Institutionen för matematikämnets och naturvetenskapsämnenas didaktik

Stockholms universitet

Kurslitteratur

för kurs på avancerad nivå

Matematikämnets didaktik A, 7,5 hp

Kurskod: UM8028
Gäller från: HT 2019
Fastställd: 20190521
Institution: Institutionen för matematikämnets och naturvetenskapsämnenas didaktik
Ämne: Matematikämnets didaktik

Obligatorisk kurslitteratur

Andrews, P., & Rowland, T. (red.) (2014). *Masterclass in mathematics education: International perspectives on teaching and learning.* London: Bloomsbury Publishing. (Valda delar om ca 80s)

Kieran, C. (2004). Algebraic thinking in the early grades: What is it? *The Mathematics Educator, 8*(1), 139-151. (13s)

Usiskin, Z. (1988). Conceptions of school algebra and uses of variables. In A. Coxford (Ed.), *Ideas of algebra: K-12* (pp.8-19). Reston, VA: National Council of Teachers of Mathematics. (12s)

Watson, A. (2007). Algebraic reasoning. In T. Nunes, P. Bryant, & A. Watson (Eds.), *Key understandings in mathematics learning* (paper 6). London: The Nuffield Foundation. (43s)

Aktuella artiklar om ca 50 sidor. Väljs i samråd med kurslärare.

Valbar kurslitteratur

Dessutom väljs minst tolv artiklar av nedanstående.

Anghileri, J., Beishuizen, M., & van Putten, K. (2002). From informal strategies to structured procedures: mind the gap! *Educational Studies in Mathematics, 49*, 149-170. (21s)

Balacheff, N. (2002). The researcher epistemology: a deadlock for educational research on proof. In F. C. Lin (Ed.), *Proceedings of the 2002 International Conference on Mathematics: understanding proving and proving to understand* (pp. 23-44). Taipei, Taiwan: NSC and NTNU. (22s)

Bartolini Bussi, M. G., & Baccaglini-Frank, A. (2015). Geometry in early years: sowing the seeds towards a mathematical definition of squares and rectangles. *ZDM Mathematics Education, 47*(3), 391–405. (15s)

Brown, M., Küchemann, D., & Hodgen, J. (2010). The struggle to achieve multiplicative reasoning 11-14. In M. Joubert & P. Andrews (Eds.), *Proceedings of the 7th British Congress for Mathematics Education* (BCME7) (pp. 49-56). University of Manchester. (8s)

Dewolf, T., Van Dooren, W., & Verschaffel, L. (2011). Upper elementary school children's understanding and solution of a quantitative problem inside and outside the mathematics class. *Learning and Instruction, 21,* 770-780. (11s)

Fischbein, E., & Gazit, A. (1984). Does the teaching of probability improve probabilistic intuitions? An exploratory research study. *Educational Studies in Mathematics, 15*(1), 1-24. (24s)

Gutiérrez, A. (1996). Visualisation in 3-dimentional geometry: in search of a framework. In L. Puig & A. Gutiérrez (Eds.), *Proceedings of the 20th International Group for the Psychology of Mathematics Education, Vol. 1* (pp. 3-19). Valencia, Spain: PME. (17s)

Gutiérrez, A., & Jaime, A. (1998). On the assessment of the van Hiele levels of reasoning. *Focus on Learning Problems in Mathematics, 20*(2/3), 27-46. (20s)

Hersh, R. (1995). Fresh breezes in the philosophy of mathematics. *American Mathematical Monthly*, *102*(7), 589-594. (6s)

Hemmi, K., Lepik, M., & Viholainen, A. (2013). Analysing proof-related competences in Estonian, Finnish and Swedish mathematics curricula—towards a framework of developmental proof. *Journal of Curriculum Studies*, *45*(3), 354–378. (25s)

Hiebert, J., Carpenter, T. P., Fennema, E., Fuson, K., Human, P., Murray, H., et al. (1996). Problem solving as a basis for reform in curriculum and instruction: the case of mathematics. *Educational Researcher, 25*(4), 12-21. (10s)

Jonsson, B., Norqvist, M., Liljekvist, Y., & Lithner, J. (2014). Learning mathematics through algorithmic and creative reasoning. *Journal of Mathematical Behavior, 36*, 20-32. (13s)

Levenson, E., Barkai, R. & Larsson, K. (2013). Functions of explanations: Israeli and Swedish elementary school curriculum documents. In J. Novotná & H. Moraová (Eds.) *SEMT13 Tasks and Tools in Elementary Mathematics* (p.188-195). Prague: Charles University. (8s)

Lu, L., & Richardson, K. (2018). Understanding children's reasoning in multiplication problem-solving. *Investigations in Mathematics Learning, 10*(4), 240–250. (11s)

Ng, O., & Sinclair, N. (2015). "Area without numbers": using touchscreen dynamic geometry to reason about shape. *Canadian Journal of Science, Mathematics and Technology Education, 15*(1), 84–101. (18s)

Nilsson, P., Eckert, A., & Pratt, D. (2018). Challenges and opportunities in experimentation-based instruction in probability. In C. Batanero & E. Chernoff (Eds.), *Teaching and learning stochastics: Advances in probability education research. ICME-13 Monographs* (pp. 51-71). Cham: Springer International Publishing.

Nurnberger-Haag, J. (2015). How students' integer arithmetic learning depends on whether they walk a path or collect chips. In T. G. Bartell, K. N. Bieda, R. T. Putnam, K. Bradfield & H. Dominguez (Eds.), *Proceedings of the 37th annual meeting of the North American Chapter*

of the International Group for the Psychology of Mathematics Education (pp. 165–172). East Lansing, MI: Michigan State University. (8s)

Pratt, D., & Noss, R. (2002). The micro-evolution of mathematical knowledge: the case of randomness. *Journal of the Learning Sciences, 11*(4), 453-488. (36s)

Schoenfeld, A. (1983). Beyond the purely cognitive: belief systems, social cognitions, and metacognition as driving forces in intellectual performance. *Cognitive Science, 7*, 329-363. (35s)

Sowder, L., & Harel, G. (1998). Types of students' justifications. *Mathematics Teacher, 91,* 670-675. (6s)

Stylianides, A. J. (2007). Proof and proving in school mathematics. *Journal of Research in Mathematics Education, 38*(3), 289-321. (33s)

Stylianides, G. J., & Stylianides, A. J. (2009). Facilitating the transition from empirical arguments to proof. *Journal of Research in Mathematics Education, 40*(3), 314-352. (39s)

Teledahl, A. (2015). Different modes in teachers' discussions of students' mathematical texts. *Teaching and Teacher Education*, *51,* 68-76. (9s)

Thompson, A. G. (1984). The relationship between teachers' conceptions of mathematics and mathematics teaching to instructional practice. *Educational Studies in Mathematics, 15*(2), 105-127. (23s)

Torbeyns, J., Peters, G., de Smedt, B., Ghesquière, P., & Verschaffel, L. (2016). Children's understanding of the addition/subtraction complement principle. *British Journal of Educational Psychology, 86*(3), 382–396. (15s)

Tversky, A., & Kahneman, D. (1975). Judgement under uncertainty: heuristics and biases. *Science, 185,* 1124-1131. (8s)

van Hoof, J., Degrande, T., Ceulemans, E., Verschaffel, L., & van Dooren, W. (2018). Towards a mathematically more correct understanding of rational numbers: A longitudinal study with upper elementary school learners. *Learning and Individual Differences, 61*, 99–108. (10s)

Verschaffel, L., De Corte, E., Lasure, S., Van Vaerenbergh, G., Bogaerts, H., & Ratinckx, E. (1999). Learning to solve mathematical application problems: A design experiment with fifth graders. *Mathematical Thinking and Learning, 1*(3), 195-230. (36s)

Vinner, S. (1991). The role of definitions in the teaching and learning of mathematics. In D. Tall (Ed.), *Advanced mathematical thinking* (pp. 65-81). Dordrecht: Kluwer. (17s)