Pre-service teachers' pedagogical content knowledge for teaching simulations and mathematical modelling with digital tools

Sebastian Gerber
Prof. Dr. Hans-Stefan Siller
(University of Wuerzburg)

Jascha Quarder
Prof. Dr. Gilbert Greefrath
(University of Muenster)

GEFÖRDERT VOM
Bundesministerium für Bildung und Forschung

Professional competencies of pre-service mathematics teachers

- pedagogical content knowledge of mathematics teachers in large-scale studies

  (Blömeke et al., 2014; Kunter et al., 2013)

- pedagogical content knowledge of pre-service mathematics teachers specifically for mathematical modelling

  (Wess et al., 2021a; Wess et al., 2021b)

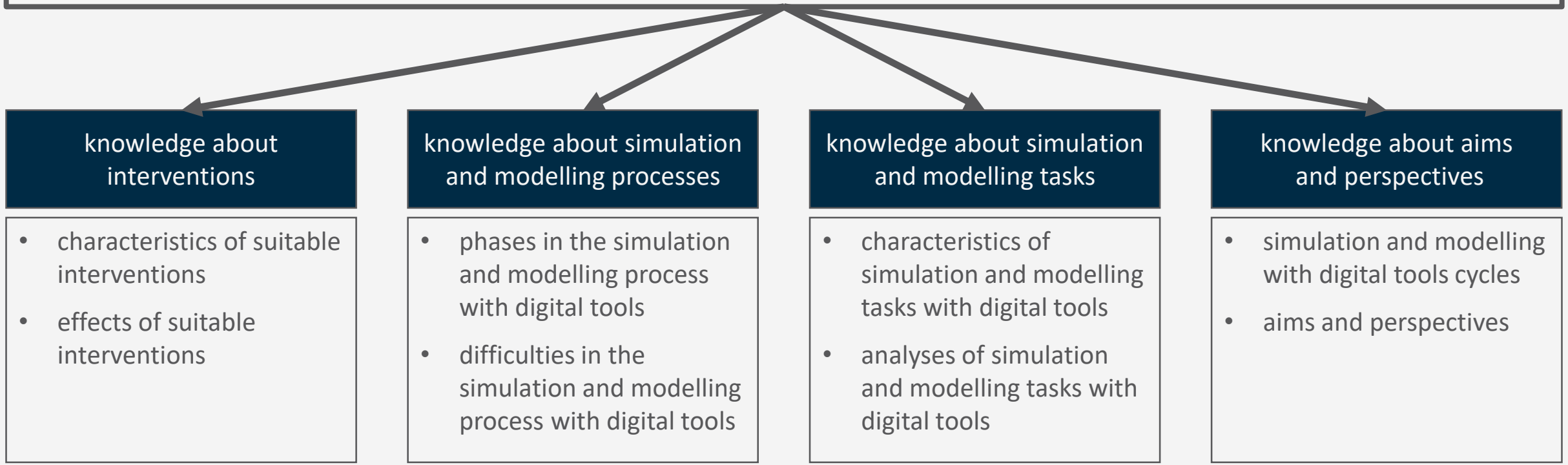
- increasing importance of digital tools/technology

  (Drijvers et al., 2016)

Research question

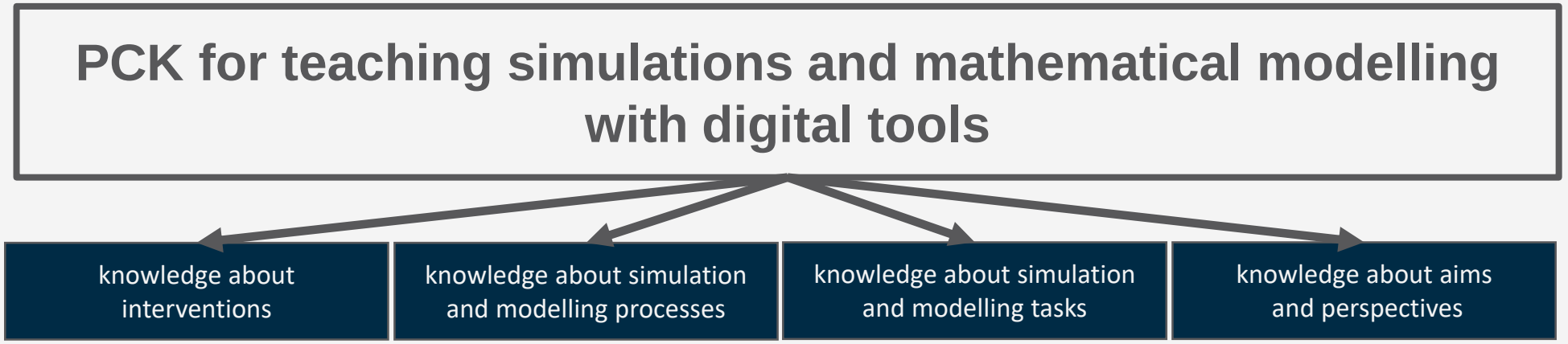
To what extent can the pre-service teachers' pedagogical content knowledge for teaching simulations and mathematical modelling with digital tools be empirically captured as a construct?

PCK for teaching simulations and mathematical modelling with digital tools



(following Borromeo Ferri & Blum, 2009; Borromeo Ferri, 2018; Wess et al., 2021a; Wess et al., 2021b)

Results



Scale →	Interventions	Processes	Tasks	Aims and Perspectives
Number of items				
EAP reliability				
Andersen test				
MNSQ				

- pre-piloting
- one-parameter Rasch model

(vgl. Gerber et al. (angenommen))

Discussion

- Pedagogical content knowledge for teaching simulations and mathematical modelling with digital tools **can be adequately captured as a construct** using the developed test instrument (in the studied group).
- The data collected confirms the four scales *tasks*, *aims and perspectives*, *processes* and *interventions*.
- The scales *tasks* and *aims and perspectives* need to be focused on separately due to the comparatively poorer EAP reliabilities.

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