



LEAD

Graduate School & Research Network

LEAD Retreat

April 17-19, 2024, Bad Boll

Program

**Ev. Akademie Bad Boll, Akademieweg 11,
73087 Bad Boll**

EBERHARD KARLS
UNIVERSITÄT
TÜBINGEN





Wednesday, April 17th, 2024

Day 1

Time	Topic		Place	
08:15am – 09:00am	Arrival at the Retreat Venue & Coffee and Snacks		<i>Foyer</i>	
09:00am – 09:30am	Welcome and Introduction <i>by LEAD Co-Directors</i>		<i>Main Hall</i>	
09:30am – 10:15am	<u>New Members' Presentations</u>		<i>Main Hall</i>	
10:15am – 10:30am	Organizational Information about the Retreat <i>by LEAD Scientific Coordination</i>		<i>Main Hall</i>	
10:45am – 11:45am	Two Challenges from Incomplete Measurement in Education Research <i>Keynote by <u>Daniel Koretz</u></i>		<i>Main Hall</i>	
12:00pm – 01:00pm	Lunch		<i>Restaurant</i>	
01:00pm – 01:45pm	Social Walk		<i>Reception</i>	
01:45pm – 02:00pm	Announcements of Future Events		<i>Main Hall</i>	
02:00pm – 03:00pm	<u>Poster Fair</u> with Coffee		<i>Main Hall</i>	
03:15pm – 04:15pm	Improving the Singapore Education System Through Research and Evaluation: A Constant Work in Progress <i>Keynote by <u>Hui Leng Ng</u></i>		<i>Main Hall</i>	
04:20pm – 04:50pm	Building Bridges Between Research & Practice - Deutsche Telekom Stiftung <i>by Jacob Chammon</i>		<i>Main Hall</i>	
05:00pm – 06:00pm	<u>Poster Fair</u>		<i>Main Hall</i>	
06:00pm – 07:00pm	Dinner (Randomised Seating Order)		<i>Restaurant</i>	
07:00pm – 08:00pm	PhD Assembly	Postdoc Assembly	<i>Main Hall</i>	<i>Festsaal</i>
08:15pm – O.E.	Social Event <i>PhD Representatives & New PhD Candidates</i>		<i>Main Hall</i>	

Thursday, April 18th, 2024

Day 2

Time	Topic	Place
07:00am – 07:30am	Early Morning Run <i>Wy Ming Lin</i>	<i>Meeting Point: Reception</i>
07:00am – 08:45am	Breakfast	<i>Restaurant</i>
08:50am – 09:00am	Announcements	<i>Main Hall</i>
09:00am – 10:00am	Data and Quality Improvement in Germany's Education System: How Does (and Doesn't) It Work? <i>Keynote by Petra Stanat</i>	<i>Main Hall</i>
10:00am – 11:00am	Poster Fair with Coffee	<i>Main Hall and Foyer</i>
11:00am – 12:00pm	LEAD Association Research Talks	<i>s. Appendix</i>
12:00pm – 01:00pm	Lunch (<i>Randomised Seating Order</i>)	<i>Restaurant</i>
01:00pm – 02:00pm	Social Walk & Group Picture	<i>Meeting Point: Reception</i>
02:15pm – 03:15pm	The Experts Meet – Meet the Experts “How Relevant Is Our Work to Education Practice? – Taking Stock and Looking Ahead” <i>Fishbowl discussion with Ng Hui Leng, Petra Stanat, Jacob Chammon and others</i>	<i>Main Hall</i>
03:30pm – 04:30pm	Special Interest Groups with Coffee	<i>s. Appendix</i>
04:45pm – 05:45pm	An Automatic Reading Tutor - From Innovative Research to Educational Practice <i>Joint Keynote by Helmer Strik & Catia Cucchiarini</i>	<i>Main Hall</i>
06:00pm – 07:00pm	Dinner	<i>Restaurant</i>
08:00pm – O.E.	Social Gathering <i>PhD Representatives & New PhD Candidates</i>	<i>Café Heuß</i>

Friday, April 19th, 2024

Day 3

Time	Topic	Place
7:00am – 7:45am	Early Morning Yoga Session <i>Salome Wagner</i>	<i>Main Hall</i>
07:00am – 08:45am	Breakfast & Check-Out	<i>Restaurant</i>
09:00am – 10:00am	Conducting Research on Teacher Professional Development in Partnership with Educators: Promises, Tensions and Opportunities <i>Keynote by Rossella Santagata</i>	<i>Main Hall</i>
10:00am – 11:00pm	Poster Fair with Coffee	<i>Main Hall and Foyer</i>
11:00am – 12:00pm	PhD Talks	<i>s. Appendix</i>
12:15pm – 12:30pm	Wrap-Up	<i>Main Hall</i>
12:30pm – 13:15pm	Lunch	<i>Restaurant</i>
13:15pm	Bus from Bad Boll to Tübingen	

Organisational Notes

Venue

Ev. Akademie Bad Boll
Akademieweg 11
73087 Bad Boll

LEAD Info Point

During the event, our **LEAD Info Point** located in the foyer will be open to answer any question and make your stay as comfortable as possible.

Rooms

Please check-in at the reception. **Check-in** time for the bedrooms is usually from **01:00 pm**. You are welcome to ask at reception if your room is ready earlier. For the Stauferland Hotel, check-in time is from 03:00 pm. **Check-out** time is before **09:00 am** at the hotel reception. You can leave your **luggage in the designated luggage room**.

Wifi

Free Wifi is available in the entire building and with the password "1.Korinther16,14".

Seating Order

To provide an opportunity for you to get more familiar with all LEAD members, there will be a randomised seating order for the **dinner on Wednesday** and the **lunch on Thursday**. Please look for the place card with your name and enjoy an inspiring meal with your colleagues.

Beverages

Mineral water will be provided throughout the retreat. Coffee, tea and snacks will be provided during coffee breaks. We ask that you pay for all other drinks (especially during evening sessions) at the reception before you leave.

Travel Reimbursement

We kindly ask for your understanding that LEAD cannot pay a daily allowance (Tagegeld). The chartered bus is the primary mode of transport. If your office is located in Tübingen, LEAD will not reimburse travel costs for other transportation (car, taxi etc.), except in justifiable cases. After the event you will receive more information including documents for the reimbursement.



Program Notes

Poster Fairs

For the poster fair, the PhD candidates prepare posters and present their PhD projects in 2-5 minutes to small groups of other LEAD members and guests. Everyone is invited to ask questions or make comments.

Special Interest Groups

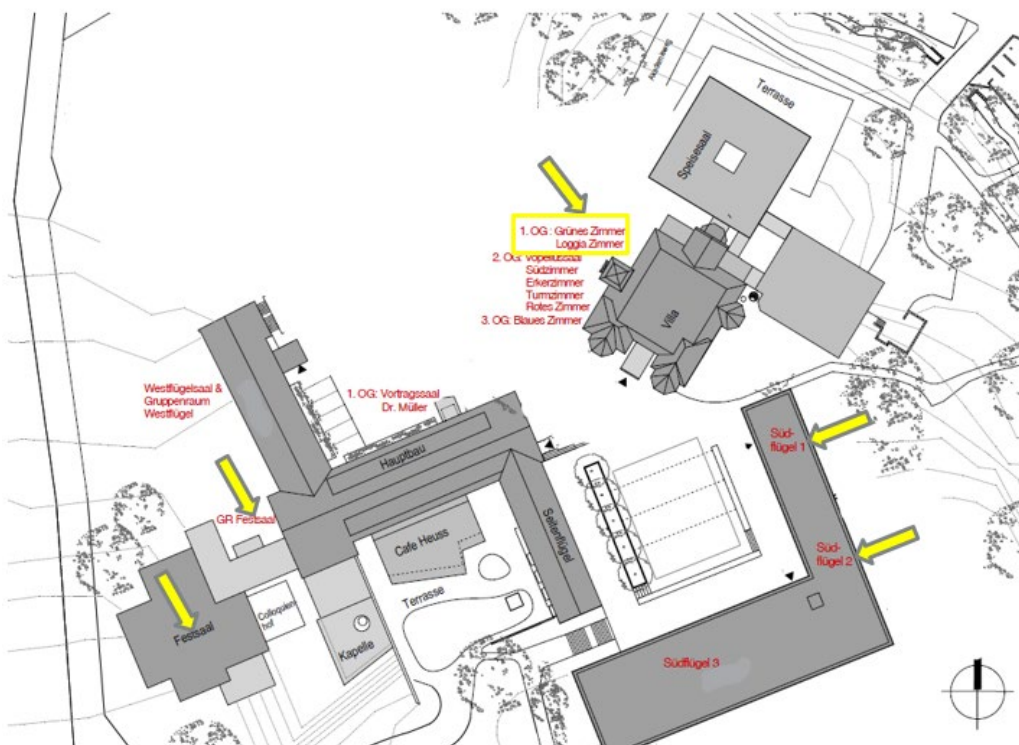
The so called “Special Interest Groups” (SIGs) give everyone the opportunity to discuss an individual topic with a smaller group of people to give or receive feedback (e.g. new research projects; new research idea; third party funding or any other proposals).

LEAD Association Research Talks

The so called “LEAD Association Research Talks” (ARTs) replace the “traditional LEAD interview” and take place during the LEAD Retreat. New members present their research or research plans briefly (max. 8 minutes, including Q&A); in parallel sessions to participants at the retreat.

Rooms for Groups

Besides the Main Hall (“Festsaal”), in which all keynotes will take place, further rooms for group activities (i.e., SIGs, ARTs, PhD/Poster Talks) are available: GR Festsaal, Südflügel 1, Südflügel 2, Green Room, Loggia Room.





Keynotes

Wednesday, April 17th, 2024

10:45am – 11:45am

Two Challenges from incomplete measurement in Education research by Daniel Koretz



Daniel Koretz is Henry Lee Shattuck Research Professor of Education at Harvard University. His research focuses on educational assessment and education policy, particularly the effects of high-stakes testing on educational practice and the problem of score inflation. His research has also investigated the assessment of students with disabilities, international differences in the variability of student performance, testing for college admissions, the application of value-added models to educational achievement, and the design and evaluation of 'self-monitoring assessments.' He is a member of the National Academy of Education and a Fellow of the American Educational

Research Association. He is the author of *Measuring Up: What Educational Testing Really Tells Us* (Harvard University Press, 2008) and *The Testing Charade: Pretending to Make Schools Better* (University of Chicago Press, 2017).

03:15pm – 04:15pm

Improving the Singapore Education System through research and evaluation: A constant work in progress by Hui Leng Ng



Hui Leng Ng received her Bachelor of Science (First Class Honours) in Mathematical Statistics and Master of Science (Distinction) in Mathematics from Imperial College of Science, Technology and Medicine, U.K.; Master of Education in General Education from the National Institute of Education, Nanyang Technological University, Singapore; and Doctor of Education in Quantitative Policy Analysis in Education from Harvard University, U.S.A., specialising in quantitative research methods. This is her 26th year serving in the Singapore Public Service. Her current main job responsibilities in her concurrent appointments include overseeing the conduct of, and derivation

of insights from, various large-scale local and international research studies that the Singapore Ministry of Education (MOE) mounts to monitor key enablers and student developmental outcomes at the system level. These include Singapore's participation in various international studies (e.g., OECD's PISA) which provide insights on how well students are developing essential knowledge, skills, and attitudes—including aspects of 21st century competencies—vis-à-vis their international peers at milestone grades/age. She also oversees driving the use of programme evaluation for both improvement and value-for-money accountability purposes in MOE. Prior to her current appointments, she had served in various other roles in the Singapore Education System, including high-school teacher, policy analyst, and vice-principal.



04:20pm – 04:50pm

Building bridges between science & practice – Deutsche Telekom Stiftung by Jacob Chammon



Jacob Chammon, Executive Director of the Deutsche Telekom Stiftung, briefly introduces the foundation and provides insights into its work. The focus of the Telekom Stiftung's activities is always in cooperation between research and practice, ensuring the transfer of research into schools and institutions.

Thursday, April 18th, 2024

09:00am – 10:00am

Data and quality improvement in Germany's education system: How does (and doesn't) it work? by Petra Stanat



Petra Stanat is the Scientific Director of the German Institute for Educational Quality Improvement (IQB) and Professor of Educational Psychology at the Humboldt University of Berlin. The IQB is in charge of standard-based student assessments in Germany. Petra Stanat received her Master's Degree (Diplom) in Psychology at the Freie Universität Berlin in 1992 and completed her Ph.D. in Social and Personality Psychology at the University of Massachusetts at Amherst in 1998. Subsequently, she worked as a research scientist at the Max Planck Institute for Human Development in Berlin where she managed the first cycle of the OECD's Programme for International Student Assessment (PISA) for Germany. After her Habilitation in Education at the Freie Universität Berlin in 2005, Petra Stanat held positions as professor at the Friedrich- Alexander Universität Erlangen-Nürnberg (2005-2007) and at the Freie Universität Berlin (2007- 2010). Her research addresses various issues related to

educational quality, with a special focus on equity and the integration of immigrant students. Petra Stanat serves on several Committees and Boards, such as the Senate and Central Board of the German Science Foundation (DFG).



04:45pm – 05:45pm

An Automatic Reading Tutor - from innovative research to educational practice

by Helmer Strik & Catia Cucchiarini



Helmer Strik received his PhD in Physics from Radboud University, where he is now Associate Professor in Speech Science and Technology. He is co-founder and CSO of the spin-off company NovoLanguage, which develops advanced speech technology solutions for e-learning.

His research activities address speech processing, automatic speech recognition (ASR), spoken dialogue systems, computer assisted language learning (CALL), e-Learning, and e-Health. He has published over 300 refereed papers. He has obtained various national and international grants for his research [<http://hstrik.ruhosting.nl/projects/>]. He is Chair of the 'International Speech Communication Association' (ISCA) 'Special Interest Group' (SIG) on 'Speech and Language Technology in Education' (SLaTE, <http://hstrik.ruhosting.nl/slate/>).



Catia Cucchiarini holds a PhD from Radboud University, where she is now Principal Investigator in the research group Language and Speech, Learning and Therapy and the Centre for Language and Speech Technology. She worked at the Centre for Language and Migration of KU Leuven in Belgium and has been a Senior Advisor at The Union for the Dutch Language (Taalunie) in the Hague since 1996. Her scientific activities focus on fundamental and applied research in speech processing, language learning, speech technology development and application in Computer Assisted Language Learning and e-health, for which she obtained numerous national and international grants. She is a member of the editorial board of Computer Assisted Language Learning and of the 'International Speech Communication Association' (ISCA) 'Special Interest

Group' (SIG) on 'Speech and Language Technology in Education' (SLaTE, <http://hstrik.ruhosting.nl/slate/>).



Friday, April 19th, 2024

09:00am – 10:00am

Conducting Research on Teacher Professional Development in Partnership with Educators: Promises, Tensions and Opportunities by Rossella Santagata



Rossella Santagata is a Professor at the UC Irvine School of Education, Director of the [Center for Research on Teacher Development and Professional Practice](#), and a member of the Orange County Education Advancement Network ([OCEAN](#)). She obtained her Ph.D. in Developmental Psychology from UCLA. Her research areas include mathematics and science teaching and learning and teacher professional development (PD). She has conducted extensive research on teacher noticing and on the use of video to foster teacher professional competence. Her current projects are

grounded in participatory methodologies and aim at addressing racial and socio-economic inequities through co-design approaches that engage educators, students, and communities as partners. Her work is funded by the WT Grant Foundation and the National Science Foundation.

New Members' Presentations

Wednesday, April 17th, 2024
09:30am – 10:15am

Name	Status
Benedikt Beuttler	Postdoc
Birgit Brucker	Postdoc
Dan John	PhD Candidate
Fanyi Zeng	PhD Candidate
Irena-Vanessa Ivan	PhD Candidate
Katharina Leibfarth	PhD Candidate
Luisa Ribeiro-Flucht	PhD Candidate
Luisa Wellert	PhD Candidate
María Paula Villabona Orozco	PhD Candidate
Mats Abrahamse	PhD Candidate
Mourhaf Kazzaz	PhD Candidate
Robin Wagner	PhD Candidate
Sara Becker	Postdoc
Ting-Yu Liu	PhD Candidate
Yannan Gao	Postdoc

Association Research Talks

Thursday, April 18th, 2024
11:00am – 12:00pm

Main Hall

Name	Title of Talk
Sara Becker	Adaptive Teaching and Learning with Innovative Educational Technologies
Robin Wagner	Using Immersive Video Technologies for Science Communication
Ting-Yu Liu	Listening Comprehension in Adaptive language Learning Within a VR environment
Marei Beukman	Fostering Learning Engagement in Digital Learning Environments

GR Festsaal

Name	Title of Talk
Luisa Wellert	Supporting Students Using Adaptive Learning Systems and AI-based Tutoring
Jana Kemmler	Supporting Learning Processes of Critical-reflexive AI Literacy
Benedikt Beuttler	Exploring New Ways of Learning with Digital Innovations
Blazej Baczkowski	Tracking the Integration of Conceptual Knowledge



Südflügel 1

Name	Title of Talk
Dan John	Development of STEM Self-concept and Motivation in Gifted Children – Formation of STEM Identities
María Paula Villabona Orozco	Shaping Expertise: A Zero-to-hero Tale of Motor Metacognition in Music Learning
Irena-Vanessa Ivan	Assisting Video Learning with Chat GPT Generated Interpolated Tests
Birgit Brucker	Embodied learning with interactive media in the Future Innovation Space at IWM
Katharina Leibfarth	Models' differences in supporting the understanding of simple electric circuits in physics

The Experts Meet – Meet the Experts “How Relevant Is Our Work to Education Practice? – Taking Stock and Looking Ahead”

**Thursday, April 18th, 2024
02:15pm – 03:15pm**

In a participatory format, we would like to hold an intensive discussion on the question of what research is needed for teaching and learning and how the results of research enrich practice.

We start with a small group of experts who begin the discussion. From the beginning, there are empty chairs in the fishbowl and everybody is invited to join this inclusive format.

Poster Fairs

Wednesday, April 17th, 2024
02:00pm – 03:00pm

Name	Title of Poster
Alexander Soemer	Thinking About Intentions and Fulfilling Them: a Daily-Life Experience Sampling Study
Babette Bühler	Multimodal Mind Wandering Detection in Online Learning: A Deep Fusion Approach using Eye Tracking, Facial Videos and Physiological Data
Hanqi Zhou	Harmonizing Program Induction with Rate-Distortion Theory
Heike Russ	Combining Explaining and Drawing is Most Effective for Inquiry Learning in School
Katharina Totter	Neither Superior nor Inferior? Results of a Preregistered cRCT on Working with Multiple Eyewitnesses in Person Versus Video
Luisa Wellert	Comparing Performance-Based Versus Cognitive Load-Based Assessment in Adaptive Learning Systems
Nelly Sagirov	POLKE – A Tool for the Automatic Annotation of English Grammar Profile Grammatical Constructs in English Texts
Philipp Stark	Using Gaze Transition Entropy to Detect Classroom Discourse in a Virtual Reality Classroom
Tosca Daltoè	Making Teaching Quality Visible - Creating Innovative Classroom Videos for Teacher Education and Research
Xenia Stein	Development of a Preformal Proving Test (PfPt)
Xinru Yao	Temporal Change of State Math Anxiety During Arithmetic

Wednesday, April 17th, 2024
05:00pm – 06:00pm

Name	Title of Poster
Denise Löfflad	Leveraging Linguistic Insights to select Reading Materials tailored to Second Language Learners
Elizabeth Bear	Fostering Foreign Language (L2) Communication Through Interaction with a Conversational Agent: A digital Intervention in School EFL Classes
Julia Bahnmüller	Triangulating Consensus on Domain-Specific Predictors of Mathematics Achievement
Katharina Netzer	Empowering Police Officers and Teachers in Arguing Against Antisemitism
Katrin Kunz & Judith Havemann	Programming vs. Mathematical Structuring Evaluation of Two Online Interventions for Talented Students
Lucy Haag	The Gender Gap in Economic and Financial Literacy
Mihwa Lee	ARES - Interactive L2 Reading Enhancement System: Combining AI Capabilities with Teacher Insights
Patrizia Bieber	Adaptive Music App SongBird: Investigating Children's Singing Abilities
Sarah Löber	Developing an Intelligent Language Assessment Platform
Tim Fütterer, Armin Fabian & Nina Udvardi-Lakos	Adaptive Learning Integrated Framework for Educators
Ting-Yu Liu	Listening Comprehension in Adaptive Language Learning within a VR Environment

Thursday, April 18th, 2024
10:00am – 11:00am

Name	Title of Poster
Aki Schumacher	Exploring the Relationship Between Behavioral and Self-reported State Curiosity
Daniel Ritchie	From Language to Algorithms: Integrating AI Literacy in Middle School English and STEM Curricula
Franziska Tschönhens	TPACK in Action: Contextual Effects of Pre-Service and In-Service Teachers' Knowledge Structures for Technology Integration
Anne Eppinger	BEWUSST – Physical Activity and Well-Being: Assessment of Self-Regulation in the Everyday Life of University Students
Huiyuan Lin	Refreshing Educational Outcome Measures
Jana Kemmler	What Works Best? – Supporting Pre-service Teachers' Critical Reflexive AI Literacy
Leona Colling	Empowering Teachers: Developing a Learning Analytics Dashboard for K-12 English
Marei Beukmann	Implementation and Evaluation of a Theory-based Intelligent Learning Management System for STEM Education
Nora Fröhlich	Promoting Reading Strategies Effectively
Sonja Walcher	Eye Movement Coupling in Visuospatial Working Memory: Effect of Spatial Reference
Stefanie Hölzlwimmer	How reflected are Teachers on the Content of the History Teacher Training Series "KLUG"? Qualitative Analysis and Scaling of Reflectedness Based on Practice Tasks with Peer- and Self-Feedback
Alexander Jung	Effects of Student Groups on Teacher Perceptions of Their own Teaching Quality
Venera Gashaj	Beyond the Pages: Enriching Storybooks with Embodied Activities for Engaging Math Learning Experiences

Friday, April 19th, 2024
10:00am – 11:00am

Name	Title of Poster
Amedeo Viccari	Developing and Testing a Videogame for History Classes - Limes
Hannah Deininger	Investigating Interindividual Differences in Learning Behaviour with Machine Learning and Explainable AI
Daniela Verratti-Souto	Towards a Quantitative Evaluation of the English Grammar Profile: a Corpus-Based Approach
Fanyi Zeng	Exploring Pathways to Thriving in College: Latent Profile Analysis on College Students' Motivational Strategy Use and Associations with Success and Wellbeing
Ida Malini Syvertsen	Individual Differences in School Leaders': a Scoping Review of Empirical Research
Ignations Charalampidis	Towards Building an Automatic Sentence Readability Assessment Pipeline: Insights Gained from Machine Learning Methods
Marilyn Lim	Strengthening Research-Policy-Practice Nexus in Education
Mark Lee	Growing Use of Program Evaluation in Education
Mourhaf Kazzaz	DLTPT: AI-Informed Classroom Exercises and Placement Tests
Nele Theuer	Training in the Big Pond – Reference-Group Effects of Vocational Education and Training (VET) Contexts on Adolescents' Educational Aspirations
Victoria Vochatzer	Students' Conceptions Regarding Ethical Issues in Economics
Darina Izhboldina	Application of Inspirational Teaching in Research on Pedagogical Agents
Vivian Gunser	Creative Writing with GPT-3: Poems and Short Narrative Texts

Special Interest Groups (SIGs)

Thursday, April 18th, 2024
3:30pm – 4:30pm

Name	Title of SIG	Place
Dominik Becker & Katarina Weßling	ConVET – Contexts of Vocational Education and Training	Loggia Room
Korbinian Moeller	How much Body do we need for Embodied Learning	Südflügel 1
Stephen Bodnar & Katharina Wendebourg	Personalised Language Learning	Südflügel 2
Ulrike Michael	Schulstudien – Schule & Wissenschaft	Green Room
Wy Ming Lin	What Questions in Education Psychology Can We Answer Using Computational Modeling?	Main Hall
Xiaobin Chen	AI Systems to Support Practical School Education: Demonstration of the KIBi Suite of Education Tools	Festsaal

PhD Talks

Friday, April 19th, 2024
11:00am – 12:00am

11:00am-11:30am

Name	Title of Talk	Place
Armin Fabian	Modeling, Measuring and Fostering (Pre-Service) Teachers' Professional Knowledge to Integrate Technologies in Mathematics Education	Main Hall
Fátima María Díaz Freire	Introducing MITCA Booklet: a Homework Support Tool for Primary Education Students	GR Festsaal
Wy Ming Lin	Applying Computational Modeling to Ascertain the Role of Emotions on Goal Setting and Performance	Südflügel 1

11:30am-12:00am

Name	Title of Talk	Place
Benedikt Gottschlich	Enhancing learning with Real-World Contexts: Insights from a Field Study on Electric Circuits	Main Hall
Lucas Stark	Promoting Primary School Students' Statistical Literacy	GR Festsaal

Please view the next page for further information about the talks.



Main Hall

Modeling, Measuring and Fostering (Pre-Service) Teachers' Professional Knowledge to Integrate Technologies in Mathematics Education *by Armin Fabian (PhD)*

Technologies hold the potential to support students' conceptual learning of mathematics. However, for these potentials to unfold, technologies must be integrated and orchestrated effectively by the teacher in classrooms. Against this background, teachers' professional knowledge is considered a crucial pre-requisite for high quality teaching in the mathematics classroom. Such knowledge has been prominently subsumed under the term Technological Pedagogical Content Knowledge (i.e., TPCK). Despite the significance of TPCK in today's education, little is known about its underlying theoretical and empirical nature. This research desiderate has been commonly attributed to the lack of subject-specific conceptualizations of TPCK as well as a lack of adequate instruments to assess it objectively. Against this background, my dissertation's overarching goal was to provide a comprehensive investigation into the nature of TPCK from a mathematics-specific perspective. To do so, I conducted a total of three studies that tackled questions related to how mathematics-specific TPCK could be conceptualized, assessed and fostered. In particular, my dissertation comprised the following three studies: (1) A systematic review investigating how TPCK has been conceptualized to date; (2) a correlational online study to investigate the empirical relationship of TPCK with other knowledge components, as well as (3) a quasi-experimental study to examine whether mathematics-specific, evidence-based short-term interventions are successful strategies in developing pre-service teachers' TPCK. In my mock oral defense, I will present key findings of the three studies, discuss their theoretical contributions, and outline possible implications for pre-service teacher education practices. Please note that this talk will be my mock defense; any feedback is therefore very welcome!

GR Festsaal

Introducing MITCA Booklet: a Homework Support Tool for Primary Education Students *by Fátima María Díaz Freire (PhD)*

Homework has always been a significant topic of debate in the educational sphere, with arguments both for and against its advantages and disadvantages. Based on an empirical review, our research group designed the MITCA method, establishing five conditions for assigning homework so that students perceive it as useful. Under this premise, we have designed the material presented here with the intention of serving as autonomous support for the completion of homework both in home and on the classroom. The MITCA booklet intricately segments the homework process into three distinct parts: distinguishing the task's content from its instructions, understanding the intrinsic value of the task, and practicing time management for task completion. This material explains to students each of the parts and provides examples on how to differentiate the statements so they can effectively solve them on their own. In addition to explanations, the booklet contains support materials like illustrative stickers to aid in the identification of task types and their associated values, and an acetate weekly planner, empowering students with the skills necessary for efficient schedule management.

Südflügel 1

Applying Computational Modeling to Ascertain the Role of Emotions on Goal Setting and Performance *by Wy Ming Lin (PhD)*

In self-regulated learning (SRL), students often set goals and adjust how they subsequently perform on tasks. In addition, emotions have been considered to play a key role in this process, yet the findings on their exact effects on goal setting and performance have been inconsistent.

To reconcile the conflicting findings in the literature, we employ computational modeling to investigate the interactions between goals, performance, and emotions to ascertain the exact nature of emotions in SRL. We developed and applied our model to data collected from an online math task (Study 1). Results from Study 1 showed that emotions influenced both goal setting and performance. Specifically, goals were set higher with positive emotions and lower with negative emotions. Furthermore, performance was lower with positive emotions and higher with negative emotions, which is consistent with the predictions from control theory. We next applied the same model to real-life learning data from medical students studying for a high-stakes exam (Study 2). Contrary to Study 1, performance was higher with positive emotions and lower with negative emotions in Study 2. There were no effects of emotions on goal setting in Study 2. These results suggest that the effects of emotions on goals and performance depend on context. Our work also highlights the value of computational modeling to analyze complex dynamic data in education research.

Main Hall

Enhancing learning with Real-World Contexts: Insights from a Field Study on Electric Circuits by *Benedikt Gottschlich (PhD)*

Students often perceive electric circuits as abstract and unengaging, leading to challenges in grasping fundamental concepts. In response, we have devised a teaching concept that integrates real-world contexts into the instruction of simple circuits. This approach incorporates diverse contexts tailored to various interest profiles. In this mock defense talk, the outcomes of conventional teaching ($n = 27$ classes) and context-based teaching ($n = 24$ classes) will be compared, examining conceptual understanding and affective factors. Furthermore, qualitative data will be analyzed to derive implications for both classroom practice and theory.

GR Festsaal

Promoting Primary School Students' Statistical Literacy by *Lucas Stark (PhD)*

Interpreting statistical data is important basis for informed decision-making in today's societies. At the same time, interpreting data is challenging and statistical misconceptions and biased interpretations are frequently described in the literature. This highlights the need for age-appropriate learning opportunities to enhance statistical literacy. However, there aren't many intervention studies focusing on promoting statistical literacy, especially at a young age. The aim of this dissertation was to evaluate the efficacy and effectiveness of a statistical literacy intervention, which is based on the predict-observe-explain approach and cooperative learning methods. In an efficacy study ($N = 53$), we examined the effects on third- and fourth-graders' statistical literacy performance and motivation under highly controlled conditions, i.e. when taught by university staff. In an effectiveness study ($N = 87$), we tested if the intervention also proves to be effective when conducted by trained course instructors from the field. Also, we validated a new measurement instrument ($N = 299$) to measure the intervention effect on children's jumping to conclusions bias more precisely. We tested the efficacy and effectiveness of the statistical literacy intervention within a multisite randomized-controlled field trial with pre- and posttest. Participants were randomly assigned to the intervention or the waitlist control group. To analyze the effects of the intervention, we used preregistered multilevel multiple regression analyses. Analysis showed significant intervention effects on aspects of children's statistical literacy such as data-based argumentation and domain-specific motivational beliefs such as self-concept in data-related task. Overall, results indicated the efficacy and effectiveness of the intervention under more and less standardized field settings.