

# PENSUMLISTE

Høst 2018

## Institutt for lærerutdanning

Master i matematikdidaktikk (1-7)

Master i matematikdidaktikk (5-10)

NORGES TEKNISK-NATURVITENSKAPELIGE UNIVERSITET

### Innhold

LMM14001 Perspektiver på tallbegrepet (1-7) emne 1 .....	2
LMM14002 Læring og undervisning av matematikk (1-7).....	3
LMM15005 Vitenskapsteori og metode, matematikdidaktikk (1-7).....	5
LMM54001 Læring og undervisning av matematikk (5-10).....	6
LMM55005 Vitenskapsteori og metode, matematikdidaktikk (5-10).....	8

# LMM14001 Perspektiver på tallbegrepet (1-7) emne 1

## Bøker

Burton, David M. (2011). *Elementary number theory*. McGraw-Hill. New York.

## Artikler og kapitler (Legges ut i Blackboard ved semesterstart)

Hersh, R. (1997): *What is Mathematics, Really?* Kapittel 1, Oxford University Press.

Lindstrøm T. (1995): *Kalkulus*, side 61-92, Universitetsforlaget AS.

Hansen, Skott og Jess (2007): *Ypsilon*, side 174-195, Frederiksberg: Forlaget Samfundslitteratur.

Kilhamn (2011): *Making sense of negative numbers*, side 18-54, doktorgradsavhandling, University of Gothenburg.

Selter et.al (2012): *Taking away and determining the difference—a longitudinal perspective on two models of subtraction and the inverse relation to addition*, *Educ. Stud. Math.* 79:389–408.

Tirosh, D. & Even R. (1997): *To define or not to define: the case of  $(-8)^{1/3}$* , *Educational Studies in Mathematics*, Vol. 33, No. 3., pp. 321-330.

Mosvold (2002): *Genesis principles in mathematics education*.

Duval (2004): *A crucial issue in mathematics education: The ability to change representation register*, in *Proceedings of the 10<sup>th</sup> International Conference on Mathematics Education*, Copenhagen.

Goldin & Shteingold (2001): *Systems of Representations and the Development of Mathematical Concepts*, fra *The Roles of Representations in School Mathematics*, National Council of Teachers of Mathematics.

Steinbring (1998): *Elements of Epistemological knowledge for mathematics teachers*, *Journal of Mathematics Teacher Education* 1: 157–189.

Zazkis & Gadowsky (2001): *Attending to Transparent Features of Opaque Representations of Natural Numbers*, fra *The Roles of Representations in School Mathematics*, National Council of Teachers of Mathematics.

Rønning (2012): *Symmetrisation of an asymmetric multiplication task*, *Proceedings of NORMA 11*, The sixth Nordic Conference on Mathematics Education (s. 553-563). Reykjavik: University of Iceland Press.

Rønning (2012): *Making sense of fractions in different contexts*, *Proceedings of the British Society for Research into Learning Mathematics* 32(3).

Fosnot (2007): *Ages and Timelines, Subtractions on the open number line*, utdrag, Heinemann USA.

Schou, Skott, Jess & Hansen (2008): *Omega*, kapittel 1 og 6, Frederiksberg: Forlaget Samfundslitteratur.

Lorentzen (2012): *Hva er matematikk?* kapittel 3, Universitetsforlaget.

Gravemeijer (2007): *Emergent Modelling as a Precursor to Mathematical Modelling*, fra *Modelling and Applications in Mathematics Education*, Springer US.

Van Den Heuvel-Panhuizen (2003): *The Didactical Use of Models in Realistic Mathematics Education: An Example from a Longitudinal Trajectory on Percentage English*, *Educational Studies in Mathematics*, Vol. 54, No. 1.

Lesh (2003): *How Mathematizing Reality is Different from Realizing Mathematics*, fra *Mathematical Modelling: A Way of Life*, Woodhead Publishing.

English (2003): *Mathematical Modelling With Young Learners*, fra *Mathematical Modelling: A Way of Life*, Woodhead Publishing.

Reality-based tasks for school, Booklet, LEMA 2009.

## **LMM14002 Læring og undervisning av matematikk (1-7)**

### **Bøker**

Fraleigh, J. B. (2003). *A first course in abstract algebra*. Reading, MA: Addison-Wesley. (utdrag deles ut)

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. (M. Cole, V. John-Steiner, S. Scribner, & E. Souberman, Red.). Cambridge, MA: Harvard University Press. (utdrag deles ut)

## Artikler

Balacheff, N. (1988). Aspects of proof in pupils' practice of school mathematics. I D. Pimm (Red.), *Mathematics, teachers and children* (s. 216-235). London: Hodder & Stoughton.

Becker, J. R., & Rivera, F. (2006). Sixth graders' figural and numerical strategies for generalizing patterns in algebra. In *Proceedings of the 28th annual meeting of the North American chapter of the international group for the psychology of mathematics education* (Vol. 2, pp. 95-101). Mérida: Universidad Pedagógica Nacional.

Duval, R. (2006). A cognitive analysis of problems of comprehension in a learning of mathematics. *Educational Studies in Mathematics*, 61(1), 103-131.

Harel, G. (2008). What is mathematics? A pedagogical answer to a philosophical question. In R. B. Gold & R. Simons (Red.), *Proof and Other Dilemmas: Mathematics and Philosophy* (s. 265-290). Washington, DC: Mathematical Association of America.

Kaput, J. J. (2008). What is algebra? What is algebraic reasoning? I J. J. Kaput, D. W. Carraher, & M. L.

Blanton (Red.), *Algebra in the early grades* (s. 5–18). Mahwah, NJ: Erlbaum.

Kieran, C. (2004). The core of algebra: Reflections on its main activities. I K. Stacey, H. Chick, & M. Kendal (Red.), *The future of the teaching and learning of algebra: The 12th ICMI Study* (s. 21-33). Dordrecht, Nederland: Kluwer Academic Publishers.

Knuth, E. J., Choppin, J. M., & Bieda, K. N. (2009). Proof: Examples and beyond. *Mathematics Teaching in the Middle School*, 15(4), 206-211.

Lannin, J. K. (2005). Generalization and justification: The challenge of introducing algebraic reasoning through patterning activities. *Mathematical Thinking and Learning*, 7(3), 231-258.

Lester, F. K. (2005). On the theoretical, conceptual, and philosophical foundations for research in mathematics education. *ZDM*, 37(6), 457-467.

Presmeg, N. (2006). Semiotics and the "connections" standard: Significance of semiotics for teachers of mathematics. *Educational Studies in Mathematics*, 61(1), 163-182.

Sfard, A. (1991). On the dual nature of mathematical conceptions: Reflections on processes and objects as different sides of the same coin. *Educational studies in mathematics*, 22(1), 1-36.

Sfard, A. (2006). Participationist discourse on mathematics learning. I J. Maas & W. Schloeglmann

(Red.), *New mathematics education research and practice* (pp. 153–170). Rotterdam, Nederland: Sense.

Sfard, A. (2007). When the Rules of Discourse Change, but Nobody Tells You: Making Sense of Mathematics Learning From a Commognitive Standpoint. *Journal of the Learning Sciences*, 16(4), 565-613.

Sfard, A. (2009). Moving between discourses: From learning-as-acquisition to learning-as-participation. *AIP Conference Proceedings*, 1179(1), 55–58.

Skemp, R. R. (1976). Relational understanding and instrumental understanding. *Mathematics Teaching*, 77(1), 20-26.

Stylianides, G. J. (2008). An analytic framework of reasoning-and-proving. *For the Learning of Mathematics*, 28(1), 9-16.

Stylianides, G. J. (2010). Engaging Secondary Students in Reasoning and Proving. *Mathematics Teaching*, 219, 39-44.

Stylianides, A. J., & Ball, D. L. (2008). Understanding and describing mathematical knowledge for teaching: Knowledge about proof for engaging students in the activity of proving. *Journal of mathematics teacher education*, 11(4), 307-332.

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

Warren, E., & Cooper, T. (2007). Repeating patterns and multiplicative thinking: Analysis of classroom interactions with 9-year-old students that support the transition from the known to the novel. *The Journal of Classroom Interaction*, 7-17.

Warren, E., & Cooper, T. (2008). Generalising the pattern rule for visual growth patterns: Actions that support 8 year olds' thinking. *Educational Studies in Mathematics*, 67(2), 171-185.

## **LMM15005 Vitenskapsteori og metode, matematikdidaktikk (1-7)**

### **Bøker**

Alvesson, M. & Sköldberg, K. (2008). *Tolkning och reflektion: vetenskapsfilosofi och kvalitativ metod*. Lund: Studentlitteratur.

Boka fins også på engelsk: Alvesson, M. & Sköldbberg, K. (2009). *Reflexive Methodology: New Vistas for Qualitative Research (2nd ed.)*. LA: Sage.

Cohen, L., Manion, L., & Morrison, K. (2011). *Research methods in education (7. utg.)*. London: Routledge.

Rienecker, L., & Stray Jørgensen, P. (2013). *Den gode oppgaven: håndbok i oppgaveskriving på universitet og høyskole (2. utg.)*. Bergen: Fagbokforlaget.

Dette er ei god oppslagsbok til bruk i arbeidet med å skrive masteroppgave. I undervisninga er den viktigst på høstens siste samling (i desember 2018) og på skriveseminaret i januar 2019.

Artikler og bokkapitler kommer i tillegg til bøkene ovenfor. Disse blir tilgjengelige i Blackboard.

## LMM54001 Læring og undervisning av matematikk (5-10)

### Bøker

Fraleigh, J. B. (2003). *A first course in abstract algebra*. Reading, MA: Addison-Wesley. (utdrag deles ut)

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. (M. Cole, V. John-Steiner, S. Scribner, & E. Souberman, Red.). Cambridge, MA: Harvard University Press. (utdrag deles ut)

### Artikler

Balacheff, N. (1988). Aspects of proof in pupils' practice of school mathematics. I D. Pimm (Red.), *Mathematics, teachers and children* (s. 216-235). London: Hodder & Stoughton.

Becker, J. R., & Rivera, F. (2006). Sixth graders' figural and numerical strategies for generalizing patterns in algebra. In *Proceedings of the 28th annual meeting of the North American chapter of the international group for the psychology of mathematics education* (Vol. 2, pp. 95-101). Mérida: Universidad Pedagógica Nacional.

Duval, R. (2006). A cognitive analysis of problems of comprehension in a learning of mathematics. *Educational Studies in Mathematics*, 61(1), 103-131.

Harel, G. (2008). What is mathematics? A pedagogical answer to a philosophical question. In R. B. Gold & R. Simons (Red.), *Proof and Other Dilemmas: Mathematics and Philosophy* (s. 265-290). Washington, DC: Mathematical Association of America.

- Kaput, J. J. (2008). What is algebra? What is algebraic reasoning? I J. J. Kaput, D. W. Carraher, & M. L.
- Blanton (Red.), *Algebra in the early grades* (s. 5–18). Mahwah, NJ: Erlbaum.
- Kieran, C. (2004). The core of algebra: Reflections on its main activities. I K. Stacey, H. Chick, & M. Kendal (Red.), *The future of the teaching and learning of algebra: The 12th ICMI Study* (s. 21-33). Dordrecht, Nederland: Kluwer Academic Publishers.
- Knuth, E. J., Choppin, J. M., & Bieda, K. N. (2009). Proof: Examples and beyond. *Mathematics Teaching in the Middle School*, 15(4), 206-211.
- Lannin, J. K. (2005). Generalization and justification: The challenge of introducing algebraic reasoning through patterning activities. *Mathematical Thinking and Learning*, 7(3), 231-258.
- Lester, F. K. (2005). On the theoretical, conceptual, and philosophical foundations for research in mathematics education. *ZDM*, 37(6), 457-467.
- Presmeg, N. (2006). Semiotics and the “connections” standard: Significance of semiotics for teachers of mathematics. *Educational Studies in Mathematics*, 61(1), 163-182.
- Sfard, A. (1991). On the dual nature of mathematical conceptions: Reflections on processes and objects as different sides of the same coin. *Educational studies in mathematics*, 22(1), 1-36.
- Sfard, A. (2006). Participationist discourse on mathematics learning. I J. Maas & W. Schloeglmann (Red.), *New mathematics education research and practice* (pp. 153–170). Rotterdam, Nederland: Sense.
- Sfard, A. (2007). When the Rules of Discourse Change, but Nobody Tells You: Making Sense of Mathematics Learning From a Commognitive Standpoint. *Journal of the Learning Sciences*, 16(4), 565-613.
- Sfard, A. (2009). Moving between discourses: From learning-as-acquisition to learning-as-participation. *AIP Conference Proceedings*, 1179(1), 55–58.
- Skemp, R. R. (1976). Relational understanding and instrumental understanding. *Mathematics Teaching*, 77(1), 20-26.
- Stylianides, G. J. (2008). An analytic framework of reasoning-and-proving. *For the Learning of Mathematics*, 28(1), 9-16.
- Stylianides, G. J. (2010). Engaging Secondary Students in Reasoning and Proving. *Mathematics Teaching*, 219, 39-44.

Stylianides, A. J., & Ball, D. L. (2008). Understanding and describing mathematical knowledge for teaching: Knowledge about proof for engaging students in the activity of proving. *Journal of mathematics teacher education*, 11(4), 307-332.

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

Warren, E., & Cooper, T. (2007). Repeating patterns and multiplicative thinking: Analysis of classroom interactions with 9-year-old students that support the transition from the known to the novel. *The Journal of Classroom Interaction*, 7-17.

Warren, E., & Cooper, T. (2008). Generalising the pattern rule for visual growth patterns: Actions that support 8 year olds' thinking. *Educational Studies in Mathematics*, 67(2), 171-185.

## **LMM55005 Vitenskapsteori og metode, matematikdidaktikk (5-10)**

### **Bøker**

Alvesson, M. & Sköldbberg, K. (2008). *Tolkning och reflektion: vetenskapsfilosofi och kvalitativ metod*. Lund: Studentlitteratur.

Boka fins også på engelsk: Alvesson, M. & Sköldbberg, K. (2009). *Reflexive Methodology: New Vistas for Qualitative Research (2nd ed.)*. LA: Sage.

Cohen, L., Manion, L., & Morrison, K. (2011). *Research methods in education (7. utg.)*. London: Routledge.

Rienecker, L., & Stray Jørgensen, P. (2013). *Den gode oppgaven: håndbok i oppgave-skriving på universitet og høyskole (2. utg.)*. Bergen: Fagbokforlaget.

Dette er ei god oppslagsbok til bruk i arbeidet med å skrive masteroppgave. I undervisninga er den viktigst på høstens siste samling (i desember 2018) og på skriveseminaret i januar 2019.

Artikler og bokkapitler kommer i tillegg til bøkene ovenfor. Disse blir tilgjengelige i Blackboard.