Educational Modules on Adaptation to Climate Change in Saxony-Anhalt (Germany)

Anne-Kathrin Lindau, Gerd Schmidt, Patrick Illiger, Alina Schürmann & Detlef Thürkow
Martin Luther University Halle-Wittenberg

Abstract

Considering the projected precipitation and temperature developments for the county of Saxony-Anhalt, there are increasing demands for climate adaptation in this region. For this purpose, educational institutions must raise awareness and train future decision-makers. The teaching and learning rooms BIKAB and BIKASA therefore offer basic information on climate change based on the concepts of different forms of learning. Regional case studies are used as learning objects which are illustrated in web-based learning modules as well as the framework of lecture series, case studies and science camps. The project’s results are implemented as a Rich Internet Application (RIA) in a modular e-learning platform, so that a sustainable usage in German-speaking areas is possible. Selected content is prepared for outdoor education in field apps. The e-learning tools in BIKAB are especially designed for students in grades 10 and 12 or 13 of secondary schools and grammar schools as well as for students of STEM subjects at universities. BIKASA aims at addressing vocational students in the agricultural sector.

Introduction

For the federal state of Saxony-Anhalt, there are increasing demands on the use and cultivation of land in order to ensure the efficiency of agricultural production and the sustainable protection of soil resources. The agricultural sector of Saxony-Anhalt is classified as particularly sensitive to the influences of climate change.

Data & Methodology

The BIKAB / BIKASA learning platform is set up in cooperation with the OpenSource-WCMS Drupal and the central e-learning platform ILIAS of Martin Luther University. Therefore the wide product spectrum of ESRI (ArcGIS Pro, ArcGIS Online) for data processing and creation of interactive story maps is used. In addition, further open source applications are used to generate the BIKAB / BIKASA geoservices (e.g. PostgreSQL/PostGIS Databases, Geoserver, R-based developments). Besides that, learning contents, methods, models and geovisualizations are implemented from research projects such as GEOLVLEX (www.geolvlex.de) or WEBGEO (www.webgeo.de). The interoperability with existing applications and data is ensured via interfaces. Processed basic geodata, remote sensing data, data from field investigations and teaching materials (about water, soil and climate in dry regions in Central Germany) as well as additional reference data are provided and further processed for the needs of BIKAB / BIKASA.

Conclusion / Outlook

The project aimed to raise awareness among pupils, students and teachers regarding regional and local effects of climate change with resulting climate impacts and required adaptation strategies. The platform offers a tool for individual learning under the consideration of previous knowledge on the topic of climate change and the usage of e-learning tools in geography lessons, vocational schools and at universities. The e-learning tools are designed in such a way that the topics can be transferred to other dry regions in Germany and that the didactic and methodological concepts can be adopted for other problematic areas.

Results

The BIKAB/BIKASA platform provides such learning materials as videos, landscape models, interactive maps or augmented reality applications for the users to access.

Contact person: Anne-Kathrin Lindau (e-mail: anne.lindau@geo.uni-halle.de)