

Dr Thorsten Scheiner

Contact information

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Work history

| Position | Organisation | Years |
|--------------------|--|--------------|
| Visiting Professor | Free University of Berlin, Institute for Mathematics, Germany | 2022–2023 |
| Research Fellow | Institute for Learning Sciences & Teacher Education Australian Catholic University, Australia | 2019–present |
| Lecturer | The University of Auckland, Department of Mathematics, New Zealand | 2017–2018 |

Education

| Qualifications | Organisation | Completed |
|----------------------|---|-----------|
| Doctor of Philosophy | University of Hamburg, Germany & Macquarie University, Australia | 2018 |
| Master of Education | Leibniz University of Hannover, Germany | 2013 |
| Bachelor of Science | Leibniz University of Hannover, Germany | 2011 |

Fellowships and scholarships

- Research Excellence Scholarship, Macquarie University, 2016–2017
- Klaus Murmann Fellowship, Foundation of German Business, 2014–2016
- Studienkolleg Fellowship, Foundation of German Business, 2009–2013
- Lower Saxony Scholarship, Leibniz University of Hannover, 2009–2011

Awards

- Early Career Researcher Excellence in Research Recognition Award, Institute for Learning Sciences and Teacher Education, 2020
- Karl H. Ditze Dissertation Award, University of Hamburg, 2018

Fields of educational expertise

- Mathematics education
- Teacher education
- Learning sciences
- Educational theory

Funded research

Competitive grants

| Years | Grants | Funding |
|-----------|--|-------------|
| 2022–2024 | Australian Research Council, Discovery Grant <i>Enabling critical mathematical thinking: The role of teacher noticing</i> | AUD 382 715 |
| 2014–2016 | Klaus Murmann Fellowship, Foundation of German Business <i>A structural analysis of mathematics teacher knowledge.</i> | EUR 66 500 |

Other funded research

| Year | Research | Funding |
|-----------|--|------------|
| 2018 | Karl H. Ditze Dissertation Award, University of Hamburg | EUR 3 000 |
| 2017–2018 | Performance-based Research Funds, The University of Auckland | NZD 10 000 |
| 2016–2017 | Research Excellence Scholarship, Macquarie University | AUD 18 750 |

Publications

Book chapters

- Scheiner, T., & Buchholtz, N. (2022). Pedagogical content knowledge oder fachdidaktisches Wissen? [Pedagogical content knowledge or subject matter didactic knowledge?]. In N. Buchholtz, B. Schwarz & K. Vorhölter (Eds.), *Initiationen mathematikdidaktischer Forschung* (pp. 267–286). Springer. https://doi.org/10.1007/978-3-658-36766-4_14
- Scheiner, T. (2019). If we want to get ahead, we should transcend dualisms and foster paradigm pluralism. In G. Kaiser & N. Presmeg (Eds.), *Compendium for early career researchers in mathematics education* (pp. 511–532). Springer. https://doi.org/10.1007/978-3-030-15636-7_27
- Kaiser, G., Scheiner, T., & Jentsch, A. (2017). Early career researcher day at ICME-13. In G. Kaiser (Ed.), *Proceedings of the 13th International Congress on Mathematical Education* (pp. 765–766). Springer. https://doi.org/10.1007/978-3-319-62597-3_143

Articles

- König, J., Santagata, R., Scheiner, T., Adleff, A.-K., Yang, X., & Kaiser, G. (2022). Teacher noticing: A systematic literature review on conceptualizations, research designs, and findings on learning to notice. *Educational Research Review*, 100453. <https://doi.org/10.1016/j.edurev.2022.100453>
- Scheiner, T., Godino, J., Montes, M., Pino-Fan, L., & Climent, N. (2022). On metaphors in thinking about preparing mathematics for teaching. *Educational Studies in Mathematics*, 111(2), 253–270. <https://doi.org/10.1007/s10649-022-10154-4>
- Pinto, M. M. F., & Scheiner, T. (2022). Sobre processos de aprendizagem da matemática e suas funções epistemológica, conceitual e cognitiva [On mathematical learning processes and their epistemological, conceptual and cognitive functions]. *Bolema: Boletim de Educação Matemática*, 36(72), 495–514. <https://doi.org/10.1590/1980-4415v36n72a22>
- Scheiner, T. (2022). Examining assumptions about the need for teachers to transform subject matter into pedagogical forms accessible to students. *Teachers and Teaching: Theory and Practice*, 28(1), 1–11. <https://doi.org/10.1080/13540602.2021.2016688>
- Santagata, R., König, J., Scheiner, T., Nguyen, H., Adleff, A.-K., Yang, X., & Kaiser, G. (2021). Mathematics teacher learning to notice: A systematic review of studies of video-based programs. *ZDM – Mathematics Education*, 53(1), 119–134. <https://doi.org/10.1007/s11858-020-01216-z>
- Scheiner, T. (2021). Towards a more comprehensive model of teacher noticing. *ZDM – Mathematics Education*, 53(1), 85–94. <https://doi.org/10.1007/s11858-020-01202-5>

- Scheiner, T. (2020). Dealing with opposing theoretical perspectives: Knowledge in structures or knowledge in pieces? *Educational Studies in Mathematics*, 104(1), 127–145. <https://doi.org/10.1007/s10649-020-09950-7>
- Scheiner, T., Montes, M. A., Godino, J. D., Carrillo, J., & Pino-Fan, L. (2019). What makes mathematics teacher knowledge specialized? Offering alternative views. *International Journal of Science and Mathematics Education*, 17(1), 153–172. <https://doi.org/10.1007/s10763-017-9859-6>
- Scheiner, T., & Pinto, M. M. F. (2019). Emerging perspectives in mathematical cognition: contextualizing, complementizing, and complexifying. *Educational Studies in Mathematics*, 101(3), 357–372. <https://doi.org/10.1007/s10649-019-9879-y>
- Scheiner, T. (2016). Teacher noticing: enlightening or blinding? *ZDM – Mathematics Education*, 48(1), 227–238. <https://doi.org/10.1007/s11858-016-0771-2>
- Scheiner, T. (2016). New light on old horizon: constructing mathematical concepts, underlying abstraction processes, and sense making strategies. *Educational Studies in Mathematics*, 91(2), 165–183. <https://doi.org/10.1007/s10649-015-9665-4>
- Pinto, M. M. F., & Scheiner, T. (2015). Visualização e ensino de análise matemática [Visualization and the teaching of mathematical analysis]. *Educação Matemática Pesquisa*, 17(3), 637–654. Retrievable from <https://revistas.pucsp.br/index.php/emp/article/view/25675>

Conference proceedings

- Scheiner, T. (2022). Exploring deficit-based and strengths-based framings to noticing student mathematical thinking. In C. Fernández, S. Llinares, A. Gutiérrez, & N. Planas (Eds.), *Proceedings of the 45th Conference of the International Group for the Psychology of Mathematics Education* (Vol. 3, pp. 395–402). PME.
- Scheiner, T. (2018). Sense-making in mathematics: Towards a dialogical framing. In J. Hunter, P. Perger, & L. Darragh (Eds.), *Proceedings of the 41st annual conference of the Mathematics Education Research Group of Australasia: Making waves, opening spaces* (pp. 669–676). MERGA.
- Scheiner, T. (2018). Mathematics cognition reconsidered: On ascribing meaning. In A. Weinberg, C. Rasmussen, J. Rabin, M. Wawro, & S. Brown (Eds.), *Proceedings of the 21st Annual Conference on Research in Undergraduate Mathematics Education* (pp. 1234–1239). RUME.
- Scheiner, T., & Pinto, M. M. F. (2018). Theoretical advances in mathematical cognition. In D. M. Gómez (Ed.), *Proceedings of the First PME Regional Conference: South America* (pp. 97–104). PME.
- Scheiner, T. (2018). Problematizing knowledge for teaching. In A. Halai & F. Mtenzi (Eds.), *Proceedings of the Fifth African Regional Congress of ICMI on Mathematical Education* (pp. 116–120). AFRICME.
- Scheiner, T. (2017). Conception to concept or concept to conception? From being to becoming. In B. Kaur, W. K. Ho, T. L. Toh, & B. H. Choy (Eds.), *Proceedings of the 41st Conference of the International Group for the Psychology of Mathematics Education* (Vol. 4, pp. 145–152). PME.
- Scheiner, T., & Pinto, M. M. F. (2016). Images of abstraction in mathematics education: Contradictions, controversies, and convergences. In C. Csíkos, A. Rausch, & J. Sztányi (Eds.), *Proceedings of the 40th Conference of the International Group for the Psychology of Mathematics Education* (Vol. 4, pp. 155–162). PME.
- Pinto, M. M. F., & Scheiner, T. (2016). Making sense of students' sense making through the lens of the structural abstraction framework. In E. Nardi, C. Winslow & T. Hausberger (Eds.), *Proceedings of the First Conference of the International Network for Didactic Research in University Mathematics* (pp. 474–483). INDRUM.
- Scheiner, T. (2015). Lessons we have (not) learned from past and current conceptualisations of mathematics teachers' knowledge. In K. Krainer & N. Vondrová (Eds.), *Proceedings of the Ninth Conference of the European Society for Research in Mathematics Education (CERME9)* (pp. 3248–3253). ERME.
- Scheiner, T. (2015). Theorizing about mathematics teachers' professional knowledge: The content, form, nature, and source of teachers' knowledge. In M. Marshman, V. Geiger, & A. Bennison (Eds.), *Proceedings of the 38th annual conference of the Mathematics Education Research Group of Australasia: Mathematics education in the margins* (pp. 563–570). MERGA.
- Scheiner, T. (2015). Shifting the emphasis toward a structural description of (mathematics) teachers' knowledge. In K. Bewick, T. Muir, & J. Wells (Eds.), *Proceedings of the 39th Conference of the International Group for the Psychology of Mathematics Education* (Vol. 4, pp. 129–136). PME.
- Scheiner, T., & Pinto, M. M. F. (2014). Cognitive processes underlying mathematical concept construction: The missing process of structural abstraction. In C. Nicol, S. Oesterle, P. Liljedahl, & D. Allan (Eds.), *Proceedings of the 38th Conference of the International Group for the Psychology of Mathematics Education and the 36th Conference of the North American Chapter of the Psychology of Mathematics Education* (Vol. 5, pp. 105–112). PME.

Conference papers

- Scheiner, T. (2022). *Shifting framings in teacher noticing of student mathematical thinking: From deficits to strengths* [Paper presentation]. 2022 Annual Meeting of the American Educational Research Association, San Diego, USA.
- Scheiner, T. (2021). *Model of dealing with opposing theoretical perspectives in cognitive science* [Paper presentation]. 19th Biennial Conference of the European Association for Research on Learning and Instruction, Gothenburg, Sweden.
- Scheiner, T. (2021). *Toward an embodied, cultural, and social view of teacher noticing* [Paper presentation]. 19th Biennial Conference of the European Association for Research on Learning and Instruction, Gothenburg, Sweden.
- Scheiner, T. (2021). *Critical remarks on the notion of unpacking mathematics in discourses of teacher knowledge* [Paper presentation]. 14th International Congress on Mathematical Education (TSG 33: Knowledge in/for teaching mathematics at secondary level), Shanghai, China.
- Scheiner, T. (2020). *Using conflicts, tensions, and paradoxes for theory building* [Paper presentation]. 2020 Annual Meeting of the American Education Research Association, San Francisco, USA.
- Scheiner, T. (2019). *A critical stance towards pedagogical content knowledge* [Paper presentation]. 18th Biennial Conference of the European Association for Research on Learning and Instruction, Aachen, Germany.
- Scheiner, T. (2019). *Problematizing pedagogical content knowledge* [Paper presentation]. 2019 Annual Meeting of the American Education Research Association, Toronto, Canada.
- Scheiner, T. (2019). *Toward a model of teacher noticing* [Paper presentation]. 2019 Annual Meeting of the American Education Research Association, Toronto, Canada.
- Scheiner, T. (2016). *Crossing the boundaries of our historical ways of thinking in conceptualising teachers' knowledge* [Paper presentation]. 2016 Annual Meeting of the American Education Research Association, Washington D.C, USA.
- Scheiner, T. (2016). *Are we trapped in old habits? Revisiting ways of thinking in conceptualising teacher knowledge* [Paper presentation]. 13th International Congress on Mathematical Education (TSG 46: Knowledge in/for teaching mathematics at secondary level), Hamburg, Germany.
- Scheiner, T., & Pinto, M. M. F. (2016). *Abstraction in mathematics: Taking account for the increasing complexity and context-sensitivity of the knowledge system* [Paper presentation]. 13th International Congress on Mathematical Education (TSG 27: Learning and cognition in mathematics), Hamburg, Germany.

Reports

- Kaiser, G., Scheiner, T., & Buchholtz, N. (2013). *Evaluation des innovativen Projektes "MINT–Lehrerbildung Neu Denken" der Deutschen Telekom Stiftung an der FU Berlin. Abschlussbericht zu den qualitativen Ergebnissen*. [Final Report of the Evaluation of the Project "MINT–Rethinking Teachers' Education": Qualitative Results]. University of Hamburg.

Test instrument

- Buchholtz, N., Scheiner, T., Döhrmann, M., Suhl, U., Kaiser, G. & Blömeke, S. (2016). *TEDS-shortM: Teacher Education and Development Study – Short Test on Mathematics Content Knowledge (MCK) and Mathematics Pedagogical Content Knowledge (MPCK). Kurzfassung der mathematischen und mathematikdidaktischen Testinstrumente aus TEDS-M, TEDS-LT und TEDS-Telekom* (2nd ed.). University of Hamburg. (1st ed. published 2012)

Scholarly contributions and service

Editorial board member

- Teaching and Teacher Education (TATE)
- Journal of Mathematics Teacher Education (JMTE)

Invited reviewer

Assessor for Funding Bodies

- Australian Research Council (ARC)

Reviewing Journal Manuscripts

- Educational Studies in Mathematics (ESM)
- International Journal of Mathematical Education in Science and Technology (IJMEST)
- International Journal of Science and Mathematics Education (IJSME)
- Journal for Research in Mathematics Education (JRME)
- Journal of Mathematics Teacher Education (JMTE)
- Journal of Teacher Education (JTE)
- Mathematical Thinking and Learning (MTL)
- Mathematics Education Research Journal (MERJ)
- Research in Mathematics Education (RME)
- Teaching and Teacher Education (TATE)
- The Journal of Mathematical Behavior (JMB)
- ZDM–Mathematics Education (ZDM)

Reviewing Conference Papers

- Conference of the European Association for Research on Learning and Instruction (EARLI)
- Conference of the International Group for the Psychology of Mathematics Education (PME)
- Conference on Research in Undergraduate Mathematics Education (RUME)
- Congress of the European Society for Research in Mathematics Education (CERME)
- International Congress on Mathematical Education (ICME)
- National Council of Teachers of Mathematics Research Conference (NCTM)

Scholarly contribution

Leadership

- Member of Representation Committee for increasing equity, diversity, inclusion and access in academic publishing of the Journal of Mathematics Teacher Education (2021–present)
- Team member of the Topic Study Group “Knowledge in/for teaching mathematics at secondary level” at the 14th International Congress on Mathematical Education, 2020–2021
- Co-organizing the Early Career Researcher Day at the 13th International Congress on Mathematical Education, 2015–2016
- Co-leading the working group “Establishing educational initiatives” of the Foundation of German Business, 2015–2019
- Leading the working group “Mathematics education” of the Foundation of German Business, 2012–2016
- Leading the working group “MEQS—Managing and enhancing quality in schools” of the Foundation of German Business, 2011–2016

Mentoring Emerging Researchers and Teachers (since 2018)

- Apr 2021: Presentation at the FEA strategic development in research workshop on “Quality research publications in education” at the Australian Catholic University, Australia.
- Jul 2019: Invited workshop on “Academic writing and publishing” at the University of Huelva, Huelva, Spain.
- Feb 2019: Member of the Early Bird Review Panel of the Mathematics Education Research Group Australasia (MERGA). Brisbane, Australia.
- Nov 2018: Workshop on “Start with a problem, not a method: Developing mathematical thinking from a problem” for in-service teachers at the 2018 Mathematics and Calculus Teachers’ Day of the Auckland Mathematical Association. Auckland, New Zealand.

- Sep 2018: Jury member for Student Research Poster Competition, Faculty of Science, The University of Auckland, New Zealand.
- Aug 2018: Invited workshop on “Academic writing: Writing for publication” at the Fifth African Regional Congress of ICMI on Mathematical Education (AFRICME). Dar es Salaam, Tanzania.
- Jun 2018: Jury member for Student Research Conference to delegate the Mathematics Education Unit, Department of Mathematics, The University of Auckland, New Zealand.
- Jan 2018: Invited presentation on “Contributing to the research environment” at the Second Annual Mathematics and Statistics Education Graduate Summer School. Massey University, New Zealand.

Memberships

- American Educational Research Association (AERA)
- European Society for Research in Mathematics Education (ERME)
- European Association for Research on Learning and Instruction (EARLI)
- Gesellschaft für Didaktik der Mathematik (Society for Didactics of Mathematics) (GDM)
- International Group for the Psychology of Mathematics Education (PME)
- Mathematics Education Research Group of Australasia (MERGA)
- Special Interest Group of the MAA on Research in Undergraduate Mathematics Education (RUME)