

Best practices of cartography education at the University of West Bohemia in Pilsen (Czech Republic)

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Abstract:

Cartography teaching at the University of West Bohemia (UWB) in Pilsen, Czech Republic, combines traditional approaches with modern technologies and didactic innovations to provide students with a unique educational experience. Cartography is taught by the staff of the Department of Geomatics, Faculty of Applied Sciences. The target group is not only students of the Faculty of Applied Sciences (future technicians), but also students of the Faculty of Economics (future regional and socio-economic geographers) and the Faculty of Education (future geography teachers). Specific cartographic subjects are also enrolled by history students (History of Maps and Mapping course) and Erasmus international exchange students (GeoWeb course).

A key element of the curriculum is the emphasis on the communicative role of the map and the role of the cartographer as a mediator between map users and geographical information and data. Several key innovations in the structure of the courses have been recently introduced at UWB. The innovations can be divided into three groups: organisational, content and formal. The organisational changes are described above and concern the introduction of cartography teaching at several departments of the UWB. This process required changes not only in the timetabling and scope of courses, but also in the language of teaching and, consequently, in the content.

The content changes consist of the introduction of new subjects. The new GeoWeb course, which replaced the original Computer Cartography course, integrates web technologies from the world of cartography, geomatics and geoinformatics. It teaches students how to use web services, the basics of the Internet of Things (e.g. sensors), JavaScript, markup languages, web GIS, principles of data semantics and other technologies. Unlike other cartography courses, the teaching is done in English. Another new subject is the Cartography Seminar. Like GeoWeb, it is designed for upper-level students who have already taken basic cartography courses such as Thematic Cartography, Geographic Cartography, or Mathematical Cartography. This interactive course will focus on the creation of functional maps that follow cartographic principles, but most importantly, will fulfil their communication role and respect the specificities of the target map user group. Students will peer-review and discuss their work in a peer-to-peer environment, which will enhance not only their cartographic skills and knowledge but also their critical thinking skills.

Another part of the content changes is to strengthen the parts of cartography that students find challenging. In the courses for junior students, this includes understanding the nature of visualized data, including data mining, harmonization, classification, and data analysis. A textbook, *Cartography for Non-Cartographers*, has been developed for students. This textbook, distributed under an open license, is designed as a practical guide to mapmaking with one common theme - American football. It uses constructivist pedagogical principles that encourage active student engagement.

A significant part of the educational cartographic activities at UWB is working with gifted high school students and popularization of cartography. Successful initiatives include lectures on "Why are maps the best?" or "The basics of self-defence against insidious maps?", cartographic workshops for Mensa or LogIQ organisations and the summer

GeoCamp at the Department of Geomatics. These activities serve as a recruitment tool and a means to spread awareness of cartography.

Through student feedback, we have identified several key preferences that have influenced the shape of our teaching. Students prefer asynchronous learning and anonymous interactive platforms such as Mentimeter. Group projects are generally unpopular, so we try to strike a balance between individual and collaborative work. An interesting phenomenon is the so-called "choice paralysis", where students experience discomfort in an environment with a high degree of freedom (being able to choose different learning texts or different paths to complete tasks). Based on these findings, we have streamlined the learning materials and structured the conditions for completing the courses.

Quality teaching (not only cartography) cannot exist without further education of teachers. That is why we are actively involved in meetings of university cartography teachers in the Czech Republic and also in meetings of the Pedadesk community at UWB. Both groups focus mainly on sharing topics and experiences in the areas of pedagogy and didactics.

The teaching of cartography at UWB is constantly evolving to reflect current technological and social challenges. The combination of theoretical knowledge, practical skills and feedback from students enables us to create an educational environment that not only prepares students for their professional careers but also inspires them to discover the beauty and possibilities of cartography.