# **📘 Super Teacher – How It Works**

*(Langflow-Based Adaptive Physics Coach for 10th Standard)*

## **🧠 Overview**

**Super Teacher** is a Langflow-powered adaptive AI tutor designed to teach **10th Standard Science (Physics)** from the **Maharashtra State Board (English Medium)**. It uses Bloom's taxonomy, friendly tone, emojis, step-by-step learning, and curiosity-sparking questions to guide students toward mastery.

## **🧩 Step-by-Step Learning Process**

### **1️⃣ Student Fills "Super Teacher Request Form"**

The learning journey starts when a student submits the form containing:

| **Field** | **Example** |
| --- | --- |
| **Standard** | 10 |
| **Subject** | Science & Technology Part 1 |
| **Chapter** | Refraction of Light |
| **Topic** | Laws of Refraction |
| **Learning Objective** | Step-by-step explanation |
| **Prerequisite Knowledge** | Reflection |

✅ The form generates a custom prompt that is sent to the **Langflow backend**, which stores learning variables into {memory}.

### **2️⃣ Langflow Sends a Curiosity-Based Question**

The system **detects the topic** and sends back **one yes/no curiosity-sparking question**.  
 🛑 No explanation is included at this step.

**Example:**

*“Ever noticed how a straw looks bent inside a glass of water? 🤔”*

✅ The frontend displays **two buttons**:

* ✅ Yes
* ❌ No

### **3️⃣ Student Clicks "Yes" or "No"**

#### **✅ If "Yes":**

* Langflow explains the topic using:  
  + Simple language
  + Real-life examples
  + Visual analogies and emojis
  + Types, variations, or sub-concepts if needed
  + Any basic formulas (if relevant)

✅ After explanation, 4 options are shown:

1. "Do you understand?"
2. "Want to take a quiz?"
3. "Explain like a 5-year-old"
4. "Use different approach"

#### **❌ If "No":**

Langflow responds warmly:

*“No worries! 😊”* *“Do you want to ask anything else?”*

✅ Then it waits for the next question or topic from the student.

## **🔁 Learning Options Flow**

### **✅ 1. "Do you understand?"**

* After an explanation, only **this one button** is shown.

#### **✔️ If the student clicks "Yes":**

Langflow responds:

*“Awesome! You're getting it really well! 🌟”* *“Would you like to ask another question?”*

🛑 No "No" button is shown at this step.

### **✅ 2. "Want to take a quiz?"**

Starts a **strict 5-question multiple-choice quiz**.

#### **🔸 Format:**

* One question at a time
* Each question has 4 options: (A), (B), (C), (D)
* Answers are not repeated or reused

#### **🔸 Quiz Logic:**

* **Correct** → Positive feedback
* **Incorrect** → Friendly correction + correct answer
* 5 unique questions in total

#### **🔸 After Quiz Ends:**

* Show score out of 5
* Review correct answers
* Encourage the student
* Offer 2 options:  
  1. "I want to ask another question"
  2. "Retake the test"

### **✅ 3. "Explain like a 5-year-old"**

Simplifies the explanation drastically using:

* Playful tone
* Emoji-rich format
* Everyday analogies
* Extremely simple language (for beginners or kids)

#### **🔸 After This Explanation, Two Options Are Shown:**

1. "Did you understand?"
2. "Explain with another example"

#### **➤ If user clicks "Explain with another example":**

* Langflow presents a **new analogy or example** of the same concept

*“Imagine a bouncy ball hitting a wall and bouncing back — that’s reflection! 🟠🪞”*

✅ Then two more buttons appear:

* "Did you understand?" → leads to Yes/No buttons

#### **➤ "Did you understand?" → Yes / No Flow:**

* ✅ **Yes**:  
    
    
   *“Yay! You're doing amazing! 🧠✨”* *“Want to ask another question?”*
* ❌ **No**:  
    
    
   *“That’s okay — your teacher will explain it in class. You can always ask me again later! 💬”* *“Want to ask another question?”*

### **✅ 4. "Use different approach" → Socratic Bloom's Mastery Flow**

Triggers a 6-question sequence based on **Bloom’s Taxonomy**:

| **Bloom’s Level** | **Goal** |
| --- | --- |
| Remember | Recall facts |
| Understand | Explain in own words |
| Apply | Use in real-life scenario |
| Analyze | Break down and reason |
| Evaluate | Compare, justify choices |
| Create | Imagine new application |

#### **🔸 For Each Question:**

* Tracks:  
  + Answer quality
  + Response time
  + Bloom level scores

## **🎯 Bloom’s Mastery Scoring System**

| **Response Type** | **Score (%)** |
| --- | --- |
| Perfect answer | 100 |
| Mostly correct | 80 |
| Vague / partial | 60 |
| Incomplete | 40 |
| Hesitant (e.g., “maybe…”) | 20 |
| Off-topic or no idea | 0 |

* Tracks time per question
* Bloom level scores are averaged
* Final mastery score = average of all 6 levels

### **🎉 After Bloom’s Loop Ends:**

#### **✅ If Overall Score ≥ 80%:**

* Langflow celebrates:  
    
    
   *“Amazing work! You've mastered this topic! 🎯🌟”*
* Shows:  
  + Score breakdown by level
  + Time per question
  + Recap of key facts and examples
* Offers:  
  + "Want to take a quiz?"
  + "Ask another question"

#### **❌ If Score < 80%:**

* Langflow highlights weak areas:  
    
    
   *“Let’s focus on these thinking levels: [e.g., Analyze, Create] 💡”*
* Asks 1–2 follow-up questions for each weak level
* Loop continues until **≥ 80%** is achieved

🛑 Student **cannot switch topic or take a quiz** until they reach 80% Bloom’s mastery.

## **🔐 Core System Rules**

* Only the tutor (AI) speaks — no system code or memory is ever exposed
* Every interaction:  
  + Starts with a curiosity hook
  + Ends with learner choice
  + Encourages mistakes and praises effort
* No skipping mastery levels
* All responses are simple, fun, and emoji-rich
* All logic is managed through Langflow

## **🧠 Internal Memory Format (Hidden from User)**

plaintext

Copy code

topic: current learning topic

stage: curiosity, explanation, quiz, Socratic, etc.

quiz\_attempts: 0

quiz\_score: 0

socratic\_count: 0

bloom\_levels:

Remember: 0

Understand: 0

Apply: 0

Analyze: 0

Evaluate: 0

Create: 0

learning\_style: default or adapted

socratic\_complete: false

time\_per\_question: []

performance\_score: 0

## **📦 Backend & UI Integration**

* The request form creates the structured prompt
* Frontend sends the prompt to Langflow
* Langflow handles all state management and outputs
* UI handles:  
  + Button responses
  + Displaying text and emoji replies
  + Quiz controls
  + Score and recap presentation

## **✅ Flow Recap (Quick Summary)**

| **Step** | **Action** |
| --- | --- |
| 1. Student submits form | Generates Langflow prompt |
| 2. Langflow sends curiosity question | Yes/No → No = Ask another Q; Yes = Start explanation |
| 3. Explanation ends with 4 buttons | Understand / Quiz / 5YO / Different Approach |
| 4. Bloom Mastery | 6 Qs → Score → Pass or Repeat |
| 5. Quiz | 5 Qs → Score → Retry or Ask New Q |