

PhD Scholarships on Spatial Learning @ University of Muenster, Germany

interdisciplinary topics for **Computer Science, Geoinformatics, (Geo-)Didactics or Psychology** students

As part of an Innovative Training Network on Enabling Open Cities (www.geo-c.eu) together with Universitat Jaume 1 (Castellon, Spain) and Universidade NOVA de Lisboa (Lisbon, Portugal), we offer PhD Scholarships in the area of spatial learning / GI education in the context of open cities. PhD students are based at the Institute for Geoinformatics, Münster, Germany. Interested candidates should **contact Angela Schwering** (schwering@uni-muenster.de) as soon as possible.

PhD Scholarship: Educating children as citizens of smart open cities

The term "smart cities" has been coined for initiatives that monitor and analyze different aspects of urban life, and manage service provision intelligently. The term "Open cities" refers to cities, in which all groups of society can participate on all levels and benefit in many ways. **The goal of this PhD project is to educate school children as smart open citizens.** The PhD project involves several tasks:

1. Develop a smart open city project idea for children in school.

The Institute for Geoinformatics developed "SenseBox", a citizen science toolbox, which can be used for various measurements at local or global scales. For example, citizens can use the SenseBox for measurements related to climate and environmental pollution (temperature, light, infrared) or traffic measurements (traffic counting). Citizens collect and analyze data to investigate a (scientific) question which is of relevance for themselves and the city.

The project to be developed can (but does not have to be) related to existing projects. It should focus on some spatio-temporal problem. For example, a project for school children could refer to how to optimize traffic in the city, in particular with respect to schools and ways to school.

2. Developing an educational concept and teaching material.

Teachers are often the bottleneck when it comes to using new technologies in education. Thus, the PhD project addresses also the development of an educational concept and teaching material such that teachers can use this material for a teaching unit on open smart cities. Relevant questions are (1) how can children be engaged to investigate scientific questions and (2) how can they be motivated to use available technology. Further questions refer to which competencies (in particular spatial competencies) are learned and how to measure learning success.

3. Develop the appropriate methods and tools to (1) collect and analyse spatiotemporal data from environment observations, (2) to enable children to build their own sensor stations using a light-weight and low-cost sensor platform, and (3) to share this data with the smart open city. This topic could also address collaborative aspects and group interaction in learning, mobile on-site learning, and gamification for motivating children.

4. Evaluate the approach

The approach can be evaluated at different levels: The didactic concept can be evaluated by determining the learning effect. The toolset itself can be evaluated through usability studies.

The PhD topic is interdisciplinary addressing geoinformatic, didactic, and cognitive research questions. The focus of the PhD topic will be aligned to the background of the PhD candidate.

For details on the formal requirements, please have a look at our website www.geo-c.eu . In total 15 scholarships are offered in the Geo-C Innovative Training Network on Enabling Open Cities.