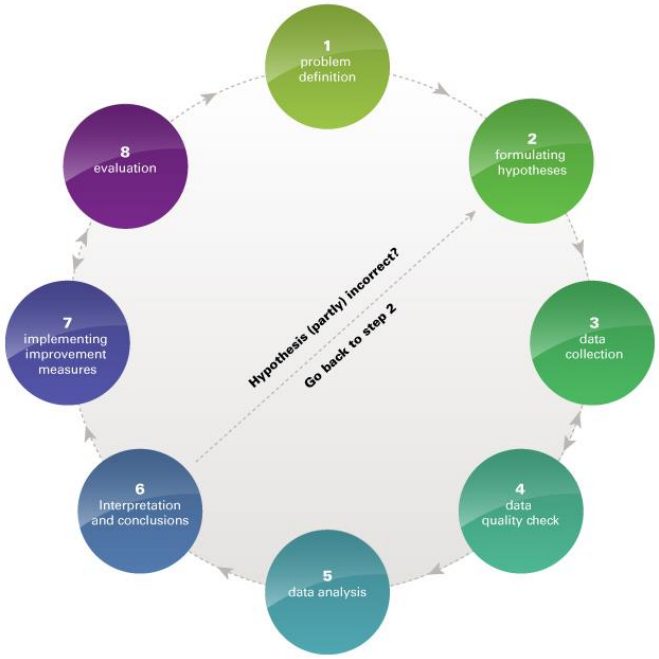
dateteams

# SCHOOL IMPROVEMENT EFFECTS OF A DATA USE INTERVENTION FOR TEACHERS

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# DATA USE AND SCHOOL IMPROVEMENT EFFECTS

Teachers can use data to determine students' learning needs

- Data: *information that is systematically collected and organized to represent some aspect of schools*[1], ranging from assessment data to student questionnaire and interview data

⇨ adapt their instruction (and/or parts of the curriculum) accordingly

⇨ school improvement in terms of student learning

# INTERVENTIONS AND EFFECTS

However:

- Data not (always) used effectively
- Teachers need PD=> data use interventions
- Are these interventions successful in helping teachers to improve student learning?
- Research[2]: little systematic research into effects, especially at student achievement-level and mixed results

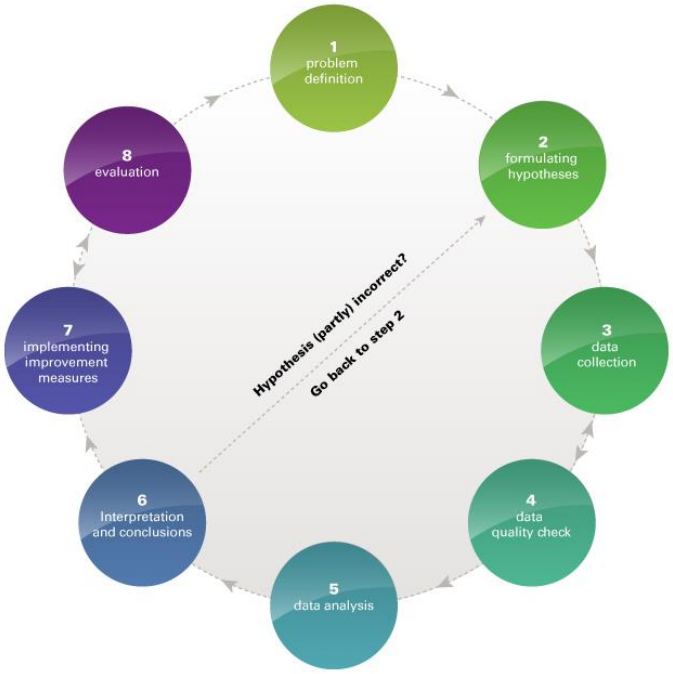
# RESEARCH AIM

- We developed 'the data team® procedure' with two goals
  - PD for teachers in data use
  - Help teachers solve educational problem at their school
- Previous research[3]: effects regarding teacher learning and application of learning
- **This study: effects regarding student achievement?**

# DATA TEAM® PROCEDURE (1)

- Data team: 4-6 teachers and 1-2 school leaders
- Systematic 8-step procedure, with guidance from external facilitator and guidelines
  - Meetings every 3-4 weeks, support for 2 years
- Eight steps: problem definition – evaluation

# Datateam® procedure (2)




- Educational problems, e.g.: grade repetition, low student achievement
- Step 1: Problem definition, concrete and measurable
- Step 2: Formulating hypotheses
- Step 3: Data collection
- Step 4: Data quality check
- Step 5: Data analysis
- Step 6: Interpretation and conclusions
- Step 7: Implementing improvement measures
- Step 8: Evaluation

# Effects framework

4. **Student achievement** → School improvement

**3.** *Applied*: Use of improved knowledge & skills

**2.** *Learnt*: Learning results knowledge, skills and attitudes

**1.** *Liked*: Satisfaction about the intervention

**Teacher professionalization**

(Guskey, 1998; 2000; Kirkpatrick, 1996; Desimone, 2009)

# PREVIOUS RESEARCH(1)

Level 1 - Satisfaction

- Questionnaire:
  - (very) satisfied about support facilitator and guidelines
  - moderately satisfied about completing steps; process and progress
- Interviews: '*good*'; '*fun*'

Level 2 – Knowledge, skills and attitudes

- Test and survey: Knowledge and skills increased significantly
- Interviews: '*learnt how to use calculations in Excel*'; what + how of qualitative analysis; '*you really need evidence*'

# PREVIOUS RESEARCH (2)

Level 3 – Use of learning

Mixed results of survey and interviews, e.g:

- Data use for accountability: increase score data team members not significant; however significantly fewer ‘I don’t know’ post-test
- Examples Data use for instruction, e.g. comparing and discussing exam results and prepare students better for particular exam questions (explanation and practice)

# RESEARCH QUESTION

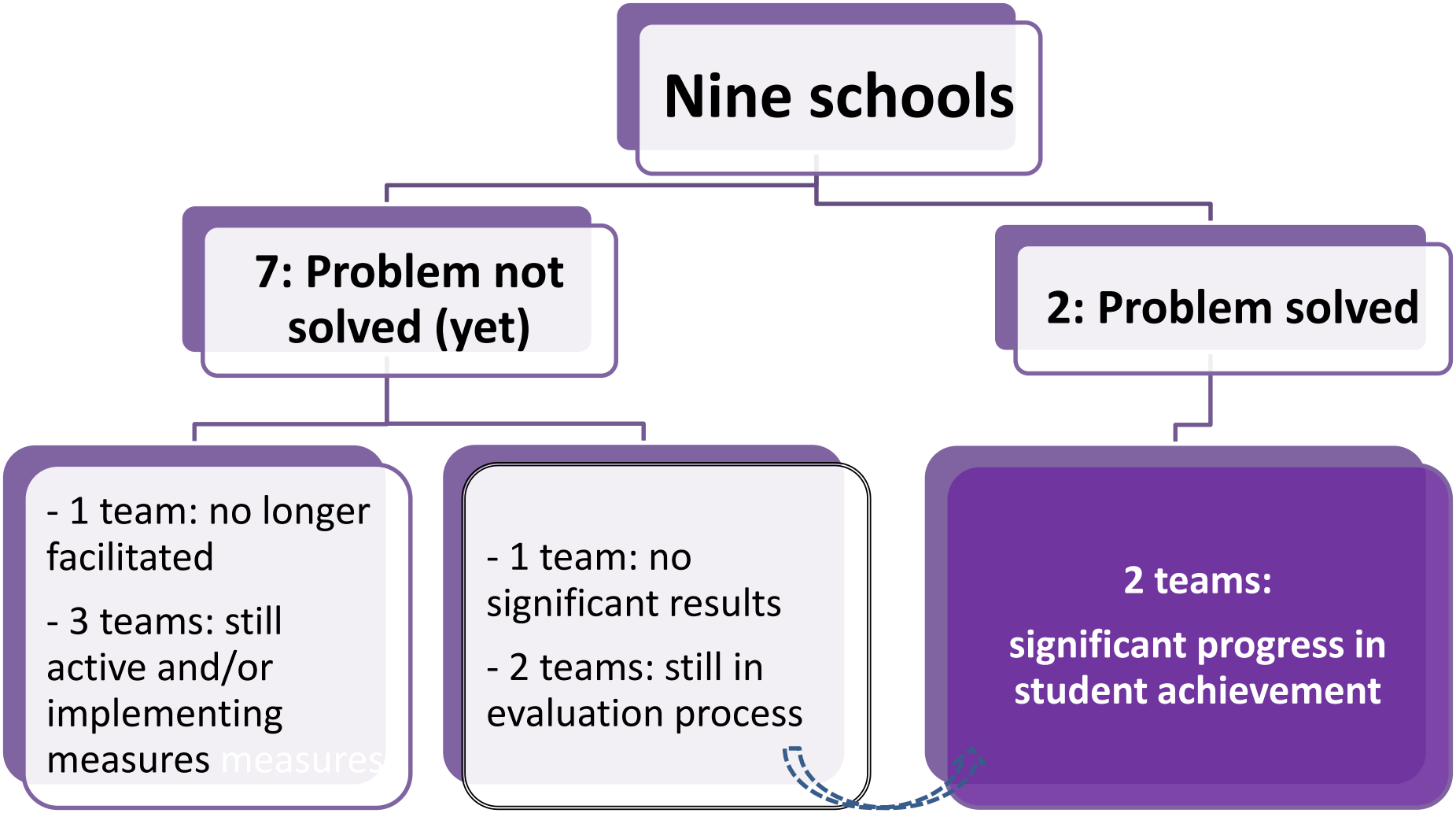
*What is the effect of participating in the data team procedure on student achievement in terms of solving the problem that data teams defined?*

# Method

- 9 (voluntary) data team schools (5-8 team members)
- Data:
  - Step 1: problem definition
  - Step 7: measures
  - Step 8: evaluation of solving problem as defined in Step 1

- Analysis
  - Measures implemented as intended?
  - Problem solved? Compare Step 8-data with Step-1 data
    - Descriptives and (independent/one sample) t-tests

# RESULTS


Nine schools
7: Problem not solved (yet)
2: Problem solved
- 1 team: no longer facilitated
- 3 teams: still active and/or implementing measures measures
- 1 team: no significant results
- 2 teams: still in evaluation process
2 teams:
significant progress in student achievement

# Team that did *not* solve problem

- Step 1 problem statement: Final exam **5.9 and 5.8** geography. Aim: ≥ **6.1** (next school year)
- Step 7 measures:
  - 1) low correlations between grades over the  years: implementation formative assessment
  - 2) Students problems with ‘productive’ questions: more practice
  - 3) Particular group of students scored low on particular final exam questions : more practice and explanations
- Step 8 process evaluation: first two measures only implemented by part of teachers and students’ reactions mixed. Measures directed at students who will take their final exam in 1-4 years (so expected result later)
- Step 8 effect evaluation: student achievement not increased

# Team that *solved* problem

- Step 1 problem statement:

Final exam (FE) English **5.8**. Aim ≥ **6.0** (in three years)

- Step 7 measures: FE only concerns reading comprehension, which did not receive enough attention in preceding years:
  - (1) Increasing amount of time spent on reading comprehension throughout curriculum, including adjusted assessment program.
  - (2) Reading comprehension test in fourth (pre-exam) year; extra support for low scoring students.
  - (3) Extra reading comprehension test 8 weeks after start of exam year.
- Step 8 effect evaluation: t-test showed that grade increased significantly to 6.5 (S.E. .11), $t(604) = 5.38$, $p<.000$).

# Conclusions and discussion

- Effects on student achievement: mixed
  - Four teams not (yet)
  - Three teams: in progress => further data collection end of school year
  - Two teams: problem solved=> higher student achievement after support period data teams
- Data team procedure characteristics, e.g. support period and guidelines
- Challenge of link from teacher PD (in data use) to student achievement
  - Line of reasoning effects framework
- Further research: sample (analysis), longer-term results and sustainability

# Thank you for your attention

For questions please contact c.l.poortman@utwente.nl

1: Lai, M. & Schildkamp, K. (2013). Data-based decision making: An overview, in K. Schildkamp, M. Lai & L. (Eds.). *Data-based decision making in education: Challenges and opportunities.* Dordrecht: Springer.

2: Marsh, J. A. (2012). Interventions promoting educators' use of data: Research insights and gaps. *Teachers College Record*, *114*(11), 1-48.

3: Ebbeler, J., Poortman, C. L., Schildkamp, K. , & Pieters, J. M. (submitted). The effects of a data use intervention in professional development of educators.