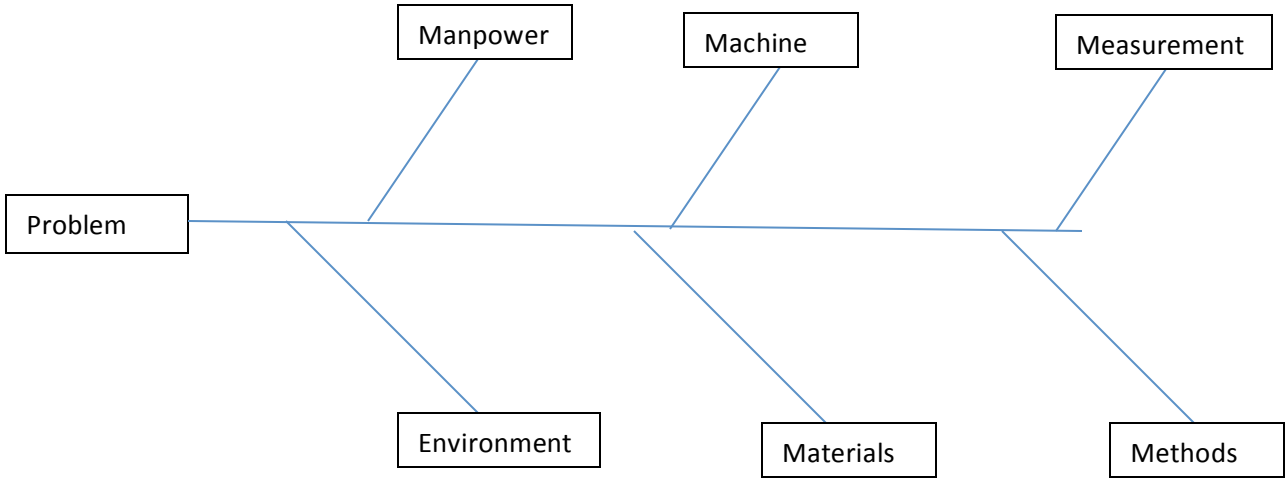
Building a Cause-and-Effect Diagram

The cause-and-effect diagram is also known as a "fishbone" diagram (you will see why in a little bit) or an "Ishikawa" diagram, after its creator. The tool can be used for a variety of purposes:

- Search for causes (beware of reasoning from effects to causes, a logical fallacy)
- Brainstorming to a specific central concept
- Planning
- Executing (as a checklist)
- Mindmapping
- Writing

The basic appearance for a traditional diagram is as follows:



Note the use of the 5Ms + 1 E. Other choices could include the "P" approach: people, policies, procedures, program, projects, planning. By no means are we restricted to using the same letter. Our goal is to jog the brain while covering the territory.

Educators might use the following list: administration, curriculum, classroom, teacher, student, extracurricular, family. For a product development launch process, we might look at the different phases of the launch as the major "bones."

Outlining can also be used to simulate the diagram, although we find people are generally less enthusiastic than they are when working an Ishikawa diagram on a white board. We need to be sure we can capture our work regardless of the tool we use.

We can add extra bones to each of the 6-8 major bones that we use in our diagram. These bones are generally the detail items that fall under each category. For example, we might have the following under machine:

- Maintenance (this one could be its own major bone)
- Age

- Calibration
- Training in use of
- Orderliness
- Applicability (we may be using the wrong tool for the wrong job)

Of course, the quality of the Ishikawa diagram is in direct proportion to the quality of the work we put into it. The diagram is a qualitative approach to what may be a quantitative challenge. As with most qualitative tools, the Ishikawa diagram is quick and effective so long as we remember its limitations:

- Quality of input
- Quantity of input
- Lack of quantitative values (although we can add these, see Ryuji Fukuda, *Cedac: A Tool for Continuous Systematic Improvement*, Productivity Press, 1996)
- Difficulty with finding good graphical tools (although mindmapping tools such as Xmind have this capability, see http://www.xmind.net/features/#fishbone)

We may not finish our task with an Ishikawa diagram, but we can certainly get off to a good start! We see no reason for *not* using the tool. You can decide if it is helpful in your organization. Do not be shy about tailoring the categories to your needs—just be sure they cover the particular situation in which you are involved.