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Online Badges For Sustainable Education (21st Century Skills)

Project title: A model for Interactive (A)Synchronous Learning in Online STEM Education

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Lodz University
of Technology



Universidad
de Alcalá

htw saar

Hochschule für
Technik und Wirtschaft
des Saarlandes
University of
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universidade de aveiro
theoria poiesis praxis



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The consortium developed a comprehensive set of micro-credentials dedicated to achieving the following types of intelligence in accordance with the Gardner classification and organised at 3 levels of advancement.

The badges were awarded to students with the use of the online platform Open Badge Factory: <https://openbadgefactory.com/en/>



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MAZURY CAMP 2022

Badges description

PICTURE SMART / NAMES OF THE BADGES	Badge level	Badge description	Criteria	Activities to be performed on the Mazury CAMP	Assessment method
Basics of MIND MAPS	1	Badge confirming the ability to create a mind map in particular in the context of discussing the role of engineering in our lives	<ul style="list-style-type: none"> The student is able to create a mind map taking into account the observations from the conducted study/ research/observation. The student is able to include in the mind map all aspects (theoretical and practical) identified during the study/ research/observation. 	<ul style="list-style-type: none"> Short introduction to mind maps/concept maps. Discussion on mind map applications for concept representation. Terrain games/activities - (photo) search for examples of how engineering makes our life easier – relation between different disciplines. 	<ul style="list-style-type: none"> Presentation of mind maps created during the camp activities
MIND MAPS- Advanced level	2	<p>Badge confirming the ability to use MIND MAPS in advanced way - based on two alternative approaches – textual and visual</p> <p>Badge confirming the skills to construct a guidance to a given destination point, using two alternative approaches (textual, and visual)</p>	The student can create a guidance to a given destination point using two alternative approaches (textual, and visual) -using a camera/smartphone	<ul style="list-style-type: none"> A case study aimed at more advanced application of concept maps and visual representation of ideas. Navigation to some point of interest (POI), representation of spatial relations. Team/terrain activities, construct a guidance to a given destination point near the camp. Use two alternative approaches (textual, and visual – use the smartphone camera). Discussion of pros/cons of the considered approaches. 	<ul style="list-style-type: none"> A navigation competition. Presentation of the final conclusions on the visual guidance advantages

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PICTURE SMART / NAMES OF THE BADGES	Badge level	Badge description	Criteria	Activities to be performed on the Mazury CAMP	Assessment method
CONCEPTUAL MAPS IN INNOVATION PROCESSES	3	Badge confirming the skills of applying of visual maps to support creation of innovations	The student can create concept/visual maps supporting different phases of innovation creation processes, i.e. generating and capturing the ideas, conceptualizing and prototyping.	<ul style="list-style-type: none">• A case study on concept maps application to support creation of innovation – team activities• Abstract concept understanding with visual maps. Brainstorming, creation a concept map representing the solution for a selected problem (generating and capturing ideas). Prototype modelling (conceptualization). Presentation of the ideas.	<ul style="list-style-type: none">• Concept map and presentation of a solution.

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Badges description

NATURE SMART / NAMES OF THE BADGES	Badge level	Badge description	Criteria	Activities to be performed on the Mazury CAMP	Assessment method
A STRAW MULCH STACK AS A TOTEM	¹	Badge confirming the ability to cooperate and communicate within a given topic in order to create a sustainable building structure and create a short corresponding story; reflect on themselves and identify shared values of the group.	Student is able to: identify shared values of their group; reflect on different roles and responsibilities played by the group members; rely on natural materials to create a sustainable building structure.	<ul style="list-style-type: none"> • Making a straw mulch stack as a totem of a group/tent • Creating a story about the totem as a natural object, that is inherited by members of a group as their spiritual emblem. A story about the totem has to define students' roles and responsibilities, and their relationships with each other. • Making a corresponding badge to the totem of your group/tent. 	<ul style="list-style-type: none"> • Oral presentation of a story demonstrating the totem and the values, which it represents.
BIRDWATCHING	²	Badge confirming the ability to recognize different bird species; describe bird's natural habitat, food, and everyday habits; identify the bird birdcalls; show greater awareness of co-existence of people and animals; rely on natural materials to create a sustainable building structure.	Student is able to: recognize different bird species; describe bird's natural habitat, food, and everyday habits; identify the bird birdcalls; show greater awareness of co-existence of people and animals; rely on natural materials to create a sustainable building structure.	<ul style="list-style-type: none"> • Researching the bird's favorite habitat, food, and waking and sleep patterns. • Identifying the bird birdcalls of the species of birds that live in the wild. • Creating a birdwatching journal. • Making bird feeders or standing/hanging birdbaths or birdhouses or a bird's nest made of natural elements that can be found in the wild. 	<ul style="list-style-type: none"> • Visual presentation of a birdwatching journal and a sustainable building structure for birds

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NATURE SMART / NAMES OF THE BADGES	Badge level	Badge description	Criteria	Activities to be performed on the Mazury CAMP	Assessment method
A HERBARIUM ADVENTURE STORYBOOK	3	Badge confirming the ability to brainstorm ideas; to study plants in their most common form; recognize and describe plant specimens; create an adventure story based in a natural setting; demonstrate different methods of plant specimen preparation; show greater awareness of nature conservation; rely on natural materials to create a herbarium.	Student is able to: recognize plant specimens; describe plant specification details; create an adventure story based in a natural setting; demonstrate different methods of plant specimen preparation; show greater awareness of nature conservation; rely on natural materials to create a herbarium.	<ul style="list-style-type: none"> Brainstorming - what to do for world nature conservation. Creating a Herbarium Adventure Storybook: Searching for interesting plant specimens Measuring the plant to find its height, width, and other dimensions Writing down the key details about the plant and its surroundings in a template: the plant's most prominent features, such as coloration, its flowers, leaves, or branch formations, along with a description of its natural habitat Taking a few cuttings. Cleaning and preparing the plants for pressing. Constructing a homemade plant press using natural materials. Drying and pressing your specimens. Gluing the plant specimens into the template, next to the description. Creating a nature adventure story and writing it down in the template. 	<ul style="list-style-type: none"> Oral and visual presentation of a Herbarium Adventure Storybook

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Badges description

WORD SMART / NAMES OF THE BADGES	Badge level	Badge description	Criteria	Activities to be performed at the Mazury CAMP	Assessment method
STORY TELLING	1	Badge confirming the ability to use appropriate language in hands-on linguistic activities within a given topic and reflect on performance during those.	The student is able to: play and interact with peers during a language game; evaluate and match information about the sun; create a visual image and explain its meaning; tell a story.	<ul style="list-style-type: none"> • Scaffolded game activities developing storytelling skills • Jigsaw • Arts and Crafts • A storytelling competition • Reflection activity 	<ul style="list-style-type: none"> • A competition activity
SHORT SPEECHES	2	Badge confirming the ability to brainstorm ideas, create a short speech/pitch on a given topic, use speaking techniques fit for the purpose to attract other's attention.	The student is able to: brainstorm about what he/she knows already on a given topic; create an elevator speech or pitch; use appropriate oral communication methods used in short speeches; generate a business card; reflect on what he/she learned about preparing a short speech.	<ul style="list-style-type: none"> • Icebreaker • Brainstorming activity • Creating a business card • Role-plays • Team activity • Reflection activity 	<ul style="list-style-type: none"> • Oral presentation (demonstration of acquired skills)
PRESENTATIONS	3	Badge confirming the ability to discuss about presentations; deliver a short presentation; reflect on own and somebody else's presentation skills.	The student is able to: brainstorm about selected public speaking techniques; critically evaluate some presentation tips; prepare and deliver a 3-minute and 1-minute presentation on a given topic; evaluate a presentation using a criteria; co-create a rubric.	<ul style="list-style-type: none"> • True/False Quiz • Brainstorming • Banana, banana game • 2-stage team speech competition 	<ul style="list-style-type: none"> • Oral presentation (demonstration of acquired skills and ability to work collaboratively)

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Badges description

LOGIC SMART / NAMES OF THE BADGES	Badge level	Badge description	Criteria	Activities to be performed on the Mazury CAMP	Assessment method
BASICS OF LOGIC	1	Badge confirming the ability to create a flowchart describing process of solving logical problem	The student is able to create a flowchart with explanation the way of succeeding in a logic game described. The student is able to explain the flowchart and enumerate applications of flowcharts usage. The student can find and explain the rules of winning the games.	<ul style="list-style-type: none"> • Short introduction to flowcharts. • Discussion on flowcharts applications for concept representation. • Logical games/activities. • Matches puzzles. • Flowchart drawing with discussion. 	<ul style="list-style-type: none"> • Presentation of a flowchart created during the camp activities
LOGIC - ADVANCED LEVEL	2	<p>Badge confirming the ability to use basic Socratic questions to find common features of different objects/actions.</p> <p>Badge confirming the ability to use tortuous logic.</p>	The student can find patterns of completely different activities using serious logic. The student can use Socratic questions to patterns of completely different activities using serious logic. The student can use tortuous logic.	<ul style="list-style-type: none"> • Camping sites – puzzles • Architect's problem • Walk through the rooms/bridges – Konigsberg • Problem • Knights problem (going through all the fields of the chessboard) • Discussion: search for patterns – what links the activities practiced before? • Break – all the members of the group hold the rope with blindfolds on their eyes. The task is to make the equilateral triangle • Triptych – given 3 names of different badges make a triptych of those – visualize and give description with all the common parts/connections – 5 minute speech • Story cubes and weird objects (hammer, colander, mint) – make a logical story with all of those 	<ul style="list-style-type: none"> • An advertisement of selling ones services using tortuous logic (of a chosen object/service).

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LOGIC SMART / NAMES OF THE BADGES	Badge level	Badge description	Criteria	Activities to be performed on the Mazury CAMP	Assessment method
LOGIC – MASTER LEVEL	3	Badge confirming the ability to use Socratic questions to find the shortest path to the solution. Badge confirming the ability to use optimization.	The student can use Socratic questions to look for the shortest path to the solution. The student can make good decisions and they solve an optimization problem.	Problems 1: Five people do five things for five different periods of time... find out who is doing what. Problems 2: <ul style="list-style-type: none">• A naked person is found dead in the middle of the desert with a broken match. Asking questions for which the only possible answers are YES or No, find out what happened.• A man enters the cemetery and starts laughing. What happened?• Global warming – article (jigsaw). Ask Socratic questions to find out as much as possible. Which questions are the strongest?• Optimization problem: packing a rucksack/the best diet.	<ul style="list-style-type: none">• Asking the right question

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Badges description

SAIL SMART / NAMES OF THE BADGES	Badge level	Badge description	Criteria	Activities to be performed on the Mazury CAMP	Assessment method
BASICS OF SAILING	1	Badge confirming basic skills on the yacht - putting on a life jacket, knowledge of basic knots, knowledge of basic terminology related to the construction of the yacht.	Student is able to correctly put on a life jacket. Student is able to correctly apply the vocabulary related to the construction of the yacht. Student is able to make basic sailing knots.	<ul style="list-style-type: none"> Life-saving measures on the yacht (putting on and fitting a life jacket, putting on life-saving equipment in the water). Basic terminology related to the construction of the yacht and sailing equipment. Basic sailing knots (cleat hitch, square knot, mooring knot, bowline etc). 	<ul style="list-style-type: none"> Validation of the ability to correctly put on a life jacket. Validation of the ability to correctly apply the vocabulary related to the construction of the yacht. Validation of the ability to make basic sailing knots.
SAILING- ADVANCED LEVEL	2	Badge confirming the ability to perform basic operations on the yacht Ability to recognize weather conditions for sailing	Student is able to set and lower the sails, work on mooring lines and fenders, steering, points of sail, sailing upwind and downwind. Student is able to prepare the yacht for the cruise. Student is able to assess the conditions and communicate them in the sailing language - Weather, Beaufort scale, atmospheric systems	<ul style="list-style-type: none"> The basics of yacht operation (setting and lowering the sails, work on mooring lines and fenders, steering, points of sail, sailing upwind and downwind). Preparing the yacht for the cruise. Weather, Beaufort scale, atmospheric systems. 	<ul style="list-style-type: none"> Validation of the ability of setting and lowering the sails, work on mooring lines and fenders, steering, points of sail, sailing upwind and downwind. Validation of the ability to prepare the yacht for the cruise. Validation of the ability to assess the conditions and communicate them in the sailing language - Weather, Beaufort scale, atmospheric systems.
SAILING LIKE A PRO	3	Badge confirming basic practical skills in sailing and navigating a yacht in inland waters	Student is able to perform basic operations on the navigation systems in inland waters. Basic sailing skills	<ul style="list-style-type: none"> Navigation, fairway marking. Sailing (Tacking and Gybing). 	<ul style="list-style-type: none"> Validation of the ability to perform basic operations during the cruise. Validation of the ability to use navigation during the cruise.