

Urban Forestry Urban Greening report on experiment with research integration in teaching

Name
Natalie Gulsrud, Associate Professor, IGN, SCIENCE Megan Maurer, Assistant Professor, IGN, SCIENCE
Course Name
Urban Forestry Urban Greening
Study Board
Geosciences and Management
Level and class size
1 st and 2 nd year MA students; 26 participating students
Description of the experiment
<p>Our course investigates the challenges of balancing demand for recreational space with calls for biodiversity conservation, and the need to know more about residents' values regarding green spaces. Our research integration focuses on Naturpark Nordhavn, with the aim of understanding the diverse values associated with Copenhagen green space and the opportunities for data-driven multifunctional solutions to planning them.</p> <p>Our experiment linked digital skills to key course knowledge objectives by using the digital mapping platform, Maptionnaire, to 1) teach about public participation and why/how to collect diverse values in urban green spaces, 2) to analyze the data collected in the platform, and 3) to visualize and communicate the data through maps and planning strategies made for experts and non-experts.</p> <p>Students actively participated in digital learning and research by generating data for their course projects by:</p> <ol style="list-style-type: none"> 1. Course lectures, guest speakers, and the course project description introduced students to the case site (Naturpark Nordhavn), the key challenges, and the benefits of understanding diverse green space values. 2. Receiving a lectures and in-class exercises familiarizing them with the Maptionnaire platform, the survey they would administer, and the method of surveying. Students were then allotted course time to administer the public participation GIS (PPGIS) Maptionnaire survey through in-person surveys and online. Locations for both were chosen by students. The same survey was distributed to a representative sample of Østerbro / Nordhavn residents via e-Boks. Data from this distribution was also made available to students. 3. Analysing data from both surveys using Maptionnaire's in-software analysis tools, as well as software such as Excel and ArcGIS. Course lectures and supervision time were used to provide guidance for utilising in-software tools, cleaning / processing raw data, and additional analysis techniques. 4. Reporting their findings as part of their course projects, using data from the surveys to support their strategies for Naturpark Nordhavn. Reporting included a completed strategy submitted to course lecturers and censor, a presentation of the strategy to all course participants, and discussion of the strategy as part of the final exam. Interested and capable students will have the opportunity to further communicate of findings through a planned policy brief and presentation to the City of Copenhagen.
Outcome for the students
<p>The experiment has had 4 primary outcomes for students: 1) familiarization with the digital PPGIS software Maptionnaire; 2) awareness of the opportunities and challenges associated with survey administration; 3) exposure to data analysis techniques including mapping and coding; 4) introduction the opportunities and challenges of data driven green space planning and management.</p> <p>Students' assessment of the course was overwhelmingly positive. In particular, students appreciated the direct connection to "real-world" challenges and solutions as provided by the experiment. They also expressed appreciation for the linkages made between external lectures from practitioners and lectures given by us as core teachers. The experiment further enhanced this successful pedagogical alignment by motivating students to make linkages between the course case site, experiment data, the literature, and the</p>

real-world policy context. Verbal feedback did reveal a few points for improvement: the timing of data collection was difficult due to weather and students' reflections revealed they would have benefited from more preparation for the task as well. Students' also reflected on the need for further support—via lectures, labs, and supervision—in data analysis and application of data in strategy building.

Outcome for the research

Data collection activities associated with the experiment—specifically the distribution of the survey to a representative sample via e-Boks—contributed to the research by providing high quality data for further analysis and publication. Preliminary results generated as part of the course activities have provided the opportunity to propose a policy brief and presentation with the City of Copenhagen. This experiment has served as a proof-of-concept with which to generate further work through the establishment of a Green Solutions Center in Nordhavn.

Interaction between teaching, research and exams

Lectures and course exercises were used to directly introduce each aspect of the research experiment. The exam was used for students to reflect on the process of creating a strategy for Naturpark Nordhavn, including the role the research played in that process. The integration of the experiment into all activities of the course—lectures, exercises, project, supervision, and exam—went well. Creating clear linkages between key course concepts, e.g. stewardship or environmental justice, and the focus on data-driven planning and management were not always clear and presented a challenge at fully integrating the experiment with the course content.

Joint publication between teachers and students

Joint publication was not an aim of this research experiment. Plans remain to invite capable and interested students as co-authors of a policy brief reporting on results from the broader Nordhavn research project.

Adapting of the experiment

No adaptations of the experiment occurred during the course. There is potential need for adaptation, in response to student feedback and instructors' identified challenges. These adaptations would include changing the course schedule to better support the survey administration aspects of the experiment and alterations to course content in order to better support and integrate the experiment's emphasis on data-driven approaches to green space planning and management. In this regard, shifting the course from Block 2—where the Christmas holidays disrupt learning and research activities—would be a particular benefit.

Strengths and weaknesses

Strengths: engaging students in hands-on data collection and analysis activities, creating an engaged and dynamic classroom; connections to real-world problems and strengthening of relationships with the City of Copenhagen and other practitioners.

Weaknesses: compressed timeline of the course makes fully covering and supporting the research process difficult; need for further integration of the experiment and its purpose with the key course concepts and learning objectives.

Experienced challenges

Key challenges:

- 1) Time necessary to prepare the research experiment and plan its integration into the course
- 2) Timing of the course in the academic year and the compressed timeline of the course
- 3) Providing sufficient training and support for data collection and analysis within course hours; necessity for additional supervision and class meetings to fully support students
- 4) Communicating the conceptual basis of the experiment, including the importance of working with a data-driven approach.

The most important experience

The dynamic and engaged classroom—the experiment provided the basis for engaging students in hands-on research activities, encouraging questions and dialogue, and allowing students to pursue different interests and lines of inquiry.

Will the experiment be conducted again?

Yes. We plan to make alterations to the course program and content to address the challenges and weaknesses identified here. If funding for continued Maptionnaire licensing can be secured, we intend to make this experiment a permanent component of the course for the time being.