GREENING GAMES
TEACHING GUIDE

CGL
Cologne Game Lab

Technology
Arts Sciences
TH Köln

Breda University
OF APPLIED SCIENCES

CHARLES
UNIVERSITY

UNIVERSITY
OF TURKU

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1. Introduction – Three Options

Every university is different and so the Greening Games teaching materials are designed for three different scenarios, with extensive options for mixing-and-matching between the offerings.

The three main options we suggest are:

- **Module-based education**
- **Drop-in teaching content (one-off sessions)**
- **Project/role-based education**

Each of these is supported with a range of slide decks and workshop activities, or suggestions for projects.

Across these three options, there are four lenses on the eco-critical teaching related to video games:

- **Games Infrastructures**: games as objects of nature, relying on material resources and practices

- **Games Cultures**: games as objects of culture, carrying societal values and providing spaces for activism

- **Games Production**: games as digital products developed according to workflow processes and practices

- **Games Content**: games as systems designed with embedded ecological messages and aesthetics

The first two engage with humanities-led topics related to **eco-critical game studies**, and the latter two fall under the banner of applied approaches to **eco-critical game development**.

By **eco-critical game studies**, we refer to approaches towards the study of games that engage with ethical, political and cultural dimensions of the medium. The question of the environmental sustainability of video games is embedded in the existing socio-economic power structures.

The **eco-critical game development** perspectives focus on sustainable game production and development as well as on environmentally considerate game design. The first aspect takes into consideration topics such as energy demands of game development, heating office spaces, flying to conferences, or the use of cloud services. These, amongst others, contribute to the industry's overall carbon footprint. The second aspect focuses on designing games representing and simulating ecological dynamics.

While this document suggests options that can shape educational approaches, we encourage teachers to explore the range of materials to find decks, documents, activities, and more that can support the particular lens through which they wish to introduce sustainability and video games to their students.

We hope that by interpreting environmental sustainability in games via those four leading paths, we can help newcomers to the field in grasping its interdisciplinary complexity.

The Greening Games Framework has been developed as part of a three-year-long research project **"Greening Games Building Higher Education Resources for Sustainable Video Game Production, Design & Critical Game Studies" (2021-2024)"**, during which our interdisciplinary research team with members from leading European universities had been designing, testing and assessing a range of teaching materials for B.A. and M.A. programs, predominantly in game design and game development.

This Pedagogical Framework presents our modular and interdisciplinary teaching and learning philosophy. It is the bedrock for all the teaching methods and tools that we offer to the higher education community, compiled in an open-access format in our online **Repository** and on the official **Erasmus+ Project Results Platform**.

Our goal is to provide educators with a set of didactic materials that may help in delivering thought-through courses, seminars, and workshops in eco-critical game studies and game development.

2. Module-based Education

In module-based education, students will be taught a topic across a range of weeks or months, culminating in some form of assessment. This is a traditional method for education across many European and international high-education institutions.

Curricula for module-based teaching

Greening Games Education at Cologne Game Lab (TH Köln):

Green Game Studies: Course Package 1 (file name: Greening Games_Course package 1)
Green Game Studies: Course Package 2 (file name: Greening Games_Course package 2)
Green Game Design: Course Package 3 (file name: Greening Games_Course package 3)
Green Game Studies: Course Package 4 (file name: Greening Games_Course package 4)
Green Game Studies: Course Package 5 (file name: Greening Games_Course package 5)
Green Game Studies: Course Package 6 (file name: Greening Games_Course package 6)

Greening Games Education at University of Turku:

(file name: Greening Games_Course package 7)
(file name: Greening Games_Course package 8)

This collection of documents outlines course structures for both bachelor's and master's level courses related to games as parts of culture: as media, discourse, and their physicality.

Each of the documents list the curriculum's learning outcomes. For examples, in the first BA course the participants will:

- reflect the question of climate crisis within the context of video games,
- learn what green / ecological / environmental games are,
- rethink game design and gaming practice from the perspective of sustainability,
- familiarise themselves with one of the most recent strands of eco-critical research in game studies,
- explore the most recent initiatives launched by the games industry and the critique thereof,
- submit academic podcasts, choosing a specific aspect of gaming to analyse within the context of sustainability.

Assessments for the course are linked to the production of digital media (podcasts) and examples from students of CGL are included in the Greening Games Repository.

Example Podcasts

Video games and their ability to raise awareness of environmental sustainability
(file name: Greening Games_Student podcast 1)

How green is the mass entertainment industry?
(file name: Greening Games_Student podcast 2)

VR raising awareness of environmental sustainability
(file name: Greening Games_Student podcast 3)

The pursuit of environmentally sustainable gaming technology
(file name: Greening Games_Student podcast 4)

How do video games impact the environment?
(file name: Greening Games_Student podcast 5)

Planned obsolescence in the video games industry
(file name: Greening Games_Student podcast 6)

The course documentation is supported by lecture decks, found in the Repository:

Lecture Decks

Video Games & Nature: Introduction to ecocritical study of games and game making
(file name: Greening Games_Introductory lecture)

Games Infrastructures: On the materiality of digital games
(file name: Games Infrastructures_Focus lecture 1)

Analysis of Video Games: How to make sense of (ecological) games?
(file name: Games Infrastructures_Focus lecture 2)

The main course documents also include an extensive bibliography of suggested reading, which can assist both teachers in gaining a strong grasp of the material and students who wish to expand their knowledge.

We encourage teachers to use this and other curricula documents as inspiration for their own exploration of our teaching materials.

3. Drop-in Teaching Content (one-off sessions)

Many game studies curricula may not prioritise sustainability in the education, particularly if they take an industry-oriented approach. Nonetheless, teachers may wish to include sustainability content within their teaching programme.

To assist in this we have developed teaching resources in the following categories:

- **lecture decks** (introductory and focused lectures)
- **workshop activities** (hands-on activities which may be used during seminars and workshops)
- **additional multimodal materials** (podcasts, videos, card deck, literature library)

All of our resources are open access and available online in the **Repository**[1] on our project's website as well as on the official **Erasmus+ Project Results Platform**.

[1] *Greening Games Repository: https://greeningames.eu/repository.*

3.1 Lecture decks

We have a selection of lecture decks on a variety of topics and with different audiences in mind.

For an excellent general introduction to a wide range of topics related to sustainability, we suggest the following lecture:

Introduction to the video game industry's environmental impact
(file name: Games Production_Focus lecture 1)

This slide deck and accompanying lecture notes covers many crucial considerations for both professional developers and cultural studies.

For decks aimed at hands-on game development students, we suggest the following lectures:

Theming and systemic pro-environmental messaging in video games
(file name: Games Content_Focus lecture 1)

Introduction to designing for implicit and explicit messages about sustainability
(file name: Games Content_Focus lecture 2)

Herein are two lectures about designing to include messages relating to sustainability, and a simple model for thinking about 'themes and systems' of sustainability topics in video game content. These are framed to help bachelor-level game developers approach sustainability with increased confidence.

For students approaching games as a form of culture/media, we have a variety of slide decks:

(file name: Games Culture_Focus lecture 1)
(file name: Games Culture_Focus lecture 2)
(file name: Games Culture_Focus lecture 3)

Games Infrastructures: On the materiality of digital games
(file name: Games Infrastructures_Focus lecture 1)
Analysis of Video Games: How to make sense of (ecological) games?
(file name: Games Infrastructures_Focus lecture 2)

These can be used as one-off lectures, or combined to support broader perspectives for students.

While the decks are designed to be 'dropped in' curricula, we strongly recommend that teachers mix and match concepts and update the slides with more recent examples, so that students recognise examples from their own experiences.

3.2 Workshop activities

The Greening Games teaching materials include a wide range of workshop activities, aimed at varying group sizes and durations. Typically they last 1-2 hours and are aimed at class sizes 10-25. The durations vary based on the particular activities and the maximum class sizes are different for more intensive interactive sessions.

There are a wide range of activities. For hands-on game development students, we recommend the following design focused activities:

Activity 1: Green re-theming
(file name: Games Content_Project based activity 1)
Activity 2: Adding green mechanics
(file name: Games Content_Project based activity 2)
Activity 3: Side quest chain design
(file name: Games Content_Project based activity 3)

Activity 1: Greening your studio
(file name: Games Production_Project based activity 1)
Activity 2: Resource management in video games
(file name: Games Production_Project based activity 2)
Activity 3: Device life cycle
(file name: Games Production_Project based activity 3)

For students with a cultural/media studies approach, our other activities may hold more interest:

Activity 1: Green game jam
(file name: Games Cultures_Project based activity 1)
Activity 2: Local action game concept
(file name: Games Cultures_Project based activity 2)
Activity 3: Ecocritical game analysis
(file name: Games Cultures_Project based activity 3)

Activity 1: Mapping out the field
(file name: Games Infrastructures_Project based activity 1)
Activity 2: Zooming in
(file name: Games Infrastructures_Project based activity 2)
Activity 3: Finding your own path
(file name: Games Infrastructures_Project based activity 3)

3.3 Additional multimodal activities

Alongside the traditional teaching materials, the Greening Games project also produced a variety of other media. These can be found in our repository.

Podcasts created by consortium members as well as students can be found in the Repository under the following titles:

Podcasts

Programmer's perspective on games production
(file name: Greening Games_Podcast 1)

Introduction to greening games production
(file name: Greening Games_Podcast 2)

Video games and their ability to raise awareness of environmental sustainability
(file name: Greening Games_Student podcast 1)

How green is the mass entertainment industry?
(file name: Greening Games_Student podcast 2)

VR raising awareness of environmental sustainability
(file name: Greening Games_Student podcast 3)

The pursuit of environmentally sustainable gaming technology
(file name: Greening Games_Student podcast 4)

How do video games impact the environment?
(file name: Greening Games_Student podcast 5)

Planned obsolescence in the video games industry
(file name: Greening Games_Student podcast 6)

Videos on topics related to sustainability and video games can be found in the Repository as well:

Videos

Greening Games: Interview with Sonia Fizek
(file name: Greening games_Video stream 1)

Greening Games: Interview with Charles Games
(file name: Greening Games_Video stream 2)

Greening Games: Introduction to designing for implicit and explicit messages about sustainability
(file name: Greening Games_Video stream 3)

Greening Games: Interview with Frans Melissen
(file name: Greening Games_Video stream 4)

A card deck for teaching a variety of topics about games and environmental sustainability can also be downloaded and used:

Card Deck

The Greening Games Deck
(file name: Greening Games_Card Deck)

And finally we have a literature library, containing links to many sources that can inspire and support the study of sustainability and video games:

Repository

https://greeningames.eu/repository

We encourage you to use these materials and adapt them to your needs to enrich your teaching on this important topic.

4. Project/Role-based Education

Some universities, particularly those teaching hands-on game development, teach by giving students projects to complete. In approaching these projects, students are given external and internal (creative) motivation to engage with pre-set concepts and themes. Students are required to adopt the necessary team roles to complete the project (hence this also being called 'role-based learning') and so they gain both practical skills and intellectual insight into the complexity of a project.

This approach of using projects begins with giving students a project brief and then supporting their knowledge and skills over a period of weeks (typically 2-6 months, but times vary).

In project-based learning, teachers play a mentor-like role, allowing students to develop insight and expertise through their desire for progress, rather than because the teacher has dictated it is necessary.

Examples of project briefs with environmental themes are available here:

Project Briefs

Greening Games: Project based learning 1
(file name: Games Content_Project brief 1)

Greening Games: Project based learning 2
(file name: Games Content_Project brief 2)

These briefs are necessarily open-ended. Giving freedom for students to explore a topic can be a powerful learning experience, alongside creating useful portfolio material for their future career, and can even lead to start-up companies.

The project briefs also contain suggestions for assessment procedures/materials. Within project/role-based learning, it is important that students are confident their personal contribution to the team's project will be individually assessed, and so procedures and documentation to support this are necessary.

5. Credits & Acknowledgements

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