



Narodowe Centrum
Badań i Rozwoju



UNIwersytet
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Scenario 6: Water - Element on the coast and inland.

Brief description of the lesson	<ul style="list-style-type: none">- Students learn about the characteristics of such phenomena as: floods, flash floods and local inundations.- Students learn why urban spaces are the most vulnerable to this type of phenomena.- Students learn simple tools for water retention in highly urbanized spaces and the importance of implementing such tools as components of urban space adaptation to climate change and pro-environmental activities (e.g., water treatment).- Learn the meaning of the phrase – small-scale water retention.
Objectives of the classes	<ul style="list-style-type: none">- The objective of the course is to make students aware that even simple activities carried out in an urban environment, aimed at unsealing surfaces (e.g., concrete, asphalt, paved with cobblestone), can reduce the phenomenon of local flooding.- The next goal will be to learn about simple adaptation tools in the form of: rain gardens, retention basins, bioswales, etc.
Detailed objectives:	<ul style="list-style-type: none">- Students learn why cities are spaces particularly exposed to floods and local flooding.- Why it is so important to increase the so-called permeable surfaces in urban spaces to reduce the phenomenon of local floods. <p>Students will learn the phrases:</p> <ul style="list-style-type: none">- gray infrastructure- green infrastructure (solutions based on nature) <p>Differences between these types of solutions.</p> <ul style="list-style-type: none">- They will also learn the meaning of the phrase "small-scale water retention in cities".
Messages: - the student knows and explains	The student knows and understands the importance of reducing the number of impermeable surfaces and increasing the number of green areas in cities - as an effective tool for their protection against local floods and flooding.
Competences:	<ul style="list-style-type: none">- Students learn what local floods and inundations are.- Learn the effects of sealing urban spaces and the individual tools (NBS - nature-based solutions) that should be used in urban spaces in order to adapt and prevent flooding.
Method	<ul style="list-style-type: none">- A game – “replace gray with green”.- Creating simple land development concepts in terms of the so-called catching water in urban spaces.
Time span	<ul style="list-style-type: none">- Presentation time 45 minutes (preparation of a lesson by the teacher in the field of floods, local inundations, flash floods, small-scale water retention, gray and green infrastructure and, on selected examples, presentation of tools such as street plantings, roof gardens, green walls, bioswales, retention reservoirs, rain gardens, methods of unsealing impermeable surfaces, etc.) (Lesson One)- presentation time 45 minutes (presentation made by students) - presentation of the concept of new development of selected urban space serving the so-called small-scale water retention. (Lesson Two)
Aids	<ul style="list-style-type: none">- A task to be performed at home; during a geography lesson, students present simple concepts for the development of their yard with the use of selected tools (e.g., street plantings, roof gardens, green walls, bioswales, swales, retention reservoirs, rain gardens, methods of unsealing impermeable surfaces, knowledge they obtained during the previous lesson from the teacher). They use stationery for this purpose.

Course of the lesson	<p>Lesson No. 1 – A presentation prepared by the teacher on the basis of materials from the Citadine platform.</p> <ul style="list-style-type: none"> - The teacher explains to students what floods, flash floods and local inundations are. - Students learn why urban spaces are the most vulnerable to this type of phenomena. - Students learn simple tools for water retention in highly urbanized spaces and the importance of implementing such tools as elements of urban space adaptation to climate change and pro-environmental activities (e.g., water treatment). - They learn the meaning of the phrase - small-scale water retention. - They learn about individual NBS tools to adapt the city or mitigate the effects of local floods or floods, they will be: street plantings, gardens on roofs, green walls, bioswales, swales, retention reservoirs, rain gardens, ways of unsealing impermeable surfaces - At home / in groups, students prepare a project to transform a given area with a large number of impermeable surfaces and a small amount of greenery. <ul style="list-style-type: none"> a) They take photos of the selected space. b) They draw a simple plan of this space. c) They place individual NBS tools on a plan made by them (street plantings, roof gardens, green walls, bioswales, swales, retention reservoirs, rain gardens, unsealing impermeable surfaces) - The task can also be done in the form of a mock-up. d) They present their concepts in the lesson.
Completion/ Summary	<p>The lesson ends with a discussion on what we, as a community living in a given part of the city, are able to change with the help of simple solutions to be able to "catch water in urban spaces" and counteract, for example, local flooding.</p> <p>These types of activities not only increase the sensitivity of students to the effects of decreasing green areas in cities, but also prepare future citizens for participatory activities involving the implementation of green areas in cities.</p>
Materials	<p>The teacher composes the presentation by himself/herself from the set of slides proposed on the Citadine platform.</p>
Online references	<p>Presentation 1 - "Introduction to general issues related to climate change and its impact on the functioning of the city and the people living in it"</p> <p>Presentation 2 - "Adaptation to climate change, general issues. Adaptation to climate change using nature-based solutions."</p> <p>Presentation 3 - "Counteracting floods, local inundations, the effects of sea level rise with nature-based solutions."</p>