

## ESERA Travel Awards 2020

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To the ESERA President, Board and Travel Award Committee,

I would like to express my deep gratitude and appreciation for the opportunity given to me upon receiving the ESERA travel award.

Originally, my research stay at the University of Georgia had the aim to support my PhD study in the phase of analysis and discussion:

To get an insight into potentially conducive effects of elements of professional development (PD) courses and, hence, to support the goal of developing effective PD programs for science teachers, my study investigated different PD formats on experimentation. The rationale of my PhD study based on several literature reviews and investigations of PDs covering scientific inquiry by Capps and his colleagues (e.g., Capps, Crawford & Constatas, 2012). In their literature review they report some features of effective PDs but conclude that there has been no study connecting the participation in a PD in this field with desired outcomes of the PD like changes in Beliefs, PCK and teaching practice. The PD itself and the investigation of the teaching practice was partly guided again by Capps and Crawford's analysis of teachers' understandings and their practices of scientific inquiry (see Capps & Crawford, 2012).

For this reason, the research stay was planned to be productive for both sides: my host Daniel Capps and his colleagues would gain insight into a research paradigm they have advocated for in the conclusion of their literature review and I would get first-hand impulses to evaluate the collected data accordingly, with the aim of answering the desideratum identified by Capps et al. (2012) as exhaustive as possible. My hosts extensive theoretical knowledge in the field of PDs on scientific inquiry would probably have opened up new perspectives for the evaluation and interpretation of the collected data so that the research project as a whole – extending beyond my PhD-thesis – might profit as well from these valuable insights.

Unfortunately, my trip in March 2019 was cancelled last minute due to the Covid-19 pandemic. Due to the gratitude of ESERA I was able to postpone my research stay for 3.5 (!) years. I finally visited the University of Georgia mid-September till mid-October 2022. Being now a Post-Doc at the Technical University of Munich the original purpose of the research stay – analyses and discussion of data from my PhD study – was mostly obsolete. But there was still room for plenty of discussion about scientific inquiry in different formats.

Every Monday I attended the class of my host as student and co-teacher. There I was able to learn about the conceptions of scientific inquiry in the US-classrooms and how it can be leveraged to enhance learning and engagement. I also had the opportunity to participate in workshops topics such as active learning and modeling as a specific way of inquiry which provided me with new strategies and techniques that I can use in my own teaching.

This led to a talk at their department given by me with the title:

*The same but different... conceptions of inquiry-based instruction in Germany and the US*

This led to spending plenty of time for digging deeper into the actual concepts of inquiry in our countries and preparing the 45-minute talk. In the talk I compared conceptions of inquiry-based instruction in Germany and the United States and presented findings from a study where I investigated how a professional development on scientific inquiry impacted middle school teachers' classroom practice.

Giving this talk and the following discussions provided me with a rich and diverse range of perspectives that helped me to think more deeply about the nature of scientific inquiry as well as to develop a more nuanced understanding of inquiry-based instruction as a method of teaching scientific inquiry.

This talk was also the starting point of a small collaborative project with my host, his two PhD candidates and researchers in Georgia (not the US-state, the European one) and two other countries. The rationale is the comparison of national and disciplinary standards to learn about appropriate levels of abstraction in inquiry. We hope to be able to present some findings in summer 2023.

During my stay I had, besides the talk, the chance to discuss my dissertation study with my host and his colleagues. This showed to be very fruitfully as these conversations gave some impulses for a paper I plan to publish covering my dissertation study. Besides the oral discussions, my host took some time to read the draft and give a more detailed written feedback.

Since I augmented my research profile with AI Literacy studies with focus on STEM education during my time as a Post-Doc in Munich I made use of the stay at University of Georgia to visit researchers in this field in New York and Atlanta. This led to the start of two productive collaborations between my research group I'm associated with in Munich and researchers from two other US universities.

While the rationale of my research stay shifted during the period of my original idea and the actual stay, from my point of view it was nevertheless very fruitful:

1. We could establish a small project on different conceptions of inquiry in the world.
2. By meeting other researchers in New York and Atlanta research cooperation could be established.

3. I had finally the chance to improve my English skills.

As illustrated, the ESERA travel award helped me to establish different collaborations and projects with researchers in the US.

Overall, my research stay at the University of Georgia was an incredibly valuable experience that helped me to develop new skills and knowledge in the field of science education. I am grateful for the opportunity to work with such a talented team of researchers and to be a part of a vibrant and dynamic research community – even for such a short period of time. I am excited to continue building on what I learned during my stay and to continue contributing to the field of science education.

In the future, I plan to continue collaborating with the researchers I met at the University of Georgia and to continue exploring new ideas and approaches to science education. I also hope to incorporate what I learned during my research stay into my own teaching and research, and to share my experiences with others in the field. I am confident that this experience will continue to support my professional development and help me to make meaningful contributions to the field of science education.

On the personal level I was fortunate to meet awesome colleagues whom I now call friends.

Many thanks again to ESERA for providing me with this opportunity!

Kind Regards,

Arne