

Transformative Learning in Real-world Labs for Inner and Outer Sustainability

A GUIDELINE

CONTENT OF THE GUIDELINE

- **Introduction** into Real-world Labs for inner and outer sustainability and into outdoor education considerations from a teachers perspective
- **Guidance** for organizing a Real-world Lab excursion to a nature-based transformative learning site and for planning the didactical, pedagogical and methodological dimensions of the excursion

I INTRODUCTION into the Real-world Lab Excursion

This guideline is designed to support you planning, organizing and participating in an excursion with an education program for inner and outer sustainability. It helps you shape and organize an outdoor excursion for secondary school pupils in a natural learning environment, following particularly the structure and objectives of a Real-world Lab for inner and outer sustainability.

With this guide you will learn how to pursue excursions to nature-based learning sites that offer high potentials for students' own sustainability value awareness, strong connecting experiences with nature that lower stress and foster curiosity, experiential hands-on activity learning, community feeling among the students' and deeper relationships with teachers through collaborative interaction.

1. REAL-WORLD LABS

The term 'Real-world laboratory' or 'Reallab' (RwL)¹ in this guideline refers to an outdoor environmental education program that creates an experimental lab space within the real life context of natural surroundings. The RwL aims to invigorate an inspiring transformative learning process for inner and outer sustainability by

- deepening knowledge and cultivating awareness about how climate change impacts nature as sea-level rise, coastal flooding, droughts, etc. during immersive on-site visits (outer sustainability dimension)
- making students conscious about their personal values, beliefs, attitudes and personal relation to nature (inner sustainability dimension)
- inviting students to experience that results out of feeling connected to nature and of acknowledging humans being part of a complex interconnected web of life
- fostering students inner motivation to address outer environmental problems through an exciting experiential situation as building a hut with natural materials
- incentivizing students curiosity and self-efficacy, while building a hut to develop and test their practical ideas for regenerative, low-impact, up-cycling, biodegradable, etc. solutions

¹ "The German term 'Real-world laboratory' or 'Reallab' is a concept mostly referring to research that addresses real-life problems and bases on academic-practitioners knowledge co-production and practical co-implementation by jointly elaborated solutions. The experimental lab environment is combined with the real-world context to test transferable solutions for sustainability challenges. Reallabs intend to foster societal sustainable transitions by cultivating students' personal sustainability and by exploring ways of up-scaling practitioners' socio-ecological innovations" (Veciana, 2022).

Jointly pursued by:



Funded by:



- building inner capacities for navigating uncertainty, fears and strengthening healthy relationship to themselves, other students, the teachers and the program team through practicing tools that encourage
 - communication skills e.g. in listening and empathy,
 - authentic self-expression e.g. by artistic practices,
 - self-care e.g. to overcome the fear of conflict when expressing their needs,
 - cooperative team work and community feeling e.g. through a collective decision-making process and creating jointly a documentation video
- reflecting and discussing students' perspective on climate challenges, how they could address them in their daily choices and lifestyle, and how their views changed during the excursion particularly on engaging for sustainability.

2. OUTDOOR EDUCATION CONSIDERATIONS

The Real-world Lab needs to incorporate the diverse expectations and needs of students, parents, the implementing team of teacher colleagues and natural park educators in the program design.

Your task as a teacher will be regarding students expectations and needs

1. to consider students usual expectations to encounter adventure, to have memorable outdoor experiences, and to enjoy free time with their schoolmates. For you and the program implementing team this may mean to
 - provide opportunities for students to have fun with planned activities (e.g. night-games), authentic unplanned experiences (e.g. encountering an animal in the forest), and enough free-time to interact with schoolmates
 - ensure that students feel safe in situations in which they may be confronted with fear or other challenging feelings
 - adapt the learning experience to students' previous experience and preparedness for participating in an outdoor environmental education program
2. in order to meet the expectations of the students' parents to
 - evaluate and select the program in regard to its main aim, natural environment site, methods, specific activities, duration, accommodation, travel accessibility and costs
3. consider didactical aspects of the programme you want to implement. Accordingly, you need to
 - plan well how to link the program with your curricula (e.g. sustainable values, environmental knowledge, responsible behavior, etc.)
 - consider that the format of a real-world lab includes a lot of self-regulatory activity by the students that empowers them to develop their competences in taking meaningful decisions for themselves and thus to experience self-efficiency. Usually regular excursions keep students motivated by tools that inspire them such as sports or games even they cannot influence
 - check how the program methods fulfill your expectations to help to foster good relationships among the students, solve existing tensions in the student group's dynamics, increase social cohesion, and improve your own relationship with the students

- ask the educational team of the natural park, sustainability scientists or communication experts for further methodological assistance, specialized knowledge and local specificities

3. REFERENCES

DEWEY, J. (1938): *Experience and Education*. New York: Macmillan Publishing Company.

KOLB, D. A. (1984): *Experiential Learning: Experience as the Source of Learning and Development*. Englewood Cliffs, NJ: Prentice-Hall.

MEZIROW, J. (2000): *Learning as Transformation: Critical Perspectives on a Theory in Progress*. San Francisco: Jossey Bass.

VECIANA, S. (2022): Nuevos formatos para la educación superior transdisciplinaria y sostenible: Aprendizaje transformativo interior y exterior en ‘laboratorios reales’. In *Proceedings of the Jornadas Hacia una Nueva Cultura Científica*, Valencia, Spain, 26–27 September 2022.

WOIWODE, C., SCHÄPKE, N., BINA, O., VECIANA, S., KUNZE, I., PARODI, O., SCHWEIZER-RIES, P., WAMSLER, C. (2021): “Inner transformation to sustainability as a deep leverage point : fostering new avenues for change through dialogue and reflection”. En *Sustainability science*, Volume: 16, Issue: 3, p. 841–858.

II GUIDANCE FOR ORGANIZING a Real-world Lab Excursion

From an organizational perspective, it is crucial to convincingly justify the excursion goals to the teaching staff and to clarify recurring questions regarding coordination, financing, accommodation, and mobility.

PREPARATION checklist

- Presentation of the excursion goals and associated learning potential to the staff (at the corresponding department-, teacher-, and school-council) and parents
- Obtaining approval from the school administration
- Cost calculation and clarification of financing (travel and accommodation expenses, materials, securing grants, etc.)
- Coordination with the staff regarding accompaniment
- Contacting the educational team of the nature-based learning site (see checklist: Communication with the nature-based learning site)
- Informing parents/legal guardians about the excursion plans, schedule, costs, etc.
- Selecting transportation for arrival and departure, and local mobility
- Selecting and booking accommodation well in advance, as well as determining room assignments for multi-day excursions
- Arranging meals
- Fulfilling formalities (identity cards, passports, vaccination certificates, etc.)
- Considering any special needs (medication, allergies, etc.)
- Legal safeguards
- Creating a schedule and program plan
- Informing students (excursion itinerary, special equipment, emergency procedures, rules of conduct)
- Planning an alternative/emergency program

FOLLOW UP checklist

- Thanking the educational staff of the natural learning site
- Cost accounting
- Report to the faculty, parents/legal guardians, and, if applicable, the funding institution

TIMELINE

- Preparation
- Duration
- Followup

III GUIDANCE FOR PLANNING DIDACTICS, PEDAGOGICS AND METHODS of the Real-world Lab Excursion

Essential for learning success is early, targeted, and audience-appropriate preparation and follow-up of visits to nature-based learning sites. From a didactic and methodological perspective, you begin with defining the learning objectives, content-related and methodological priorities, and by reflecting on the students' prior knowledge. On this basis, concepts for the preparation and the follow-up of the nature-based learning site excursion can be developed. A reasoned selection of the nature-based learning site is crucial. It is important to research information about the site and its educational offerings beforehand in order to assess the specific learning potential.

1.1. PREPARATION IN GENERAL

- Select the excursion site based on its unique opportunities for your transformative learning program identifying, justifying and describing how engagement with the site will contribute to the delivery of meaningful learning
- Research the nature-based learning site and educational programs offered there (guided tours, lectures, discussions with experts, workshops, project days, etc.)
- Identify logistical and resource-related requirements, including transportation, risk management and any necessary equipment you might need
- Gather prior experience of the nature-based site from colleagues
- Consider an individual preliminary visit to the nature-based learning site
- Contact the educational staff of the nature-based learning site
- Present the excursion plan and its associated learning potential to the colleagues

1.2. PREPARATION OF DIDACTICAL DIMENSION

- Frame the visit: voluntary vs. mandatory participation
- Determine the content-related and methodological learning objectives, taking into account curricular guidelines (subject-specific or interdisciplinary approach)
- Define topics, content, and methods; selecting and, if necessary, preparing teaching materials (suggestions for this point can be found at section 2.2)
- Relate the excursion within a unit of study and bring in sample teaching and learning processes you would like to use
- Assess the students' prior knowledge of the topics addressed at the nature-based site and their prior experience visiting nature-based sites
- In your design process, include a summary of class needs, inclusive of backgrounds, subject areas, and any additional support students might require asking them for their interests, wishes, expectations, and anxieties

- Consider problems and questions that concern you about the program design, leaving opportunity for solutions and reflexivity
- Develop questions/ideas* for the excursion with the students
- If appropriate and not presented by the nature park, define research and work assignments for the excursion

1.3. PREPARATION OF PEDAGOGICAL DIMENSION

- Discuss the potential emotional impact of the nature-based learning site
- Agree on appropriate behavior at the nature-based learning site
- Consider process of creating (sub)groups
- Agree on “work time” and “leisure time”

2. REALIZATION

The implementation of the nature-based learning site excursion depends very much on the educational program offered by the site that is selected. Generally, the site's educational staff is responsible for conducting the visit, while teachers typically play a supporting role in both content and pedagogy. In a RwL teachers' role may become much more active to foster a deeper relationship with the students.

To plan the excursion optimally and tailor it to the individual needs of the learning group, early contact and consultation with the site's educational staff is recommended. In the following checklist you can find some suggestions:

2.1. COMMUNICATION WITH THE NATURE-BASED LEARNING SITE checklist

At most nature-based learning sites, you will find educational staff who will be happy to coordinate your excursion with you. The following checklist contains essential points that can be of great help to the staff at the place-based learning site in the process of preparing for the excursion and adapting it to the students group. Early communication allows us to consider the students' background and the intended learning objectives.

- Provide information about the structure of the students (age, grade level, number of participants, background)
- Explain the context of the visit (one-day/multi-day class trip, subject-specific/interdisciplinary)
- Determine the timeframe for the visit on site
- Discuss the selection of the educational program (e.g. guided tour providing on-site knowledge, workshop on hut building, sports activities)
- Inquire about the lead time for booking the educational program
- Inquire about the possibility of (digitally) involving the staff of the nature-based learning site in the preparation and follow-up activities
- Communicate and, if necessary, adjust the planned learning objectives
- Inform the students about the thematic focus of the nature-based learning site
- Discuss the students' prior experience with visiting nature-based learning sites
- Inform the students about their specific interests and expectations
- Inquire about preparatory and follow-up activities for classroom use
- Agree on the teacher's role in the implementation beforehand

2.2. METHODS & TOOLS

As already mentioned, to plan the excursion ideally, it is helpful to relate your summary of class needs with the outdoor methods and tools to be applied during the RwL at the nature-based learning site. Check if your program design includes means and methods that address both inner sustainability as well as outer sustainability practices:

- Examples for the inner sustainability dimension are methods and tools related to
 - self-awareness about own values and own unsustainable attitudes / habits (e.g. journaling, identifying emotional triggers, feedback circle)
 - connectedness feeling with nature (e.g. through contemplation in forest bathing activity or a Zen-garden walk)
 - experience of deep intra- and interrelatedness (e.g. body-scan, body-balance exercises with others, connecting with trees exercise)
 - capacities of listening and empathy (e.g. active listening, listening triads, paraphrasing circle)
 - awareness of own needs (e.g. playing with need-cards) and practices of self-care (e.g. mindfulness exercises)
 - emotional education as coping with strong uncomfortable feelings (e.g. non-violent communication exercises)
 - authentic self-expression (e.g. body-scan and expression exercise, learning to overcome fear to communicate others your own needs)
- Examples for the outer sustainability dimension are methods and tools related to
 - conceptual environmental understanding (e.g. guided nature tour by expert)
 - place-specific knowledge (e.g. shape, color, pattern, animal traces walks)
 - critical engagement with climate change (e.g. discussion with local or scientific expert and activist)
 - protection of nature and responsible environmental behavior (e.g. knowledge about nature park rules, learning about permaculture principles making compost)
 - creative skills e.g. working with natural materials (e.g. shadow drawing, shaping a mandala or labyrinth, creating a small nature pond, bee hotel or human use hut)
 - self-efficiency experience through participatory leadership (e.g. sociocracy group decision-making)
 - competences and skills for spending time outdoors (e.g. orientation with compass, risk assessment, “leave no trace”)

2.3. REFERENCES

PEARSON, K.R., BACKMAN, M., GRENNI, S., MORIGGI, A., PISTERS, S., VRIEZE DE, A. (2018). Arts-Based Methods for Transformative Engagement: A Toolkit. Wageningen: SUSPLACE.

3. FOLLOW-UP

3.1. FOLLOW-UP OF CONTENT DIMENSION

- Evaluation, reflection, and documentation of work results (e.g., through a report at the school website, students' video or podcast)
- Clarification of open questions

3.2. FOLLOW-UP OF DIDACTICAL DIMENSION

- Reflection and evaluation on the excursion to nature-based learning site including the feedback from the students on the excursion's progress
- Reference to the students' expectations and preconceptions

1.3. FOLLOW-UP OF PEDAGOGICAL DIMENSION

- Reflection on emotional impressions from the excursion
- Clarification of any issues that arose during the excursion (e.g. conflicts among students)



**Co-funded by
the European Union**

© 2026 Bund für Bildung e.V. and project partners

This Guideline was developed within the Erasmus+ project "Transformative Learning in Real-world Laboratories: Experiencing Inner and Outer Sustainability in Cooperative School Projects" (SusTrainAbility).

Licence: Except where otherwise indicated, this publication is licensed under the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International Licence (CC BY-NC-SA 4.0).

Third-party content, photographs, logos and trademarks are excluded from this licence unless otherwise indicated.