Be Creative in New Product Development

Creativity - cognitive process concerned with the development of an idea, commodity, concept, or discovery that is novel to the creator.

**Creative**
- **UNIQUE**
- **INSIGHTFUL**
- **CLEVER**
- **ILLOGICAL**
- **DIFFERENT**

**Think Outside the Box!!**
- Lack of creativity that exists in most individuals is a result of the judgmental biases.
- Many companies today offer courses in creativity to their employees.

**Creativity Exercise I**

Without lifting your pencil from the pages, draw four and only four straight lines that connect all nine dots.

**Unsuccessful Attempts**

1. 
   - You used your logical decision making skills on the perceived problem. You did not think outside the box.
   - You unsuccessfully defined the scope of the problem and prevented yourself from finding the solution.
   - Individuals make false assumptions about problems in order to fit the problems into their previous experience (i.e. this previously established decision making process).
Thinking Outside the Boundaries
- You may have assumed that you needed to stay within the boundaries.
- Solution, break the barrier/boundary around the peripheral.

Creativity
- View creativity as an assumption - breaking process
- You will need to make assumptions to get answers - assumptions limit creativity
- As we just demonstrated, assumptions can lead you to believe there is no solution

Psychological Basis of Creativity Limiting Solutions
The Framing of Problems: how are problems posed? Individuals tend to be risk adverse to positively framed problems and risk seeking to negatively posed problems. Sometimes you can make implicit false assumptions that the frame in which the problem is presented is the only perspective of the problem. How do you pitch the problem? Framing is used against you all the time - e.g. A home alarm sales person doesn’t ask you “How can you make your home safe?” but rather “Are your spouse and children worth 2000 bucks?”

Anchoring and adjustment - Your strategy is to make an adjustment to the problem so it looks like a similar problem that you solved once before. This could be very powerful, but also it could inhibit creativity. May lead to shortcuts that inhibit a full search for alternatives. The anchor keeps you from considering alternatives outside your boundaries.

Representative - When evaluating alternatives, we tend to select alternatives that are similar to successful decisions in similar past problems. This usually works, but creativity usually goes beyond these boundaries.

Psychological Basis of Creativity Limiting Solutions
Availability - Assessing an event by a degree to which similar occurrences already exist in your memory. Individuals tend to revert to things vivid in their memory.

Escalation - Creative thinking requires that we remain open to divergent ideas. Example - If you first dig a hole in the wrong place, what other holes would be appropriate to dig (creative). Escalation theory states that if we first dig a hole in the wrong place, and obtain negative results, we are more likely to non-rationally continue to dig in order to justify the initial decision to dig that hole.

The non-rational tendency to escalate commitment to a previously selected course of action leads us to make implicit assumptions about the rationality of our initial strategy, thereby reducing our creativity.

Cultural and Environmental Blocks - Many times, how we solve problems arise from the culture and environment that surround us. We make assumptions about problem solving based on the organization, cultural and society that surround our behavior.

Assumptions at Various Stage of Decision Making Process in New Product Design
- Definition of Product: At this stage, false assumptions can prevent you from finding a solution, or the right one
- Alternatives: Where do you look for alternatives? The creative solution often lies in identifying an alternative that most people would have excluded. Remember, assumption limit alternatives.
- Criteria Identification: What criteria are relevant to alternatives? What assumptions do we make in criteria identification? Are certain issues weighted more importantly than others?

Creativity Exercise II
Steel pipe embedded in a concrete floor. The inside diameter of the pipe is 1 mm larger than the diameter of a ping pong ball, resting at the bottom of the pipe. All you have is:
- 100 ft. clothes line
- hammer
- chisel
- box of Wheaties
- tile
- a wire coat hanger
- a monkey wrench
- a light bulb

How do you get the ball out of the tube without damaging the ball, pipe or floor?

Solutions to Ping Pong Ball Problem

Conventional

1. File hanger into two, flattening the resulting ends with a hammer to make a pair of tweezers.
2. Smash handle of hammer and try and use wood splinters to retrieve the ball.

A Taboo Solution

Urinate in the pipe and this will subsequently float the ball to the surface.

Why is this such a difficult solution to develop?

Because our society has a taboo against solutions such as these.

Strategies for Breaking Blocks to Creativity

Problem Definition: Obtain broad perspective of the problem through a wider search for information, clarifying the problem that needs to be solved, analyze resources that you have to address the problem, identifying missing resources, gathering additional resources and assessing assumptions that are being made about the problem.

Move beyond Ready-Aim-Fire

"The formulation of a problem is often more essential than its solution, which may be merely a matter of mathematical and experimental skill. To raise new questions, new possibilities, to regard old questions from a new angle, requires creative imagination."

A creativity exercise III

Given

A
B
C
D

Goal

You are given 4 separate pieces of chain that are each 3 links in length. It costs $100 to open a link and $150 to close a link. All links are closed at the beginning of the problem. Your goal is to join all 12 links of chain into a single circle. Your total budget for forming the single circle is $750.

Solutions - Too Much - Too Much

Step 1. Open link of A $100
Step 2. Add B (close) (A+B) $150
Step 3. Open A + B $100
Step 4. Add C (close) (A+B+C) $150
Step 5. Open (A+B+C) $100
Step 6. Add D (close) (A+B+C+D) $150
**Solutions - Too Much - Too Much**

**Step 7.**
Open (A+B+C+D) $100

**Step 8.**
Connect $150

**TOTAL $1000**

---

**Successful Solution**

Break the assumption that when you open a link, you are limited to inserting only one link into the opening

**Step 1:**
Open all links in A $300

**Step 2:**
Use A to combine B+C $150

**Step 3:**
Use A to combine to D $150

**Step 4:**
Use final link to combine chain $150

**TOTAL $750**

---

**Why? Made Assumption that Eliminated Solution**

- How did I overlook the solution to this simple problem, many bright people do.
- Because your assumption eliminated the solution.
- Frequently, we miss the optimal solution to a problem not because we chose an alternative over an optimal choice, but because we never considered the optimal choice as feasible.

---

**Final Thoughts on Creativity**

1. Creativity is key for many new product concepts.
2. View the problem broadly and see interdisciplinary opinions to facilitate creativity and cross-fertilization.
3. Think outside the boundaries.
4. Be careful of your assumptions, you have to make them, but don’t let your assumptions eliminate potential solutions.
5. Stay alert to situations where assumptions are likely.