Everyone Coaching Physics

EEF CPD review

Ian Horsewell
ian.horsewell@iop.org

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EEF Report Introduction

- Report and materials from EEF.
- Approx 100 papers met criteria.
- Including more of the **14 mechanisms** made it more likely the CPD was considered effective.
- A range of subjects, countries (mainly USA) and focused on CPD led by setting.

POLL

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Mechanisms grouped by IGTP Model

Purpose	Mechanism
Instil insight (I)	0.1 Manage cognitive load
	0.2 Revisit prior learning
Motivate goals (G)	1.1 Goal setting
	9.1 Credible source
	10.4 Praise/reinforce
Teach techniques (T)	4.1 Instruction
	3.2 Practical social support
	6.1 Modelling
	2.2, 2.7 Feedback
	8.1 Rehearsal
Embed practice (P)	7.1 Prompts/cues
	1.4 Action planning
	2.3, 2.4 Self-monitoring
	8.3 Context-specific repetition

Note. Numbers (e.g. 2.3) refer to the codes used in Michie et al. (2013). Mechanisms 0.1 and 0.2 are additions to the Michie taxonomy for this project. Some mechanism labels have been adapted from Michie et al. (2013)'s—for example, we have adopted 'Modelling' for 'Demonstration' and 'Context-specific repetition' for 'Habit formation'.

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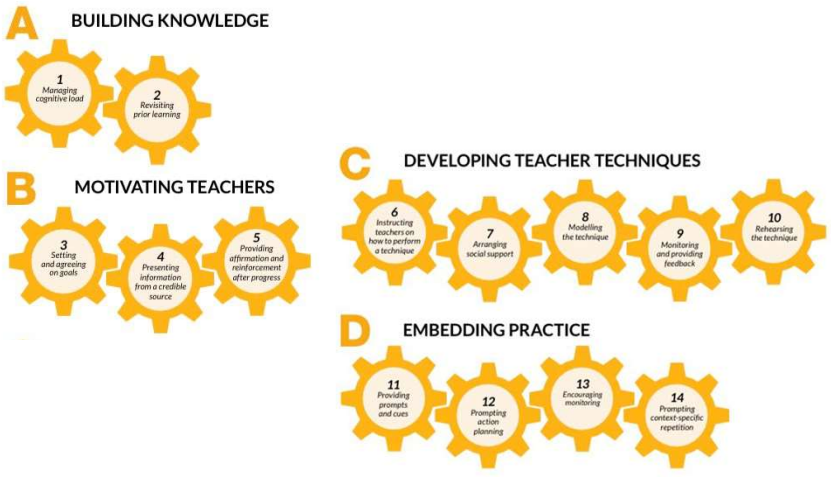
Insight and Motivation



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Failure Modes defined by IGTP model

Table 1: Theorising how PD might be ineffective, using the IGTP model

(Instil) Insight	(Motivate) Goals	(Develop) Techniques	(Embed) Practice	Consequences
✓	✓	✓		Revert to old habits
✓	✓			Knowing-doing gap
✓				No implementation
	✓	✓	✓	Misapplication
✓	✓	✓	✓	May work

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Three common forms

Table 5: Defining 'forms' of PD in terms of their mechanisms

	I mechanisms	G mechanisms	T mechanisms	P mechanisms
Lesson study			Practical social support, Feedback	Action planning
Teacher learning communities		Goal setting	Practical social support	Action planning
Instructional coaching		Goal setting	Instruction, Modelling, Feedback, Rehearsal	Context specific repetition

Note. I = insights, G = goal-directed behaviours, T = techniques, and P = practice.

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Limitations

Table 6: Characteristics of the studies included in the statistical meta-analysis

	Characteristics	Count	Proportion
Study characteristics	Location		
	USA	*73*	*70.2%*
	UK	25	24.0%
	Other	6	5.8%
	Age group		
	Early years/Pre-kindergarten	29	27.9%
	Primary/Elementary	52	50.0%
	Middle/Secondary/High	28	26.9%
	Subject targeted		
	Literacy/first language	52	50.0%
	Maths	30	28.9%
	Science	12	11.5%
	Other subjects	6	5.8%
	Cross-curricular	17	16.4%
	Test type		
	High-stakes standardised	29	27.9%
	Low-stakes standardised	75	72.1%
	Targeted at early-career teachers	3	2.9%

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Science-specific Recommendations

Preconceptions: Build on the ideas that pupils bring to lessons	10
Self-regulation: Help pupils direct their own learning	14
Modelling: Use models to support understanding	18
Memory: Support pupils to retain and retrieve knowledge	24
Practical Work: Use practical work purposefully and as part of a learning sequence	28
Language of Science: Develop scientific vocabulary and support pupils to read and write about science	32
Feedback: Use structured feedback to move on pupils' thinking	38

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Some physics-specific approaches

- Consider and build on preconceptions (diagnostic questions eg BEST)
- Explicit teaching of how different models can be used for particular purposes
- Practical activities, including demonstrations, which provide a context for abstract ideas
- Using language and maths to clarify rather than avoid physical concepts

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Mechanisms grouped by IGTP Model

Purpose	Mechanism
Instil insight (I)	0.1 Manage cognitive load 0.2 Revisit prior learning Audit tools
Motivate goals (G)	1.1 Goal setting 9.1 Credible source ITT/EEF/IOP/ASE/etc 10.4 Praise/reinforce
Teach techniques (T) Eg Domains	4.1 Instruction 3.2 Practical social support In setting, online 6.1 Modelling 2.2, 2.7 Feedback 8.1 Rehearsal Needs time
Embed practice (P)	7.1 Prompts/cues 1.4 Action planning 2.3, 2.4 Self-monitoring Tools for review 8.3 Context-specific repetition

Note. Numbers (e.g. 2.3) refer to the codes used in Michie et al. (2013). Mechanisms 0.1 and 0.2 are additions to the Michie taxonomy for this project. Some mechanism labels have been adapted from Michie et al. (2013)'s—for example, we have adopted 'Modelling' for 'Demonstration' and 'Context-specific repetition' for 'Habit formation'.

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