



GEM – Course Concept and Experience Report

Alternative Learning Spaces



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GEM – Course Concept and Experience Report

Alternative Learning Spaces

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A. COURSE CONCEPT

Introduction

The Alternative Learning Spaces course was the first workshop that was held within the Green Education in Media (GEM) project. The course was organised in autumn/winter 2022 in a hybrid format involving online activities and onsite activities at the local departments of each partner university, as well as at outdoor locations in natural environments in these localities.

Some of the partner universities organised pilot courses, prior to the actual course at the beginning of the GEM project and these were considered as important steps in the course development. One of the pilots was 'Nature and Creativity Walks' in Tampere University of Applied Sciences. Additionally, in the context of the ERASMUS+ project "ErasmusXR: Experience and immersive technologies - from creative practice to educational theory", a workshop organised by the National and Kapodistrian University of Athens (NKUA) at the Evripus campus in Psachna. This involved brief nature walks and the capturing of content from natural environments via different methods and technologies, such as photography, video, audio, 3D scanning and photogrammetry.

Another pilot course was the project "All Souls' Night" which was a collaboration of Łódź Film School and Film University Babelsberg. It was a site specific outdoor inclusive theatre performance based on the XIX century poem of Adam Mickiewicz. In the context of the project, students visited primaeval swamps on Polish-Belarusian border as part of the project's research on this unique ecosystem and preparation for the creation of a virtual environment. The purpose of the walks was to increase empathy for nature and enrich the creative process. During nature walks, tutors and students walk a certain pre-defined route together to experience the environment, to discuss and to accomplish certain pre-planned tasks. Nature walks have been considered a concrete and suitable method that could be applied in the context of the GEM project.

The Alternative Learning Spaces course aimed to take the results of the pilot courses a step further. Firstly, it applied the method of Nature Walks more extensively and in varying contexts. The Nature Walks were organised at different geographical locations with varying natural and environmental characteristics. Moreover, the ALS Nature Walks engaged varying audiences of students with different backgrounds and profiles. The creative processes initiated during the Nature walks, such as ideation processes, design ideas, inspiration from nature and capturing of natural elements, were expanded into the digital realm. These processes acted as starting points for the creation of collaborative nature-inspired artworks/prototypes which were finally composed and presented in virtual environments. In this way the course aimed to bridge the physical and digital environments, while fostering pro-environmental practices, cultivating audience's environmental awareness and promoting critical and sustainable design practices.

Course Objectives

The Alternative Learning Spaces course aims at redefining the role of nature in the realm of media education by returning to natural environments as places of teaching and exploring the resulting effect on classes, as well as bringing aspects of nature into virtual environments. The original course, including course objectives and planned schedule, is described below in accordance with the contents of the approved proposal.

The main objective of the course is to find methods for combining learning and ideation in both physical natural spaces and digital virtual spaces. These methods aim to encourage

active engagement of participants and to inspire new ways of teamwork, while directly experiencing the natural environment and drawing inspiration from it. Moreover, the course aims to cultivate novel collaborative artistic experimentation practices among the participants from different institutions and localities within natural and virtual environmental contexts. Artistic experimentation will be based in critical design and sustainable practices, resulting in small-scale artworks with the goal of raising environmental awareness among their audiences. Finally, the course is intended to enable participants to investigate and incorporate sustainability approaches into their own creative practices, scientific work and everyday life.

The course has a hybrid format including online and onsite sessions. Some online sessions will be common for all participants. During the course, tutors and students will form smaller groups that will attend additional online sessions for brainstorming and collaborative work. Onsite sessions will be organised by the partner universities for local groups of students. During these sessions, local departments will plan Nature Walks to selected natural outdoor locations. Subsequently, students will build prototypes in the form of small artworks in a 3D VR online platform. They will also attend guided ideation sessions with the tutors, aiming at further developing design ideas and transforming them in nature-inspired digital compositions. The course will conclude with a “virtual walk” inside the virtual environments created by the students.

Planned schedule

- A. Preparatory course activities
 1. A pilot executed by Tampere University of Applied Sciences
 2. Pilot walks in nature including one at primaeval swamps on Polish-Belarusian border during 3 camps for students of Łódź Film School and Film University Babelsberg: one in September in town Włodawa, a second in Łódź, and a third in Potsdam / Berlin.
 3. Another pilot was organised by the National and Kapodistrian University of Athens during the autumn school of the ERASMUS+ project “ErasmusXR: Experience and immersive technologies - from creative practice to educational theory” at the university campus in Psachna.
 4. Exchange of experience from pilot workshops with the other partners
- B. Main course activities (and their anticipated duration)
 1. Common online Workshop 1: Kick-Off and Student Briefing in an Online Workshop (Week 1) ~ 2 hours
 2. Implementation of Nature Walks at all locations of the partner universities (Week1) ~ 8 hours
 3. Common workshop 2: Presentation of the Nature Walks’ results, insights gained and ideas so far (Week2) ~ 5 hours preparation and 4 hours session.
 4. Building the prototypes in smaller teams. (Week 3-Week4) ~ 20-25 hours work
 5. Common workshop 3: Virtual walk to visit Mozilla Hubs rooms and experience the prototypes. (Week 4) ~ 5 hours preparation and 2 hours session.

Collaboration Mode

During the course, students from different universities form groups and collaborate in blended modes, both online and onsite. During the common online sessions mixed student groups from different universities communicate and collaborate fully online via platforms and applications such as Zoom, Discord, GatherTown, WebEx and Mozilla Hubs. During the nature walks and meetings at the local departments, local groups of students meet and

collaborate onsite at the universities and also partly outdoors in natural (or urban) environments. The local groups of students work onsite with in-group-collaboration in any method that is more practically preferable and feasible for them and their tutors.

Duration, Intensity & ECTS

The course took place during November and December of 2022. During this period, three common online workshops were organised, and additional online sessions for smaller groups of students and tutors took place. Furthermore, partner universities hosted onsite sessions for local students.

The amount of ECTS granted for this course are subject to the individual implementation of the partner universities.

Platforms

The virtual environments prototypes are created in a 3D multi-user virtual reality platform such as Mozilla Hubs. The common sessions for all students and teachers are held inside the 3D virtual platform (Mozilla Hubs) as well as in other online platforms such as Zoom, Gather.town and WebEx. Student groups from each institution may also use other applications for communication such as Messenger or Discord.

Methods

In this section the methods and ways of learning, working and collaborating in the course are described. The Experience Report section addresses how these methods were implemented during the course.

Nature walk

The purpose of the walks is to enhance the ideation process of the participants. In this learning activity the tutors and students walk a certain pre-planned route in nature near the University premises, e.g., in the forest or around the lake, to experience the environment, to discuss and to take notes and collect digital artefacts, such as pictures, scans and draw sketches. After the nature walk the group shares their thoughts and feelings, collects the observations, artefacts and sketches together, write more notes about their observations and create ideas for creating digital art content, solutions or environments. The walk can have a certain theme, like “Nature in detail”. Digital mobile ideation boards such as Flinga are a useful tool for the group, as well as a common database for the artefacts.

Ideation session

Aim of this session is to ideate on digital space design and artworks based on the nature walk observations and ideas. In this activity, nature walk experiences and nature’s meaning overall for the students and tutors can be discussed. For example, the ideation grid¹ created to a digital whiteboard, such as Jamboard, is a good tool for collaborative ideation. Ideation grids can have points of view as a starting point for the ideation, such as upcoming digital space’s desired user experience, aesthetics, narration and theme. The student group can fill in the grid together.

¹ <https://www.emerging-media-exploration.eu/wordpress/wp-content/uploads/2021/07/EMEX-2020-VPIdeationGrit.pdf>

Capturing nature in the digital domain

Students capture natural elements of interest, through various recording and scanning techniques. The aim of the capturing process is to digitise inspiring natural elements which can be later integrated into virtual digital compositions. Proposed capturing techniques include audio and video recordings, photography, 3D scanning and photogrammetry. Students are introduced to tools and apps that they can run on their own smartphones or will be given access to devices (tablets that can capture 3D content, audio recorders etc.).

Establishing a space for virtual walks

A multiuser Virtual Reality (VR) platform is used to create the virtual context for online collaboration and presentation. After identifying the appropriate platform, a generic space for the educational activity to take place is created. Students and tutors meet, communicate, and collaborate remotely inside the virtual environment. The multiuser VR platform supports the creation of 3D virtual compositions and the planning of virtual walks.

Virtual walk

At the end of the course a virtual walk and presentation of the creative process inside the VR environment takes place. Students and tutors visit the online platform synchronously and navigate inside the 3D environments created by the tutors and students. During the virtual walk, the students present the final outcomes of their collaboration, and receive feedback from the tutors and their peers. Discussion takes place using audio and text channels of the multi-user VR platform.

Competencies

Our aim is that the students can develop the following competencies in course:

- Knowledge
 - Sustainable design
 - Ideation processes
 - Working and co-working in virtual worlds

- Skills
 - Ideation in nature
 - Capturing and recreating nature in the digital domain
 - Methods of structured online ideation
 - Exploration of virtual technologies and practices
 - Prototyping

- Social Competencies
 - Working in interdisciplinary and international teams
 - Creative processes and decision making
 - Self-reliance and empowerment
 - Self-organisation within teams

Curriculum

Introduction

UNESCO defines critical thinking competency as one of the key competencies for education for sustainable development. According to UNESCO, critical thinking competency means the ability to question norms, practices and opinions; to reflect on one's values, perceptions

and actions; and to take a position in the sustainability discourse. (UNESCO, Education for Sustainable Development Goals. Learning Objectives²)

Goals

Alternative Learning Spaces course's goal is to question and redefine the role of nature in artistic and design practices. The course aims to improve students' ideation skills, by combining learning activities in natural physical spaces and virtual digital spaces. Moreover, it aims to cultivate novel collaborative artistic experimentation and new skills for capturing and recreating nature in the digital domain. The course intends to foster students' critical thinking, to support the exploration and implementation of sustainable approaches, and to inspire novel ways of teamwork.

Content

The content of the course includes preparation and implementation of nature walks, participation in observation and ideation sessions, capturing of natural elements and artefacts via traditional and digital media, setting up a virtual platform suitable for collaboration, presentation of findings and brainstorming, translation of ideas into prototypes for digital space based on sustainable design paradigms, creation of 3D compositions in virtual environments, pitching the ideas and presenting the prototypes during a virtual walk on an online digital platform.

Prerequisites

Basic knowledge in one of the following capturing media is recommended: photography, video recording, audio recording, 3D scanning or photogrammetry. Basic knowledge on 3D modelling and development of 3D compositions in virtual environments is also recommended.

Evaluation

Evaluation will be based on tutors and students' feedback. Taking into account the background knowledge of students, evaluation will assess the work conducted during the course, the students' participation and involvement in the course's activities and the final outcomes of the workshop, i.e. the 3D virtual environments that will be created, as well as the overall collaboration and work conducted during the course's online and onsite meetings.

² <https://unesdoc.unesco.org/ark:/48223/pf0000247444>

B. EXPERIENCE REPORT

This second part of the report describes in detail the manner in which the course was implemented and experienced by all participants, when the above plan was put into practice.

Course Overview and Introduction

The Alternative Learning Spaces course started on 22.11.2022 and ended on 13.12.2022. During the course three common online sessions were organised for all participants. Apart from the common online sessions, partners hosted additional online sessions where smaller groups of students and tutors met and collaborated. Moreover, local groups of students worked onsite at their local departments, as well as at outdoor locations in urban natural environments. After the first online session partners organised nature walks in their own countries. Smaller groups of students then participated in guided ideation sessions with the tutors where they further developed design ideas and created nature-inspired prototypes inside an online 3D virtual environment. The course ended with a “virtual walk” session in this 3D virtual environment.

The program of the first online session consisted of an introduction to the GEM project and description of the course procedure. Then nature walks were organised by partner universities at selected natural locations in Finland, Poland, Germany, Greece, Malta and Croatia. Local groups of tutors and students participated in the organised nature walks.

In Tampere the tutor teachers organised a preparatory workshop for the students and a nature walk near TAMK main campus along with the ideation session in the classroom. Some students had also participated in a series of pilot nature walks before the beginning of the course. The Nature Walk of NKUA took place at a seaside location in the area of Psachna on Evia Island, close to the Evripus Campus. The students used various techniques for capturing nature such as photography, video/360° video recordings, audio recordings, and 3D scans of natural elements. They discussed and noted down observations and ideas that emerged during the walk. In Malta, the nature walks through the Ghadira Bird Life Sanctuary and Msida Valley was an exhilarating and educational experience for the participants involved. The purpose of the nature walk was twofold: first, to capture the beauty of the sanctuary using 360° cinematic virtual reality recordings, and second, to engage in photogrammetry to capture various nature elements for exhibition in the Mozilla Hubs space. In Poland and Germany, students of Łódź Film School and Film University Babeleberg, participated in nature walks that were organised, in the context of the ‘All Souls’ Night’ project. The walks took place at the primeval swamps of the Polish-Belarusian border town Włodawa.

After the nature walks, the students participated in ideation collaborative sessions to create nature-inspired 3D virtual worlds in Mozilla Hubs. After discussing and evaluating alternative options, the multiuser VR platform Mozilla Hubs was selected for creating the virtual context for online collaboration. After evaluating several related platforms, it was decided that the Mozilla Hubs platform meets the main requirements for supporting the Alternative Learning Spaces course since: it supports creation of online, persistent multiuser VR worlds, supports synchronous and asynchronous remote collaboration, allows the integration of various media (3D models, audio, video and images), it is freely available and permits communications through text and voice channels.

By using the Mozilla Hubs platform, the NKUA team created a generic space for the educational activity to take place in. This space initially consisted of four rooms and was later expanded to three more rooms. A main hall was used for meeting and discussion, as well as for providing access points to the rest of the rooms, which were used for artistic

experimentation and virtual walks. An introductory presentation of the main features of Mozilla hubs took place during one of the common online sessions of the course.

The tutors in Tampere and in Zagreb organised two ideation and prototyping sessions for the students of these two universities. Additionally, the students worked with their prototypes and digital audio-visual elements in their own time. Similarly, common working meetings were organised between the students of Athens and Malta. Students also worked asynchronously offline. The students experimented with the integration of multiple media inside virtual environments and tried to translate their ideas into virtual compositions. Students and tutors from Łódź and Babelsberg worked in two virtual rooms focusing on the integrations of video elements in VR environments.

During the final online session of the course, a virtual walk took place inside the VR environments created in Mozilla Hubs. Students and tutors visited the 3D prototypes synchronously and navigated in the virtual environments created by the students. Students presented their ideas and their virtual compositions. All participants discussed and students received feedback from the tutors and their peers.

Initially, 35 students registered for the course. Some of them did not conclude the course due to restricted time and other academic commitments. Finally, 24 students attended the course, with varying degrees of intensity. However, not all of them could be present on all the joint online activities.

Duration, Intensity & ECTS

The course took place from 22.11.2022 to 13.12.2022. During this period three common online workshops were organised. Additional online sessions for smaller groups of students and tutors will take place. Furthermore, partner universities will host onsite sessions for local students.

The amount of ECTS granted for this course will be subject to the individual implementation of the partner universities.

However, an estimate of the ECTSs in accordance with the duration of each activity is:

2-3 ECTSs [2-3 walks = 8-12 hours, pre-workshop sessions (if needed) = 2x3 = 6 hours, 3 workshop sessions = 8 hours, homework (prototyping & preparation of presentations)= 30-35 hours, TOTAL = 52 – 61 hours].

Competencies

This subchapter describes how the competencies required by the course in the description were actually addressed during its implementation.

During nature walks, students learned to observe nature by paying attention to details such as the uniqueness of each plant, rock or natural element. They were also encouraged to reflect on the differences between natural and artificial environments and to participate in ideation sessions. Students with varying background knowledge and skills were able to attend the nature walks without difficulties.

Students put into practice skills that already mastered for capturing natural elements, using various media such as sketching, photography, video or sound recordings. Additionally, some students experimented with new capturing digital technologies such as 3D scanning, 360° video or photogrammetry and acquired some basic skills on using the required equipment.

Students from various universities and different departments formed small groups and collaborated online in order to build their prototypes. Thus they had the opportunity to expand their collaboration skills in interdisciplinary and international settings. Due to

differences in expertise, background knowledge, and schedules they had to distribute tasks, to share knowledge and to join forces to achieve a common goal.

Moreover, students acquired basic skills in creating 3D compositions in virtual environments. Tutors provided online assistance and learning materials to support students' work. Students familiar with 3D environments and 3D modelling felt more confident in experimenting with the digital platform Mozilla Hubs. However a lack of expertise in similar technologies prevented some students from further engaging with the creative process of building virtual 3D compositions.

Instructional Materials

- **Tips for teachers**

The presentation "Tips for teachers" provides tips for ideation based on earlier nature walks conducted by the Tampere University of Applied Sciences, as well as general ideation methods to try out during the future nature walks.

- **Introduction to the Alternative learning spaces workshop**

"Introduction to the Alternative learning spaces workshop" presents an overview of the Alternative learning spaces course and the Green Media in Education project. It describes the objectives and main activities of the GEM project. Moreover it presents the themes, objectives and competences of the Alternative Learning Spaces course, and it provides the course's structure and schedule.

- **Introduction to Mozilla Hubs**

"Introduction to Mozilla Hubs" is a presentation of the main features and functionality of the multiuser VR platform Mozilla Hubs. The presentation includes a description of the interface and the main tools available for the development of VR scenes in the Spoke editor. It also presents the process of creating and configuring virtual rooms in Mozilla Hubs. Lastly it presents the options available to the user inside Mozilla Hubs rooms for manipulating 3D content, interacting with the virtual environment, and communicating with other users.

- **Introduction to gather.town**

The presentation "Introduction to gather.town" provides an overview of the main features of the gather.town platform. The presentation includes a description of the user interface and modes of user interaction. It also presents the virtual space "GEM gather.town" created to host some of the project's online sessions.

Course Activities and Learner Interaction

The course followed a hybrid format that included both online and onsite activities. During the onsite activities organised by the local departments, the interaction between learners was effortless and natural. The course raised a lot of discussions about nature and digital environments. The discussions were lively and active in smaller teams in the classrooms and in the ideation sessions. The experience was pleasant, and the feeling was relaxed especially during nature walks. As tutors, we observed that the students actively engaged in nature walks, demonstrating a genuine interest in the subject matter and making efforts to capture the essence of the natural environment.

During the online activities, learners interacted through digital platforms such as Mozilla Hubs, Zoom, Gather.town and WebEx. Some of the students also communicated and interacted through applications such as Messenger or Discord. During common online sessions, interaction between learners was limited. However, when students worked together in smaller groups, they got to know each other and developed more effective ways of communication and interaction between them.

Course Technology

- The platforms Zoom, Gather.town, WebEx and Mozilla Hubs were used for online common workshops.
- The applications Flinga and Jamboard were used for collaborative ideation.
- Equipment like cameras/ video 360° cameras, audio recorders and mobile devices with LiDAR were used to capture natural elements through, images, videos /360° videos, sounds, 3D scans and photogrammetry.
- The online 3D VR platform Mozilla Hubs was used for the creations of the students' prototypes. The students also used images, videos, audio and 3D models previously processed in other software.

Learner Support

One first challenge that we faced was that due to the differences between the expertise of collaborating partners and departments, students formed a very diverse crowd and accordingly had very diverse needs for providing them with the appropriate technical background knowledge that they needed in order to participate in the course.

Additionally, the way that nature walks can be implemented may significantly differ from country to country, due to the environmental differences of each locality. These differences translate to differences in practical means of support for organising these walks (clothing, shoes according to weather and environmental conditions) and to timing synchronously these activities across Europe.

Finally, differences in the weekly schedule of each department made it difficult to synchronise the nature walk and collaborative ideation sessions amongst all different departments. Hence it was decided to create pairs of departments which collaborated for the final creative process to the extent that this was feasible (Finland-Croatia, Greece-Malta, Germany-Poland).

Accessibility and Usability

Accessibility might be considered for the nature walks by selecting accessible nature trails as targets for the nature walks.

Moreover the main platforms selected for online sessions, Zoom and Mozilla Hubs, meet the following accessibility criteria.

Zoom is compatible with accessibility standards WCAG 2.1 AA, Revised Section 508 Standards, and EN 301 549 Accessibility requirements. It supports assistive technologies like screen readers and allows customization of display settings such as the font size of chat and captions. It provides keyboard accessibility, allowing the control of the UI only with keyboard, using keyboard shortcuts for easy navigation. Zoom supports different modes of captioning, such as auto-generated captions, manual captions and third-party captioning, integrating with third-party providers using the closed captioning REST API. Moreover, it provides various video options, allowing a meeting host to spotlight the sign language interpreter so they are always in view for everyone. Users can create custom views of the displayed videos by prioritizing and pinning selected meeting participants, or they can rearrange gallery view, by clicking and dragging video tiles.

Mozilla Hubs is an open-source platform which allows the creation of 3D VR environments accessed via a web browser. In terms of accessibility, Mozilla Hubs supports existing browser accessibility functionality, permitting compatible assistive technologies, like screen readers and accessibility keyboards to be used on desktop or laptop modes. It also

uses visual indicators to indicate the active audio sources and the currently speaking avatar. Moreover, it supports zoom controls that allow users to scale-up the user interface and increase its readability. Furthermore, a persistent chat sidebar and a streamlined interface for mobile and desktop have been implemented. Members of the Mozilla Hubs community suggest expanded accessibility features for future implementation. These considerations for future accessibility features in Hubs include automatic avatar captioning; management of multiple simultaneous audio sources; management of auto-play and synchronization options for videos and audio; accessible input controls and mechanics across different modalities; decrease of non-essential visuals; description of scene elements.

Evaluation / Student Feedback

The evaluation of the course was based on the feedback of students and tutors. All participants were asked to participate in an online survey. The survey consisted of 21 questions, including 3 multiple choice questions, 11 scale questions and 7 open questions, which allowed participants to elaborate on the scales given or to allow comments on the entire course. Moreover, tutors were asked to contribute to an online feedback board on Mural, summarizing their findings of the whole course. More concretely, tutors and staff members were asked to note down their observations on digital post-its, and to answer questions regarding the negative and positive aspects of the experience and other useful insights on the course. Further results of the evaluation and conclusions drawn from tutors and students' feedback can be reached at the "GEM – Course Evaluation" document.

Sample results of student works

The students used the digital elements that they had previously captured during the nature walks and other free available resources to create their virtual compositions. They experimented with the integration of multiple media inside the VR world, such as 3D objects, photos, and audio files.

In one of the 3D environments, the students of NKUA focused on the need to restore the damaged natural environment. In order to project their ideas, they divided the 3D space into two sides by placing a path in the middle of the virtual world (Fig 1). At one side of the path, they placed the digital elements representing a "healthy" environment, containing trees, flowers, animals etc. At the other side of the path, they placed the digital elements representing the deteriorated environment, such as burnt trees, and trash (Fig 2). They took advantage of the option offered by Mozilla Hubs, which allows visitors to clone and move specific 3D objects. Thus, they invited the visitors to copy digital elements from the 'healthy' natural environment and paste them in the deteriorated environment in order to 're-generate' it.



Fig. 1. Screenshot of VR environment created in Mozilla Hubs by the students of the course.



Fig. 2. Screenshot of VR environment created in Mozilla Hubs by the students of the course.

Another question that the tutors and students asked themselves during the nature walks and workshops was "How can we digitise nature?". These trees were made by the student of TAMK (Fig 3). They are a very rough prototype for a digital nature exhibition that was organised for the course's virtual walk. One aspect that the viewers can think about when looking at the trees is: "Apart from the fact that the trees are low poly, what else shows that they are not real or what distinguishes them from nature?" The other example of the demos that TAMK students developed for the virtual walk was a sound-space inspired by the nature walk.



Fig. 3. Screenshot of VR environment created in Mozilla Hubs by the students of the course.

Another project in Mozilla Hubs explored the idea of communicating with nature through rituals. In many cultures, rituals serve as a way to bring people together and to build community. The created 3D environment aims to engage the visitor in a ritual. The celebration of this ritual is a powerful representation of the relationship and emotions between animals and humans in times of environmental crisis. The ritual serves a dual purpose, both as a form of penance and mourning for the animals that have been killed, and as a platform for reflection and reconciliation for the audience. Students from Łódź Film School and Film University Babelsberg used 360° recording of a live performance. The actors' performance standing in a circle with the audience serves as a template for the layout of the virtual reality environment in Mozilla Hubs. The environment is designed to mimic the natural environment of primeval swamps of Polish-Belarusian border in November, with the naked trees, iced rocks by using many assets (3D objects) and models from Sketchfab, like trees, skulls, and rocks surrounding the performance area (Fig. 4). The lake with slowly rippling water reflection and transparency effect is also incorporated into the layout to add to the visual appeal of the environment. The lighting is adjusted to include moonlight, creating an eerie and otherworldly feel, which enhance the atmosphere of the performance. The video clips featuring the actors' performances and various audio clips of sound effects are inserted into the environment, creating an ambient, moody sound. The use of spatial audio is also incorporated, allowing the sound to be placed in specific locations within the environment, creating a sense of presence and depth.



Fig. 4. Screenshot of VR environment created in Mozilla Hubs by the students of the course.

Recommendations

The duration of the course could be longer so that the participants could familiarize themselves with the concepts and the applied technologies. Due to the fact that this is a new type of education process, combining many learning goals, such as sustainability and digital skills, the course requires further explanation and more detailed presentation of new concepts and techniques for the participants. Closer and more detailed collaboration of the tutors beforehand would also be beneficial for a more precise planning of the course.

Nature Walk is a learning method that is suitable for participants with varying profiles and doesn't require any prior knowledge. However, we noted that some students struggled with the technologies used to capture natural elements, such as 3D scanning and photogrammetry. The organization of pre-walk training sessions aiming to familiarize

students with these technologies beforehand could be beneficial. Participants also found the equipment management challenging. Ensuring backup equipment availability can counter any technical failures and avoid unnecessary delays.

Moreover, structuring the walk by defining clear goals and activities for different parts of the walk could make the experience more educational and fulfilling. Moreover, breaking the students into smaller groups, each led by a tutor or experienced student, can ensure better focus and personalized guidance.

Adverse weather conditions can delay or even cause the cancellation of a nature walk. Conducting thorough weather checks can help mitigate challenges faced during the walks.

Organising the nature walks while synchronising the schedules of nine departments in partner universities proved to be very challenging. We found that it is preferable to allow for certain flexibility of scheduling nature walk activities and design brainstorming locally, in accordance with each department's schedules and then program meetings with all the partners weekly to discuss the results and work collaboratively. Collaboration between two partners seemed more feasible at least for collaborative creative sessions. The course raised a lot of discussion about nature's meaning and role in digital design and productions. Challenges showcased that there is not yet easy to use tools and methods to make e.g forests and animals a natural part of the digital world. Moreover, nature itself is not experienced in the same way in the different countries.

Creating environments and artworks within the Mozilla Hubs requires specific technical skills. Although we organised an introductory workshop on Mozilla Hubs, it wasn't sufficient for students without any prior knowledge of 3D VR environments. Further training on the use of relevant digital platforms and tools could be beneficial. Alternatively, it could be interesting to let the students process the ideas generated on nature walk, using the media that they are already familiar with, e.g. films, video, web design etc. and not necessarily a specific platform, like Mozilla Hubs. Finally, additional software or tools could extend the expressive possibilities of Mozilla Hubs, such as the Mozilla Hubs Blender Kit.

Finally, since the overall process requires many different skills, the quality of the creative output of the process might benefit if the duration of the overall course and/or the intervals between the sessions was increased so that students had more time to creatively experiment with all stages of the process.

C. APPENDIX

Course description for students

GEM – Green Education in Media / Course 2022

Course Theme: Alternative learning spaces

As part of the GEM Erasmus+ Cooperation Partnership Project

In this course, nature serves as a learning environment and as inspiration for virtual worlds. One might say that here nature goes indoors and indoors goes outdoors. As the power of digitisation constantly grows and people spend more and more time in virtual environments, it is important that nature too plays a significant part in the digital world. The role of nature in artistic and design practices will be questioned and redefined and you will gain nature-centric ideation skills and get practical experience on how to digitise your ideas. Together with local students you will experience nature and create nature inspired digital artworks. In common online sessions you will collaborate with international students with different academic backgrounds from Greece, Finland, Germany, Malta, Poland and Croatia and create a virtual environment that showcases all works produced.

ECTS: The amount of ECTS granted for this course is subject to the individual implementation of the partner universities.

Course Outline:

- **Workshop 1 | 22.11.2022 | 14:00 – 16:00 CET**
Introduction, Online
 - Description of the course procedure
 - Overview and introduction of the virtual space used and compatibility with other media formats
 - Description of the desired results
 - Assign student lead and Tutor

- **Interim Activity | Free time planning | appr. 4 hours or more**
Nature walks, Onsite
 - At each location students go into nature to seek inspiration
 - In nature, drawings are made, photos or videos are taken or small installations are created.
 - The whole process and the results have to be documented
 - **Ideation Session, Onsite or Online**
 - Guided Ideation Session with one of the Tutors on how to enhance and further develop the nature artefacts.

- **Workshop 2 | 29.11.2022 | 12:00 – 16:00 CET**
Meet-up, Online
 - Presentation of the results insights gained and ideas so far from the local groups
 - Break-out sessions in small groups on how to compose the virtual world in which the local artworks are displayed.
 - Voting on a concept

- **Interim Activity | Free time planning | appr. 6-8 hours or more**
 - Further work and implementation of the ideas developed
 - Displays in the shared virtual world

- **Workshop 3 | 13.12.2022 | 14:00 – 16:00 CET**
Virtual Walk, Online
 - Local groups pitch their artworks to the international audience
 - Discussions, mutual feedback

Competencies and Themes of the Course:

- Knowledge
 - Sustainable design
 - Ideation processes
 - Working and Co-working in virtual worlds
- Skills
 - Ideation in nature
 - Capturing and recreating nature in the digital domain
 - Methods of structured online ideation
 - Exploration of virtual technologies and practices
 - Prototyping
- Social Competencies
 - Working in interdisciplinary and international teams
 - Creative processes and decision making
 - Self-reliance and empowerment
 - Self-organisation within teams

Teachers and Tutors

- Dimitris Charitos, Head of Department of Digital Arts and Cinema, National and Kapodistrian University of Athens, Greece
- Caterina Antonopoulou, adjunct assist. Professor, Department of Digital Arts and Cinema, National and Kapodistrian University of Athens, Greece
- Charalampos Rizopoulos, Assistant Professor, Department of Digital Arts and Cinema, National and Kapodistrian University of Athens, Greece
- Iouliani Theona, PhD candidate, NTUA Athens, Greece
- Penny Papageorgopoulou, PhD candidate, NKUA Athens, Greece
- Carita Forsgren, Senior Lecturer of Visual Design, freelance writer and producer, Tampere University of Applied Sciences, Finland
- Kirsi Karimäki, Senior Lecture, User Experience Design, Finland Tampere University of Applied Sciences
- Sophie Tummescheit, Researcher, Film University Babelsberg KONRAD WOLF, Germany
- Björn Stockleben, Professor of New Media Production, Film University Babelsberg KONRAD WOLF, Germany
- Wojciech Olchowski, PhD Student, Łódź Film School

About GEM

GEM - Green Education in Media is an Erasmus+ Cooperation Partnership between nine international partners:

- Film University Babelsberg KONRAD WOLF, Germany (Project Lead)
- Tampere University, Finland
- Tampere University of Applied Sciences, Finland
- National and Kapodistrian University of Athens, Greece

- University of Malta, Malta
- Academy of Dramatic Art, University of Zagreb, Croatia
- Jagiellonian University in Kraków, Poland
- Łódź Film School, Poland
- Institute for Art and Innovation e.V., Germany

Together they are working on:

- Environment and fight against climate change
- Supporting digital and green capabilities of the higher education sector
- Green skills
- Creating new, innovative or joint curricula or courses
- Digital content, technologies and practices

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Experience Reports

Experience Report | TAMK

Pilot Nature Walks / Autumn 2022 TAMK

Before weather became cold, a series of preliminary or pilot walks was held in Tampere, Finland, by Carita Forsgren and Tuomo Joronen. These pilot walks were aimed to be part of the planning for the actual workshops later in the year.

Four walks were scheduled around the Lake Tohloppi area, each of which were planned to take from 60 to 120 minutes. Lake Tohloppi was chosen because it was right next to the TAMK Mediapolis campus and easy to reach, and because it has a rich variety of (urban) nature types, for instance a small nature reserve swamp, beaches for swimming, forests and lakeside road with public transport traffic and food industry plants. The area also has a forested ridge formed by the previous ice age, where luxury villas have been built.

In the first pilot walk, there were around 15 students. The weather was fair and the tutor (Ms. Forsgren) did a tour with the students around the lake (ca. 5 km), making stops for taking and drawing pictures and having discussions around pre-defined themes. The main theme of the walk was the Hero's Journey story structure and how it could be implemented in physical environments, apps and other experiences. There were also a couple of pre-planned "dangers" the students had to overcome, such as jumping over a ditch or not stepping into a fen puddle.

In the second pilot walk, Forsgren and Joronen led a dozen students to the Tohloppi lakeside road in order to make observations of details in nature via sketching. (All students who attended one pilot walk obtained a sketch book from TAMK.) It was autumn, and the sun was shining. After the 45-minute drawing session, there was a feedback session indoors in Mediapolis, which stretched into a longer, more philosophical discussion for Joronen and a handful of students.

The last three walks were scheduled for November and for two of these, no students showed up. The weather was fairly horrible: it was windy, dark, temperature was around 0°C and there was freezing rain. It was understandable that students did not feel like participating. For the last walk, there was one student accompanying Forsgren and Joronen. This time, they made a 500 m tour in the forest, where a week-long "Light Path" experience had just been dismantled. The theme of the walk was, for self-evident reasons, death and decay.

Already during the first pilot walks it became clear that it was not possible or practical to try having people on the walk-through online presence in Zoom. First, getting Zoom to work consistently outdoors was a challenge. Secondly, the teacher who held the device (smartphone or iPad) where Zoom was running would get their hands and fingers very cold in just a few minutes, so that holding the device was next to impossible for more than a short period of time. The third obstacle was psychological: the teacher would concentrate more on students who were physically there and to the environment, and ignore people who were online.

Another lesson from the pilot walks was that they work well when the teacher has been to the place beforehand and made a clear structure to the lesson - where to stop, what topics to discuss, which tasks to give at which point. In other words, using pedagogical common sense applies to a learning session done outdoors in a nature setting just as it does in a classroom.

Caveats: A teacher should remind their students beforehand what kind of (weather-protective) clothing they should wear, have enough (but not too many) breaks and tell students to hydrate themselves regularly if it gets hot. A moderate amount of physical risk will make the experience more exciting and memorable!

Experience Report | NKUA

Nature Walk at the area of Psachna, Evia 7.12.2022

Planning

While planning the Nature Walk, we studied the preparatory material provided by the Tampere University of Applied Sciences. Then we selected the exact location for the Nature Walk. Although the Evripus Campus of the University of Athens is surrounded by the natural environment, we opted for a quieter setting at the seaside, a few minutes' driving distance from the Campus.

We prepared the schedule for the Nature Walk. The schedule included arrival to the selected location, contemplation and observation of the natural environment, recording and digitization of natural elements, and lastly, ideation and brainstorming around the ideas that emerged during the walk. However, we decided not to stick to a strict schedule of activities in order to leave room for improvisation. Preparation of a list of questions that could serve as starting points for brainstorming sessions with tutors and students, such as “How do we feel while being in nature?”, “What strikes our attention and why?”, “What kind of relations exist between humans and nature?”, and more.

Then we prepared the required equipment for recording and scanning natural elements. The equipment included video cameras and 360° cameras, mobile devices with LiDAR technology for 3D scanning, and audio recorders.

Lastly, we scheduled a pre-event to inform the students about the Nature Walk.

Pre-event:

We met with the students at the University Campus on 30.11.2022, a week before the walk. We confirmed the date, time and location of the walk and provided an overview of the scheduled activities. We presented the aim of the course: to give nature a more significant role in the virtual world design. We also discussed the potential observation viewpoints.

Nature walk and ideation

Students and tutors met at the University Campus and went together to the selected location. Tutors emphasized the importance of documentation and recording of observations during the walk. When we arrived, we spent some time in silence to observe, feel and get inspired by the natural environment. Then we started brainstorming about our thoughts and feelings.

Our walk lasted about an hour. We paused several times to share our thoughts and observations, as well as to talk about the natural elements that inspired us or attracted our attention. We also discussed ways that natural elements could be captured and later used to enhance our digital artistic creation.

We also paused several times to capture natural elements, using various techniques. We took photos of the landscape and of several details. We recorded videos of the seaside and sounds of the natural environment. We 3D-scanned several natural elements like anthills, stones, rocks, seaweeds, sponges and pieces of wood. We also 3D-scanned traces of the human intervention in nature, such as plastic bottles, and other pieces of garbage. Lastly, we recorded a 360° video of a nearby water habitat.

At the end of the walk, we had a final ideation session. We shared thoughts and ideas that emerged during the walk. After the nature walk, we gathered our observations in a common file. Some of the students' observations included “[Nature seams] Threatening and obscure to humans”, “[Nature seams] Friendly to natural organisms”, “Human's actions have negative impact on nature”, “[Humans] Not respecting the natural habitats”. The walk was documented by several images, videos and recordings. The students created a presentation about the nature walk and the ideas that emerged. They added photos of the

landscape, details of natural elements, and traces of human intervention to the natural environment.



Fig. 5. Nature Walk NKUA

Experience (tutor point of view)

The Nature Walk was an interesting and inspiring experience. The weather was warm and allowed us to pause our walk often and have ideation sessions with the students. The sources of inspiration were a lot during the walk. For this reason, next time we will consider planning a longer walk and having more available time. Team bonding and collaboration between participants was easy and natural during the walk. We believe that several courses of our curriculum could benefit from the method of Nature Walks, and we are considering organizing Nature Walks with students more often.

Ideation, design and development of nature inspired space. December 2022

Planning

Tutors and students from the University of Athens and the University of Malta, decided to work inside GEM-room-1³ in Mozilla Hubs. The environment of the virtual room had initially the form of a lunar landscape. However, students from the University of Athens opted for a more natural environment, so we loaded a different scene into the GEM-room-1. We shared digital files from our Nature Walks, we communicated through emails and arranged a common working meeting inside the virtual environment on 9.12.2022.

Ideation, design and development of the 3D environment in Mozilla Hubs

He held discussions about the concept of the 3D virtual world that was under development. We also talked about the limitations of the VR platform and ways to overcome these limitations. The students of the University of Athens decided to divide the 3D environment into two separate sections. The first section would represent the healthy natural environment and the second section would represent the polluted and deteriorated environment. Similarly, they separated the scanned 3D objects, the photos and videos from the Nature Walk into two categories following the same idea.

Below there are screenshots of some of the scanned objects that the students imported inside the VR environment in Mozilla Hubs:

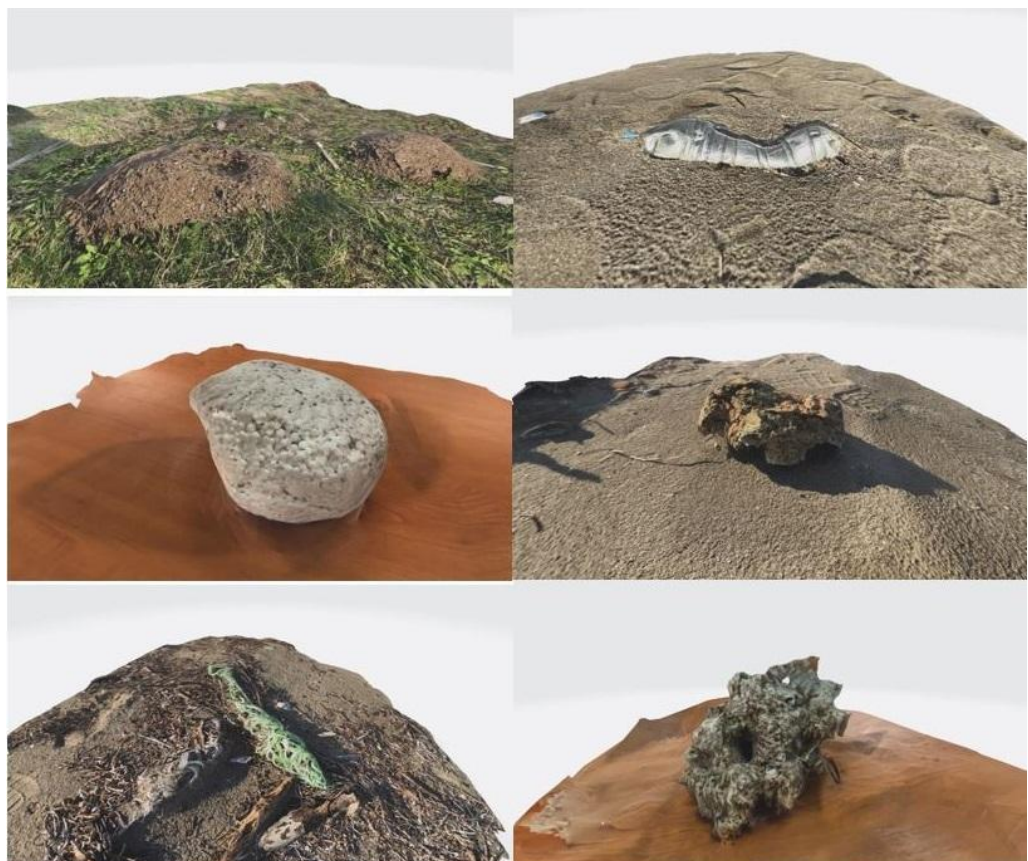


Fig. 6. 3D Scans of artefacts collected during the Nature Walk by the students of NKUA.

Inside the Mozilla Hubs room, the students divided the 3D space by placing a path in the middle of the virtual world. They placed the digital elements corresponding to the healthy environment from one side of the path and the digital elements corresponding to the deteriorated environment at the other side of the path.

³ <https://hubs.mozilla.com/wAotNWT/gem-room-1>

The students experimented with the integration of multiple media inside the VR world. They imported 3D objects (scanned, modelled or downloaded), photos, and audio files.

They took advantage of the option offered by Mozilla Hubs, which allows visitors to clone and move specific 3D objects. Thus, they invited the visitors to copy digital elements from the 'healthy' natural environment and paste them in the deteriorated environment in order to 're-generate' it.

Below there are some screenshots taken from the VR environment in Mozilla Hubs:

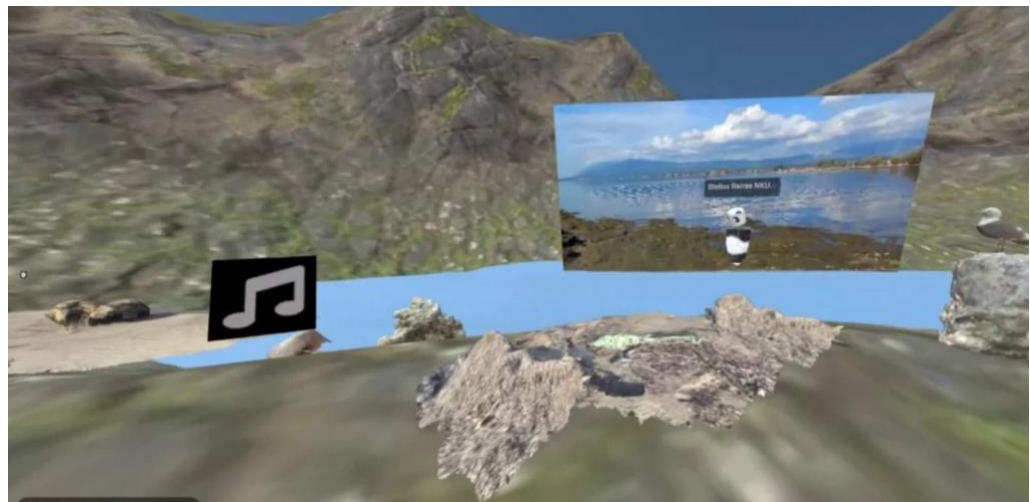


Fig.7. Screenshot of VR environment created in Mozilla Hubs by the students.



Fig.8. Screenshot of VR environment created in Mozilla Hubs by the students.



Fig.9. Screenshot of VR environment created in Mozilla Hubs by the students.



Fig. 10. Screenshot of VR environment created in Mozilla Hubs by the students.

Experience Report | University of Malta

Ghadira Bird Life Sanctuary & Msida Valley Nature Walks (UM)

Our nature walks through the Ghadira Bird Life Sanctuary and Msida Valley was an exhilarating and educational experience for the participants involved. The purpose of the nature walk was twofold: first, to capture the beauty of the sanctuary using 360° cinematic virtual reality recordings, and second, to engage in photogrammetry to capture various nature elements for exhibition in the Mozilla Hubs space.

The use of 360° cinematic virtual reality recordings allowed us to immerse ourselves in the natural surroundings of the Ghadira Bird Life Sanctuary. Equipped with VR cameras, the participants were able to capture panoramic views of the sanctuary, including its diverse flora and fauna, providing an immersive experience for viewers. This technique offered a unique perspective, enabling us to showcase the sanctuary's natural beauty to a wider audience.

Additionally, students embarked on a second nature walk in Msida valley, focusing on photogrammetry. Using advanced apps/software, they captured detailed 3D models of various elements in nature, such as trees, plants, and stones. These photogrammetry models were later exhibited in the Mozilla Hubs space, creating a virtual exhibition that showcased the intricate details of the sanctuary's ecosystem. However, accurate photogrammetry requires steady hands and precise camera movements, which was challenging for some students. There was also difficulty in capturing certain objects due to their size or location. A pre-photogrammetry briefing on proper techniques might help overcome this in future.

The nature walks presented several challenges for both the students and tutors. Firstly, weather conditions played a significant role, as adverse weather, such as strong winds, could disrupt the capturing process and hinder the quality of the recordings. Additionally, managing the equipment and ensuring proper battery life and storage capacity proved to be a logistical challenge, requiring careful planning and organization. Inclement weather, including strong winds and intermittent rain showers, made it challenging to capture stable and clear footage during the virtual reality recordings and photogrammetry process. However, the group adapted by seeking sheltered areas and adjusting their schedules accordingly.

Furthermore, capturing rare bird species posed a particular challenge. While the Ghadira Bird Life Sanctuary is renowned for its diverse avian population, some rare species are elusive and difficult to locate. Patience, keen observation, and understanding bird behaviour were crucial in capturing these rare species, but the process required persistence and a bit of luck.

The participants displayed a great deal of enthusiasm and interest in spotting and capturing rare bird species. Their dedication and excitement were evident as they eagerly scanned the sanctuary, often with binoculars in hand, hoping to catch a glimpse of these elusive creatures. This interest in rare bird species fostered a deeper appreciation for the sanctuary's biodiversity and the importance of conservation efforts.

The participants provided positive feedback regarding the nature walks. They expressed their delight at the immersive nature of the virtual reality recordings and appreciated the opportunity to capture and exhibit nature elements using photogrammetry. Participants highlighted the unique experience of observing and recording rare bird species as a standout moment during the walks. However, participants also found the equipment management and adverse weather conditions challenging, as these factors occasionally impacted the quality of their recordings. There were suggestions for a more structured learning experience and additional on-site support for handling the technology.

Tutor Observations and Recommendations

As tutors, we observed that the students actively engaged in the nature walks, demonstrating a genuine interest in the subject matter and making efforts to capture the essence of the sanctuary. However, we noted that some students struggled with the technical aspects of photogrammetry. To improve future nature walks, it would be beneficial to provide more comprehensive training sessions on these technologies before embarking on the field trip. Additionally, ensuring backup equipment availability and conducting thorough weather checks can help mitigate challenges faced during the walks.

Furthermore, it would be beneficial to incorporate expert bird guides into the nature walks to enhance the chances of spotting and capturing rare bird species. Their knowledge and expertise would enrich the educational experience and help participants appreciate the significance of these elusive creatures within the sanctuary's ecosystem.

The nature walk through the Ghadira Bird Life Sanctuary, combined with the use of 360° cinematic virtual reality recordings and photogrammetry, was a memorable and valuable experience for participants.

The tutors noted the high level of engagement and enthusiasm displayed by the students during the nature walks. The tutors were pleased to see the students apply the knowledge they had gained from classroom lectures and workshops in a real-world setting. Furthermore, they commended the students' collaborative spirit, as they frequently shared insights, discussed techniques, and offered assistance. Nevertheless, tutors also observed varying degrees of student engagement during the walks. While most students were excited about the project, some were overwhelmed by the technicalities of the equipment. A few were also distracted by the walk's leisure aspects, leading to a loss of focus on the

task at hand. Future iterations of the nature walks could benefit from the following recommendations:

- Pre-Walk workshops: Hosting a workshop before the walk to familiarize students with the VR and photogrammetry technology could be beneficial.
- Small groups: dividing the students into smaller groups, each led by a tutor or experienced student, can ensure better focus and personalized guidance.
- Structuring the walk: having clear goals and activities for different parts of the walk could make the experience more educational and fulfilling.
- Backup Equipment: having spare equipment on hand can counter any technical failures and avoid unnecessary delays.

Conclusion

Overall, the nature walks at Ghadira Bird Life Sanctuary and Msida Valley provided an enriching experience for both students and tutors. It was a brilliant amalgamation of nature and technology, unveiling a novel perspective of the world around us. It was an educational adventure that emphasized the importance of preserving and appreciating the natural world while adapting to the technological advancements that allow us to capture its beauty in newer, more immersive ways.

Experience Report | Łódź Film School

Pilot: Nature & Culture Walks & Performances - September to November 2022

The Nature & Culture Walks & Performances were a series of events that took place from September to November 2022 in several locations in Poland and Germany. The events aimed to explore the relationship between nature and culture through a variety of artistic and educational activities. These events were themed around nature, culture, walks, and performances, and were designed to provide participants with an opportunity to explore the unique features of these locations.

Types of Organization

1. Summer Science Camp

A summer science camp is a program designed for students to learn and explore different areas of science outside of the traditional classroom setting. This program is typically held during the summer months and is geared towards students who have an interest in science and want to deepen their knowledge and skills. Students attending the camp engage in hands-on experiments, workshops, lectures, and field trips to different scientific institutions, all of which are aimed at developing their scientific literacy and critical thinking skills.

2. Study Visit

A study visit is an educational program that provides students with an opportunity to visit another university and learn from its faculty and students. During the visit, students attend lectures, participate in workshops, and have the chance to explore the campus and its resources. The program is designed to expose students to different academic and cultural experiences, helping them to expand their knowledge and gain a broader perspective.

3. Short Students Exchange with Making Group Art Project

A short student exchange program is a collaborative project that involves students from two universities working together on a group art project. The program typically lasts for a short period, usually a week or two, and involves students from different disciplines and backgrounds. During the exchange, students work together to develop a project that

combines their unique perspectives and skills. This program is designed to promote cultural exchange, collaboration, and creativity among students from different universities. The end result is a collaborative work of art that reflects the diversity of the participating students' experiences and cultural backgrounds.

Teaching Methods

1. **Online lecture:** A lecture delivered through online platforms such as video conferencing tools or pre-recorded videos, where the teacher presents the material and students can interact through chat or other means of communication. An instructor presents a lecture to students through a digital platform, such as Zoom or Microsoft Teams. This method allows for the dissemination of information and the opportunity for students to ask questions and interact with the instructor.
2. **Online screenings with discussion:** Students watch a film or video content online, then participate in a group discussion, facilitated by a teacher, about the film's themes, techniques, and overall impact. This method allows for the exploration of cinematic techniques and themes, as well as critical analysis and interpretation.
3. **Education film screenings with discussion:** A similar format to the previous method, but with the added element of live, onsite educational context and quality of screening, where films or videos are specifically chosen for their informative value. Students watch films with an educational focus, and then engage in discussion in group and with the instructor.
4. **Outdoor activities - nature walks:** Students participate in guided nature walks or open-air shooting excursions where they can experience and explore different natural environments and take photographs or create film content to document their experience. This method encourages creativity and an appreciation for nature.
5. **Practical film production workshops:** Hands-on workshops where students can learn about different aspects of film production such as screenwriting, directing, cinematography, sound design, and editing. This method provides students with practical skills and experience.
6. **Acting workshops:** A workshop where students can develop their acting skills and techniques, often led by professional actors. Students learn and practice acting techniques, such as character development, script analysis, and improvisation. This method prepares students for performances and enhances their understanding of filmmaking.
7. **Lectures with specialists:** A lecture delivered by a specialist in a particular field, such as a filmmaker, film historian, or environmental scientist, who can provide unique insights and perspectives on the subject matter.
8. **Curatorial tour:** A guided tour of a museum, exhibition, or natural location, led by a curator or expert in the field, where students can learn about the significance and context of the exhibits or environment.
9. **Mind maps creating collages of illustrations cut-out from newspapers:** A creative exercise where students can reflect on their learning experience by creating visual representations of their thoughts and ideas using cut-out illustrations from newspapers, magazines, or other printed materials.

The events that were held throughout the program involved a total of around 50 participants, including 20 students from the Film University Babelsberg who went on two visits to Poland, visiting Włodawa and Łódź. Additionally, 20 students from the Łódź Film School went on visits to both Poland and Germany as part of the program. Furthermore, 10 students from the Film University Babelsberg were present as viewers during the event held in Potsdam, Germany.

Apart from the students, several artists and professors also participated in the program. Five of these individuals took part in the visit to Włodawa, while 15 artists and professors

joined in the visits to Łódź and Potsdam. This combination of students, artists, and professors from various backgrounds and locations contributed to the diversity and richness of the program.

The presence of students from both the Film University Babelsberg and Łódź Film School allowed for an exchange of knowledge and ideas. The program provided a platform for the students to collaborate and learn from each other's experiences. The involvement of artists and professors also added a new dimension to the program, as they were able to share their expertise and offer valuable guidance to the students.

In summary, the program was a collaborative effort involving students, artists, and professors from different locations. The program provided an opportunity for participants to exchange knowledge and ideas, collaborate, and learn from each other's experiences. The involvement of various individuals from diverse backgrounds enriched the program and made it a truly memorable experience for all involved.

Different types of immersive media

1. **Immersive Exhibition:** This involves an exhibition where images, sounds, and videos surround the viewer to create an immersive experience. Possible installations include panoramic projections and immersive environments with interactive elements.
2. **360° Videos:** These videos are shot with special cameras that capture a 360° view of the environment. They can be viewed on a computer, laptop, or smartphone screen and provide an immersive experience.
3. **VR Headsets:** These headsets allow viewers to watch 360° videos in a fully immersive environment. The viewer can move their head and body to explore the virtual environment.
4. **Interactive Virtual Reality:** This involves using technology to create a fully interactive virtual environment. Viewers can interact with objects and other elements in the virtual space, making it a more immersive experience.
5. **Mozilla Hubs:** This is an online platform for creating and sharing virtual reality spaces. It allows for interactive experiences that can be accessed online or with a VR headset.

These different immersive media can be used in a variety of contexts, including art installations, film productions, educational experiences, and more.

Locations

1. Włodawa

The first event took place in Włodawa, which is located on the eastern border of Poland, and the European Union. This location was chosen because of its unique natural and cultural heritage, including the Polesie National Park, which is home to a variety of plant and animal species in the area of last EU primeval swamps. The activities in Włodawa included guided nature walks, educational workshops, and exhibitions and performances by local and guest artists, also during the Festival of Three Cultures.

The summer science camp in Włodawa was organised in collaboration with the Museum-Synagogue, which offered special guided tours and an introduction to the rich and varied heritage of this town and region. The town has a unique mix of Jewish, Belorussian, and Polish traditions and is also a memory place for Holocaust. The Museum and local community, as well as many visitors, celebrate this unique mixture during the Festival of Three Cultures when the science camp took place.

The Festival of Three Cultures is a vibrant and colourful celebration of the town's cultural diversity. The festival includes various music concerts, exhibitions, workshops, and even land art and open-air modern art sculptures. These activities were available as inspiration for the students participating in the summer science camp.

The special guided tours and introduction to the heritage of the town provided students with a deeper understanding of the history and culture of the region. They were able to appreciate the unique mix of Jewish, Belorussian, and Polish traditions that make Włodawa such a special place. This understanding helped to enrich the students' scientific studies and encouraged them to think critically about the impact of culture on science.

Collaboration between the summer science camp and the Museum-Synagogue in Włodawa provided an excellent opportunity for students to learn about the rich cultural heritage of the town and region. The Festival of Three Cultures added to the vibrant and colorful atmosphere, and the various activities available provided students with inspiration for their scientific studies. The summer science camp in Włodawa was a truly unique and enriching experience for all involved.

The walk of students and artists in the Polesie National Park was a strong and inspiring experience due to the unique ecosystem of the primeval swamps found there. This ecosystem differs significantly from the nearby monoculture pine forest cultivated for industrial wood production. The swamps offer a unique environment, culture, and symbolic meaning.

The swamps ecosystem is diverse and unique, containing small plants and microorganisms that are not typically seen in other natural environments. Due to the humble nature of the ecosystem, visitors need to adopt a meditative and slow approach to fully immerse themselves in the environment. This approach is not typical for the modern world, which is full of distractions and fast-paced activities.

To appreciate the swamps' beauty fully, visitors need to understand the cultural context given by poetry, songs, folk, traditional culture, and music. This context helps them understand the significance and value of the ecosystem and appreciate it even more.

The walk in the Polesie National Park was limited to only five hours for the entire group, which is not enough time to fully immerse oneself in the environment. However, individual walks were available the following day. These walks offered an opportunity to experience the ecosystem in more depth.

In conclusion, the walk in the Polesie National Park was a unique and inspiring experience due to the ecosystem's diversity, cultural context, and symbolic meaning. It allowed students and artists to appreciate the value of nature and the importance of adopting a mindful and meditative approach to fully immerse oneself in the environment.

The concept of "true" nature can have different meanings depending on individual perspectives and experiences. It can be perceived as inanimate nature, such as rocks, ground, water, sky, clouds, sun, and stars. It can also be animated nature, including plants, animals, and humans. Both of these forms of nature are essential to the natural world and have a profound impact on the environment.

Another aspect of "true" nature is scale. One person may consider a single plant to be nature, while another might view a landscape as a natural wonder. The experience of nature can also differ depending on the focus and attention given to it. For example, a few trees and rocks might inspire a sense of awe and appreciation in one person, while a grand vista of high mountains or the sea might evoke a different emotional response.

Moreover, the notion of "true" nature can also vary based on the type of environment being considered. Wild nature, such as a primeval forest or swamps ecosystem, is often seen as the purest form of nature. It is an environment that has not been significantly altered by human activity and where natural processes can unfold without interference. On the other hand, monoculture forests created for industrial purposes are often perceived as a deviation from "true" nature. These forests may provide resources for human use, but they are not natural in the same way as a wild ecosystem.

In summary, the concept of "true" nature is complex and can encompass a range of perspectives, experiences, and environments. It may refer to inanimate or animated nature, different scales of natural phenomena, and different types of natural environments, each with its own unique characteristics and significance.

The type or quality of nature can have a profound influence on how a person experiences it, and in turn, how they are inspired by it. For example, inanimate nature like rocks, water, and the sky may evoke a sense of stillness, calmness, and awe. These elements are typically constant, and their changes are subtle and slow. On the other hand, animated nature, like plants, animals, and humans, can be more dynamic, evoking emotions like joy, playfulness, and curiosity.

The scale of nature can also impact how we experience it. Large-scale nature, such as mountains and oceans, can be overwhelming and awe-inspiring. The vastness of these natural features can make us feel small and insignificant, which can be both humbling and empowering. In contrast, small-scale nature, such as a single plant or rock, can evoke a sense of intimacy and attention to detail. These small details can be the source of inspiration and awe.

The difference between wild and industrial nature can also impact how we experience it. Wild nature, such as a primeval forest or a swamps ecosystem, can evoke a sense of awe, respect, and humility. These environments have a unique character and are often home to a variety of plant and animal species. In contrast, industrial nature, such as monoculture forests for wood production, can feel sterile and artificial. These environments are often designed for efficiency and are not home to diverse plant and animal life.

The quality of nature can influence a person's sensitivity to nature, environmental awareness, and inspiration for creative works. A person who regularly immerses themselves in nature, particularly wild nature, is more likely to develop a deep appreciation for it and to become more environmentally conscious. They may also draw inspiration from nature to create art, music, and other forms of creative expression. Conversely, a person who is not exposed to nature may not fully understand its importance and may not be as inspired by it. Therefore, it is important to provide opportunities for people to experience and appreciate nature in all its forms.

2. Łódź

The second location was Łódź, Poland which is home to the renowned Łódź Film School. This location is known for its rich cultural history and vibrant arts scene, making it an ideal location for student exchange and meetings. This event focused on the intersection of film and nature, and included film screenings, workshops on nature documentary filmmaking, and discussions on the role of film in raising awareness about environmental issues.

As part of a visit to the Łódź Film School, a series of online workshops were prepared for students on immersive media, immersive media production, and green film production. The online workshops were designed to provide students with an introduction to the technical aspects of film production, as well as an understanding of the environmental impact of filmmaking.

The immersive media module covered topics such as virtual reality, augmented reality, and 360° video, while the immersive media production module focused on the technical aspects of creating immersive media. The green film production module explored ways to reduce the environmental impact of film production, including sustainable production practices and green energy solutions.

In addition to the online workshops, on-site workshops were also held on film production techniques, including location scouting and rehearsals with actors. These workshops provided students with hands-on experience in the production process, allowing them to apply the knowledge gained from the online modules.

To conclude the program, students participated in a workshop on making mind maps of "Future if Green Production of Immersive Media" as collages of recycled illustrations. This workshop encouraged students to reflect on their education experience and think critically about the future of sustainable filmmaking. By using recycled materials, the workshop also promoted environmental awareness and sustainability.

Overall, the workshops provided students with a comprehensive education in film production, immersive media, and green film production. The program not only provided technical knowledge but also instilled an appreciation for sustainable filmmaking practices and their role in shaping the future of media production.

3. Potsdam / Berlin

The third event took place in Potsdam, Germany. Like Łódź, Potsdam is known for its cultural and artistic significance, making it an ideal location for students to exchange at the Film University Babelsberg which is very developed in emerging media in arts. This event also focused on film and nature, but from a more global perspective, including a visit to the Film Museum and the famous Babelsberg Studios to watch application of Virtual Production technology in shooting scenes in virtual mountains set for "Mandelorian". Other activities included film screenings and discussions on the representation of nature and culture in cinema, as well as workshops on film production techniques including virtual acting with avatars workshop for students.

The final event was held in Berlin, Germany, which is known as a hub of cultural diversity and a point of convergence for different cultures and religions. Here, participants were able to experience a unique blend of history, culture, and art. The final event took place at the Place of Meetings of Cultures and Religions at the former Tempelhof Airfield. This event aimed to explore the relationship between nature, culture, and spirituality. Activities included guided walks through urban parks, performances, and discussions on the role of spirituality in environmental activism.

Overall, the Nature & Culture Walks & Performances were a diverse and engaging series of events that brought together artists, filmmakers, educators, and activists to explore the complex relationship between nature and culture. The events in these locations were designed to provide participants with a rich and diverse cultural experience, showcasing the unique features of each location while also exploring the intersection between nature and culture. By fostering a deeper understanding of this relationship, the events aimed to inspire action towards a more sustainable and harmonious future.

In Potsdam, the activities included film screenings and discussions on the representation of nature and culture in cinema, as well as workshops on film production techniques. One of the unique workshops was the virtual acting with avatars workshop for students. This workshop used a setup of VR headsets of Vive and VRChat virtual environments where participants could choose avatars and play with them in various virtual locations while also interacting with other people as avatars.

The virtual acting with avatars workshop was designed to introduce students to the world of virtual reality and explore the potential of this technology in film production. The workshop focused on the use of avatars in virtual environments and the techniques of virtual acting. Students were able to choose their avatars and explore different virtual locations, interacting with each other in real-time.

This workshop not only provided hands-on experience with virtual reality technology but also allowed students to explore the creative potential of this technology in film production. It also encouraged collaboration and teamwork among students, as they worked together to create virtual scenes and interact with each other as avatars.

Overall, the virtual acting with avatars workshop was a unique and innovative addition to the film production workshops in Potsdam. It provided students with a new perspective on film production techniques and introduced them to the exciting possibilities of virtual reality technology in film production.

Virtual Performance

The virtual acting with avatars workshop for students was an exciting opportunity for the students of Film University Babelsberg to learn and explore new ways of creating immersive media experiences. The workshop was designed to help students prepare for recording their performances in the studio and incorporating them into the created virtual online access environment using Mozilla Hubs.

During the workshop, students were given a brief introduction to the concept of virtual acting with avatars, which is a technique that involves using virtual reality technology to create digital representations of actors. The students were then given the opportunity to use VR headsets of Vive and VRChat virtual environments to experiment with the different avatars and virtual locations available.

The workshop was facilitated by experienced professionals who provided the students with guidance and feedback as they worked on their virtual acting skills. The students were encouraged to experiment with different poses and movements, and to explore the creative possibilities of the medium.

Once the students had developed their virtual acting skills, they were ready to move on to the next stage of the project: recording their performances in the studio. This involved setting up a 360° camera to capture the live performances of actors with the audience, and using the resulting footage to create a virtual online access environment.

The environment was designed to capture the unique style and mood of the Polesie National Park, drawing on the best elements of the natural environment and the cultural heritage of the region. The students were able to incorporate their virtual acting performances into this environment, creating a truly immersive experience that would be accessible to audiences around the world.

Overall, the virtual acting with avatars workshop was an excellent way for students to explore new creative possibilities and develop their skills in a rapidly-evolving field. It provided them with the opportunity to experiment with cutting-edge technology and to create immersive media experiences that would engage and inspire audiences.

Obstacles

In today's modern world, individuals are constantly surrounded by technology and media, which can lead to overstimulation and a lack of focus on natural surroundings. This can result in a decreased level of immersion and experience for students when they are on a walk in nature. The constant bombardment of information and distractions can lead to a lack of mindfulness and attention to detail, which is necessary for fully experiencing and appreciating the natural environment. Additionally, the lack of contact with wild nature, especially for those who grow up in urban areas, can make it more difficult to connect with and understand the significance of natural elements like weather, sky, clouds, and mood.

Furthermore, the fast-paced nature of modern communication can create a sense of urgency and pressure to always be connected and responding to messages, which can be difficult to disconnect from when trying to immerse in nature. The overuse of social media and other forms of digital communication can also lead to a disconnection from the natural world, as individuals are more focused on their screens than on their surroundings.

To fully appreciate and immerse in nature, it is important to develop mindfulness and a slower pace of life. This can be achieved by disconnecting from technology and taking the time to observe and appreciate natural surroundings. Additionally, learning about the

cultural and symbolic meanings of nature can provide a greater appreciation and understanding of its importance.

Factors for successful and inspiring walk in nature for students

Nature:

- Quality, biodiversity, and level of wilderness of nature can significantly impact the level of immersion and experience of students.
- Students should be aware of the uniqueness and quality of the ecosystem they are visiting, which can help them appreciate the opportunity to immerse themselves in this environment.

Cultural context:

- Providing cultural context, such as poetry, stories, songs, and traditional culture, can help students understand and engage with nature on an emotional level.
- Understanding the cultural significance of the environment can also deepen the level of respect and appreciation that students have for it.

Methods of focusing:

- Using techniques like grounding, mindfulness, meditation, tree-hugging, and breathing exercises can help students connect with nature on a deeper level.
- These methods can help students slow down and focus on the present moment, which can increase their level of awareness and appreciation for their surroundings.

Virtual environment of the project “All Souls’ Night” - Communicating with Nature through Rituals

The “All Souls’ Night” is project of Łódź Film School PhD student Wojciech Olchowski, and collaborative team of LFS and Film University Babelsberg students of acting and new technologies of creating, performing and using 360° recording of live performance standing in a circle with an audience as a template and inspiration for creating a high-value online virtual reality environment in Mozilla Hubs, which involves incorporating the video recordings of faces of performers into the magical forest on swamps scene during a winter night. This VR version provides a unique perspective, allowing the audience to be fully immersed in the mood of the project.

As a text project is a loose and shortened translation of XIX century Adam Mickiewicz’s drama “Forefathers’ Eve, Part II”, with additional modern poems. “Forefathers’ Eve”, “Dziady” (Jaddy) in Polish, is a feast performed on the eve of All Saints’. Its equivalent in the Western world would be a Halloween stripped of its spiritual dimension. Since Poland has always been a multi-religious country, some pagan traditions were never suppressed, merging instead with Christianity, like the ritual of calling the damned souls. Forefathers’ Eve was especially popular in the eastern parts of the Polish-Lithuanian Commonwealth. Today this region is in Belarus, where the tradition is still alive.

As authors of this project we celebrate this ritual as an artistic and spiritual expression of relations and emotions between slaughtered animals and humanity which is killing them in times of environmental catastrophe. This is penance and mourning but for the audience this is also a chance for reflection and looking for forgiveness and reconciliation. We are giving animals a voice and words for calling for justice, as a meeting between the souls of killed animals and their executioner - the damned soul of the human. The celebration of this ritual is a powerful representation of the relationship and emotions between animals and humans in times of environmental crisis. The ritual serves a dual purpose, both as a form of penance and mourning for the animals that have been killed, and as a platform for reflection and reconciliation for the audience. The current state of the environment is dire, with many species of animals facing extinction due to human activities such as deforestation, pollution, and overfishing. The loss of these animals is not just a loss of

biodiversity, but it also represents a loss of a crucial link in the web of life that sustains our planet. This ritual provides a space for individuals to confront the reality of their impact on the environment and to acknowledge the pain and suffering caused by their actions.

The ritual is also an artistic expression that gives voice to the animals and their plight. By doing so, it elevates their status and recognizes their inherent value, reminding us that they are not just mere commodities to be exploited but rather sentient beings deserving of respect and dignity. Through the use of storytelling, music, and other forms of art, the ritual provides a platform for the animals to tell their own story and to call for justice.

For the audience, the ritual provides an opportunity for reflection and introspection. It allows individuals to consider their own role in the destruction of the environment and to seek forgiveness and reconciliation. By acknowledging their actions and seeking to make amends, the ritual promotes a sense of responsibility and promotes positive change.

In many cultures, rituals serve as a way to bring people together and to build community. Live performances of “All Souls’ Night” provide a space for individuals to come together and to acknowledge the pain and suffering caused by their actions. By coming together, individuals are able to support one another and to find strength in their shared commitment to protecting the environment. By giving animals a voice and calling for justice, the ritual promotes a sense of responsibility and encourages positive change. Through coming together as a community, individuals are able to find strength in their shared commitment to protecting the environment and to promoting a more just and sustainable world.

We recorded live performances with a 360° camera, and uploaded this to the internet, as an opportunity to virtually join a circle of performers during watching video recordings. Later we explored primaeval swamps on the Polish-Belarusian border, and we brought cultural and nature inspirations which we found there to create an online VR environment which includes performances and artistic interpretation of nature to VR space which may be explored by viewers individually. The actors’ performance standing in a circle with the audience serves as a template for the layout of the virtual reality environment. The environment is designed to mimic the natural environment of primaeval swamps of Polish-Belarusian border in November, with the naked trees, iced rocks by using many assets (3D objects) and models from Sketchfab, like trees, skulls, and rocks surrounding the performance area. The lake with slowly rippling water reflection and transparency effect is also incorporated into the layout to add to the visual appeal of the environment. The lighting is adjusted to include moonlight, creating an eerie and otherworldly feel, which enhance the atmosphere of the performance. The video clips featuring the actors’ performances and various audio clips of sound effects are inserted into the environment, creating an ambient, moody sound. The use of spatial audio is also incorporated, allowing the sound to be placed in specific locations within the environment, creating a sense of presence and depth.