

EDUCATIONAL TOY DESIGN BRIEF

Senior Secondary Students (Classes 11–12, India)

Designer: Senior Toy & Product Designer | 20+ Years Experience | Metro India

1. CORE PROBLEM (REAL & IMMEDIATE)

What is actually broken?

- Students memorize → forget after exams
- Abstract concepts (Physics, Maths, Chemistry) are *invisible*
- Same concept, different textbooks → confusion across boards
- Coaching-centred learning, low conceptual ownership

Ground Reality:

CBSE, ICSE, State Boards may differ in *order* and *examples*, but the **core concepts are identical**.

2. DESIGN GOAL (NON-NEGOTIABLE)

Build **ONE standardized educational toy** that works across **ALL Indian boards** by teaching **concepts, not chapters**.

3. SOLUTION OVERVIEW

Product Name: CONCEPT GRID™

Category: Physical–Cognitive Learning System

Age Group: 16–18 years (Senior Secondary)

Subjects: Physics | Chemistry | Mathematics (Core)

4. STANDARDIZATION STRATEGY (KEY DESIGN MOVE)

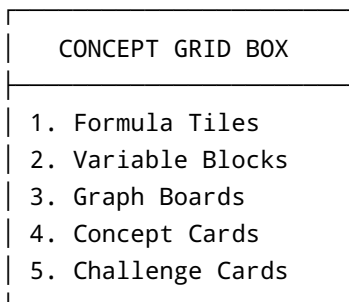
What we align to:

- NCERT *learning outcomes* (not textbook content)
- Universal laws, formulas, relationships

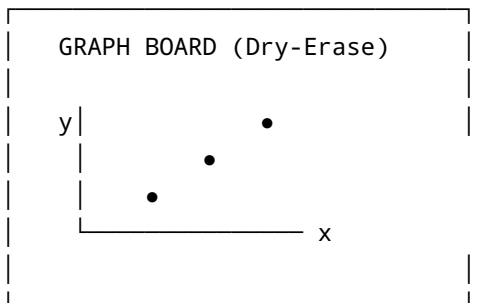
What we avoid:

- Board-specific numericals
- Exam pattern dependency
- Language-heavy explanations

5. PRODUCT COMPONENTS (AT A GLANCE)

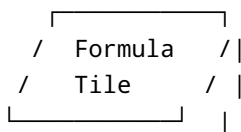


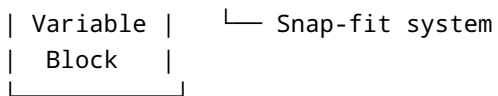
6. 2D CONCEPT ITERATION (TOP VIEW)



Below the board → Snap-in Formula Tiles

7. 3D CONCEPT ITERATION (PERSPECTIVE)





Material: ABS plastic + magnetic core

Feel: Serious, tool-like (not toyish)

8. HOW LEARNING HAPPENS (FLOW)

CONCEPT CARD



BUILD PHYSICAL MODEL



MAP FORMULA → VARIABLES



PLOT / VISUALIZE



SOLVE APPLICATION CHALLENGE

No memorization → only construction & logic

9. SUBJECT APPLICATION EXAMPLES

Physics

- Build equations: $F = ma$
- Visualize motion using slope blocks

Chemistry

- Atom blocks → bonding tiles
- Energy change sliders (exo / endo)

Mathematics

- Function tiles → graph board
- Limits & calculus as *movement*, not symbols

10. WHY THIS WORKS ACROSS BOARDS

- ✓ Same laws everywhere
- ✓ Same formulas everywhere
- ✓ Same misconceptions everywhere

Only textbooks change — concepts don't.

11. DEVELOPMENT-READY NOTES

- Modular (subjects sold separately)
 - Scalable for competitive exam editions (JEE/NEET)
 - Compatible with low-tech classrooms
 - Optional QR-based digital layer (future phase)
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12. FINAL DESIGN STATEMENT

CONCEPT GRID™ turns abstract senior secondary learning into something students can **see, touch, rearrange, and understand** — independent of board, state, or medium.

This is not a toy to play with.

This is a tool to think with.

(End of Design Brief)