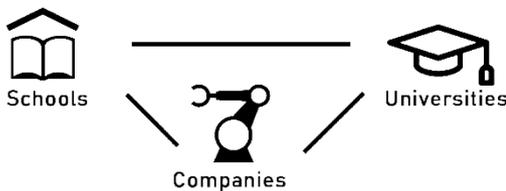




Authentic-STEM

Dear Ladies and Gentlemen,

the last days of September and the first days of October were highly anticipated and looked forward to by the team behind Authentic-STEM. After all the planning and preparation, we had the honor to welcome a number of American guests to the city of Siegen. Extremely grateful and inspired we want to take a look back at the study visit in the two transatlantic programs Authentic-STEM and Learning to teach full of new experiences, insights, and networks.



Authentic-STEM

The project Authentic-STEM addresses the skilled labor shortage in the STEM area. As an innovative project for vocational orientation, it wants to

give students the opportunity to work in intercultural project teams on substantial and authentic mathematical problems which arise in businesses. Students get the chance to see how they can apply their school knowledge in real-world work experiences and develop competencies in digital and intercultural communication and problem-solving. As members of the mathematics education institute at the University of Siegen, we work together with businesses to identify problems (e.g. modeling, optimization, big data, product design, etc.) for the students to work on. In solver teams with German and US students together they search for solutions, accompanied by mentors from the mathematics education institute at the university of Siegen.

In the pilot study (February-June 2022) students from Lansing Community College, MI, USA and Städtisches Gymnasium Olpe, Germany, worked together on optimizing defect protocols and training new skilled welding workers for weld cells at Kirchhoff Automotive. Another team with students from CV-TEC Mineville, NY, USA and Städtisches Gymnasium Olpe, Germany worked on reducing manual labor while increasing productivity through automation of a manufacturing process for Schluter® Systems KG. After working on the problems for around four months, the students presented their solutions in the "Forum of innovation" to the companies and supporters from schools, politics and society. The students took the audience on a journey through their work process with all challenges they faced and overcame and reflected on their learning process during the time of the project, where they were taken out of their comfort zones and learned to collaborate globally. We thank everyone who was able to join our forum!



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Within the project, two memoranda of understanding were signed for the support of the project, one in Germany between the department of mathematics education of the University of Siegen, SCHULEWIRTSCHAFT NRW, the AmerikaHaus e.V. and Jochen Ritter (member of the state parliament NRW), the other in the United States between the mathematics education institute at the University of Siegen, the North Country Workforce Partnership, Inc. & North Country Workforce Development Board, Champlain Valley Educational Services, Schluter® Systems and the North Country Chamber of Commerce on April 4th, 2022.

Study Visit

We can now look back at a fruitful study visit in Siegen (from September, 24th till October, 5th). A delegation of people from NY who have supported the project from the beginning, Sylvie Nelson and Jordan LeBlanc from the North Country Workforce Development Board NY, Sue Matton from the Chamber of Commerce and Natalie Branosky from International Knowledge Exchange NY came to Siegen. Other guests came from Colorado from Adams State University and SLV BOCES, who are involved in a student exchange Learning to teach, organized by Amelie Vogler, a member of the mathematics education institute in Siegen. Learning to teach offers an international exchange for pre-service teacher students to learn from different approaches to STEM education in the United States and in Germany. The American guests arrived over the weekend and had some time to get to know their hosts and the city of Siegen in a tour led by students of the university of Siegen.



On *Monday*, September 26th, the visitors started the day with a school visit (Pestalozzi-Schule – a school for special need education) for the Learning to teach group and a company visit for the Authentic-STEM group (Viega in Attendorn Ennest). Before lunch, the two groups met to celebrate the official welcome at the University of Siegen with welcoming addresses. After lunch the groups then took a look at different perspectives for STEM education with a lecture by Prof. Dr. Ingo Witzke and different workshops. The day concluded with a tour of campus with German students and dinner at a local restaurant.

Tuesday The next day the two groups went to Düsseldorf, the capital city of North Rhine-Westphalia to visit the state parliament NRW and meet with members of parliament, Raphael Tigges and Angela Freimuth. For lunch the group split up. One part of the group was invited by the Consul General Mrs. Pauline Kao. The other part went on a city tour through Düsseldorf.



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On *wednesday*, the *Authentic-STEM* group visited the employment agency Siegen in the morning. This was followed by a company visit to KIRCHHOFF Automotive in Attendorn. Meanwhile, the *Learning to teach* group visited another school in Siegen and later met to reflect as a group on further impressions and observations in German schools.

thursday The following day the group went on to visit

the Städtisches Gymnasium Olpe, the school where the German students in the pilot study came from. The afternoon was then spent in the empirical research lab of bc:Olpe, which is a cooperation of the university of Siegen, the city and county of Olpe, and the schools in Olpe for the development of education. Students, lecturers, and members of the development of the workforce worked on different topics and exchanged ideas in various workshops.

On *friday*, both groups exchanged ideas in workshops, the Learning to teach group worked on STEM education while the Authentic-STEM group developed the next steps to take for the project.

From *saturday* to *monday*, we had a couple of days off to take day trips and explore the country, landscape, and culture of Germany, concluded with a dinner Monday evening with typical American food that the American students prepared for their German hosts.

On the last day of the study visit, *tuesday*, the groups went to Cologne to visit the company ALSCO as well as Currenta, one of the world's most versatile locations for the chemical industry. The Authentic-STEM group was invited for lunch followed by a panel discussion with a comparative perspective on educational systems (program organized by the AmerikaHaus e.V.).

thank you

Looking back we are extremely happy with the study visit and the fruitful intercultural exchange about STEM education and the education systems as well as the future of the projects. We want to take this opportunity to say "Thank you" for the continuous support of the project. We are now looking forward to and preparing for the first cycle of the project starting on February 8th, 2023.

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Finally we want to wish you

Merry Christmas
and a
Happy New Year



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