

Matematiklärafortbildningens forskningsgrund och teori

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Effektiv fortbildning?

Förändring (förbättring?) av:

- Lärares attityder, föreställningar, kunskaper
- Lärares beteende (undervisning och övriga professionella beteenden, även "organisationers beteende")
- Elevernas kunskapsutveckling

Studier som mäter lärarfortbildnings effekt på elevers kunskapsutveckling

One of the most discouraging findings in the project was the discovery that only nine of the original list of 1,343 studies met the standards of credible evidence set by the What Works Clearinghouse, the arm of the U.S. Department of Education that is charged with providing educators, policy makers, researchers, and the public with scientific evidence about “what works” in education. All nine studies focused on elementary schools and were conducted between 1986 and 2003. No studies of professional development at the middle school or high school levels met the WWC standards, nor did any of the studies published between 2004 and 2006.

Guskey, T.R, Yoon, K.S. (2009). What works in professional development.

<http://www.schoolreforminitiative.org/wp-content/uploads/2014/02/guskey-yoon.pdf>

Yoon et al (2007). Reviewing the evidence on how teacher professional development affects student achievement

http://ies.ed.gov/ncee/edlabs/regions/southwest/pdf/rel_2007033.pdf

En bredare ansats

- Forskning om lärande/kunnande av matematik
- Forskning om lärarkunskap eller lärares agerande
- Forskning om lärarfortbildning

Några modeller

Klassisk transmissionsmodell

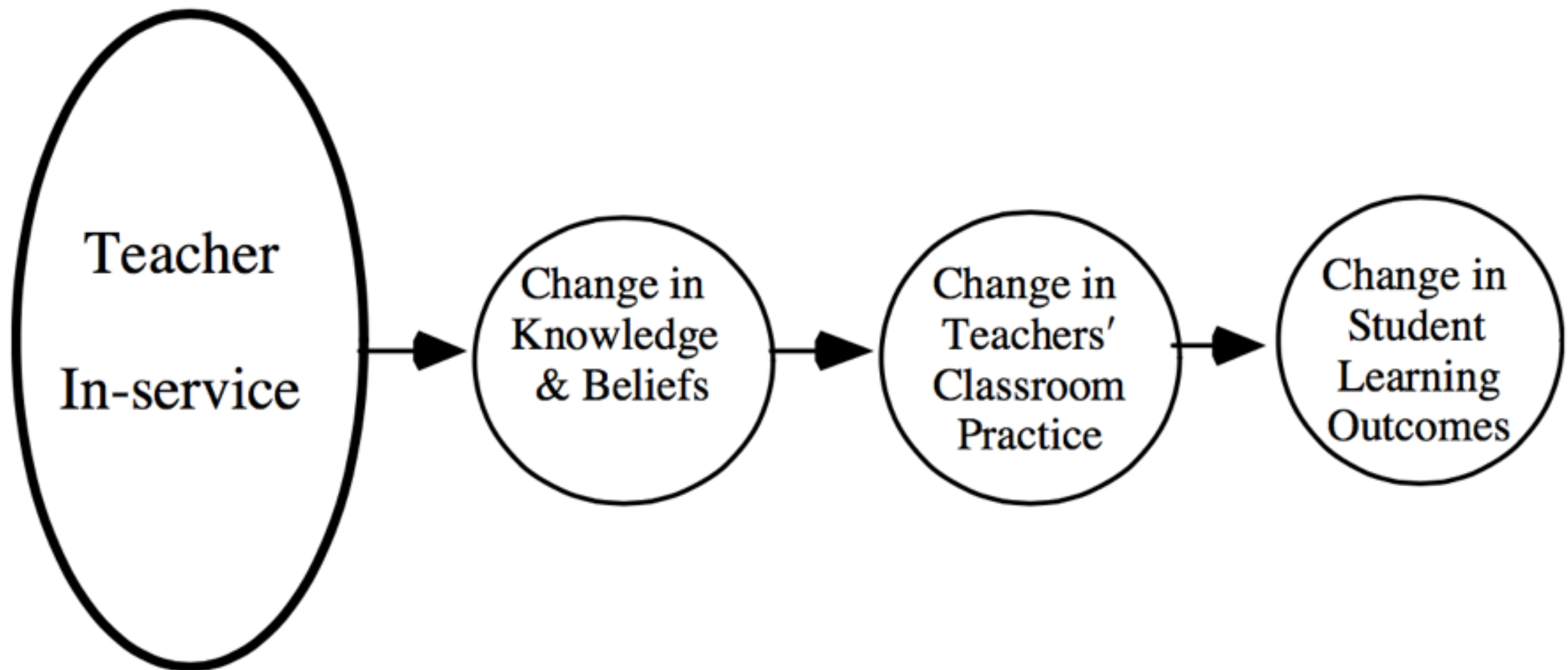
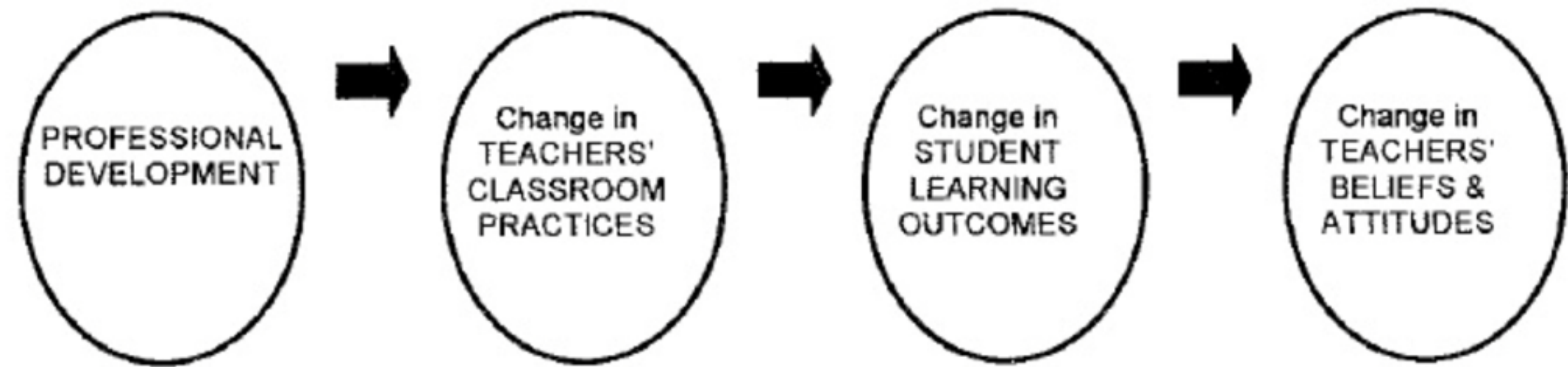
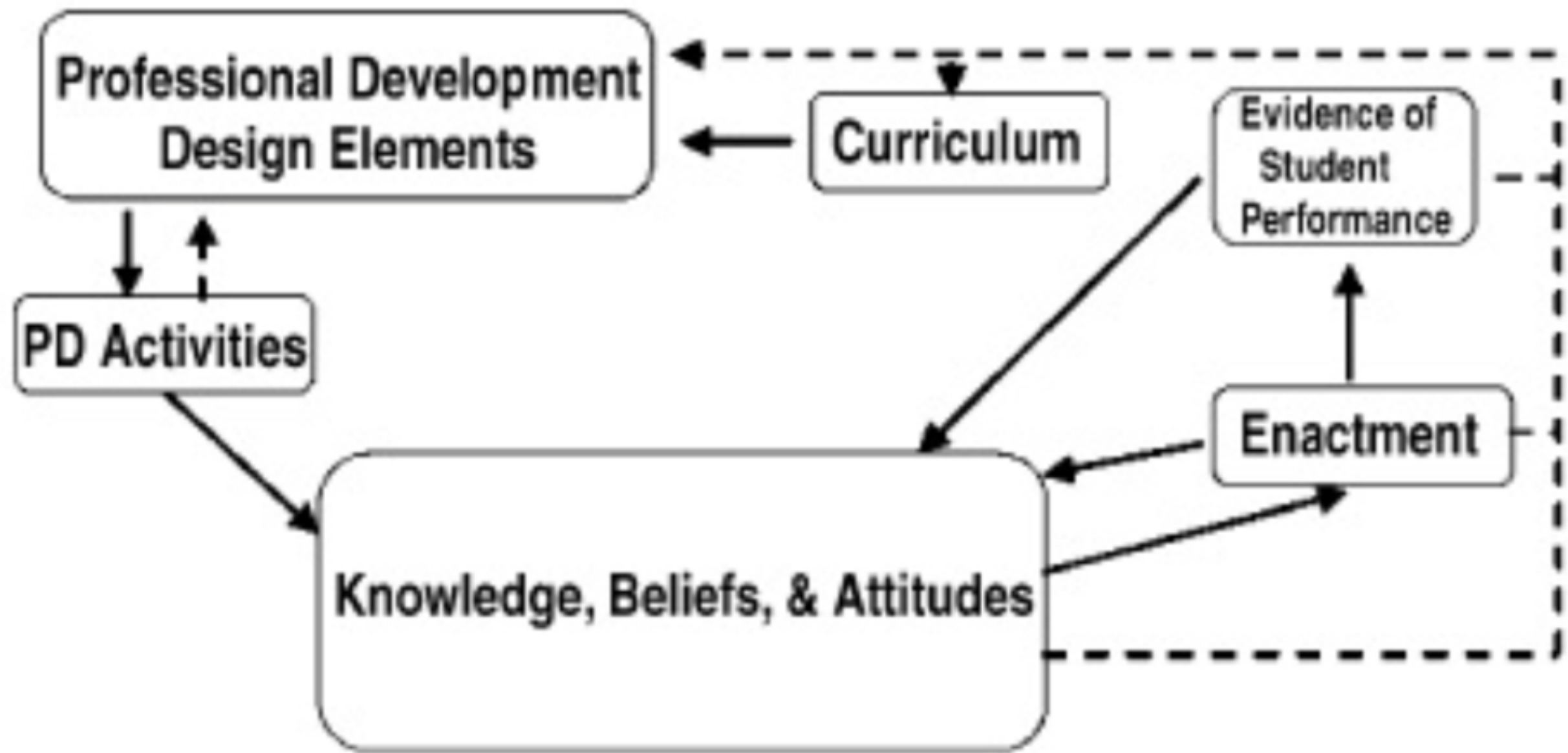


Fig. 1. An implicit model of the purpose of teacher professional development.



Guskey, T. R. (1986). Staff development and the process of teacher change. *Educational Researcher*, 15(5), 5-12. Available from: <http://www.jstor.org/stable/1174780>

Guskey, T. R. (2002). Professional development and teacher change. *Teachers and Teaching: theory and practice*, 8(3/4), 381-391. doi: 10.1080/13540600210000051 2



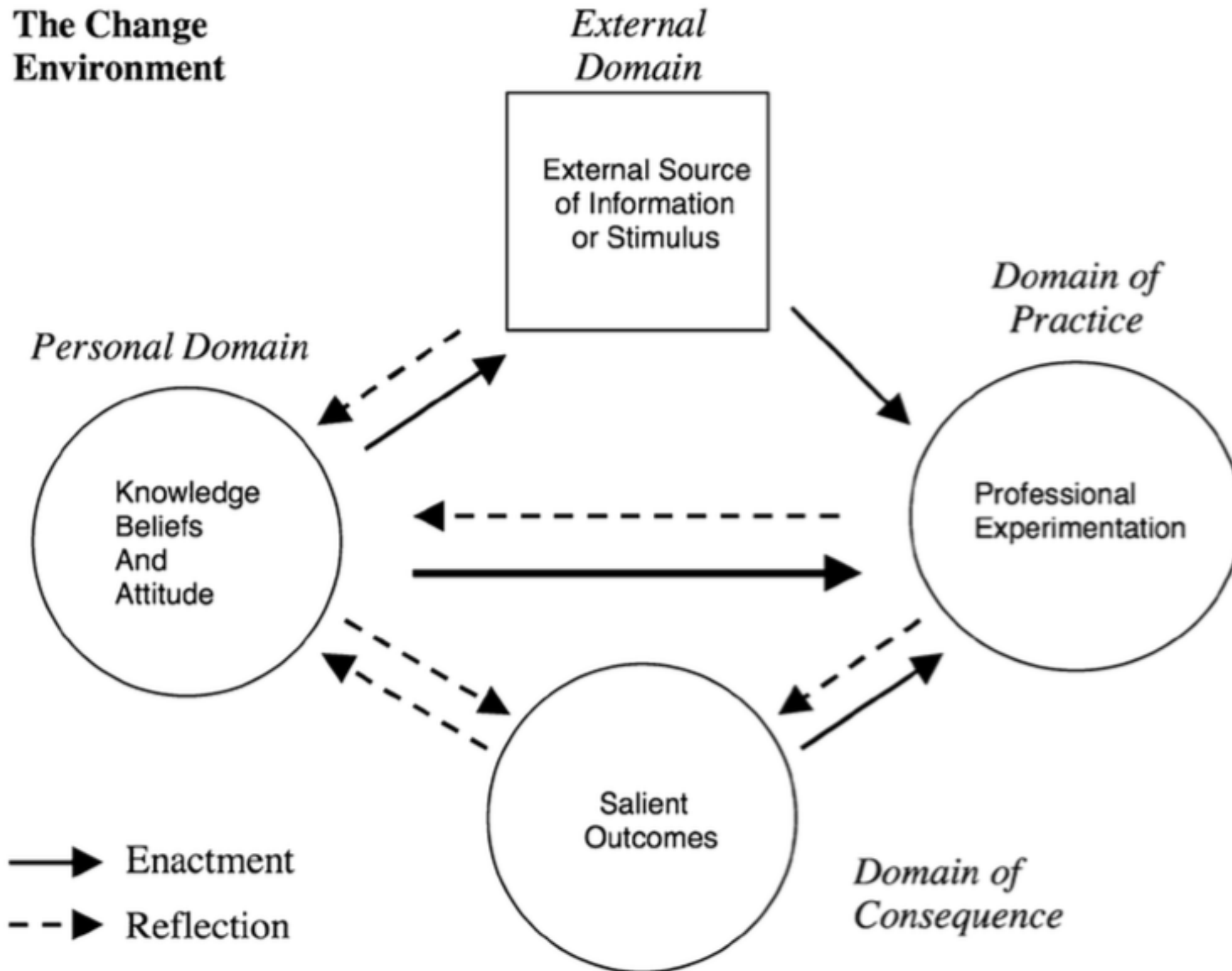
Jfr: Pedagogies of enactment - Pedagogies of investigation

Fishman, B. J., Marx, R. W., Best, S., & Tal, R. T. (2003). Linking teacher and student learning to improve professional development in systemic reform. *Teaching and Teacher Education*, 19, 643-658. doi: 10.1016/S0742-051X(03)00059-3

Grossman, P., Compton, C., Igra, D., Ronfeldt, M., Shahan, E., & Williamson, P. W. (2009). Teaching practice: a cross-professional perspective. *Teachers College Record*, 111(9), 2055-2100.

Grossman, P., & McDonald, M. (2008). Back to the future: directions for research in teaching and teacher education. *American Educational Research Journal*, 45(1), 184-205.

The Change Environment



Några egna erfarenheter

Budskapsdrivet - Matematiklyft, förskolan

Inspirationsdrivet - Matematiklyft IKT

Innehållsdrivet - personliga träffar, förskoleklassens matematik

Att "meddela" innehållet

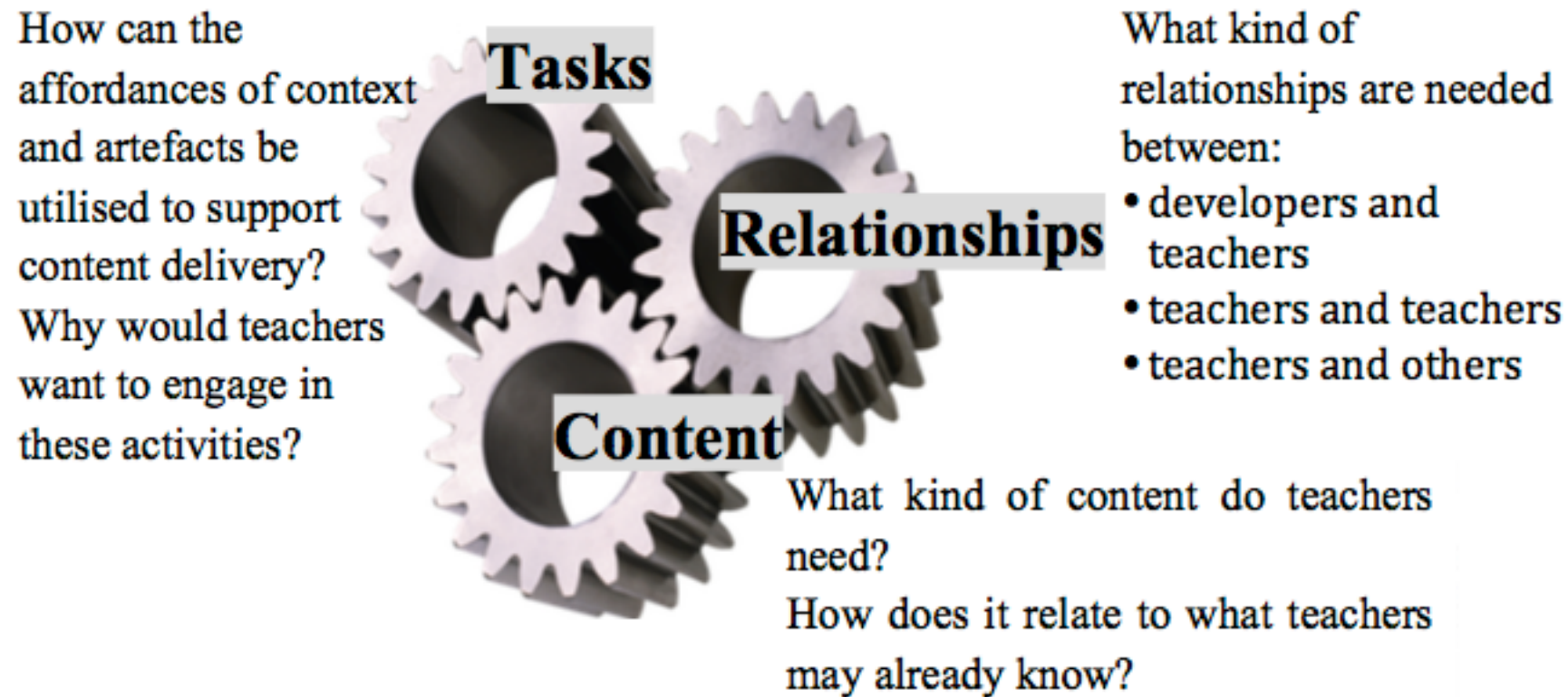


Figure 3: Professional Development Material Design Model

Professionalitet

metoder, verktyg, modeller

reflektion, kunskap

(Relaterat till den generella frågan om vad evidensbaserad undervisning innebär)

Tillbaka till Guskey och Yoons översikt

- **Workshops** en del i alla framgångsrika. "These workshops focused on the implementation of research-based instructional practices, involved active-learning experiences for participants, and provided teachers with opportunities to adapt the practices to their unique classroom situations."
- **Utomstående expertis** behövs, även för "önskningar om innehåll".
"school staff members [...] were more interested in designs that drew on research about practices that they already felt were 'good' than in designs that were producing results." (Corcoran, 2001).

- **Tid** behövs. Även vid i övrigt välorganiserade fortbildningar hade alla effektiva minst 30 timmars "kontakttid".
- **Uppföljning** efter "huvudinsatsen" behövs,
- Det finns **ingen "best practice"** för genomförandet. Effektiva kompetensutvecklingsinsatser hade genomförandet anpassat till innehållet.
- **Innehållet:** "the professional development efforts in every one of these investigations centered directly on enhancing teachers' content knowledge and their pedagogic content knowledge (Shulman 1986). The activities were designed to help teachers better understand both what they teach and how students acquire specific content knowledge and skill."

En tillämpning? Matematiklyftet.

Regeringen (2011). *Uppdrag till Statens skolverk att stärka undervisningen i matematik, naturvetenskap och teknik*. U 2011/2229G. Stockholm: Regeringen. <http://www.regeringen.se/content/1/c6/17/65/48/079bae6c.pdf>.

Regeringen (2012). *Uppdrag att svara för utbildning*. U2011/4343S, U2011/7370/GV, U2012/2113/GV. Stockholm: Regeringen. <http://www.regeringen.se/content/1/c6/19/33/30/4865d8ae.pdf>..

Skolverket (2011). *Dnr 2011:643. Delredovisning av uppdrag om att stärka undervisningen i matematik, naturvetenskap och teknik. Fortbildning av matematiklärare*. Stockholm: Skolverket.

En tillämpning? Matematiklyftet

Metod: Toulmins argumentationsmodell. Leta ”claims” och undersök ”warrants”.

Klassificera warrants med avseende på publikationstyp (rapport/forskning/forskningsrelaterat) och typ av påstående (resultat/diskussion)

Table 1 Identified claims in the government texts and internal and external warrants

Claim	Research	Research-related	Report	External (examples)
G1 Increase the extent to which students reach national goals by strengthening teaching			<i>Skolverket (2008), Skolinspektionen (2009, 2010)</i>	Baumert et al. (2010), Hill et al. (2008)
G2 The PD should give teachers the support, inspiration, and ability they need to develop classroom activities that increase students' potential to develop the knowledge and competencies set out in the new national curriculum documents				Timperley (2011), Cobb and Jackson (2011)
G3 The PD should relate closely to teaching and practice, and should involve teachers in an active way				Clarke and Hollingsworth (2002), Grossman et al. (2009), Grossman and McDonald (2008)
G4 [The PD-material should give] teachers support and inspiration to try out and develop teaching models based on research and proven experience. The material should stimulate reflection, professional development and collegial collaboration between teachers in the planning, enactment, follow-up, and assessment, and contribute to the development of teaching				Clarke and Hollingsworth (2002), Grossman et al. (2009) Grossman and McDonald (2008), Cobb and Jackson (2011, p. 12)
G5 The mandate also means that school principals are to be included in professional development			<i>Skolinspektionen (2011, 2012)</i>	Buchberger et al. (2000), Mourshed et al. (2010)
G6 The programme should include 'mathematical advisors' whose role is to support teachers in their PD, and a special PD programme should be developed for such advisors				Cobb and Jackson (2011)
G7 The support material should be web-based				
G8 The support material should take the form of separate professional development modules				Ostermeier et al. (2010)

A reference in italics indicates that the claim is related to a *discussion* in the literature, while normal font indicates a *result* (see Sect. 5 for further explanations)

Table 2 Identified claims in the National Agency of Education text and internal and external warrants

Claim	Research	Research-related	Report	External
A1a [The PD] is based on the national curricula, is driven by the national curricula ...				Timperley (2011), Cobb and Jackson (2011)
A1b [The PD] is driven by the local governing school bodies			<i>Mouwitz (2001)</i>	Cobb and Jackson (2011)
A1c [The PD] involves principals and school leaders in an active way		Hattie (2008)	<i>Skolinspektionen (2009, 2010)</i> , Mourshed et al. (2010), Skolverket (2009)	Timperley (2011)
A2a [The PD] builds on collegial learning ...		Kilpatrick et al. (2001)	<i>Mouwitz (2001)</i> , Gustavsson (2008), Mollberg Hedqvist (2006)	Clarke and Hollingsworth (2002), Grossman et al. (2009), Grossman and McDonald (2008), Cobb and Jackson (2011, p. 12)
A2b ... with support from resource persons from outside the local practice			Cordingley et al. (2005a, b)	Cobb and Jackson (2011)
A3a [The PD] means that what is discussed and read is also tested in one's own teaching ...			Cordingley et al. (2005a, b)	Clarke and Hollingsworth (2002), Grossman et al. (2009), Grossman and McDonald (2008), Cobb and Jackson (2011, p. 12)
A3b ... evaluated, modified, and tested again in recurring cycles				
A4 is web-based through a learning platform with a number of modules	Ostermeier et al. (2010)			Mourshed et al. (2010)
A5 ... involves regular meetings at national level for resource persons to create coherence, equity, and clarity in the professional development programme				Cobb and Jackson (2011)
A6 involves the opportunity for individual teachers to get university credits by means of validation at a university or university college		Kock (2010)		
A7 is coordinated by the National Agency for Education but involves broad national engagement with many players			Mourshed et al. (2010)	

A reference in italics indicates that the claim is related to a *discussion* in the literature, while normal font indicates a *result* (see Sect. 5 for further explanations)

Varför "stämmer det" så bra med etablerad forskning trots att så få explicit forskningsgrundade argument anges?

Är det ett problem att det inte finns (så bra) formell förankring i forskningen?