Plan Overview

A Data Management Plan created using DMPonline

Title: The campus as an urban living lab: Examining the transformative learning experiences and outcomes of students from engaging with biodiversity

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Project abstract:

The project is part of the activities carried out within the Marie Curie Research Training Network SUNSET (sunsetproject.eu), whose aim is to explore the role of Urban Living Labs (ULLs) at Universities in the context of the EU twin transition. The project departs from the idea that urban sites where re-naturing happens can be learning environments and places for transforming people’s relationship with nature in cities. The PhD Candidate will qualitatively investigate how and what students learn by engaging with biodiversity restoration at the UU Campus, a site where numerous renaturing projects and associated student engagement processes are in place. The project is guided by the following research question: How and what do students learn while engaging with biodiversity on the UU campus?

The aim is to explore the quality of university students' outdoor learning experiences, focusing on the meanings that students attribute to nature in the city and the behaviours that make these meanings manifest. Theoretically, the study will investigate the “place” dimension of learning with and for biodiversity in urban environments. Theories on situated learning (Lave & Wenger, 1991) and place-based education (Smith, 2002) are the two main points of departure for the construction of a theoretical framework that could include aspects of engagement with urban places and biodiversity as dimensions of transformative learning. The project's overall aim is to improve students' learning experiences while enhancing their relationship with nature, the place they live (and study at) and informing the creation of future ULLs, where urban biodiversity enhancement initiatives might also facilitate a richer and transformative learning experience for students that engages them as active agents in the place transformation.

The research will result in a review and dissemination of students’ learning experiences, and a critical examination of how connection and interaction with nature can impact students' learning and active engagement with the city environment. The topic will be explored from the point of view of different academic and non-academic stakeholders that shape the students' learning environment while contributing to nature restoration on the UU campus (student associations, Green office, Biodiversity Board at UU, Centre for Academic Teaching and Learning, City of Utrecht, National Park Utrecht’s Heuvelrug)

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The campus as an urban living lab: Examining the transformative learning experiences and outcomes of students from engaging with biodiversity

Data Summary

Will you re-use any existing data and what will you re-use it for?

The researcher will not use existing data. Previously collected data concerning local biodiversity, openly available at https://waarneming.nl/ might be used for triangulation in a further stage of the project, but this has not yet been defined.

What types and formats of data will the project generate or re-use?

The PhD candidate will collect new empirical, qualitative data generated by the researcher herself through two case studies (City of Utrecht and Consortium Secondment Host (still to be defined)).

The data generated by the research during the first Case Study will include:

1) (2025) Go-along interviews protocols and transcripts to assess students' learning experiences at the university campus (.odt (protocol), .odt (transcript));

2) (2025-2026) Semi-structured interviews protocol and transcripts with student associations, Green office, Biodiversity Board at UU, Centre for Academic Teaching and Learning, City of Utrecht, National Park Utrecht's Heuvelrug, Parkmakers Utrecht (.odt (protocol), .pdf (transcript));

3) (2025) Researcher's interpretations, narratives and mapping of youths' engagement with biodiversity obtained from participant observations (.pdf (lab journal), .tif (photographs), .gpkg (geospatial information));

4) (2026-2028) Best practices protocol co-created and co-designed with students on developing and implementing an Urban Living Lab for biodiversity restoration on Campus (format not yet defined, possibly PDF/A).

What is the purpose of the data generation or re-use and its relation to the objectives of the project?

The purpose of the data generation above is related to objective 1 of the SUNSET project, namely:

· **Project objective 1 (2025): Examining how campus interventions and living labs could be planned and implemented.** This is done by examining the current state of the art on the possibilities of people to engage in initiatives for biodiversity restoration at the UU Campus, focusing in particular on the quality of students' learning experiences through their civic participation (e.g. why, with whom, and how do they engage and learn?) (data output 1, 2).

Further project objectives (for which both the Data Management Plan and Ethics Application will be updated) include:

· **Project objective 2 (2026-2027): Analyse how the results of campus initiatives feed into urban decision-making as a multi-level learning process.** This will be assessed by exploring how different dimensions of learning explored through objective 1 connect to urban nature

decision-making processes at the City level (how do Campus learning outcomes feed into urban policies? What actors are pivotal for this transfer of knowledge to happen? What role do students play here?) (data output 3).

· **Project objective 3 (2027-2028): Develop scholarly and practical knowledge on the success factors and pitfalls of campus interventions and living labs in sustainable innovation**. This objective will be reached by bringing together students and academic and non-academic actors to co-create and co-design a protocol for successful Urban Living Labs for biodiversity restoration in the city (How can spaces for collaborative learning between students, academic and non-academic actors be practically created?) (data output 4).

What is the expected size of the data that you intend to generate or re-use?

Audio recordings: 200 MB per recording (average of 45 minutes at 16-bit, mono channel)
Photos: average of 5 MB per image.
Lab journal: 30 MB (estimated 30 pages in PDF, no images, black and white)
Final protocol: 30 MB (estimated 20 pages in PDF, including images)

What is the origin/provenance of the data, either generated or re-used?

Research subjects will be the direct source of data via interviews, observations and workshops.
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To whom might your data be useful ('data utility'), outside your project?

Data may be useful for future research on the topic of youth engagement and community-based nature conservation (academic scholars), but also to policymakers or city officers working on renaturing and public engagement policies. Data might also be used by teachers implementing place-based education programs at higher institutions.

FAIR data

2.1. Making data findable, including provisions for metadata: Will data be identified by a persistent identifier?

The data we publish will be described with standard metadata (e.g., DataCite v4) and assigned a persistent identifier.

2.1. Making data findable, including provisions for metadata: Will rich metadata be provided to allow discovery? What metadata will be created? What disciplinary or general standards will be followed? In case metadata standards do not exist in your discipline, please outline what type of metadata will be created and how.

YODA repository will be used to deposit and include rich metadata. The repository metadata standard will be used

2.1. Making data findable, including provisions for metadata: Will search keywords be provided in the metadata to optimize the possibility for discovery and then potential re-use?

Search keywords will be provided in the metadata to optimise the possibility for discovery and then potential re-use.

2.1. Making data findable, including provisions for metadata: Will metadata be offered in such a way that it can be harvested and indexed?

We will use standard metadata such as DataCite v4, which ensures that the data can be reliably indexed, discovered, and cited. Using widely adopted metadata standards also enhances interoperability with repositories and catalogues, facilitates integration with research infrastructures, and supports the FAIR principles, thereby making the data more accessible and reusable.

2.2. Making data accessible - Repository: Will the data be deposited in a trusted repository?

The data will be deposited in *Yoda*, Utrecht University’s trusted repository environment. Yoda complies with international standards for data management and security. It supports FAIR data principles by providing persistent identifiers (DOIs), standard metadata (e.g., DataCite v4), and controlled access options. Depending on the sensitivity of the data, we will make the data openly available or restrict access as necessary, in line with UU’s Research Data Management policy.

2.2. Making data accessible - Repository: Have you explored appropriate arrangements with the identified repository where your data will be deposited?

No particular arrangement with the identified repository has been explored so far. The project does not entail large datasets. However, it is possible to set up a data repository within a few days via Yoda.

2.2. Making data accessible - Repository: Does the repository ensure that the data is assigned an identifier? Will the repository resolve the identifier to a digital object?

The repository ensures that the data is assigned an identifier. The persistent identifier system is DOI.

2.2. Making data accessible - Data:

Will all data be made openly available? If certain datasets cannot be shared (or need to be shared under restricted access conditions), explain why, clearly separating legal and

contractual reasons from intentional restrictions. Note that in multi-beneficiary projects it is also possible for specific beneficiaries to keep their data closed if opening their data goes against their legitimate interests or other constraints as per the Grant Agreement.

Lab/field journals and outputs of co-design and co-creation workshops will be made openly available after consultation with participants and if no objections emerge. Data will be de-identified to guarantee participants' confidentiality. Moreover, the interviews and observational data that contain personal information will not be openly shared.

2.2. Making data accessible - Data:

If an embargo is applied to give time to publish or seek protection of the intellectual property (e.g. patents), specify why and how long this will apply, bearing in mind that research data should be made available as soon as possible.

Data will be made available via the repository only after research articles are formally published in journals.

2.2. Making data accessible - Data:

Will the data be accessible through a free and standardized access protocol?

Yes, the data will be accessible through a standardised protocol via the repository.

2.2. Making data accessible - Data:

If there are restrictions on use, how will access be provided to the data, both during and after the end of the project?

The procedure for accessing data will be explained in the documentation and metadata of the data that has restricted access.

2.2. Making data accessible - Data:

How will the identity of the person accessing the data be ascertained?

The person who would like to have access to restricted data should contact us by institutional email addresses to start the process.

2.2. Making data accessible - Data:

Is there a need for a data access committee (e.g. to evaluate/approve access requests to personal/sensitive data)?

No.

2.2. Making data accessible - Metadata:

Will metadata be made openly available and licenced under a public domain dedication CC0, as per the Grant Agreement? If not, please clarify why. Will metadata contain information to enable the user to access the data?

The metadata will be made openly available, and information will be provided to access the data that is not openly available. The data will be published in Yoda under a CC BY V4 licence.

2.2. Making data accessible - Metadata:

How long will the data remain available and findable? Will metadata be guaranteed to remain available after data is no longer available?

The Netherlands Code of Conduct of Research Integrity states that research data must be kept for at least 10 years. Utrecht University Policy Framework For Research Data adds a 10-year-period after the publication of a paper.

2.2. Making data accessible - Metadata:

Will documentation or reference about any software be needed to access or read the data be included? Will it be possible to include the relevant software (e.g. in open source code)?

The information concerning any software needed to access the documentation will be included in a README file and attached to the dataset.

2.3. Making data interoperable:

What data and metadata vocabularies, standards, formats or methodologies will you follow to make your data interoperable to allow data exchange and re-use within and across disciplines? Will you follow community-endorsed interoperability best practices? Which ones?

We will keep the final version of the data in open file formats to facilitate its long-term reuse.

2.3. Making data interoperable:

In case it is unavoidable that you use uncommon or generate project specific ontologies or vocabularies, will you provide mappings to more commonly used ontologies? Will you openly publish the generated ontologies or vocabularies to allow reusing, refining or extending them?

Yes.

2.3. Making data interoperable:

Will your data include qualified references[1] to other data (e.g. other data from your project, or datasets from previous research)?

[1] A qualified reference is a cross-reference that explains its intent. For example, X is regulator of Y is a much more qualified reference than X is associated with Y, or X see also Y. The goal therefore is to create as many meaningful links as possible between (meta)data resources to enrich the contextual knowledge about the data. (Source: https://www.go-fair.org/fair-principles/i3-metadata-include-qualified-references-metadata/)

The DataCite V4 metadata standard allows us to have cross-referencing and versioning of the datasets.

2.4. Increase data re-use:

How will you provide documentation needed to validate data analysis and facilitate data re-use (e.g. readme files with information on methodology, codebooks, data cleaning, analyses, variable definitions, units of measurement, etc.)?

A readme file and a field notebook will be added to the datasets.

2.4. Increase data re-use:

Will your data be made freely available in the public domain to permit the widest re-use possible? Will your data be licensed using standard reuse licenses, in line with the obligations set out in the Grant Agreement?

Lab/field journals and outputs of co-design and co-creation workshops will be made openly available after consultation with participants and if no objections emerge. Data from interviews will be de-identified to guarantee participants' confidentiality and made available upon request only in transcript and/or aggregated form. Personal data will not be shared.

The metadata will be made openly available, and information will be provided to access the data that is not openly available. The data will be published in Yoda under a CC BY V4 licence.

2.4. Increase data re-use:

Will the data produced in the project be useable by third parties, in particular after the end of the project?

The data will be usable by third parties at the end of the project in accordance to CC BY V4 licence and GDPR regulations. See sections 1.1. and 1.2.

2.4. Increase data re-use:

Will the provenance of the data be thoroughly documented using the appropriate standards?

Yoda keeps track of the versioning of the data, and we will document this information in the metadata and other documentation (README files).

2.4. Increase data re-use:

Describe all relevant data quality assurance processes.

All the datasets on Yoda are reviewed by experienced data managers before publication.

2.4. Increase data re-use:

Further to the FAIR principles, DMPs should also address research outputs other than data, and should carefully consider aspects related to the allocation of resources, data security and ethical aspects.

A research ethics and integrity chapter will be part of the final project dissertation; moreover, a Privacy Scan has been filed together with the Utrecht University (Geoscience Faculty) Privacy Officer and is attached to this DMP.

Other research outputs

In addition to the management of data, beneficiaries should also consider and plan for the management of other research outputs that may be generated or re-used throughout their projects. Such outputs can be either digital (e.g. software, workflows, protocols, models, etc.) or physical (e.g. new materials, antibodies, reagents, samples, etc.).

We do not plan to develop code or software.

Beneficiaries should consider which of the questions pertaining to FAIR data above, can apply to the management of other research outputs, and should strive to provide sufficient detail on how their research outputs will be managed and shared, or made available for re-use, in line with the FAIR principles.

No other research outputs are foreseen.

Allocation of resources

What will the costs be for making data or other research outputs FAIR in your project (e.g. direct and indirect costs related to storage, archiving, re-use, security, etc.) ?

The only cost will be storing and publishing data, which is mostly negligible.

How will these be covered? Note that costs related to research data/output management are eligible as part of the Horizon Europe grant (if compliant with the Grant Agreement conditions)

Data storage, transfer and deposition costs are covered by the Horizon Grant from the SUNSET project.

Who will be responsible for data management in your project?

PhD candidate and supervisors will be responsible for data management.

How will long term preservation be ensured? Discuss the necessary resources to accomplish this (costs and potential value, who decides and how, what data will be kept and for how long)?

Data long-term preservation and handling will be ensured by the PhD Candidate (and supervisors) via the repository.

Data security

What provisions are or will be in place for data security (including data recovery as well as secure storage/archiving and transfer of sensitive data)?

Provisions for data security are provided by the chosen repository.

Ethics

Are there, or could there be, any ethics or legal issues that can have an impact on data sharing? These can also be discussed in the context of the ethics review. If relevant, include references to ethics deliverables and ethics chapter in the Description of the Action (DoA).

A Privacy Scan has been filed together with the Utrecht University (Geoscience Faculty) Privacy Officer and is attached to this DMP.

Will informed consent for data sharing and long term preservation be included in questionnaires dealing with personal data?

Yes. See attached Privacy Scan.

Other issues

Do you, or will you, make use of other national/funder/sectorial/departmental procedures for data management? If yes, which ones (please list and briefly describe them)?

This DMP responds and aligns with the Geoscience Faculty Research Data Management Policy at UU.

The creation of the data management plan will be carried out via DMPonline platform used by researchers at Utrecht University. The data management plan and the research proposal will be assessed by the Science-Geo Ethics Review Board (SG ERB) at Utrecht University to ensure compliance with ethical standards concerning the involvement of human subjects.

The DMP is also shared and validated with the project manager of the Marie Curie Doctoral Network SUNSET.