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Standardization and Organization of Student's learning Necessities enhancement Through Quality Function Deployment (QFD)

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EDUCATION – A SYSTEM TO IMPART KNOWLEDGE

Education is a system of imparting "knowledge" to the individual/group, that comes into existence due to some individual(s)experiences and past researches. Before mitigating to the aspects of education firstly we have to understand the term "Knowledge." Knowledge is a term having the familiarity with something, which can include facts, information, descriptions, or skills acquired through experience or education. It can refer to the theoretical or practical understanding of a subject. It can be implicit (as with practical skill or expertise) or explicit (as with the theoretical understanding of a subject); and it can be more or less formal or systematic [1].

An old proverb explains knowledge as "Wisdom." But knowledge as every common one understands is the capacity of mind to remember the things. The person who remembers the things more is more knowledge-full, isn't it? But is exactly the knowledge the same as we concern about it? What if remembered things are not demonstrated/utilized when needed? In such situations, it is total failure of the person and also the failure of the system of imparting knowledge, i.e., education.

Now evidently it becomes extremely important to reinforce/reconstruct the system of knowledge which duly emphasizes on learning. And now the question arises what are the things that encompass the knowledge with learning. Basically, knowledge is the modus operandi of some of the following aspects,

1. Understanding/utilization of things efficiently
2. Experiences
3. Education/Research

Although education is not the necessary aspect for grasping knowledge, but it is still vital from the view that one can be judiciously nourished if the systematic process approach is followed. To develop a system of knowledge as desired, one of the major obstructions while catering to the students' learning requirements is that, as our

traditional education culture not encompasses the gamut of holistic development. "*Traditional education focuses on teaching, not learning. It incorrectly assumes that for every ounce of teaching there is an ounce of learning by those who are taught. A child learns such fundamental things as how to walk, talk, eat, and dress, and so on without being taught these things. Adults learn most of what they use at work or at leisure while at work or leisure. Most of what is taught in classroom settings is forgotten and much of what is remembered is irrelevant*" [2]. It is imperative to grasp the knowledge from learning as Patrick White in his novel *The Solid Mandala* commented that "*I don't know...I forget what I was taught. I only remember what I've learnt."* Furthermore, Oscar Wilde argues that "*Education is an admirable thing, but it is well to remember from time to time that nothing that is worth learning can be taught."* Knowledge thus should be recognized as some such experiences which are remembered and utilized efficiently when needed. Therefore, emphasis is made to develop such schemes that cater to the mental power of utilization and remembrance.

Journey toward Excellence through Success

Success is the measure of a person's capabilities to do things efficiently or the degree of perfection. And often success is a result of learning through failures and experiences as supported by Malcolm Forbes, "*Failure is success if we learn from it*." Therefore, success is paradigm of both learning and mistakes as given below:

Success = Learning – Mistakes

It is prime responsibility to teach students "how to learn." Meanwhile one should also help students to get rid of usual common mistakes. Figure1 below demonstrates the ideology of failure, success and excellence.

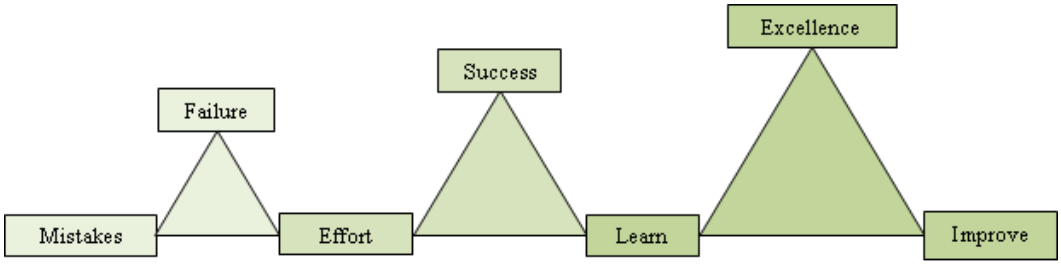

Fig. 1: *Journey from Failure to Excellence through Success.*

Figure 1 clearly depicts the fact that

1. Efforts + Mistakes = Failure
2. Learning + Efforts = Success
3. Learning + Improvement = Excellence

Therefore, eliminating the mistakes from the efforts, and applying the efforts with learning, and continuous improvement in learning are the key elements for achieving excellence. Figure1 clearly indicates how small changes in existing culture are intended to develop a new and better culture.

Developing Knowledge @ Learning

As learning proliferates from the ability to grasp the knowledge @ desires, people are always vital from prospect that they led and facilitate the development processes. Meaning of learning differs from person to person as the learning imperatives are the result of individual's perspectives. Rudyard Kipling in his famous rhyme says, "I keep six honest serving men, they taught me all I know- their names are *what* and *why* and *where* and *when* and *how* and *who*." His learning is the result of his ability to understand things through sets of questionnaires. Albert Einstein acknowledges abilities as the paradigm of hard working as he quotes, "*Genius is 1%talent and 99% percent hard work...."*Therefore, learning ability is compilation of training, hard work, and understanding.

One of the essential requirements is to properly nourish the learners in order to grant society-friendly development. Supported by Albert **Einstein**, "*Never regard study as a duty but as an enviable opportunity to learn to know the liberating influence of beauty in the realm of the spirit for your own personal joy and to the profit of the community to which your later works belong."* And knowledge should be intensified by developing ability of innovative thoughts as Abraham Maslow asserts, *"If the only tool you have is a hammer, you tend to see every problem as a nail."* Thus, only the open-minded approach facilitates the inventiveness and learning through understanding the process. Similarly, teaching should be broad focused as claimed by **Clay P. Bedford, "***You can teach a student a lesson for a day; but if you can teach him to learn by creating curiosity, he will continue the learning process as long as he lives.*" Supported by a famous **Chinese proverb, "***Tell me and I'll forget; show me and I may remember; involve me and I'll understand.*"

Therefore, learning ability is very important and presently a model to enhance learning is shown in Figure 2. The three main elements of learning are given as:

1. Explore
2. Grasp
3. Innovate

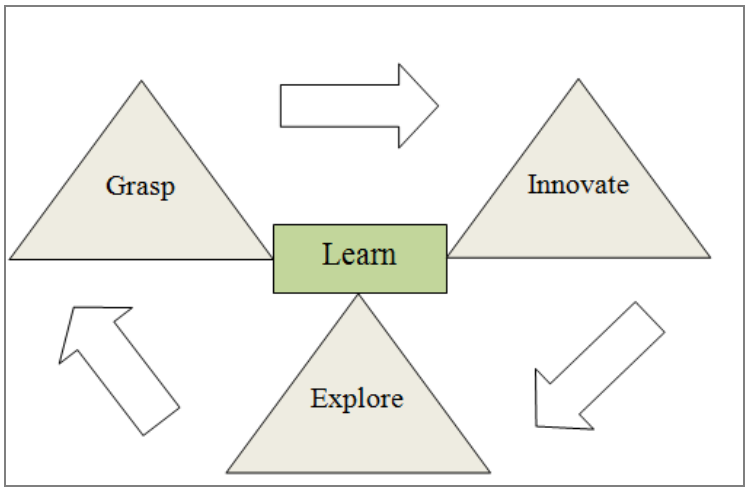

Fig. 2: *Three Vital Key Elements of Learning.*

First step towards learning is to explore the things and then grasp the knowledge allied with them, and then use knowledge as a base to innovate/develop new things/knowledge. Figure2 shows a cyclic workapproachin order to enhance learning abilities of individual(s). When a systematic process is allied in such a cyclic manner, then the motto should be to develop the following attributes amongst the learners:

1. Problem solving
2. Soft skill
3. Critical thinking
4. Ethical

Leading this way,the above four attributes can greatly impact on the socio-friendly development. When every individual is educated through such a learning process, the end result would be optimum. Therefore, it is very important to facilitate the learning scheme throughout education as only and only the learning @ utilization is key factor regarding future development.

Deploying Functionalities of Quality Attribute

Quality function deployment (QFD) is the tool used to fulfill the demanding customer's requirements up to their satisfaction. QFD is a structured method, developed by Akao (1990) "…*to transform user demands into design quality, to deploy the functions forming quality, and to deploy methods for achieving the design quality into subsystems and component parts, and*

ultimately to specific elements of the manufacturing process" [3].QFD works on the basic House of Quality (HOQ) for determining the customers' needs and transforms these needs into the process voice as shown in Figure 3.

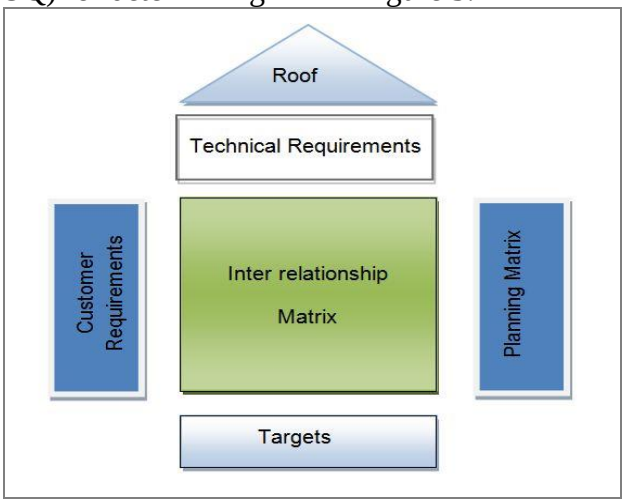

Fig. 3: *The Constructs of House of Quality.*

In the extreme left of the house, customers' requirement are placed, duly collected by surveying customers, and converted from stated voice to technical requirements. The second step is to evaluate one's own performance with that of competitors which helps compare how well this organization met the voice of customers as compared to that of her competitors. This matrix for peer comparison is on the extreme right. This comparison is done by giving a ranking "between" 1 to 5 to different organizations for their processes of fulfilling customer requirements. That helps in understanding organizations' provision well. The third matrix to be filled in is the top box below the roof. The bigger square – called interrelationship matrix is used to show the interaction between the customer's requirements and the technical requirements. It collates what's (left) and how's (right). In the roof of the house relation between various technical requirements are enumerated as strong relation, negative relation and no relation. The "target" component indicates the extreme limit to which an organization tries to fulfill the customers' needs.

Enhancing Learning Competencies through QFD

Derived elements of learning as problem solving, ethical, soft skills and critical thinking are taken as the basis input (VOC), to QFD and the outputs as shown in Table 1.

Table 1: *Listing various Customer Requirements and Process Voice.*

S. No.	Voice of customer	Voice of process
1	Problem solving	Innovation
2	Soft skill	Use of New Technology
3	Critical thinking	Brainstorming
4	Ethical	Cultural Renovation

The technical requirements commensurate to fulfill the holistic customer's needs and significant importance learning exerts on the developmentare:

1. **Innovation:** Innovation ensures two things better, i.e., development and updatedknowledge. It is,therefore,important imperatives for the sound and competitive education practices. Innovation is the creation of better or more effective products, processes, services, technologies, or ideas that are accepted by markets, governments, and society [4]. Therefore, innovation certainly acts as a problem-solving tool.

2. **New Technology:**The word *technology* comes from Greek *τεχνο-λογία (technologία)*; from *τέχνη (téchnē)*, meaning "art, skill, craft," and *-λογία (-logía)*, meaning "study of-"[5]. Technology is always vital to assist any individual for socio-techno-eco-friendly development. And the use of technology enhances the soft-skills of the individual.
3. **Brainstorming:** Brainstorming is a more effective method for generating ideas, as Osborn claimed that two principles contribute to "ideative efficacy." these are "*Defer judgment*" and "*Reach for quantity*" [6]. Brainstorming is actually the working in the group to generate new ideas with the principle as "1 + 1 = 3," i.e., combining of two ideas to generate a new idea. Thus, brainstorming helps to develop critical thinking amongst learners.
4. **Cultural Renovation:** Culture (Latin: *cultura*, lit. "Cultivation") is the term used for the pattern of human knowledge, belief, and behavior that depends upon the capacity for symbolic thought and social learning[7]. Thus, to cult the society with ethics everyone is liable and renovation in the culture towards pacifism plays an important role.

CONCLUSIONS

Every individual needs provocation about the righteous path to be followed. Thus, teacher's prime responsibility is to intentionally design the favorable path. When learning incompliance with education is used to grow the students, then the results would always be better. Learning abilities should always be groomed as:

1. Problem solving @ innovation
2. Soft skills @ technology
3. Critical thinking @ brainstorming
4. Ethical @ cultural renovation

Therefore, every individual should always be harnessed with quality (system, thinking, and approach), so that they lead the development with quality processes as quality in the product is the quality in the use.

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