

RUHR-UNIVERSITÄT BOCHUM

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RUB

Redesigning Interventions for Engineering Students

Learning from Practice

PME37 Kiel, Germany

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Outline

- MP² - Math/Plus/Practice
- Redesigning interventions
- Consequences
- Empirical findings



MP² Math/Plus/Practice

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- engineering students
- Math/Plus: learning strategies and motivation
- Math/Practice: motivation through applications
- 2010-2012 funded by

Stifterverband
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Heinz Nixdorf Stiftung



MP² Math/Plus 2010/2011

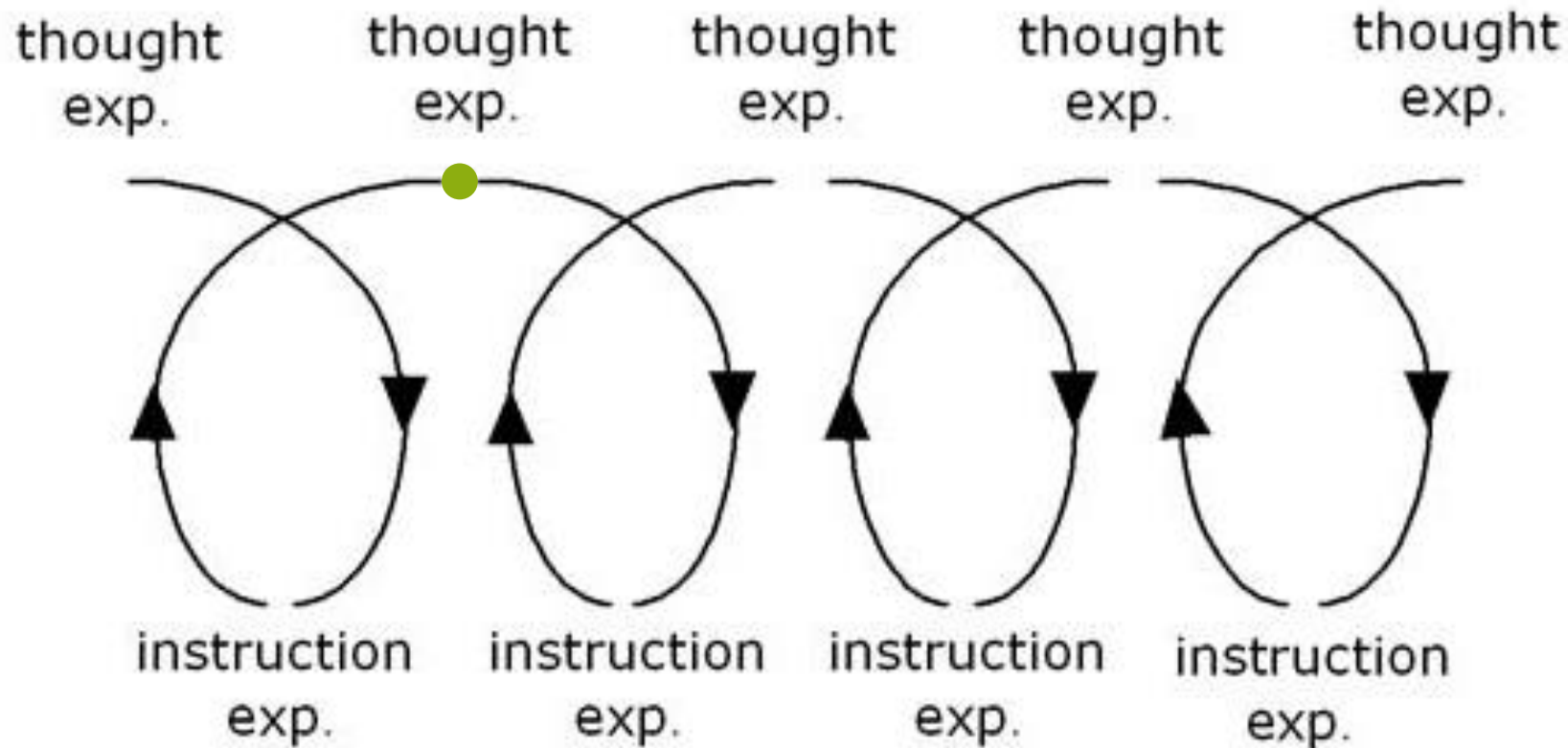
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- weekly preparatory tutorial
- helpdesk
- e-learning
- learning diary
- review course

→ moderate pass rate



Design-based research



Gravemeijer & Cobb (2003), figure 4.1



MP² Learning from practice

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- students relying on (our) support
- isolated, stand-alone interventions
- more commitment from students
- coordinated and linked interventions
- systematic withdrawal of personal support
- peer support as counter-balance





MP² Empirical evidence

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pass rates (March 2012)

project group 70.69%

reference group 53.33%

(almost significant, $p=.052$)

exam scores according to gender

female $p=.007$, $t(27.949)=2.91$; $r=.482$

male $p>.05$



MP² Redesigning 2.0

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- male students profited less
- learning log was opposed
- female mentor students
- *learning log online* for smartphones / tablet computers



MP² Empirical evidence

RUB

pass rates (March 2013)

project group	72.86%
non-project group	57.97%
reference group	50.97%

exam scores

project group against non-project group

$p=.007$; $t(89.928)=-2.125$; $r=.219$



**Thank you very much
for listening!**

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