

Teacher Professional Development in Assessment for Learning on student outcomes

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Why Assessment for Learning?

- Positive effects are found on student achievement.
- However, teachers find it difficult.
- Teacher professional development can offer a solution.

RQ: Impact of teacher professional development on student outcomes ?

Black & Wiliam, 1998
Kingston & Nash, 2015
Heitink et al, 2016

This presentation

- Theoretical framework
- Methods
- First results
- Planned publications
- Questions and suggestions for improvement



Theoretical framework

AfL and teacher professional development

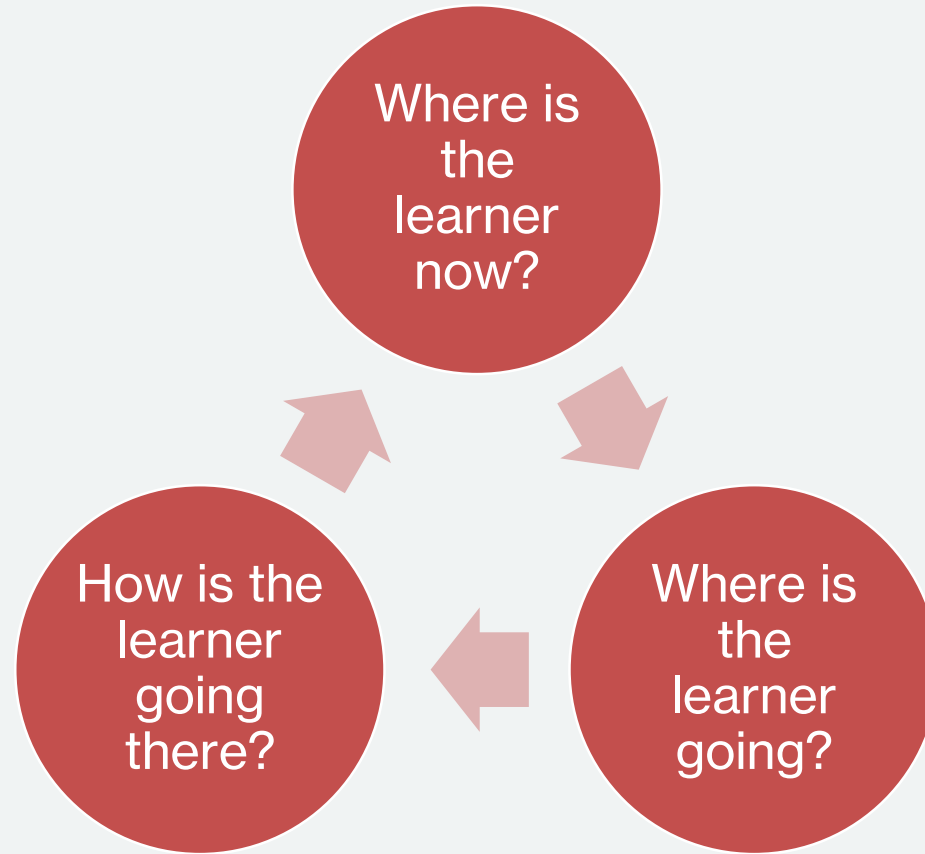


Assessment for Learning

- “...assessment to the extent that evidence about student achievement is elicited, interpreted, and used by teachers, learners, or their peers, to make decisions about the next steps in instruction that are likely to be better, or better founded, than the decisions they would have taken in the absence of the evidence that was elicited.”

(William & Leahy, 2015, p. 8).

Assessment for Learning



Assessment for Learning (AfL)

	Where is the learner going?	Where is the learner now?	How is the learner going there?
Teacher	1. Clarifying, sharing, and understanding learning intentions	2. Engineering effective discussions, tasks, and activities that elicit evidence of learning	3. Providing feedback that moves learners forward
Peer		4. Activating students as learning resources for one another.	
Learner		5. Activating students as owners of their own learning process.	

Student achievement can be increased

- Why?
- Better-informed decisions by both teacher and students.
- But also through improvement of **metacognition** of students.

Black & Wiliam, 1998

Nicol & MacFarlane-Dick, 2006

Heritage, 2010

Metacognition: what is it?

- **A:** “An active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and constrained by their goals and the contextual features in the environment.”

Self-regulated learning

Self-regulated learning

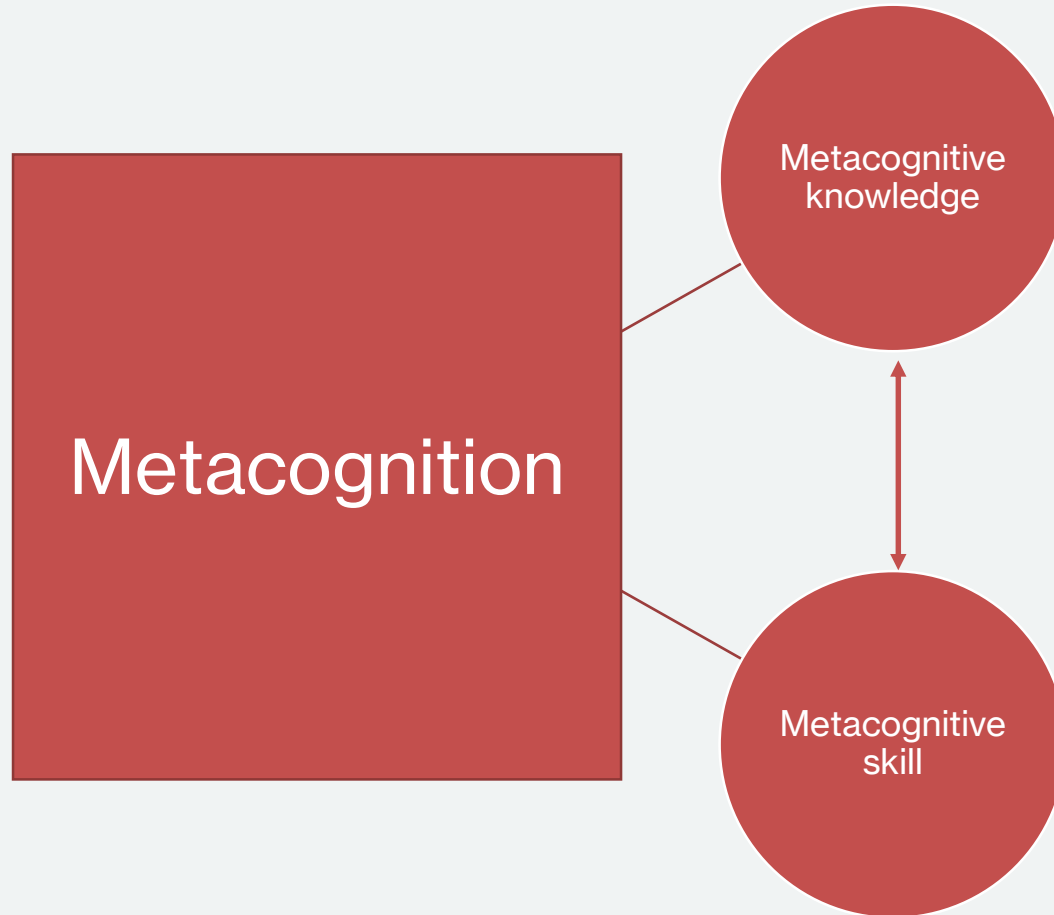
...knowing how to manage one’s own learning activities.”

C: “Individuals' ability to understand and manipulate their own cognitive processes.”

Metacognition

- **D:** “thinking about thinking”.

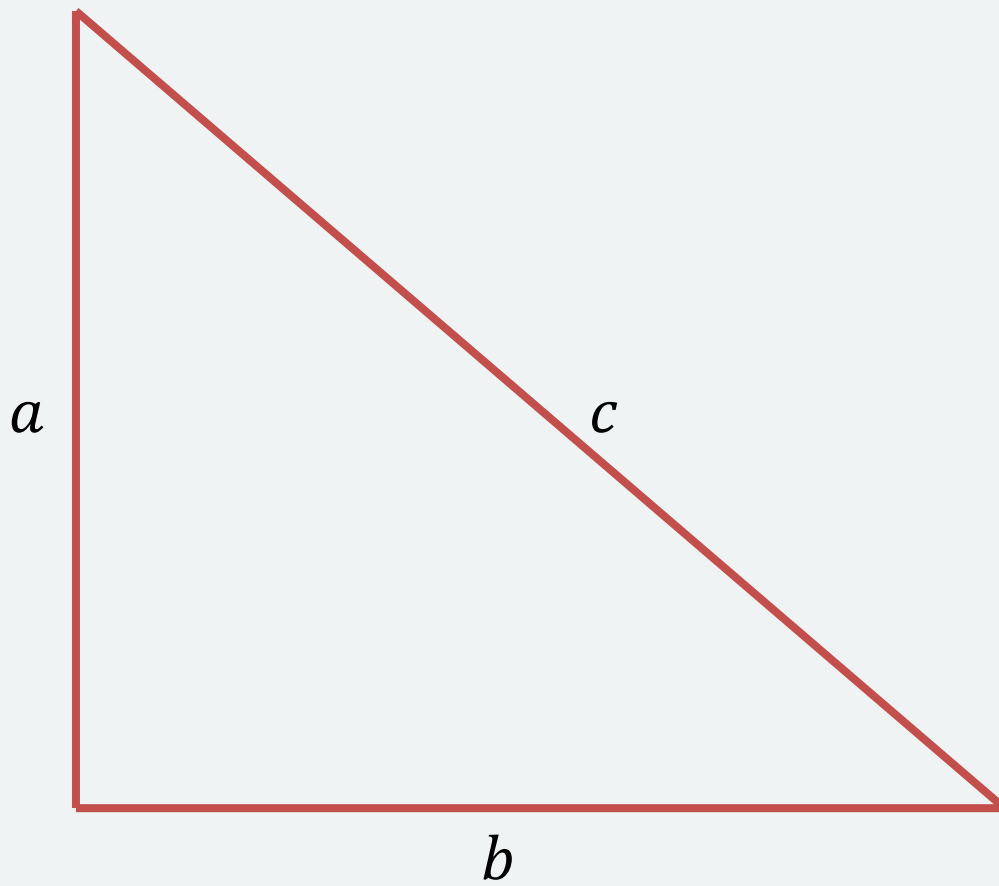
Metacognition



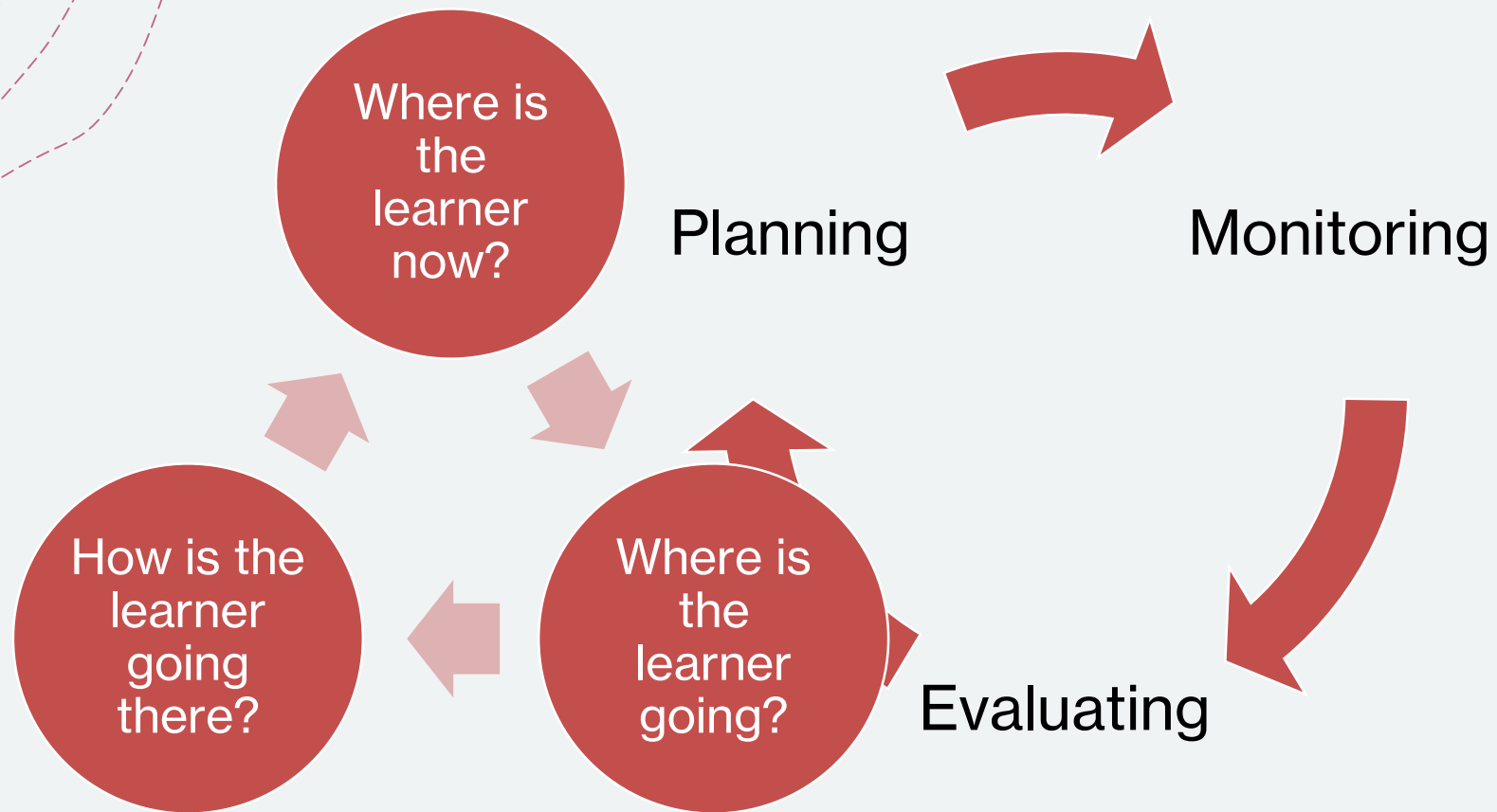
- Declarative knowledge
- Procedural knowledge

- Planning (predicting)
- Monitoring
- Evaluating

For example...



$$a^2 + b^2 = c^2$$



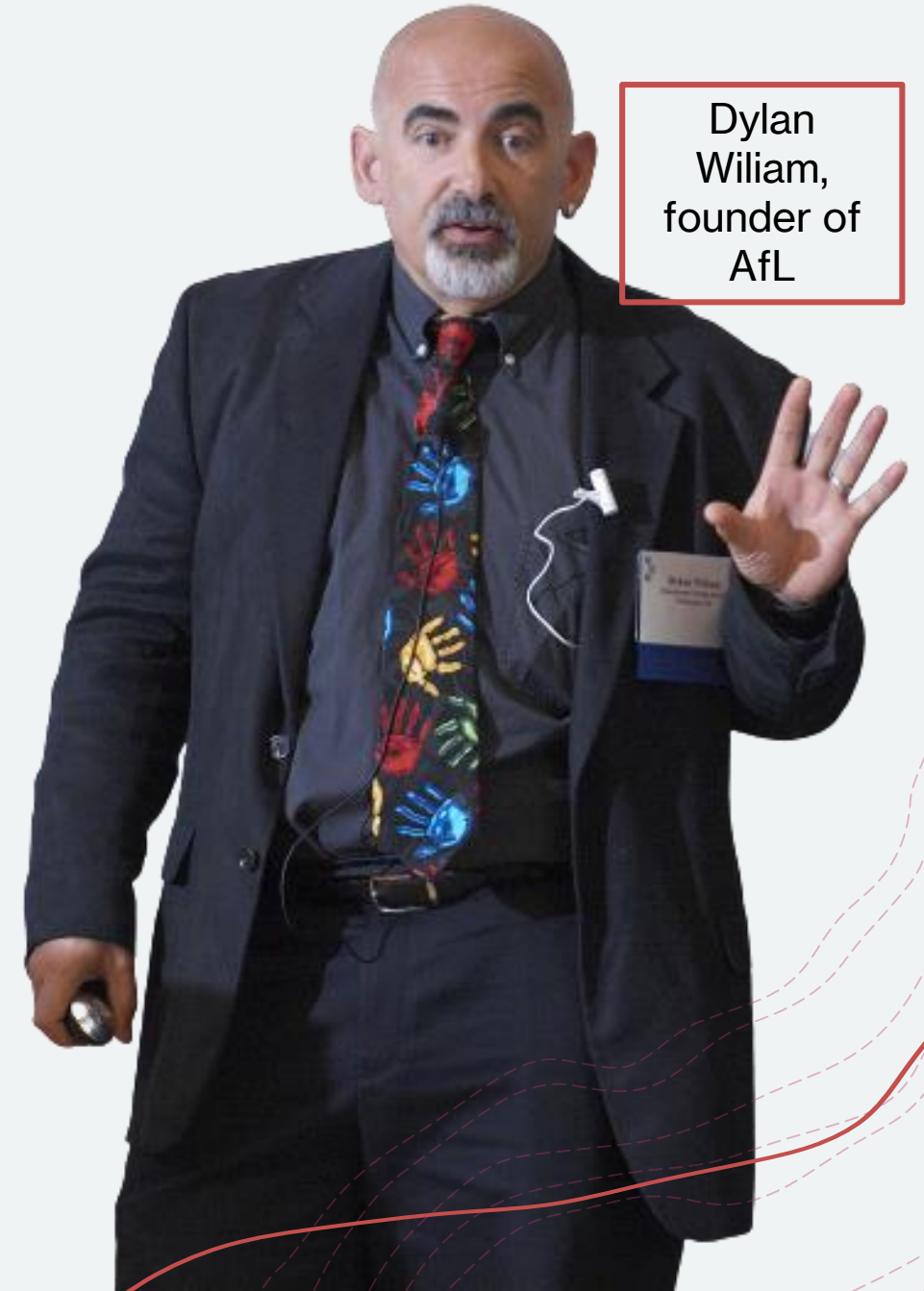
Heritage, 2010
Nicol, 2019
Boud, 2000

Dylan
William,
founder of
AfL

AfL is difficult!

Teacher professional development might support teachers in developing AfL in their own classroom practice.

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Assumptions of Dynamic Model

1. Integrating teacher skills
2. Adjusting to professional needs
3. Explaining mechanisms behind teacher skills
4. Establishing action plans
5. Supporting teachers
6. Continuously monitoring and adapting
7. Investigating added value

Research questions

Student achievement

- “What is the effect of a TPD programme in AfL on student achievement?”

Students’ metacognition













- “What is the effect of a TPD programme in AfL on students’ metacognition?”



Methods



FORMAS: participants

	Experimental	Control
Grade 7	 49  9	 141  10
Grade 8	 74  61	 28  24
Grade 9	 97  81	 10  15

FORMAS: Instruments

Mathematics test

- Four tests, including 13 – 30 items
- Validated prior this study (N = 480 students)

Metacognitive mathematics test

- Four tests, including 38 items
- Planning, predicting and evaluating
- Validated prior to this study (N = 480 students)

FORMAS: Instruments

Sample question of mathematics test

Solve the equation.

a) $2x + 3 = 15$

b) $6a - (3a - 1) = -2$

c) $x + \frac{2x}{3} = 2$

Sample question of metacognitive mathematics test

Question: A bike is sold at 15% discount. What is the current price if the initial price was 150,-?

1 = I am sure that I have solved the exercise correctly.

2 = I think that I have solved the exercise correctly.

3 = I think that I haven't solved the exercise correctly.

4 = I am sure that I haven't solved the exercise correctly.

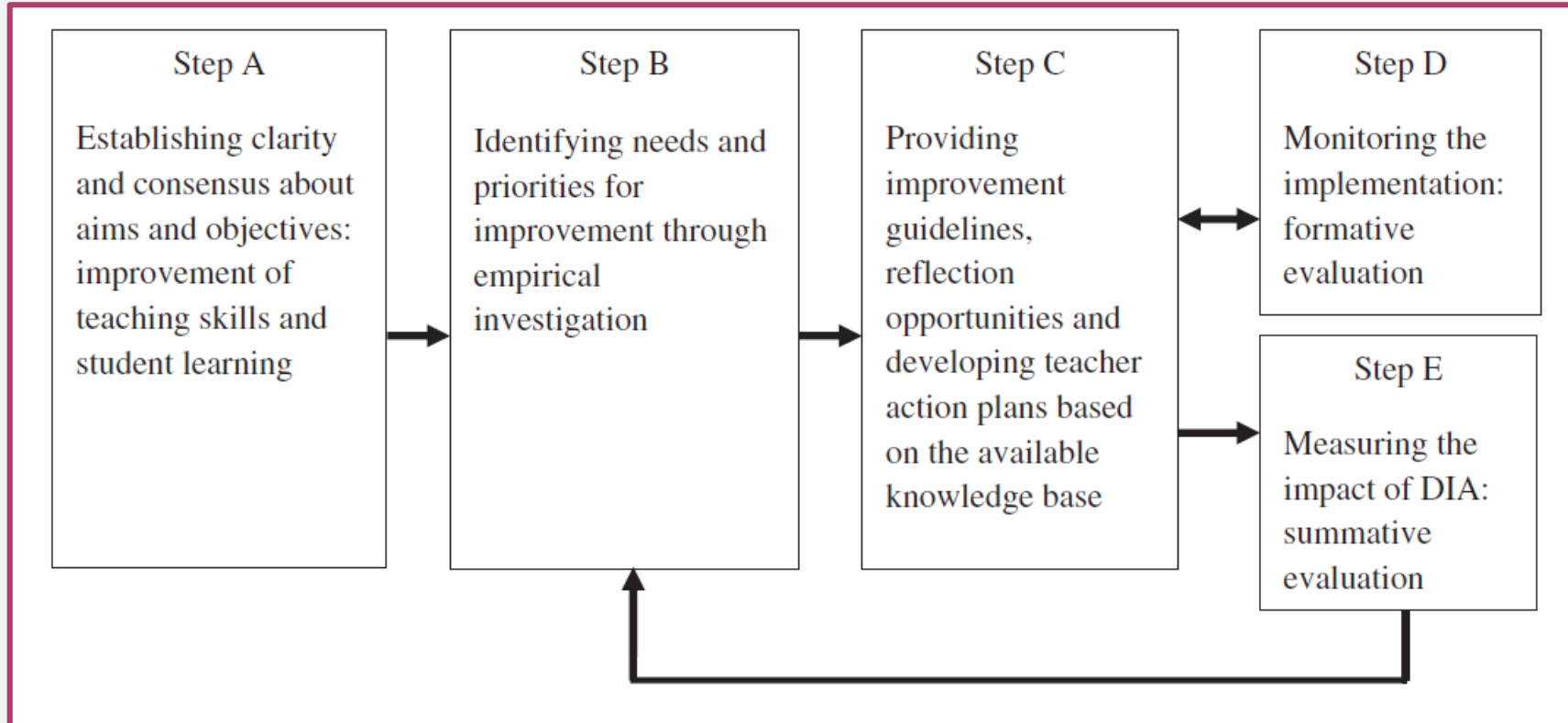


FORMAS TPD programme

FORMAS: TPD content

	Session 2	Session 3	Session 4	Session 5
GROUP A	Creating a culture that can foster formative assessment	Designing representative and valid assessments	Developing different types of assessment items to achieve quality in assessment	Assessing homework for formative purposes
GROUP B	Providing constructive feedback to students	Using different types of assessment techniques in an efficient and systematic way	Formulating assessment success criteria and involving students in the process of assessment	Using rubrics/checklists to record results from different assessment techniques
GROUP C	Recording results in ways that enable us to identify the needs of each student	Using assessment to assess individual/group work	Differentiation in assessment: facing the challenges	Differentiation in assessment: implications for using self-assessment and recording/reporting results

FORMAS: TPD procedure



FORMAS: TPD activities

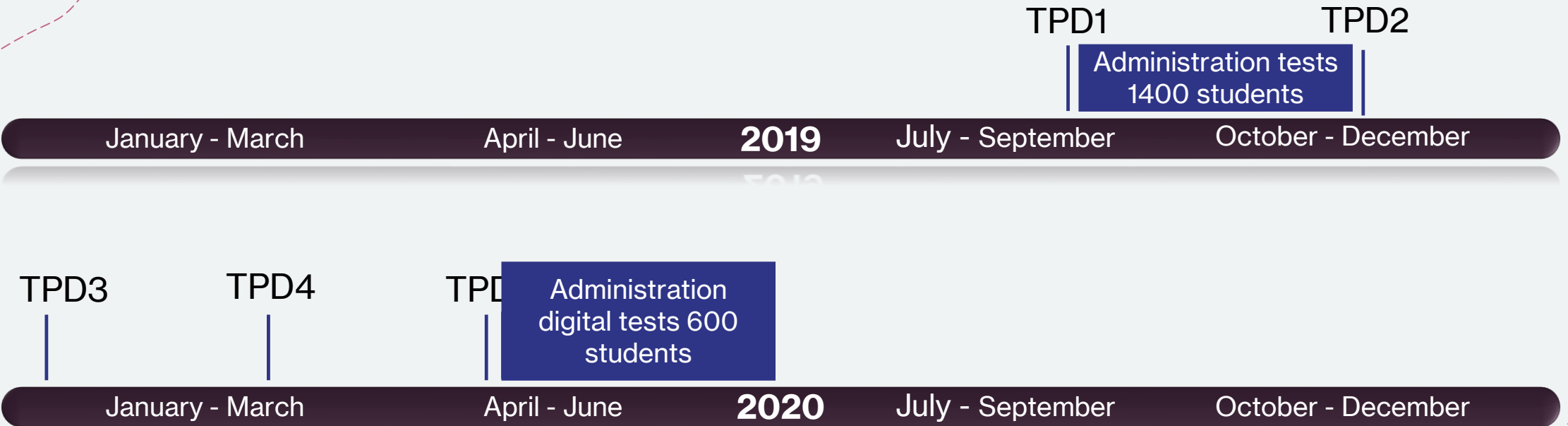
During TPD sessions

- Reflection on previous strategy
- Concept of a new strategy
- Demonstration of a new strategy
- Preparation of new lesson in which new strategy to be included.

Between TPD sessions

- Finishing lesson preparation
- Feedback moment
- Lesson execution

FORMAS: TPD timeline





First results!

Spoiler: it has an effect!



FORMAS: Preliminary results

RQ1: The Impact of an Assessment for Learning Teacher Professional Development Programme on Student Learning

- Measured with mathematics tests (pre- and post).
- Positive effect on student achievement ($p < .05$).

RQ2: The Impact of an Assessment for Learning Teacher Professional Development Programme on Students' Metacognition

- Measured with mathematics metacognitive tests (pre- and post).
- Positive effect on planning ($p < .05$), predicting ($p < .10$), evaluating ($p < .05$).

Questions?

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