Effective Teaching Strategies for Mathematics

High Impact Approaches at Each Phase of Learning

Surface Learning		Deep Learning		Transfer Learning	
Strategy	E.S.	Strategy	E.S.	Strategy	E.S.
Manipulatives	0.50	Questioning	0.48	Peer Tutoring	0.55
Direct Instruction	0.59	Multiple Representations	0.50	Cooperative Learning	0.59
Note-taking	0.59	Concept Mapping	0.60	Problem solving teaching	0.61
Summarizing	0.63	Study Skills	0.63	Metacognitive strategies	0.69
Number Talks	0.64	Self-Questioning	0.64	Formal discussions (debate)	0.82
Leverage prior knowledge	0.65	Reciprocal Teaching	0.74	Transforming conceptual knowledge	0.85
Vocabulary Instruction	0.67	Class Discussion	0.82	Organizing conceptual knowledge	0.85
Spaced Practice	0.71	Organizing and transforming notes	0.85	Identifying similarities and differences	1.32

Student-teacher relationships 0.72
Teacher clarity 0.75
Feedback 0.75
Teacher credibility 0.90
Assessment-capable learners 1.44
Collective teacher efficacy 1.57
Teacher estimates (expectations) of student learning 1.62

From "Visible Learning for Mathematics" by Hattie, Fischer & Frey.