



freeland

Promoting STEAM through participatory urban regeneration

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Learning Module



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Module title: Sustainable Cities

Description of the module

The module includes a series of educational activities aimed at helping students understand different aspects and methods of participatory design for the application of urban regeneration approach in abandoned or neglected spaces. This type of actions may stimulate students to deepen aspects related with sustainability in their city, such as urban design, environmental protection, sustainable construction, active participation, equality and inclusion.

Learning objectives

Students will learn about:

- The concept of sustainability inside the urban regeneration approach
- The concept of public space and its regulation
- The use of artistic approaches in urban regeneration

Students will be able to:

- Develop their skills on the use of digital tools
- Develop their skills on the use of specific measurement tools
- Develop their skills in doing fieldwork and interviewing stakeholders
- Develop their skills in performing a survey
- Develop their design skills
- Develop their analytical skills
- Develop their teamwork skills
- Develop their presentation skills

Methods that will be used

The proposed module is based on the following methodologies:

1. **Circle Time** for the discussion and engagement phases with students and other potential stakeholders.

2. Inquiry-Based Learning (IBL) for the data collection and analysis phase.

School subjects involved

- Civic Education
- Sociology
- Information Technology
- Mathematics
- Physics
- Biology
- Art
- English

Module duration and suggested time allocation

Step	Indicative Duration (hours)	Description of methods
Step 1: Presentation of the place & problem discussion	2	Circle Time
Step 2: Outdoor laboratories & research	4-6 per laboratory	Inquiry based learning
Step 3: Design	6	Role-playing, Group work
Step 4: Sharing the Process and Defining the Final Project	6	Full class, Group work
Step 5: Project delivery & civic engagement plan announcement	4	Full class, General presentation

Step by step template

Step 1: Presentation of the place & problem discussion

In this step, the real-world problem of urban neglected space is presented and conceptualised. The presentation/orientation could be at least partially made outside in the selected urban place, but can also be based on virtual resources, such as PPT presentations, pictures and videos, Google Maps, Freeland platform and tools.

The goal of this step is to describe the urban place in terms of problems and opportunities.

To identify the problem, a guided discussion utilizing the [Circle Time](#) tool is recommended. During the Circle Time activities, questions can be used to start the discussion.

Duration: 1 hour

Activities and methods

This step includes the following activities, to be carried out in the classroom and outdoor in the selected place, using the **Circle Time** methodology:

1. Presentation of the concepts of sustainability and urban regeneration in the classroom, by means of a PPT presentation or other didactic resources.
2. Presentation of the selected location (photos, videos, Google Maps, etc. in case of indoor activity) and discussion of its characteristics.
3. Discussion on students' expectations and possible functions/uses of the proposed space.
4. Introduction to intervention approaches and tools provided by the FREELAND project for planning potential urban regeneration initiatives.
5. Presentation and organization of the following steps.

Tips & Tricks

- **TIP1:** Difficulty in engaging students in understanding what urban regeneration is and what can be done; encourage open discussion on these topics.
- **TRICK1:** Present examples and practical cases of simple urban regeneration projects (e.g. tactical urbanism).

Resources needed

- Computer with Office, PowerPoint, and Internet connection
- Video projector
- Notebooks for outdoor investigation
- Smartphone for taking pictures

Cross-curricular links

Civic Education, Sociology, Science

Step 2: Outdoor laboratories & research

One or more outdoor scientific laboratories are proposed by the science teacher, to investigate the topics emerged during the first step (e.g. high temperature during the summertime, vegetation's wellbeing, pollution). The proposed approach in this step is that of [Inquiry Based Learning](#) that will guide students in a journey towards knowledge and awareness by proceeding through different phases.

This step will include also the use of the FREELAND [Platform](#) for the virtual reconstruction of the selected place: this activity may be conducted by one group of students, while another group may focus on data collection and analysis inside specific scientific laboratories.

The result of this step will be an output in the form of report, presentation or video, that can be evaluated by teachers following the school's evaluation grid.

Duration

Variable, depending on activities

Activities and methods

According to the Inquiry-Based Learning approach, activities are structured in the following phases: Orientation, Conceptualization, Investigation, Conclusion, and Discussion.

Phase 1 – Orientation (1 hour)

This activity takes place in a classroom large enough to accommodate the expected number of participants.

The teacher organizes a meeting between the students from the involved classes and other stakeholders interested in the use of the space (for example: sports or cultural associations, etc.).

The teacher shows a video (or images) of one or more experiences of shared urban regeneration, to stimulate curiosity and interest among participants.

The teacher facilitates the discussion through specific questions about possible problems posed by selected space and opportunities of shared use, ensuring that everyone has the opportunity to participate. For example:

- Is the space sufficiently comfortable from an environmental point of view?
- Is it adequately shaded in the hot season?
- Is it aesthetically pleasant?
- Is it functional for the activities that could take place there?

At the end of the discussion, a shared list of the identified problems and expressed wishes is compiled.

Working method: full class

Phase 2 – Conceptualization (1 hour)

The teacher summarises the outcomes of the Orientation phase and divides the students into groups, each tasked with formulating a hypothesis to test in the next Investigation phase, or with identifying a central question to answer. An example of hypothesis could be: “if we paint the concrete surface with a specific colour, the local temperature will get lower in the hot season”, while an example of general

question could be “would it be possible to increase the shadow areas in this space in order to make it more usable?”

The groups then present their hypotheses or questions and decide together which ones to focus on for the following activities.

Teachers should guide students in formulating their final hypotheses or questions, ensuring they are broad enough to cover different aspects of the topic and are not too narrow.

The finalized hypotheses or questions are recorded and will guide the subsequent investigation.

Working method: Whole class and group work

Resources: Computer with Internet connection, video projector, flipchart

Phase 3 - Investigation (Duration depends on the activities)

This step involves carrying out all necessary activities to test the hypotheses or answer the questions formulated in the Conceptualization phase.

It consists of two stages:

1. Planning investigation activities

In this phase, students decide which investigation methods and activities to adopt to test their hypotheses or answer their questions. An Investigation Plan is created with the support of the teachers, who can propose adjustments. The objective is to develop a realistic and reliable Investigation Plan, specifying:

- Planned activities (in order)
- Necessary equipment
- Possible contributions from external experts or stakeholder organizations
- An estimated timetable

2. Performing investigation activities

This includes carrying out the selected investigation activities, analysing the results, and formulating the main findings for each activity.

Examples of activities in this phase include:

1. Field data collection and analysis: according to the identified application context, some specific **scientific laboratories** proposed by the Freeland project can be carried out to collect and analyse the required data: e.g. Laboratory “[How hot is your city](#)” ([video](#)), Laboratory “[Plant Biodiversity Detectives](#)” ([video](#)), Laboratory “[Digging into soil secrets](#)” ([video](#)) and Laboratory “[Ecosystem Services](#)” ([video](#)). Collected data will be graphically represented either with the FREELAND platform or with other digital tools, like MS Excel.
2. Mapping the spatial elements to be entered into the FREELAND platform.
3. Online research on specific topics related to the hypothesis or question (e.g. types of surfaces/colours that lower temperature, types of plants and urban furniture, etc.).
4. Involvement of an expert, in the classroom or on site, on topics related to the hypothesis/question defined in the Conceptualization phase (e.g. environmental expert, expert on municipal regulations on public spaces, expert on urban furniture design, etc.).
5. Creation and administration of online questionnaires (e.g. Google Forms) to be distributed to relevant stakeholders.

Working method: In class collectively and in groups, outdoor in groups in the selected urban place.

Resources: according to each selected activity, resources may include PCs connected to Internet, smartphone and specific apps, flipchart, video projector and screen, specific sensors and tools for local measurements outdoors. Specific resources for each laboratory are specified in the related descriptive form and video.

Phase 4 - Conclusion (1 hour)

The objective of this step is to bring together and report the results of the investigation activities and draw conclusions regarding the tested hypotheses or explored questions.

The teacher(s) present the initial hypotheses/questions and ask students if they now feel they have enough evidence to verify or reject the hypotheses or to answer the questions.

Students present the main findings and conclusions of each investigation activity in groups, and the class discusses the results collectively.

Students are encouraged to refer to the collected documentation and draw overall conclusions.

The participation of teachers from various STEAM subjects is encouraged to ensure that different aspects are considered and to support the students in case of conflicting findings.

Working method: Full class

Resources: PC connected to Internet, flipchart, video projector and screen.

Phase 5 - Discussion (1 hour)

This step aims to verify the knowledge, skills, and competences acquired by the students.

Students are invited to discuss their conclusions, share their experiences (challenges faced, what they liked most), and propose solutions to enhance sustainability within the chosen topic.

Working method: Full class

Resources: PC connected to Internet, flipchart, video projector and screen.

Tips & Tricks

- **TIP1:** Difficulty in finding local stakeholders to be involved in the Orientation phase
- **TRICK1:** refer to your Municipality to get a list of local associations
- **TIP2:** Difficulty in using the FREELAND platform for mapping the place
- **TRICK2:** Use the smartphones for photos and videos
- **TIP3:** Difficulty in using Google Form to build questionnaires

- **TRICK3:** Look for other online tools or use social network (eg. Whatsapp) to build smaller surveys

Resources needed

PC with Internet connection, video projector and screen, flip chart, smartphones and specific apps, sensors for local measurement, FREELAND platform.

Cross-curricular links

Civic Education, Sociology, Science, Physics, Biology, Mathematics, English.

Step 3: Design

With the support of teachers, students think of possible solutions to the problems that have been conceptualised and analysed in previous steps.

The project must impact the social aspect of the place. The work must be inclusive, collecting different experiences and knowledge from native and foreign students and citizens (family members, stakeholders that follow the project).

Suggested projects

The following are possible ideas regarding urban regeneration projects connected with the topics of sustainability:

- Environmental improvement of the chosen space (increasing biodiversity, adding permeable surfaces, creating shaded areas, planting new trees, reducing surface temperature through the use of different colour painting).
- Improving the usability of the chosen space (functional zoning, adding urban furniture or sport infrastructure).
- Inclusion (involving local communities in the design process, participation in the creation and management of the spaces).

Duration: 6 hours

Activities and methods

This step includes two phases: the first one is meant to finalise one or two project proposals, while the second one is dedicated to the design of the selected solution.

Phase 1 (Duration: 2 hours): A participatory meeting involving the classes and, if possible, other stakeholders, aimed at identifying some concrete project proposals based on the information and data gathered in Step 2. In this phase, a role-playing method could be applied, where teachers act as narrators and participants are invited to impersonate different types of stakeholders (students, associations that use the spaces, local residents, local administrators, technicians and analysts, local artists).

The discussion will conclude with the identification of one or two concrete project ideas aimed at improving the quality and usability of the selected space.

Phase 2 (Duration: 4 hours): In this phase, students are divided into two groups. The first group will use the FREELAND platform to virtually build the project proposal(s) developed in the previous phase. The second group will use a paper or digital map to graphically represent the proposals, also through artistic approaches (collage, graphic design, infographics, photo editing, etc.).

Tips & Tricks

- TIP1: Difficulty in involving stakeholders beyond students and teachers.
- TRICK1: Use role-playing to represent missing profiles.
- TIP2: Difficulty in using the FREELAND platform.
- TRICK2: Use paper maps for one group of students and digital maps for the other group, as an alternative approach.

Resources needed

A space large enough to host the participants, flipcharts, a map of the area under investigation, a projector and screen, a virtual reconstruction of the place (using the FREELAND platform), a summary of the data collected in Step 2.

Cross-curricular links

Art, Computer Science, Civic Education, English, Science, Physics.

Step 4 – Sharing the Process and Defining the Final Project

This is a work-in-progress step where the selected project is proposed to peers, teachers or the local community in a participatory discussion. Schools are in charge for inviting citizens and stakeholders, collecting feedback and improving the final design of the project idea.

Duration: 6 hours

Activities and methods

Phase 1 (Duration: 2 hours): Organization of a participatory event that includes students, teachers, parents, associations, and local authorities, during which the project ideas developed in Step 3 and the process followed to reach those solutions are presented.

This event may include an exhibition of the works created in Step 3, around which a discussion can be developed among participants, who can contribute experiences and knowledge to help define and improve the final project, including practical suggestions for managing the selected space. If Step 3 produced multiple project solutions, this phase will also include the selection of the most suitable one.

To ensure greater inclusion, the exhibition materials can be presented in the languages of the various local communities to which the students belong.

Phase 2 (Duration: 4 hours): Students, divided into two groups, will rework the results from Phase 1 in order to build the final project using the FREELAND platform and the paper or digital map. The final project may also include a preliminary cost estimate, which can be recorded in a dedicated Excel sheet.

Tips & Tricks

- TIP1: Difficulty involving stakeholders in the participatory event

- TRICK1: Try involving those most connected to the school (families, school staff) and use a role-playing approach to include missing profiles
- TIP2: Lack of funds to organize the exhibition
- TRICK2: Try to involve the local administration or associations interested in collaborating that might offer support
- TIP3: Difficulty in using the FREELAND platform
- TRICK3: Use digital maps as an alternative approach.
- TIP4: Difficulty in finding suitable exhibition space at school
- TRICK4: Try involving the local administration, a local library, or an association.

Resources needed

Spaces for setting up the exhibition and hosting the participatory event, video projector, PC with internet access, Office software, software for graphic design, stationery.

Cross-curricular links

Art, Computer Science, Civic Education, English, Science, Physics.

Step 5: Project delivery & civic engagement plan announcement

Students with stakeholders propose a civic engagement plan for the regeneration of the selected space through the involvement of the local community.

Suggested activities for a civic engagement plan: *monthly competition or photographic exhibition (or printed materials from the digital platform, designing material), book exchange, cultural exchanges in talks with experts, open air courses dealing with circular economy, project or artistic exhibitions on specific themes dealing with sustainability, inclusion and renovation of the place.*

Duration: 2 hours for the preparation of the management plan (phase 1); the duration of the implementation phase will depend on the actual feasibility of such action.

Activities and methods

This step includes three phases: phase 1 and 2 focus on developing a management plan for the selected space, while phase 3 (optional) is dedicated to the actual implementation of the selected project.

Phase 1 (Duration: 2 hours): The civic engagement plan defines how the different uses of the selected space will be coordinated and proposes a series of events, meetings, and opportunities to make the space lively and attractive to the entire local community, also based on the work done during the definition of the final project.

Examples of proposed activities may include: photo exhibitions, expert talks to raise awareness about urban sustainability, book and object exchange events, concerts, etc.

Phase 2 (Duration 2 hours): The civic engagement plan is presented and shared by the students with all the other classes, to increase awareness on the topics faced in the work they have done and propose the involvement of other students in the realisation of such plan.

Phase 3 - Optional (Duration depends on the necessary activities): This phase is optional as it depends on the actual feasibility of the project implementation by the involved stakeholders, considering financial resources, possible necessary permits, and project timelines. This phase can also be carried out after the conclusion of the FREELAND project timeframe.

For the potential final implementation of the project, the following steps should be considered:

- Requesting necessary authorizations
- Identifying the stakeholders involved in the implementation (students, teachers, parents, associations, citizens, technical staff, local administration)
- Possible cost review
- Acquiring the necessary materials
- Defining a project timeline (Gantt chart)

Tips & Tricks

- TIP1: Lack of implementation skills
- TRICK1: Involve external participants who can assist (families, associations).
- TIP2: Lack of financial resources
- TRICK2: Try reducing activities, dividing them into multiple phases, or finding a sponsor.

Resources needed

PC with internet connection, Office software, video projector, screen, meeting room. Additional resources may be identified during Phase 3 in case of project implementation.

Cross-curricular links

Art, Computer Science, Civic Education, English, Science, Physics.

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Additional reading materials:

- [TACTICAL URBANISM TOOLKIT](#)
- [TACTICAL URBANIST' GUIDE TO MATERIALS AND DESIGN](#)
- [RETHINKING SPACES THROUGH ACTIONS FOR KIDS](#)
- [URBAN REGENERATION - Benefits of nature-based solutions](#)
- [CATALOGUE OF NATURE BASED SOLUTIONS FOR URBAN REGENERATION](#)

Appendix:

[Urban Regeneration schools](#) (PPT presentation)

Sources:

- Pedaste, M. et al. (2015). Phases of inquiry-based learning: Definitions and the inquiry cycle. Educational Research Review.
- Mosley, J. (1993). Quality Circle Time in the Primary Classroom. LDA Publishing.