

# Future-Focused Project Based Learning

## Deep Learning Pedagogy

Nine optimal conditions for mastering curriculum content and Design Thinking skills

### MOTIVATION

Tap into students' passions and let them work on problems that they want to solve

Deep motivation (d = .69) Task value (d = .46)  
 Student effort (d = .77) Persistence and engagement (d = .56)

### COLLABORATION

Organise students to work together in small groups of mixed abilities and interests

Cooperative learning (d = .53-.55) Small group learning (d = .49)  
 Peer tutoring/reciprocal teaching (d = .55-.74) Group discussion (d = .82)  
 Seeking help from peers (d = .83) Not labelling students (d = .61)  
 Ability grouping (d = .12)

### CONSOLIDATION

Plan for students to use previously learned skills and knowledge to solve problems

Student self-efficacy (d = .92) Prior achievement (d = .55)  
 Deliberate practice (d = .79) Mastery learning (d = .58)

### EXPLANATION

Clearly explain to students what they need to know and show them what they need to do

Direct/explicit instruction (d = .60) Teacher clarity (d = .75)  
 Problem-solving teaching (d = .61)

### EVALUATION

All learners (teacher and students) routinely assess themselves and others on what they have done well and how they can do better

Evaluation and reflection (d = .75) Self-reported grades (d = 1.33)  
 Setting standards for self-judgement (d = .62) Meta-cognitive strategies (d = .69)  
 Teacher estimates of student achievement (d = 1.62)  
 Formative evaluation (d = .48-.90) Micro teaching (d = .88)  
 Feedback (d = .70)

# THE DEEP NINE

### EXPECTATION

Challenge students beyond their current level of mastery and affirm that maximum effort will lead to improvement

Teacher expectation (d = .43) Setting challenging goals (d = .59)  
 Student effort (d = .77)

### DIFFERENTIATION

Start where students are at in their levels of thinking and assist them to move to higher levels

Piagetian programs (d = 1.28) Acceleration (d = .68)

### MEMORIZATION

Assist students to commit the design process and problem solving strategies to memory

Scaffolding (d = .82) Rehearsal and memorization (d = .73)  
 Mnemonics (d = .76)

### EXEMPLIFICATION

Show students how the experts do it

Scaffolding (d = .82) Worked examples (.57)