Fredrik Jeppsson
19780712-4032

CV

Fredrik Jeppsson

Higher education degrees:

Year and degree:	*Master of education in mathematics and physics (2007)*

Doctoral degree:

Degree and year:	*Doctor of Philosophy* (7 December 2012)
Subject Area:	Science education within educational sciences
Dissertation title:	*Conceptual metaphors in learning and teaching entropy – adopting a cognitive semantic approach in science education research.*
University:	Linköping University, Sweden
Supervisor:	Prof. Helge Strömdahl, Linköping University, Sweden
Examiners:	Prof. Ola Halldén, Stockholm University, Sweden Prof. Ann-Marie Pendrill, University of Gothenburg, Sweden Ass. Prof. Francoise Monnoyeur-Broitman, Linköping University, Sweden
Opponent:	Prof. David Hammer, Tufts University, USA

Post-doc:
Post doctoral position at Linköping University.

Docentur:
Antagen som docent vid Linköpings universitet, mars 2017.

Biträdande professor:
Antagen som biträdande professor vid Linköpings universitet, juni 2019.

Professor:
Antagen som professor vid Linköpings universitet, december 2024.

Nuvarande position:
Jag arbetar idag som professor och forskningsledare vid avdelning för lärande, estetik och naturvetenskap.

Handledda doktorander:

Fredrik Jeppsson
19780712-4032

Feaya Axelsson disputerade 2023 med avhandlingen: *Study guidance practices in science with Turkish speaking recently arrived pupils: A study focusing on scaffolding and meaning making.*

Bidrag erhållna i konkurrens:

- VR - Vetenskapsrådet, Sverige - **Fredrik Jeppsson**
  2024 – 2027 Multimodal meaning making and assessment in linguistically diverse science classrooms - 5 988 776

- Skolforskningsinstitutet, Sverige – **Fredrik Jeppssson**
  2024 – 2026 Multimodal meaning making and assesment in linguistically diverse science classrooms - 4 282 598

- VR - Vetenskapsrådet, Sverige - Tünde Puskas (***Fredrik Jeppsson, medsökande***)
  2019 – 2022 Livsfrågornas didaktik - Att arbeta med frågor om döden i förskolans praktik - 5 700 000

- VR - Vetenskapsrådet, Sverige - Kristina Danielsson (***Fredrik Jeppsson, medsökande***) 2018 - 2021Transformationer av transformationer. En tvärvetenskaplig studie av elevers meningsskapande genom transformationer av representationer i naturvetenskaplig undervisning - 6 000 000

Utmärkelser
Artikeln Thermal cameras in school laboratory activities blev utvald som årets artikel i *Physics Education* 2015. *"Thermal cameras in school laboratory activities has been selected by the editors of Physics education for inclusion in the exclusive Highlights of 2015. This paper has chosen for its outstanding quality and valuable contribution to the physics-teaching community".*

Artikeln: *Representations of science content in a primary classroom: Combining long and short timescales for multimodal analysis var* Top Cited Article in *Science Education* 2023.

Sakkunniguppdrag

Mälardalens universitet Sakkunnig vid bedömning av ansökningar till lektorat, med ansvar för granskning av vetenskapliga meriter, pedagogisk skicklighet och tjänstens relevans.

Jönköping University Sakkunnig vid bedömning av ansökningar till lektorat, inkluderande kvalitativ analys och jämförelse av sökandes akademiska och pedagogiska meriter.

Universitetet i Oslo Sakkunnig och medlem i bedömningsgrupp vid prövning av befordran till docentur, med uppdrag att analysera och värdera sökandes vetenskapliga och pedagogiska meriter.

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Övriga akademiska meriter med relevans:

- 2015 - 2018 Ämnesanvarig för naturvetenskapliga ämnena i lärarutbildning (F-3 & 4-6).
- 2014 – 2016 Seminarieansvarig på Institutionen för Samhällsvetenskap och Välfärd.
- 2016-07-01 – 2018-02-01 Studierektor och enhetschef på avdelningen för lärande, estetik och naturvetenskap.
- 2018 – 2020 Proprefekt vid Institutionen för Samhällsvetenskap och Välfärd och sedermera Institutionen för Beteendevetenskap och lärande.
- 2020 – Vetenskaplig ledamot för Etikprövningsnämnden
- 2024 – Forskningsledare för forskningsmiljön Teknik, naturvetenskap och didaktik (TekNaD)

Sakkunnigbedömda originalartiklar

Jeppsson, F., Kersting, M., Haglund, J., & Danielsson, K. (2025). Dual Lenses on Science Classroom Interaction - A Multimodal and Embodied Analysis of Learning Newton's Laws in a Primary Physics Classroom. *Science & Education*, https://doi.org/10.1007/s11191-025-00630-7

Jeppsson, F., Lattik Ekvall, L., Danielsson, K., Puskás, T., & Andersson, A. (2025). Depicting death for children–analysing how death is portrayed in stylistic different ways in children's picture books. *Scandinavian Journal of Educational Research*, 1-15.

Nestlog, E. B., Danielsson, K., & **Jeppsson, F**. (2024). Disciplinary content and text structures communicated in the classroom–pathways in science lessons. *Linguistics and Education,* 84, 101343.

Danielsson, K., Nestlog, E. B., **Jeppsson, F**., & Tang, K. S. (2023). Analysing Interaction in Science Classrooms: A Comparative Study of two Discourse Analysis Frameworks. *Educare*, (1), 1-32.

Danielsson, K., **Jeppsson, F**., Nestlog, E. B., & Tang, K. S. (2023). Representations of science content in a primary classroom: Combining long and short timescales for multimodal analysis. *Science Education*, *107*(6), 1561-1592.

Puskás, T., **Jeppsson, F**., & Andersson, A. (2023). 'There is no right or wrong answer': Swedish preschool teachers' reflections on the didactics of death. *Contemporary Issues in Early Childhood*, *24*(4), 438-452.

Puskás, T., Andersson, A., **Jeppsson, F**., & Slaughter, V. (2023). Living in heaven and buried in the earth? Teaching young children about death. *European Early Childhood Education Research Journal*, *31*(6), 900-913.

Jeppsson, F, Danielsson, K, Bergh Nestlog & Tang, K.S. (2022) Primary pupils' multimodal representations in worksheets – text work in science education. *Education Sciences 12*(3), 221.

Tang, K.S, **Jeppsson, F**, Danielsson, K & Bergh Nestlog, E (2022): Affordances of physical objects as a material mode of representation: A social semiotics perspective of hands-on meaning-making, *International Journal of Science Education. 44*(2), 179-200.

Åhman, N., & **Jeppsson, F**. (2020). Teachers' and pupils' scientific dialogue in learning about invisible thermal phenomena. *International Journal of Science Education*, 1-18.

Jeppsson, F., & Haglund, J. (2019). Sampublicering med studenter: ett sätt att stärka forskningsanknytningen i lärarutbildningen. *Högre utbildning, 9*(1), 98-111.

Grothérus, A., **Jeppsson, F**., & Samuelsson, J. (2019). Formative Scaffolding: how to alter the level and strength of self-efficacy and foster self-regulation in a mathematics test situation. *Educational action research, 27*(5), 667-690.

Jeppsson, F., Netzell, E., Haglund, J., & and Schönborn, K. (2017). Visualising energy transformation in electric circuits with infrared cameras. *School Science Review, 98*(364), 19- 22

Jeppsson, F., Frejd, J., & Lundmark, F. (2017). Wow it turned out red! First, a little yellow, and then red! – First graders work with heat camera in exploring and learning of thermal phenomena. *Journal of Research in Childhood Education. 31*(4), 581-596

Puskás, T., & **Jeppsson, F**. (2017). Om forskarhandledningens mål, samförfattarskap och meritering: Några dilemman inom det utbildningsvetenskapliga fältet. *Högre utbildning*, *7*(2), 51-62.

Haglund, J., **Jeppsson, F**., Hedberg, D., & Schönborn, K. J. (2015). Students' framing of laboratory exercises using infrared cameras. *Physical Review Special Topics - Physics Education Research, 11*(2), 020127.

Jeppsson, F., Haglund, J., & Amin, T. (2015). Varying use of conceptual metaphors across levels of expertise in thermodynamics. International Journal of Science and Education. 26. doi:10.1080/09500693.2015.1025247.

Haglund, J., **Jeppsson, F**., & Schönborn, K. (2015). Taking on the Heat—a Narrative Account of How Infrared Cameras Invite Instant Inquiry. *Research in Science Education*, 1- 29.

Haglund, J., **Jeppsson, F**., Hedberg, D., & Schönborn, K. J. (2015). Thermal cameras in school laboratory activities. *Physics Education*, *50*(4), 424.

Haglund, J., **Jeppsson, F.,** Melander, E., Pendrill, A. M., Xie, C., & Schönborn, K. J. (2016). Infrared cameras in science education. *Infrared Physics & Technology, 75,* 150-152. laboratory activities. *Physics Education, 50*(4), 424.

Amin, T. G., **Jeppsson, F**., & Haglund, J. (2015). Conceptual metaphor and embodied cognition in science learning: Introduction to special issue. *International Journal of Science Education*, *37*(5-6), 745-758.

Hedberg, D., Haglund, J., & **Jeppsson, F**. (2015). Metaforer och analogier inom termodynamik i kemiläroböcker för gymnasiet. *NorDiNa: Nordic Studies in Science Education*, *11*(1), 102-117.

Haglund, J., & **Jeppsson, F**. (2014). Confronting conceptual challenges in thermodynamics by use of self-generated analogies. *Science & Education*, *23*, 1505-1529.

Haglund, J., Jeppsson, F., & Andersson, J. (2014). Primary school children's ideas of mixing and of heat as expressed in a classroom setting. *Journal of Baltic Science Education*, *13*(5), 726-739.

Jeppsson, F., Haglund, J., Amin, T. G., & Strömdahl, H. (2013). Exploring the use of conceptual metaphors in solving problems on entropy. *Journal of the Learning Sciences*, *22*(1), 70-120.

Haglund, J., & **Jeppsson, F**. (2012). Using self-generated analogies in teaching of thermodynamics. *Journal of Research in Science Teaching*, *49*(7), 898-921.

Amin, T. G., **Jeppsson, F**., Haglund, J., & Strömdahl, H. (2012). Arrow of time: Metaphorical construals of entropy and the second law of thermodynamics. *Science Education*, *96*(5), 818-848.

Haglund, J., **Jeppsson, F**., & Andersson, J. (2012). Young children's analogical reasoning in science domains. *Science Education*, *96*(4), 725-756.

Jeppsson, F., **Haglund, J**., & Strömdahl, H. (2011). Exploiting language in teaching of entropy. *Journal of Baltic Science Education*, *10*(1), 27-35.

Jeppsson, F., & Strömdahl, H. (2010). Comprehension of temperature when solving a thermodynamic task. *Journal of Baltic Science Education*, *9*(3).

Rengman, H., Johansson, H., & **Jeppsson, F**. (2010). Den elektriska kretsen–En explorativ studie av svenska elevers uppfattningar angående den elektriska kretsen. *Nordic Studies in Science Education*, *6*(2), 173-191.

Sakkunnigbedömda originalartiklar under granskning

Jeppsson, F., Lattik Ekvall, L., Danielsson, K., Puskas, T. & Andersson, A. (under review) Illustrating death for children – An analysis of how death is portrayed in children's literature through picture books. *Scandinavian Journal of Education Research*

Jeppsson, F., Kertsing, M., Danielsson, K., & Haglund, J. (under review). Dual Lenses on Learning: A Multimodal and Embodied Analysis of Learning Newton's Laws. *Science Education*

Bergh Nestlog, E., Danielsson, K., & **Jeppsson, F**. (under review). Disciplinary content and text structures communicated in the classroom – pathways in science lessons. *Linguistics and Education*

Sakkunnigbedömda konferensbidrag

Fredrik Jeppsson
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Jeppsson, F., Danielsson, K. & Ünsal, Z. (2025). *Challenges In Assessing Primary Science Students' Multimodal Knowledge Representations.* Conference of the European Science Education Research Association (ESERA), Copenhagen, Denmark, 25 Aug-29Aug.

Danielsson, K., **Jeppsson, F**., & Ünsal, Z. (2025). *Orchestrating multimodal resources in a linguistically diverse science classroom. An analysis of a teacher's instruction for a hands-on activity.* Conference of the European Science Education Research Association (ESERA), Copenhagen, Denmark, 25 Aug-29Aug.

Jeppsson, F., Danielsson, K., Haglund, J., & Kersting, M. (2024). *Exploring students' embodied engagement in physics teaching through diverse analytical lenses.* First International Conference on Embodied Education, Danish School of Education (DPU), Aarhus University, Copenhagen, Denmark, 15-17 maj. http://urn.kb.se/resolve?urn=urn:nbn:se:kau:diva-99634

Danielsson, K., **Jeppsson. F** & Berg Nestlog, E (2023). Detecting students' signs of learning in physics classrooms: combining different time scales and grain sizes in multimodal analysis. Paper presented at 11th International Conference on Multimodality: Designing Futures. (ICOM-11), London, England, 28 Sep -29 Sept.

Jeppsson, F & Tang, K.S. (2021). From photons to pixels - Manipulation of invisible material processes through the lens of an infrared camera. Conference of the European Science Education Research Association (ESERA), Portugal, 30 Aug-3 Sept.

Cilingir, F & **Jeppsson, F**. (2021). Meaning making strategies through text reading in bilingual context during a science study guidance session. Conference of the EuropeanScience Education Research Association (ESERA), Portugal, 30 Aug-3 Sept.

Cilingir, F & **Jeppsson, F**. (2020). Meaning-making Processes in Science within a Swedish Context: The Case of Newly-arrived Turkish Pupils in Sweden. ESERA Virtual Doctoral Network Summer School, 28th June–4th July 2020.

Jeppsson, F., Haglund, J. & Schönborn, K. (2015). Personal embodied experiences in thermodynamics education. Paper presented at 11th Conference of the European Science Education Research Association (ESERA), Helsinki, Finland, 31 Aug-4 Sept

Haglund, J., **Jeppsson., F** & Schönborn, K. (2015). IR cameras provide disciplinary affordance to thermal phenomena. Paper presented at The Sixth Conference on the Foundations and Frontiers of Physics Education Research (FFPER), Bar Harbor, ME, June 15-19

Schönborn, K., Haglund, J. & **Jeppsson, F.** (2015). Students' interaction with IR cameras in POE laboratory exercises. Paper presented at 11th Conference of the European Science Education Research Association (ESERA), Helsinki, Finland, 31 Aug-4 Sept

Jeppsson, F., Haglund, J., & Amin, T. G. (2014). Varying use of conceptual metaphors across levels of expertise in thermodynamics. Paper presented at the 9th International Conference on Conceptual Change, EARLI, Bologna, Italy, 26-29 August.

Amin, T., **Jeppsson, F**., & Haglund, J. (2013). Language, conceptual metaphor and embodiedment in science: Implications for learning and instruction. Paper presented at the ESERA, Nicosia, Cyprus, 2-7 September.

Haglund, J., & **Jeppsson, F**. (2012). Using self-generated analogies in teaching of thermodynamics. Paper presented at the World Conference on Physics Education, Istanbul, 1-6 July.

Strömdahl, H., Haglund, J., & Jeppsson, F. (2011). The role of the referent in the history of science and in science education - heat and entropy as examples. Paper presented at the EARLI conference, Exeter, UK, 30 August - 3 September.

Jeppsson, F (2009). The interpretation of temperature when solving a thermodynamic task - a semiotic/semantic approach . September 2009, ESERA-conference, Istanbul: Turkey

Jeppsson, F., Haglund, J. & Strömdahl, H. (2009). Metaphors/analogies in teaching entropy. October 2009, FontD-conference, Sweden: Norrköping

Jeppsson, F (2008). The interpretation of terms used in a task solving process of a thermodynamic problem. May 2008, Science Education Conference at Aletheia University Taiwan: Taipei

Jeppsson, F (2008). Mångtydigheten hos begreppet temperatur – En kvalitativ studie av fysikers och fysiklärares uppfattningar av ordet temperatur. Juni 2008, Iceland: Reykjavik

Jeppsson, F., Haglund, J., Amin, T. G., & Strömdahl, H. (2011). Exploring the use of conceptual metaphors in solving problems on entropy. 2-4 June, Jean Piaget Society annual meeting, San Francisco: USA

Sakkunnigbedömda vetenskapliga böcker och bokkapitel

Haglund, J., **Jeppsson, F**., & Schönborn, K. J. (Eds.). (2022). *Thermal cameras in science education*. Cham: Springer International Publishing.

Haglund, J., **Jeppsson, F**., & Schönborn, K. J. (2022). Introduction. In *Thermal cameras in science education* (pp. 1-3). Cham: Springer International Publishing.

Haglund, J., **Jeppsson, F**., & Schönborn, K. J. (2022). Conclusion and Future Outlook. In *Thermal cameras in science education* (pp. 205-210). Cham: Springer International Publishing.

Åhman, N., & **Jeppsson, F**. (2022). A Language Model Based Analysis of Pupils' Practical Work with IR Cameras. In *Thermal Cameras in Science Education* (pp. 95-110). Cham: Springer International Publishing.

Andra publikationer (böcker & populärvetenskapliga artiklar)

Fredrik Jeppsson
19780712-4032

Lattik Ekvall., L & **Jeppsson, F**. (2025). Semiotik som verktyg för bildanalys för bildlärare och bildlärarstudenter. *Venue*, (27); Populärvetenskaplig tidskrift för forskning om skola och förskola, 8(1), 1-6.

Karlsson, M., & **Jeppsson, F.** (2019). Öva och pröva-Hur kan fritidspedagogik stärka teknikundervisningen?. *Venue:* Populärvetenskaplig tidskrift för forskning om skola och förskola, 8(1), 1-6.

Jeppsson, F. (2018). *Naturvetenskap och teknik genom estetiska lärprocesser i förskolan*. Natur och kultur.

Jeppsson, F., & Frejd, J. (2018). Naturvetenskap och energi I Jeppsson, F. (Red.) *Naturvetenskap och teknik genom estetiska lärprocesser i förskolan*. Natur och kultur.

Hagerman, F., **Jeppsson, F**., Axell, C., Frejd., & Sultan, U. (2018). Estetiska lärprocesser. I Jeppsson, F. (Red.) *Naturvetenskap och teknik genom estetiska lärprocesser i förskolan*. Natur och kultur.

Hagerman, F., **Jeppsson, F**., Axell, C., Frejd., & Sultan, U. (2018). NO och teknik på lekfulla villkor. I Jeppsson, F. (Red.) *Naturvetenskap och teknik genom estetiska lärprocesser i förskolan*. Natur och kultur.

Jeppsson, F. (2017). Kroppsligt förankrad kognition. *Venue.* Retrieved 16 November, 2014, from https://old.liu.se/uv/lararrummet/venue/kroppsligt-forankrad-kognition?l=sv

Netzell, E., Haglund, J., Schönborn, K. J., & **Jeppsson, F**. (2016). Värmekameran – en laboration med fokus på elektriska kretsar Ett hjälpmedel för elever att tolka och problematisera ideala modeller *Föreningen LMNT - Lärare i Matematik, Naturvetenskap och Teknik.*

Haglund, J., **Jeppsson, F**., Hedberg, D., Xie, C., & Schönborn, K. (2014). Värmekameror gör det osynliga synligt. *Venue*, (6), 1-5.

Jeppsson, F., & Haglund, J. (Eds.). (2013). *Modeller, analogier och metaforer i naturvetenskapsundervisning*. Studentlitteratur.

Jeppsson, F. (2013). Begreppsliga metaforer i studenters dialog. I Jeppsson, F & Haglund, J. (Red.) *Modeller, analogier och metaforer i naturvetenskapsundervisning*. Studentlitteratur.