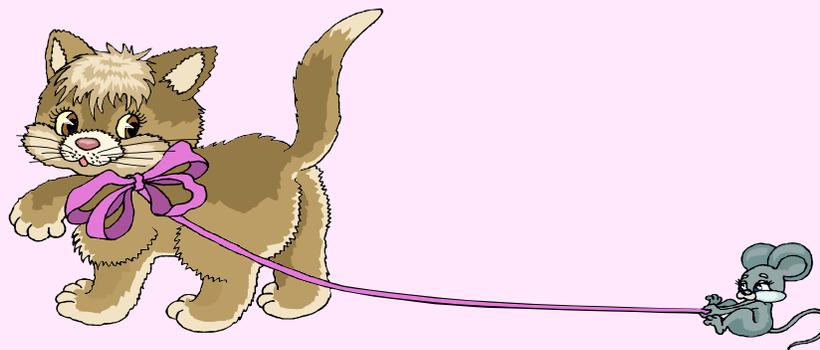


# Creativity, Innovation and Problem Solving

**Innovative thinking is the key to becoming a successful entrepreneur. Whether you actually invent a new product or process, or you use creativity to find a better way to market existing products or services, you will need to learn how to think like an inventor.**



**Creativity and Innovation consists of**

**SEEING** what everyone else has seen,

**THINKING** what no one else has thought, and

**DOING** what no one else has dared!"

## **START WITH THE CUSTOMER OR END USER**

The customer is always your first and most important creative challenge. Listen! Try to see the customer's problems and needs from his or her point of view. Restate the problem and the customer's needs in their terms until a consensus is reached. Ask not only what the problems are, but what special methods are presently used to solve them.

Work with the end user or customer. Use fictitious product descriptions to stimulate ideas and discussion. Remember that effective market research and sales strategy requires just as much creativity, enthusiasm and perfection as does product development.

## **IMPORTANCE OF ASKING THE RIGHT QUESTIONS**

The problem as first stated is rarely the true problem. Ask at least five times. Always restate the problem as many ways as you can; change the wording, take different viewpoints, try it in graphical form. Describe the problem to laymen and also to experts in different fields.

Don't try to learn all the details before deciding on a first approach. Make the second assault on a problem from a different direction. Transforming one problem into another or studying the inverse problem often offers new insights. If you don't understand a problem try explaining it to others and listening to yourself. Test the extremes. If you can't make it better, try making it worse and analyzing what happens. Visualize a new way to solve your problem.

"Why are we so much better at answering questions than at answering the right questions? Is it because we are trained at school and university to answer questions that others have asked? If so, should we be trained to ask questions?" [Or trained to ask the complete set of right questions in the right way?]  
Trevor Kletz (Analog Science Fiction, January 1994, p.195)

## **GETTING GOOD IDEAS FROM EVERYONE AND EVERYWHERE**

Asking once is rarely effective, you have to ask many times in many ways. Look at all possible sources of good ideas: **your customers, your competition, your peers, the literature, patents, and your own subconscious**. Give others some examples, this serves both to illustrate what you're talking about and encourages them to suggest improvements to your ideas.

Tell them also what [you believe] you don't want and which solutions [you believe] won't work. Remember that breakthrough innovations often come from the outside. Work with high performers in fields related to your own to identify and adopt their relevant methods, tools and "tricks of the trade". Trade ideas with all.

## **SEARCH FOR MULTIPLE SOLUTIONS**

"Nothing is more dangerous than an idea when it is the only one we have." The first solution found is usually inadequate or not the optimum. There is usually more than one acceptable solution. Suspend judgment and criticism when first collecting ideas. Studying multiple problems jointly often generates unique solutions. Look for solutions using combinations of ideas from different or evolving technologies. Even if you have one optimum solution it may be necessary to get patent coverage for all other effective solutions so as to protect your market.

## **BRAINSTORMING:**

In the initial phase of a brainstorming session participants are encouraged to suggest any idea that comes to their minds. During this initial phase it is a firm rule that none of the participants can criticize or react negatively to any of the ideas that are proposed. Although a given idea may not be new to some it will be new to others and provoke new ideas from the group as a whole. The point is to think of as many new ideas within the group as possible and provoke everyone to think creatively. Following sessions are used to critique the ideas; selecting, improving, modifying, and combining them to produce the final working solution. Encourage examination of the problem statement itself. Encourage ideas on improving the brainstorming process itself.

## **VALUE OF EXPERIMENTATION, PLAY, EXAGGERATION; PERSISTENCE:**

Get your hands dirty. Spend some time trying things you "know won't work" or "don't know how they will work". If you don't fail frequently you aren't trying hard enough and may be missing a lot of good opportunities. Try Tom Peter's algorithm: "READY, FIRE, AIM." Persist, persist, persist.

As Edison said "invention is 1% inspiration and 99% perspiration [persistipation?]". Be very stubborn about solving a problem, but be flexible about the definition of the true problem and be very flexible and open minded about the form of the solution.

## **PATENT AND PROJECT NOTEBOOKS**

Patent notebooks are used to provide legal protection for inventions, but can have many other useful, complementary functions: a recorder, a reminder, a source of ideas, a means of ensuring project continuity, and a way to communicate with yourself and within a project group.

Clarity and conformance to legal standards is critical. Other things that should be recorded: sources, **questions**, what doesn't work, things to try. A one page summary sheet of the important procedures and checkpoints should be included inside the front cover of every patent notebook issued.

## **INNOVATIVE COST REDUCTION**

Remember that the real objective is higher profits. Raising the selling price by adding value or retargeting the market can be an alternative or supplement to cutting costs.

## **EFFECTIVE USE OF NOTES:**

Try file cards with text and graphics (diagrams, flow charts, block diagrams, elementary circuits). Keep them simple and easy to change (use pencil or wipe-off transparencies for overlay). Scramble the cards, lay them out together in different arrangements. Mark ideas and questions in a way that makes them obvious to a reader and searchable by a computer.

**Richard Feynman, also a Nobel Laureate physicist, believed in getting his hands dirty and doing lots of experiments, saying "To develop working ideas efficiently, I try to fail as fast as I can".**