

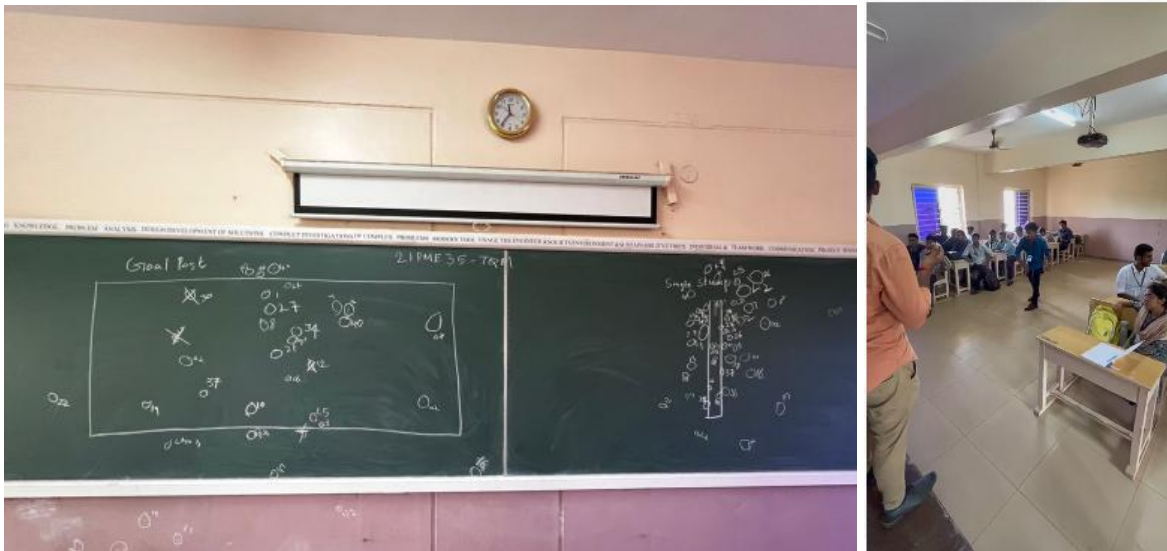
Velammal College of Engineering and Technology, Madurai
Department of Mechanical Engineering
Innovative Teaching Methodology

Name of the course: Total Quality Management

Topic: Taguchi's Quality Loss function

Course Incharge: Dr. G. Manikandan

Innovative Method: Goal post vs Single stump Game



Total Quality management is to achieve total quality through every body's participation. To illustrate this concept learners were asked to throw some **targets** in the drawn **goal post** and **single stump** on the black board. Pursuit of quality means excellence, and it demands **every body's participation towards a single target** (or at least with minimum deviation). This game highlights the need for this single minded approach.

After this game a learner understands the fact that only by **changing the culture and mindset that hitting the single target is essential to achieve success**. All Learners participate and contribute to the final achievement. If everybody working towards a **common goal** (quality) it is indeed possible to achieve (or at least with minimum deviation), Learner will able to perceive clearly the **Taguchi's Quality loss function** (deviation from target is a loss to society)

Velammal College of Engineering and Technology, Madurai
Department of Mechanical Engineering
Innovative Teaching Methodology

Name of the course: Design Concepts in Engineering

Topic: Identification of Customer Needs, Design Thinking

Course Incharge: Dr. M. Vivek Prabhu

Innovative Method: Case Study- IDEO Shopping Cart



This pedagogy integrates **case-based learning** with design thinking principles to promote experiential engagement and critical problem-solving. The IDEO shopping cart case is a celebrated example of rapid innovation under constraints and **user-centered design**.

Through this case, students are introduced to **real-world design methodology**, dissecting how IDEO tackled a complex problem in just five days. They explore the principles of ethnographic research, idea convergence, prototyping, and iterative testing. The case highlights how even simple products like a shopping cart can undergo radical improvement when innovation is intentional and collaborative.

The IDEO shopping cart case offered a **rich, contextual anchor** for teaching design thinking in action. It not only encouraged students to think beyond form and function but also illustrated how **collaborative ideation, time-boxed creativity, and user empathy** lead to real innovation. This exercise bridged academic learning with industrial relevance, fostering the mind-set of "**fail fast, learn faster**" among future engineers.

Velammal College of Engineering and Technology, Madurai
Department of Mechanical Engineering
Innovative Teaching Methodology

Name of the course: Kinematics and Dynamics of Machines

Topic: Quick return Mechanism

Course Incharge: Dr. V. Anbumalar

Innovative Method: Model Demonstrate for Quick Return Mechanism



A **quick return mechanism** converts circular motion into **reciprocating motion** in presses and **shaping machines**, which are utilized to shape stocks of metal into flat surfaces. This mechanism is mostly used in shaping machines, slotting machines and in rotary internal combustion engines. The word quick return indicates that the returning stroke is faster than the forward stroke which help the tool to retrieve back faster after doing a particular job. Quick-return mechanisms feature different input durations for their **working and return strokes**. The time ratio of a Quick Return mechanism is the ratio of the change in input displacement during the working stroke to its change during the return stroke.

At the end of this session, the learner will be able to: Define Quick return Mechanism; Application of Quick return Mechanism in various machine tool & Calculate the speed during forward stroke and return Stroke.