Dr. Christina Krause – **Curriculum Vitae**

CONTACT INFORMATION

Postal (office)	University of Duisburg-Essen Faculty for Mathematics Thea-Leymann-Str. 9 45127 Essen, Germany
Email	christina.krause@uni-due.de

Research interests Gestures, embodiment and multimodality in the learning of mathematics; Mathematical conceptualization; Semiotics in mathematics; Metaphorics in mathematics; Mathematical epistemology; Aspects of language in the learning of mathematics

PROFESSIONAL EXPERIENCE

10/2019 – 09/2022 **Marie Skłodowska Curie-fellow in the EU-funded program Horizon2020 (University of California, Berkeley / University of Duisburg-Essen)**
Implementation of the project *SignEd|Math – Signs of Mathematics: Fostering the emergence of conceptual gesture in deaf students*, funded in the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska Curie Grant Agreement No [GA no. 847487] (under the supervision of Prof. Dor Abrahamson, University of California, Berkeley (10/2019 – 09/2021) and Prof. Dr. Florian Schacht, University of Duisburg-Essen, Germany (10/2021 – 09/2022))

10/2018 – 04/2019 parental leave (worked part time in the summer term 2018)

10/2017 – 04/2018 maternity and parental leave

10/2014 – 09/2019 **University of Duisburg-Essen, Campus Essen, Faculty of Mathematics, Mathematics Education unit**
Postdoctoral researcher and lecturer

04/2016 – 09/2016 **University of Siegen, Faculty IV – Department of Mathematics, Mathematics Education**
Visiting/Substitute professor for Primary and Secondary Mathematics Education (on leave from the University of Duisburg-Essen)

02/2010 – 09/2014 **University of Bremen, Department 3 (Mathematics and Computer Science), Mathematics Education unit**
Research and teaching assistant

09/2009 – 09/2010 ***menssana* Coaching Institute Oldenburg (Germany)**
Tutor for Mathematics, Physics and Italian at secondary level

09/2009 **University of Applied Sciences, Oldenburg (Germany)**
Guest lecturer in 'Mathematics for engineers'

10/2006 – 08/2008 **Carl von Ossietzky-University Oldenburg (Germany), Department of Mathematics**
Teaching assistant in mathematics

10/2004 – 08/2005 **Carl von Ossietzky-University Oldenburg (Germany), Department of Mathematics**
Teaching assistant in mathematics

EDUCATION

2015	**PhD (Dr rer. nat., *summa cum laude*) at the University of Bremen (Germany), Dept. 3 (Mathematics & Computer Science)** Title of the thesis: "The mathematics in our hands: How gestures contribute to constructing mathematical knowledge" 1st assessor: Prof. Dr. Angelika Bikner-Ahsbahs, University of Bremen (Germany) 2nd assessor: Prof. Dr. Ferdinando Arzarello, University of Turin (Italy)
2010 – 2015	**PhD candidate: University of Bremen (Germany), Dept. 3 (Mathematics & Computer Science), Mathematics Education unit** Research focus in mathematics education: "semiotics", "gesture studies", "construction of mathematical knowledge", "social interaction" Supervisor: Prof. Dr. Angelika Bikner-Ahsbahs (Bremen, Germany)
2009	**Graduation in Mathematics** (Graduation degree: Dipl.-Math., equivalent to the North-American master's degree in Mathematics) Title of the thesis: "On minimal tropical bases of regular matroids" (supervised by Prof. Dr. Eva-Maria Feichtner)
10/2008 – 05/2009	**Graduate Student: University of Bremen (Germany), Dept. 3 (Mathematics & Computer Science)**
10/2005 – 09/2006	**Study Abroad at the Universitá degli Studi di Siena (Italy)**
10/2002 – 03/2009	**Diploma studies: Carl von Ossietzky-University Oldenburg (Germany)** Major: Mathematics; Minor: Physics

PROJECTS

Current

2016 – ongoing	"*DeafMath: The mathematics of hearing-impaired learners – Barriers and chances"*: PI (preliminary study funded by the principle office of the University of Duisburg-Essen within the Program Supporting Excellent Young Researchers); Recruitment and guidance of associated staff: One student research assistant, two deaf assistants for translation and consulting.; Supervision of one related master's thesis and one related thesis as written part of the 1st State Examination (entitlement for becoming a secondary teacher)
2018 – 2020	"*The body in mathematics: Theoretical and methodological lenses"*: Book project with Prof Laurie Edwards (St. Mary's College of California), aiming at explicating and comparing different methodological approaches and perspective in the context of embodiment and multimodality in the learning of mathematics. The book will not only be a collection of chapters written by different authors but rather a collaboration between them.
2019 – 2022	With Prof Dor Abrahamson (UC Berkeley, California) and Prof. Dr. Florian Schacht (University of Duisburg-Essen, Germany) (funded in the European Union's Horizon 2020 research and innovation programme under the Marie Sklodowska-Curie grant agreement No 842487): *„Signs of Mathematics: Fostering the Emergence of Conceptual Gesture Among Deaf Student" (SignEd|Math)";* a Design-Based Research project against the background of theories of embodied cognition; Objectives of the project are (i) Designing a learning environment building on deaf learners' strengths and aligned to their needs, (ii) gaining deeper insights into learning mathematics within an embodied perspective through analysing the learners' interaction with the learning material and with each other, and (iii) reflecting on the design approach and developing it further.

CONFERENCES AND OTHER RESEARCH STAYS

Invited talks

11/2018 University of Cologne, Symposium INKMUT *Inklusion im Mathematikunterricht* (Inclusion in the mathematics classroom) (invited by Prof. Benjamin Rott and Prof. Inge Schwank)

05/2018 Invited talk at the Freie Universität Berlin (Germany), Colloquium in Mathematics Education (invited by Prof. Dr. Brigitte Lutz-Westphal)

05/2018 Presentation at the University of Loughborough (via online conference, Skype)

02/2018 Invited talk at the College of Education at the University of Iowa (via online conference, Zoom)

01/2018 Invited talk at the School of Mathematical and Statistical Sciences at Arizona State University (via online conference, Adobe Connect)

09/2017 Invited talk at the symposium "Growing knowledge in mathematics (education)", University of Bremen (Germany), in honour of Prof. Dr. Angelika Bikner-Ahsbahs (via online conference, Skype)

03/2017 Invited talk at the colloquium of the Graduate School of Education at UC Berkeley (CA; invited by Prof. Dor Abrahamson)

01/2017 Invited talk at the mathematical colloquium of the University of Duisburg-Essen, Faculty for Mathematics (Essen, Germany; invited by Prof. Dr. Irwin Yousept)

07/2016 Invited talk at the University of Cologne (Germany), Colloquium in Mathematics Education (invited by Prof Dr Inge Schwank)

01/2016 Invited speaker at the annual conference of the Italian Society for Mathematics Education „XXXIII Seminario di Ricerca in Didattica della Matematica" (invited for collaboration by Prof Dr Cristina Sabena; presentations in Italian; Rimini, Italy)

09/2014 Invited talk at the interdisciplinary workshop 'Body Diagrams – On the Epistemic Kinetics of Gestures' at the HumTec of the RWTH Aachen, invited by Prof. Dr. Irene Mittelberg (Aachen, Germany)

Refereed presentations at conferences

07/2019 PME 43 (43rd Conference of the International Group for the Psychology of Mathematics Education; Pretoria, South Africa)

07/2018 PME 42 (42nd Conference of the International Group for the Psychology of Mathematics Education; Umea, Sweden)

07/2017 PME 41 (41st Conference of the International Group for the Psychology of Mathematics Education; Singapore, Singapore; Presentation of a Research Report and organisation of a Discussion Group)

02/2017 CERME 10 (10th Congress of European Researchers in Mathematics Education; Dublin, Ireland)

08/2016 PME 40 (40th Conference of the International Group for the Psychology in Mathematics Education; Szeged, Hungary)

07/2016 ICME 13, Speaker in the TSG 54 (Semiotics in mathematics education; Hamburg, Germany)

07/2016 ISGS 7 (7th International Conference of the International Society for Gesture Studies; Paris, France)

07/2015 PME 39 (39th Conference of the International Group for the Psychology in Mathematics Education; Hobart, Tasmania; one poster presentation, one Oral communication, one ad hoc presentation)

02/2015 CERME 9 (9th Congress of European Researchers in Mathematics Education; Prague, Czech Republic)

09/2014 14th International Conference of the German Society for Semiotics, theme session on 'Body diagrams: On the epistemic kinetics of gesture' (Tubingen, Germany)

07/2014 ISGS 6 (6th International Conference of the International Society for Gesture Studies; San Diego, CA)

08/2012 YESS 6 (Summer school of ERME; Faro, Portugal)

07/2012 PME 36 (36th Conference of the International Group for the Psychology of Mathematics Education; Taipei, Taiwan)

Research stays

09-10/2017 Embodied Design Research Laboratory of the Graduate School of Education at UC Berkeley (CA, USA)

03-04/2017 Embodied Design Research Laboratory of the Graduate School of Education at UC Berkeley (CA, USA)

09/2015 Mathematics education working group of the University of Turin (Italy)

04/2013 Mathematics education working group of the University of Turin (Italy)

03/2011 Mathematics education working group of the University of Turin (Italy; presentation in Italian)

10/2010 Mathematics education working group of the University of Turin (Italy; presentation in Italian)

Other presentations at conferences

06/2017 Informal AdHoc-Discussion at the Canadian Mathematics Education Study Group (CMESG; Montreal, Canada), discussing the question "What/how can we learn from the deaf mathematics classroom?"

03/2017 51st Annual Conference of the German Society for Mathematics Education (Potsdam, Germany)

03/2016 50th Annual Conference of the German Society for Mathematics Education (Heidelberg, Germany)

02/2015 49th Annual Conference of the German Society for Mathematics Education (Basel, Switzerland)

03/2012 46th Annual Conference of the German Society for Mathematics Education (Weingarten, Germany)

02/2011 45th Annual Conference of the German Society for Mathematics Education (Freiburg, Germany)

Further in preparation:

12/2019 Invited workshop at the conference of the Federal Association of the Students of Deaf Education (Bundesverband der Studierenden der Gehörlosen- und Schwerhörigenpädagogik (BSGS)

07/2020 Invited as co-leader of the Thematic Study Group on Semiotics in Mathematics Education' (TSG 60) at the 14th International Congress of Mathematics Education (ICME 14) (Shanghai, China)

PUBLICATIONS

Monographs

Krause, C.M. (2016). *The mathematics in our hands: How gestures contribute to constructing mathematical knowledge.* Wiesbaden, Germany: Springer Spektrum.

Book chapters

Krause, C.M. (2018). Embodied Geometry: Signs and gestures used in the deaf mathematics classroom – the case of symmetry. In R. Hunter, M. Civil, B. Herbel-Eisenmann, N. Planas, D. Wagner (Eds.), *Mathematical discourse that breaks barriers and creates space for marginalized learners* (pp. 171-193). Rotterdam: Sense.

Krause, C.M. & Salle, A. (2018). On the role of gestures for the descriptive analysis of 'Grundvorstellungen': A case of linear functions. In: N. Presmeg, L. Radford, W.-M. Roth, G. Kadunz (Eds.), Signs of Signification: Semiotics in Mathematics Education Research (ICME 13 Monographs) (pp. 293-313). Springer International Publishing.

Journal articles

Krause, C.M. (2019). What you see is what you get? – Sign language in the mathematics classroom. *Journal for Research in Mathematics Education, 50*(1), 84-97.

Peer-reviewed conference proceeding

Krause, C. M. & Salle, A. (2019). Towards cognitive functions of gestures – a case of Mathematics. In M. Graven, H. Venkat, A. Essien, P. Vale (Eds.), *Proceedings of the 43rd Conference of the International Group for the Psychology in Mathematics Education* (Vol. 2, pp. 496-503). Pretoria, South Africa: PME.

Krause, C. M. (2017). Iconicity in signed fraction talk of hearing-impaired sixth graders. 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 in Mathematics Education, Vol. 3* (pp. 89-96). Singapore, Singapore: PME.

Krause, C. M. (2017). DeafMath: Exploring the influence of sign language on mathematical conceptualization. In T. Dooley & G. Gueudet (Eds.), *Proceedings of the 10th Congress of the European Society for Research in Mathematics Education* (pp. 1316-1323). Dublin, Ireland: DCU Institute of Education and ERME.

Krause, C. & Salle, A. (2016). Learners' gestures when learning alone. In: C. Csíkos, A. Rausch, J. Szitányi (Eds.), *Proceedings of the 40th Conference of the International Group for the Psychology in Mathematics Education, Vol. 3* (pp. 123-130). Szeged, Hungary: PME.

Sabena, C., Krause, C. M., & Maffia, A. (2016). L'analisi semiotica in ottica multimodale: dalla costruzione di un quadro teorico al networking con altre teorie [Semiotic analysis within a multimodal perspective: from the construction of a theoretic frame to networking theories]. Contribution to the Italian conference "*XXXIII Seminario di Ricerca in Didattica della Matematica*", January 2016 in Rimini, Italy. Online: http://www.airdm.org/doc/SemNaz2016_RELAZIONE.pdf

Krause, C. M. (2015). Gestures as part of discourse in reasoning situations: Introducing two epistemic functions of gestures. In K. Krainer & N. Vondrová (Eds.), *Proceedings of the 9th Congress of the European Society for Research in Mathematics Education* (CERME 9 in Prague 2015) (pp. 1427-1433). Prague, CZ: ERME.

Bikner-Ahsbahs, A., Sabena, C., Arzarello, F. & Krause, C. M. (2014). Semiotic and theoretic control within and across conceptual frames. In C. Nicol, P. Liljedahl, S. Oesterle, & D. Allan (Eds*.), Proceedings of the joint meeting of PME 38 and PME-NA 36*. Vol. 2 (pp. 153-160). Vancouver, Canada: PME.

Krause, C. M. & Bikner-Ahsbahs, A. (2012). Modes of sign use in epistemic processes. In T.-Y. Tso (Ed.), *Proceedings of the 36th Conference of the International Group for the Psychology in Mathematics Education*, Vol. 3 (pp. 19 – 26), Taipei, Taiwan: PME.

Peer reviewed conference-abstracts and short contributions with peer-review

Krause, C.M. (2018). Establishing representational meaning of gestures – learning from the deaf classroom. In E. Bergqvist, M. Österholm, C. Granberg, & L. Sumpter (Eds.), *Proceedings of the 42nd conference of the International Group for the Psychology of Mathematics Education, Vol. 5* (p. 91). Umea, Sweden: PME.

Krause, C. M. & Salle, A. (2016). Gestures in individual mathematical learning processes: Perspectives for the researcher and for the learner. In: *The Book of Abstracts of the 7th Conference of the International Society for Gesture Studies*. Paris, France: ISGS.

Sabena, C., Krause, C. M., & Maffia, A. (2015). L'analisi semiotica in ottica multimodale: dalla costruzione di un quadro teorico al networking con altre teorie. [Semiotic analysis within a multimodal perspective: from the construction of a theoretic frame to networking theories]. Extended Abstract for the Italian conference "*XXXIII Seminario di Ricerca in Didattica della Matematica*", Accessible online: http://www.airdm.org/doc/SemNaz2016_Abstract.pdf

Krause, C. M. (2015). Epistemic functions of gestures: Results from an empirical study. In K. Beswick, T. Muir, & J. Wells (Eds.), *Proceedings of the 39th Conference of the International Group for the Psychology in Mathematics Education, Vol. 1* (p. 177). Hobart, Tasmania: PME.

Krause, C. M. (2015). On the nature of representational gestures as grounded in the mathematical task. In K. Beswick, T. Muir, & J. Wells (Eds), *Proceedings of the 39th Conference of the International Group for the Psychology in Mathematics Education, Vol. 1* (p. 232). Hobart, Tasmania: PME.

Krause, C. M. (2014). Information bundles and their associated signs – how gestures can 'make' mathematical meaning. In: *The Book of Abstracts of the 14th International Conference of the German Society for Semiotics.* Tübingen, Germany: DGS. Online: http://www.semiose.de/export_download.php?id=772 (p. 106)

Krause, C. M. & Bikner-Ahsbahs, A. (2014). 'Where, what and how' – Specifying gestures as a pathway to mathematics? In: *The Book of Abstracts of the 6th Conference of the International Society for Gesture Studies*.

San Diego, USA: ISGS. Online: http://www.math.unibremen.de/didaktik/ma/chkrause/documents/Krause_Bikner-Ahsbahs_Where,_what_and_how.pdf

Other contributions in conference proceedings

Krause, C. M. (2017). What/How can we learn from the deaf mathematics classroom? In: J. Holm, S. Mathieu-Soucy, S. Oesterle (Eds.), Proceedings of the 2017 Annual Meeting of the CMESG (pp. 259-260). Canada: Montréal: CMESG.

Krause, C. M. (2016). DeafMath – Ein Projekt zum Einfluss der Gebärdensprache auf Mathematikverständnis [DeafMath – A project on the influence of sign language on understanding mathematics]. *Vorträge auf der 50. Tagung für Didaktik der Mathematik [Proceedings of the 50th Annual Conference of the German Society for Math Education].* (pp. 827-830). Münster: WTM.

Salle, A. & Krause, C. M. (2016). Grundvorstellungen und Gesten – Eine exemplarische Analyse im Bereich linearer Funktionen [Grundvorstellungen and gestures – A case analysis in the context of linear functions]. *Vorträge auf der 50. Tagung für Didaktik der Mathematik [Proceedings of the 50th Annual Conference of the German Society for Math Education].* (pp. 577-580). Münster: WTM.

Krause, C. M. (2015). Hände hoch! – Ergebnisse einer empirischen Studie zur Rolle von Gesten in sozialen mathematischen Erkenntnisprozessen. [Hands up! – Results of an empirical study on the role of gestures in social epistemic processes in mathematics]. *Vorträge auf der 49. Tagung der GDM in Basel [Proceedings of the 49th Annual Conference of the German Society for Mathematics Education].* Münster: WTM.

Behrens, D., Krause, C. M., & Bikner-Ahsbahs, A. (2014). „Ich zeig' uns was, was du nicht siehst" – Zur epistemischen Rolle von Gesten. [„I show us something that you don't see" – On the epistemic role of gestures]. In J. Roth & J. Ames (Eds.), *Beiträge zum Mathematikunterricht. Vorträge auf der 48. Tagung für Didaktik der Mathematik [Proceedings of the 48th Annual German of the GDM].* (pp. 149- 152). Münster: WTM.

Krause, C. M. (2012). Arten des Zeichengebrauchs und ihre Rolle im mathematischen Erkenntnisprozess [Modes of sign use and their role in epistemic processes] In M. Ludwig, & M. Kleine (Eds.), *Beiträge zum Mathematikunterricht. Vorträge auf der 46. Tagung für Didaktik der Mathematik (pp. 469-472) [Proceedings of the 46th Annual German Conference for Mathematics Education]*. Münster: WTM.

Teacher journals

Krause, C. M. (2017). Diagnose im Fach inklusive – Lohnenswerte (Ein)Blicke aus anderer Perspektive [Subject-related diagnostic assessment inclusive – Worthwhile (in)sights from another perspective]. *mathematik lehren 201*, 42-45.

Under review

Krause, C.M. (*under review*). Reconstructing multimodal features of learning math in social interaction - a methodological tool and its application to gestures.

In preparation

Krause, C.M. & Edwards, L.D. (Eds.) (*in preparation*). *The body in mathematics: Theoretical and methodological lenses*. Book to be published with Brill.

Krause, C.M. & Salle, A. (*in preparation*). Kognitive Funktionen von Gesten in der Mathematik (Arbeitstitel). [Cognitive functions of gestures in mathematics (working title)]. Journal article in preparation.

Krause, C. M. & Sommerhoff, D. (*in preparation*). *Wissenschaftliches Arbeiten in der Mathematikdidaktik – von der Themenstellung bis zur Einreichung [Elaborating empiric work in mathematics education – from finding a topic to submission].* Book to be published with Springer.

Tancredi, S., Chen, R., Krause, C., & Siu, Y. (*in preparation*). The Need for SpEED: Rationale and Guiding Principles for Special Education Embodied Design in Mathematics. In S. L. Macrine, J.M.B. Fugate (Eds.), *Movement matters: How Embodied Cognition informs teaching and learning.*

Krause, C. & Wille, A. (*in preparation*). What does a semiotic lens offer when investigating learning mathematics in sign languages? Contribution for the 14th International Congress on Mathematics Education (ICME-14).

TEACHING AND SUPERVISION OF MASTER'S STUDENTS

University of Duisburg-Essen:

- **Preparatory course for the practical internship** (summer term 2017)
  Master's course taken by the master students prior to their practical semester teaching at school.
  The aim of the course is to provide the students with methods and curricular information to prepare for teaching mathematics at school. The students have to prepare at home, mostly by revising literature that serves as base to work in the lessons in an interactive manner.
  (∼ 20 students, primary instructor)
- **Master's thesis course** (winter term 2016/2017, summer term 2017)
  This course is provided to master students in the program for prospective secondary mathematics teachers. In three sessions, the students writing their master's thesis in this program are made familiar with ongoing research of potential supervisors, develop their research question, present their methodology as well as first results.
  The aim of this course is to provide co-supervision of the leaders of the seminar in addition to the official supervisor to let them benefit from the several perspectives these leaders can offer.
  (∼ 15 students, co-leadership with Prof Dr Andreas Büchter, Prof Dr Benjamin Rott, Dr Sebastian Bauer)
- **Cognitive and psychological aspects of the learning of mathematics** (winter term 2016/2017)
  A third year bachelor's lecture in mathematics education, covering fundamental ideas in mathematics education.
  (∼ 70 students, primary instructor)
- **Communication processes in mathematical (learning) situations** (winter terms 2014/2015, 2015/2016, 2016/2017)
  A facultative bachelor's course accompanying the practical training of mathematical teaching situations (in school or other educative institutions). In this course, the students encounter different theoretical perspectives to observe and analyse social interaction in situations of learning mathematics.
  (∼ 20-30 students, primary instructor)
- **Assessment of mathematical performance in mathematics: Analyses of concrete cases** (summer terms 2015, 2018, 2019)
  Third year bachelor's course for future teachers. The course was subdivided in a theoretical part in which the students learn the theoretical basics of assessment of mathematical performance, and a practical part in which they have to design and implement an assessment test to present the results from their analyses and their interpretation of these results.
  (∼ 50 students, subdivided in two groups, primary instructor)
- **Theories and methods in mathematics education research** (summer term 2015, winter term 2015/2016)
  A graduate course provided for the doctoral students in the mathematics education unit at the University of Duisburg-Essen. In this course, we discuss literature and methodological approaches in the field of mathematics education. Furthermore, the students have the chance to present their dissertation project and discuss it with the other participants of the course, as well as three professors from the department.
  (∼ 15 students, organized in cooperation with Dr Larissa Zwetzschler)

University of Siegen (summer term 2016)***:***

- **Speech, gesture, inscription: A view on sign use in social processes of learning mathematics**
  A third-year bachelor's course for future teachers, emphasizing the role of signs in mathematical learning processes. This course is subdivided in a theoretical part and a practical part. In the theoretical part, the students become acquainted with notions and concepts linked to different kinds of signs used in the mathematics classroom, and how they are connected to teaching and learning. In each lesson, they are asked to apply some of these ideas by observing and analysing given data. In the second part, the students work together in groups to design a mathematics lesson for a school class that is invited to the university. The lesson, held by the future teachers, is filmed and subsequently analysed with respect to some aspect of sign use chosen by the participants of the course themselves.
  (18 students, primary instructor)
- **Lectures on "Elements of geometry" and supervision of the corresponding tutorial lessons**
  Elements of geometry" is a second year bachelor's course for prospective teachers for primary and lower secondary school. The focus was on basic Euclidean geometry. The students had to attend one of the five corresponding tutorial lessons for which I provided the additional tasks.
  (∼ 90 students, primary instructor)

University of Bremen:

- **Observing and analyzing: Sign use in mathematical learning processes** (summer term 2014)
  A first-year master's course for future teachers, emphasizing the role of signs in mathematical learning processes. The students learn about theoretical semiotic concepts and their role in the teaching and learning of mathematics. In the course of the term, they have to modify a given task on folding geometry based on the theoretical knowledge they got to know before. They are asked to use these tasks in a mathematics lesson at a school and to observe the sign use of the students with respect to a research question of their choice and interest.
  (∼ 20 students, team teaching with Prof Dr Bikner-Ahsbahs)
- **Basic lectures on theories, concepts and approaches in mathematics education** (winter terms 2010/2011, 2011/2012, 2013/2014)
  A second-year bachelor's course in mathematics education, giving an overview on ideas and theories on teaching and learning.
  (∼ 20-40 students, teaching assistant)
- **Didactics of teaching functions** (summer terms 2011, 2012)
  A second-year bachelor's course in mathematics education, focusing on the teaching and learning of functions.
  (∼ 20 students, teaching assistant)

University of Applied Sciences, Oldenburg (September 2009):

- **Fundamental mathematics for engineers**
  Two weeks crash course on basic mathematics for future engineering students
  (∼60 students, material provided)

University of Oldenburg:

- **Algebra** (summer terms 2007, 2008)
  Tutorial for the second-year algebra course, provided in the mathematics bachelor's program.
  (∼ 25 students, teaching assistant)
- **Linear Algebra** (winter term 2006/2007, winter term 2007/2008)
  Tutorial for the first-year linear algebra course, provided in the mathematics bachelor's program
  (∼ 25 students, teaching assistant)

- **Analytical geometry for future secondary teachers** (winter term 2004/2005)
  Tutorial for the second-year course for prospective secondary teachers. The focus of the course was set on analytical geometry in 2 to 3 dimensions.
  (~ 25 students, teaching assistant)

SUPERVISION OF MASTER'S STUDENTS

ongoing **Lukas Jösch** (Master of Education (M.Ed))
Working title: Students' handling of representations on different competence levels in statistics – a qualitative exploration from grade 9 to university
Faculty of Mathematics, University of Duisburg-Essen, Germany

2017 **Susanne Scharping** (Master of Education (M.Ed))
Title of the thesis: Adaption und Erprobung eines Instruments zur Erhebung von Einstellungen und Vorstellungen von Studierenden zur Mathematik– mit Fokus auf genderspezifische Unterschiede [Adaption and trial of an instrument to survey students' mathematics attitudes and perceptions – a focus on gender-specific differences]
(partly in collaboration with Christoph Kansy)
Faculty of Mathematics, University of Duisburg-Essen, Germany

Christoph Kansy (Master of Eduaction (M. Ed.))
Title of the thesis: Adaption und Erprobung eines Instruments zur Erhebung von Einstellungen und Vorstellungen zur Mathematik von Studierenden – mit Fokus auf studiengangsübergreifende Vergleiche [Adaption and trial of an instrument to survey students' mathematics attitudes and perceptions – a focus on comparisons between study programs] (partly in collaboration with Susanne Scharping)
Faculty of Mathematics, University of Duisburg-Essen, Germany

Romina Kreutz (Master of Education (M. Ed.))
Title of the thesis: Zum Gebrauch von Fachgebärden zum Themenbereich Bruchrechnung im Mathematikunterricht – Eine explorative Studie auf Grundlage von Unterrichtsvideos und Interviews mit Lehrkräften an Förderschulen [On the use of technical signs in the content area of fraction arithmetics in the mathematics classroom – An explorative study based on videos from the math lessons and interviews with teachers at special needs schools]
Faculty of Mathematics, University of Duisburg-Essen, Germany

Florian Pottbäcker (First state examination for teaching at secondary level)
Title of the thesis: Welchen Problemen begegnen hörgeschädigte Schülerinnen und Schüler beim Lernen von Mathematik – Erkenntnisse aus bestehender Forschung [Which Problems do hearing-impaired students encounter in the learning of mathematics – Insights from existing research]
Faculty of Mathematics, University of Duisburg-Essen, Germany

Annika Overdick (Master of Education (M. Ed.))
Title of the thesis: Zum Beitrag von Gesten zur deskriptiven Diagnose von Grundvorstellungen zu quadratischen Funktionen – Ein Fokus auf Gesten [Encountering gestures' contribution to the descriptive analysis of students' conceptualization of quadratic functions – A focus on the gestures]
Faculty of Mathematics, University of Duisburg-Essen, Germany

Stephanie Perick (Master of Education (M. Ed.))
Title of the thesis: Zum Beitrag von Gesten zur deskriptiven Diagnose von Vorstellungen zu quadratischen Funktionen – Ein Fokus auf Repräsentationsarten [Encountering gestures‘ contribution to the descriptive analysis of students‘ conceptualization of quadratic functions – A focus on the types of representations]
Faculty of Mathematics, University of Duisburg-Essen, Germany

2016 **Samuel Sturm** (Master of Education (M.Ed.))
Title of the thesis: Handlungsorientierte Aufgaben in Mathematikbüchern – Eine komparative Schulbuchanalyse mit Ausblick auf die Schulpraxis [Activity-oriented tasks in mathematics text books – A comparative text book analysis with outlooks on school praxis]
Faculty IV – Department of Mathematics, University of Siegen, Germany

Samet Bahar (Master of Education (M.Ed.))
Title of the thesis: Der Einsatz von Metaphern im Mathematikunterricht. Eine empirische Studie über die Auswirkung auf die Begriffsbildung bei Schülerinnen und Schülern der Sekundarstufe I [The use of metaphors in the mathematics classroom. An empirical study on effects on conceptualization of students in lower secondary]
Faculty IV – Department of Mathematics, University of Siegen, Germany

Sahin Gülistan (Master of Education (M.Ed.))
Title of the thesis: Wie kann eine Scaffolding-Lernumgebung im sprachsensiblen Mathematikunterricht aussehen? - Eine empirische Studie im Kontext fachintegrierter Sprachförderung [How can a scaffolding-environment be designed in a language-sensitive mathematics classroom? – An empirical study in the context of subject integrated fostering of language skills]
Faculty IV – Department of Mathematics, University of Siegen, Germany

Ayse Nur Simsek (Master of Education (M.Ed.))
Title of the thesis: Förderung des räumlichen Vorstellungsvermögens im Mathematikunterricht der Grundschule – Praktische Umsetzung anhand der Unterrichtseinheit „Würfelgebäude [Fostering of spatial reasoning skills in the elementary mathematics classroom – Practical implementation of a teaching unit on cube building block houses]
Faculty IV – Department of Mathematics, University of Siegen, Germany

Daniela Klimovic (Master of Education (M.Ed.))
Title of thesis: Entwicklung und Erprobung einer Förderumgebung zu linearen Funktionen [Developing and testing an environment to foster skills and knowledge in the content are of linear functions]
Faculty of Mathematics, University of Duisburg-Essen, Germany

GRANTS AND AWARDS

- Marie Skłodowska Curie fellowship (Global fellowship), awarded by the European Union under the MSC Actions in the program Horizon2020 (fellowship period: October 2019 – September 2022; €264 669,12)
- Travel grant provided by the DAAD (German Academic Exchange Service) for funding the participation at PME 43 in Pretoria, South Africa, in July 2019 (€2800)
- Diversity-award 2018 (category 'Research'), awarded by the University of Duisburg-Essen (April 2018; 500€)
- Travel grant provided by the DAAD (German Academic Exchange Service) for funding the participation at PME 41 in Singapore in July 2017 (€1824)
- Financial support of the IZfB (Interdisciplinary Centre for Educational Research) of the University of Duisburg-Essen to fund the research and teaching stay of Dr Wes Maciejewski (January 2017)
- 2016 Teaching award (together with the working group of Prof Dr Andreas Büchter) of the University of Duisburg-Essen (June 2016; €5000)
- Award for the most-downloaded dissertation on Springer-Link in the first half of 2016 (June 2016; €100)
- Postdoc-award 2016 of the Faculty of Mathematics of the University of Duisburg-Essen (January 2016; €5000)
- Financial support for the project "*DeafMath: The mathematics of hearing-impaired learners – Barriers and chances*", granted by the principle office of the University of Duisburg-Essen within the Program Supporting Excellent Young Researchers (December 2015; €25800)
- Travel grant provided by the DAAD (German Academic Exchange Service) for funding the participation at PME 39 in Hobart, Tasmania in July 2015 (€2139)
- Travel grant provided by the Department 3 (Mathematics and Computer Science) of the University of Bremen, for attending the conference ISGS 6 (Conference of the International Society for Gesture Studies) in July 2014 in San Diego, California (€500)
- ISGS student bursary for reimbursing the conference fee for the ISGS 6 (conference of the International Society for Gesture Studies in July 2014, San Diego, USA) ($350)
- Approval of a graduation grant by Unit 12 (Research Services) of the University of Bremen (€8800)
- Promos (DAAD, German Academic Exchange Service) for attending the YERME-Summer school YESS 6 in August 2012 in Portugal (€500)
- Impulse/Travel Expenses Allowance, Announcement of the Central Research Development Fund (ZF) of the University of Bremen, for the Conference of the PME 36 in Taipei, Taiwan in July 2012 (€1200)

PROFESSIONAL ACTIVITIES

Memberships

- Canadian Mathematics Education Study Group (CMESG)
- L'Associazione Italiana di Ricerca in Didattica della Matematica (AIRDM)
- International Group for the Psychology of Mathematics Education (PME)
- European Society for Research in Mathematics Education (ERME)
- International Society for Gesture Studies (ISGS)
- German Society for Mathematics Education (GDM)
- Working Group 'Semiotics in Mathematics Education' of the GDM

Reviews for Journals (Mathematics Education)

- Educational Studies in Mathematics
- For the Learning of Mathematics
- Canadian Journal of Science, Mathematics and Technology Education
- Journal for Research in Mathematics Education
- Eurasia Journal of Mathematics, Science and Technology Education

Additional Education and Outreach

- Course in website design (Imperia) at the University of Duisburg-Essen (07/2018)
- Course (unofficial audit) in American Sign Language (ASL) and Deaf Culture at San José State University (02/2018-04/2018)
- Organisation of two teaching/research visits of Dr Wesley Maciejewski (San José State University, California) at the Mathematics Education working group at the University of Duisburg-Essen;
  Organisation of the corresponding seminars (01/2017, 06-07/2018)
- Organisation of the teaching/research visit of Prof Jérôme Proulx (UQAM, Montréal, Canada) at the Mathematics Education working group at the University of Duisburg-Essen;
  Organisation of the corresponding seminars (02/2016)
- Organisation of a workshop on data security and data management in empirical research at the mathematics education working group of the University of Duisburg-Essen (12/2015)
- Organisation of and participation in two workshops on programs related to qualitative data analysis (MaxQDA and feldpartitur) at the mathematics education working group of the University of Duisburg-Essen (03/2015)
- Participation in the YERME-Summer school YESS-6 in Faro, Portugal (08/2012)
- Course in German Sign Language (10/2011-07/2012, 09/2016-01/2017)
- Workshop on presentation skills “Respiration, Voice, Language, Presence” (summer term 2010)

Activities & Service

10/2016 – 09/2019	Contact person for questions of inclusion in teaching and learning at secondary level at the mathematics education unit of the Faculty of Mathematics, University of Duisburg-Essen (Germany)
11/2015 – 09/2019	Member of the “Qualitätsverbesserungskommission” (Committee for the improvement of quality in teaching) at the Faculty of Mathematics, University of Duisburg-Essen (Germany)
02/2006 – 08/2006	Gruppo Erasmus di Siena, Siena (Italien)
01/2005 – 01/2006	Member of the students‘ parliament at the CvO-University Oldenburg (Germany)
10/2003 – 10/2005	Student representative at the Department of Mathematics, CvO-University Oldenburg (Germany)

LANGUAGES

German (mother tongue)

English, Italian (fluent)

French, American Sign Language, German Sign Language (beginner)