

## CLIMATE CHANGE ENGAGE



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Climate Change Engage is a 33 lesson stand-alone module. This module introduces learners to the topic of game design within the context of climate adaptation. It introduces them to the concept and process of Design Thinking; the cognitive, strategic, and practical processes for creative problem-solving. The module enables learners to develop a fundamental understanding of serious game design, world-building, character development, presenting, planning and time management.

The module encourages learners to engage with their local context to enable them to explore real-world problems in meaningful and tangible ways that are manageable. The module encourages the development of 21st Century skills, supporting them to keep up with the lightning pace of a constantly changing technologised world.

Design Thinking helps the learners to understand that they can create their own future by enabling them to design their own experiences and participation. Using linked learning and systemic thinking with practical methods of learning, including inquiry and project-based methods, the activities support teachers and learners to undertake a serious game design project.

#### Learning Objectives:

- Gain knowledge about climate change adaptation, mitigation, nature based solutions, and environmentally sensitive design
- Develop awareness of the basics of Design-Thinking for problem-solving
- Practice problem solving and critical thinking skills as individuals and as part of a group
- Be introduced to aspects of serious game design and tools such as Lean Canvas, vision boards and a Pecha Kucha presentation
- Develop skills of planning, division of workload and time management

This module covers the following Sustainable Development Goals: SDG4: Quality Education; SDG11 Sustainable Cities and Communities; SDG12 Responsible Consumption and Production; SDG13 Climate Action.

Lesson 1: Design Thinking is the cognitive, strategic and practical process for creative problem-solving. This lesson will introduce students to the 5 stages of Design Thinking to build a foundational understanding of the process.

Lesson 2: In this lesson, learners are introduced to the foundational concepts of Climate Change. This will enable them to understand more about Climate Change and its impacts and gain knowledge that they can include within their game design.

Lesson 3: This lesson builds on Lesson 2 and learners are introduced to the difference between weather and climate. This will enable them to begin to understand the changes in patterns and recognise the impacts that this can have, and provides an opportunity to consider how they might integrate this knowledge into their game design.

Lesson 4: In this lesson, learners are introduced to the concepts of mitigation and adaptation, as well as encouraging them to take climate action, by looking at their own behaviour and how they might reduce their impact.

Lesson 5: Design Thinking 1 - Empathy Stanford Design School's five-chairs exercise is adapted to encourage learners to learn how to develop design principles for a gamer profile. Learners will consider the gamers' needs and develop ideas on paper and create 3D prototypes of their designs.

Lesson 6: In this lesson, learners will begin to understand how to define a problem. Learners are asked to begin to identify the problem they want to address within their game design using the driving question and SDGs as a starting theme. They also have an opportunity to develop an awareness of the problem on a local scale.

Lesson 7: Through deconstructing games, learners will develop their understanding and knowledge of different kinds of games and game construction. This lesson enables learners to gain insight into game design; their mechanics and purpose, which provides a foundation for them to construct inclusive games.

Lesson 8: This lesson enables learners to develop an understanding of the importance of developing ideas and looking for opportunities to iterate and improve on existing ideas. Learners are also introduced to Open Source concepts e.g. iteration and collaboration.

Lesson 9: This lesson introduces learners to the closely associated concepts of 'nature-based solutions' and 'green infrastructure'. The lesson challenges them to rethink how and why the places they are familiar with could and should be redesigned.

Lesson 10: This lesson builds on Lesson 9 and involves rethinking how we design the places where we live, work, and play. The lesson deepens the 'learners' understanding of key concepts and terminology presented in lesson 9.

Lesson 11: This lesson introduces learners to what serious games are and their purposes, describing the characteristics of games relevant to integrating nature in cities.

Lesson 12: In this lesson, learners will learn why we need to adapt the way we plan and build in our cities and town in the future. Learners will consider challenges of existing low-density settlement. how we adapt and increase density in built-up area of cities and towns through repurposing buildings.

Lesson 13: In this lesson, learners will reflect on the different settlement patterns in their locality and consider if they are positive or negative for the environment. Firstly, they review some of the key vocabulary / terms from the previous lesson and secondly, look at what these terms mean on the ground in the built environment that they are familiar with.

Lesson 14: In this lesson, learners will think about different types of housing, their varying densities and how sustainable these are. They will think about the various types of housing they are aware of and reflect on the positive and negative elements of these from a climate change perspective. This lesson focuses on different building types rather than overall settlement.

Lesson 15: In this lesson, learners will begin to consider the key aims of the project and developing teams. In order to come up with a well-rounded pitch, it is important to answer the driving question in full. By breaking down and analysing each part of the question, learners have a more focused approach to their research, ideas and solutions.

Lesson 16: This lesson facilitates learners to develop further insight into specific users and develop an understanding of their needs and interests. From this lesson, learners working within their design teams will begin to identify and focus on the users of their game and the design principles, necessary to design their game.

Lesson 17: This lesson builds on 8, enabling learners to develop an understanding of the process of generating ideas using the fundamental components of a game. They will work in teams to identify 4 components of 3 games building on their understanding of games from Lesson 7 and how to use random variables to create useful building blocks for design ideas.

Lesson 18 - 20: In this lesson, learners will begin to consider their ideas for their prototype, develop a concept statement and look at ways to prototype their ideas depending on their gamers / audience. They will also develop their designs on paper using their user profiles and selected game theme. They will also begin to prepare materials and ideas for their vision board.

Lessons 21- 22: This lesson prepares learners to present their work in a structured way and preparing them for organising documentation (images, details) of their idea development and process. This lesson will begin to help them test their ideas by developing their vision boards using the Vision Board support worksheets and prepare them for their final pitch - their Pecha Kucha presentation.

Lessons 22-26: In these sessions, learners build on lessons 14 - 21, their initial paper prototyping ideas and the feedback from testing their ideas to create their final game prototype and completing their vision boards in preparation for their pitch presentation.

Lesson 27: In this lesson, learners will define their peer assessment criteria. Learners are encouraged to consider what is most important, valuable and successful from what has been learned and the process of learning it. By engaging in the development of peer assessment criteria and the assessment itself, learners take responsibility, learn to evaluate, are more motivated and get practice at giving and receiving feedback.

Lesson 28: A Pecha Kucha ('chit chat' in Japanese) is a presentation format (20 slides with a 20 second limit – 400 seconds) that encourages presenters to be concise and use the relationship between image and text. In this lesson, learners will be introduced to the Pecha Kucha format and begin to analyse what makes a good presentation so they can prepare to create their own Pecha Kucha presentation.

Lesson 29 - 30: In this lesson learners will continue to how to plan, create and present their Pecha Kucha. The lesson and its resources support students to create their outline and begin to develop their presentation step-by-step. They can continue to work on this in lesson 30.

Lessons 31 - 32: This lesson builds on Lessons 27 - 30 enabling learners to develop their presentation skills learn to give peer feedback and constructive criticism. Each team will present their game ideas to the other teams and using the supporting resources assess their peers.

Lesson 33: Facilitating a World Café In this lesson, the learner will experience the World Café methodology as a reflective tool. A World Café is a series of conversations around a question or issue. It was developed in 1995 and is a simple, flexible and effective way to host large group dialogue. By facilitating a World Café as a reflective exercise for your learners, it will enable them to process their thoughts on the game design process and feedback further on each other's game ideas.

### **External Expertise:**

- Dr. Michael Lennon: UCD - focuses on the intersection of planning and environmental policy. The current focus of his research, teaching and publications centres on four interrelated areas: Socio-Ecological Relationships; The Politics and Policy of Change; Planning Sustainable Environments; and Planning Theory & Practice.
- Dr. Anita McKeown: UCD / FutureFocus21c. Dr Anita McKeown, FRSA, FIPM, MEI - is an award winning artist|scholar and STEAM educator, co-designing values-based leadership through education and community processes. She works at the intersection of art, equitable placemaking and technology: Open Source Culture and Technology (ethical and ecological implications) and STEAM education, across a range of interdisciplinary projects, processes and partnerships
- Ms. Rebecca White: UCD - is an educator, consultant, trainer and curriculum developer, focusing on STEAM education, project-based, student-led learning and professional development for place-based learning.
- Dr. Paula Russell: UCD - Paula's main area of research relates to the role of civil society in the planning process, looking at issues of engagement and influence. She has a broad interest in urban policy issues.
- Dr. Aura Istrate: UCD - is an urban planning scholar concerned with smart & sustainable urbanism, conducting multiscale interdisciplinary research on topics such as mainstreaming active mobility and nature-based solutions in cities, employing participatory, geospatial, and mixed methods to inform smart communities and the transition to climate-neutral cities.
- Dr. Tamara Hochstrasser: UCD - teaches mostly into the Agricultural Science and Environmental Science Programmes and into the MSc Global Change: Environmental Science and Policy at UCD.

For more information or to access online support in integrating the programme into your existing teaching please contact: [Rebecca.white@ucd.ie](mailto:Rebecca.white@ucd.ie)