

Development Networks



OBJECTIVE

To help selected universities improve STEM teacher training.

Teacher training has long been treated like a neglected stepchild at German universities. The situation is particularly difficult for prospective teachers of “STEM” subjects – science, technology, engineering and mathematics. To bring about much-needed change, Deutsche Telekom Stiftung is funding development networks that will organizationally and substantively establish and develop STEM teacher training as one of the main fields of activity.

The foundation has been helping universities implement innovative new ideas and approaches to teacher training since 2009. In its first nationwide competition, it awarded EUR 4.5 million in funding that ran until 2013 to Technische Universität München (TU Munich), Technische Universität Dortmund (TU Dortmund), Freie Universität Berlin (FU Berlin) and Humboldt-Universität zu Berlin (HU Berlin).

These four universities confer education degrees for many different school types and STEM subjects and provide world-class, evidence-based teacher training in these fields. In this initial project phase, they all developed methods for more effectively integrating STEM subjects, subject-specific education, education research and real-life teaching demands. TU Munich relied heavily on its School of Education, which proved to be a significant element of its project activities. Diagnosis and personalized support played a key role in TU Dortmund's project. HU Berlin, for its part, benefited from close ties to Adlershof, a business park and research campus where many education students intern in fields related to their chosen occupation. FU Berlin focused on redesigning the initial phase of its degree programs and strengthening



DURATION

2009 – 2018



Photo: Deutsche Telekom AG

STEM teachers need to be thoroughly prepared for their jobs.

TEACHER TRAINING IS ABSOLUTELY CRITICAL TO IMPROVING THE EDUCATION SYSTEM.

the practical phases. All university projects were overseen by academic sponsors and subjected to internal and external evaluations.

Now, the second project phase will carry on the development, cooperation and change processes initiated at the four universities and explore insights and deeper questions surrounding STEM teacher training in a network with other universities.

In 2013, the foundation asked all German universities that educate STEM teachers to submit proposals for exploring further ideas within its areas of interest. 43 universities responded to

the call; nine were selected to cooperate in three associations until 2018. These networks will focus on “Student laboratories: labs for teaching and learning”, “Recruiting, assessment and support” and “Diagnosing and supporting heterogeneous learning groups”. By working together, the network participants aim to improve the structure and substance of STEM teacher training and raise awareness and appreciation for this aspect of teacher education at German universities. The networks are coordinated by the universities from the first project phase and receive advice and assistance from sponsors.

More information:

<https://www.telekom-stiftung.de/en/development-networks>



Development network: Student laboratories as labs for teaching and learning

This network looks at ways to turn student laboratories into teaching and learning labs. Ideally, the labs will provide a platform where future STEM teachers can reflect and re-examine teaching, learning and their own behavior from a new perspective. The network aims to integrate labs into education degree programs, where they will largely eliminate the sharp distinctions between training in science, general education and specialized education.

Partner universities

- Freie Universität Berlin and Humboldt-Universität zu Berlin (coordinators)
- Carl von Ossietzky Universität Oldenburg
- Christian-Albrechts-Universität zu Kiel and Leibniz-Institut für die Pädagogik der Naturwissenschaften und Mathematik Kiel
- Universität Koblenz-Landau
- Westfälische Wilhelms-Universität Münster

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Development network sponsors

- Prof. Dr. Bernd Ralle
Technische Universität Dortmund
- Prof. Dr. Johann Sjuts
Studienseminar Leer and Universität Osnabrück

Development network: Diagnosing and supporting heterogeneous learning groups

This aims to train students to constructively identify heterogeneity, develop and improve diagnostic and support skills and apply them in a classroom setting. It also seeks to analyze how future STEM teachers cope with an increasingly heterogeneous student body and integrate inclusive teaching methods into STEM education.

Partner universities

- Technische Universität Dortmund (coordinator)
- Universität Bremen
- Justus-Liebig-Universität Gießen
- Carl von Ossietzky Universität Oldenburg

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Development network sponsors

- Prof. Dr. Cornelia Gräsel
Bergische Universität Wuppertal
- Prof. Dr. Elisabeth Moser Opitz
Universität Zürich

Development network: Recruitment, assessment, support

This network aims to interest high-school students in becoming STEM teachers and recruit them to the profession. Teaching is a demanding occupation that requires strong nerves, excellent educational skills and profound expertise in the teacher's core subjects. Some students may not meet this standard, making it necessary to conduct assessments of each student's suitability. The network also looks into ways to assist education majors as they work their way through the degree program.

Partner universities

- Technische Universität München (coordinator)
- Technische Universität Berlin
- Leuphana Universität Lüneburg
- Eberhard Karls Universität Tübingen

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Development network sponsors

- **Prof. Dr. Konrad Krainer**
Alpen Adria Universität Klagenfurt
- **Prof. Dr. Tina Hascher**
Universität Bern

Publications

Online magazine for STEM teacher training

Deutsche Telekom Stiftung has been publishing the latest news from its three development an online multimedia magazine since February 2016. Text, audio and video contributions are regularly posted to the website.



www.mint-lehrerbildung.de

New approaches for STEM teacher training

This book, published in November 2013, documents the development processes in teacher training at the four universities from the first project phase between 2009 and 2013.



MINT Teacher Training university competition

This publication, released in April 2013, describes certain best-practice examples from the universities that participated in the first project phase. Both books are available free of charge from Deutsche Telekom Stiftung.



DEUTSCHE TELEKOM STIFTUNG

Deutsche Telekom Stiftung was established in 2003 to strengthen Germany's position as an education, research and technology leader. It is one of the country's main corporate foundations with an endowment of EUR 150 million. Deutsche Telekom Stiftung's mission is to improve education in the digital world concentrating on the so called STEM subjects science, technology, engineering and mathematics. It focuses on four core areas: Education Drivers, Education Opportunities, Education Innovations and Education Dialog.

In Education Drivers, the foundation supports people who inspire others to study STEM subjects. Education Opportunities involves projects to prepare children and teenagers to succeed in STEM fields and participate fully in our connected world. In Education Innovations, the foundation invests in researchers and teachers who specialize in STEM subjects. Finally, Education Dialog comprises all the projects in which the foundation works with policymakers and civil society to improve education in a digitized world.

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