Teaching Portfolio
"Collective Learning by Doing (Research)"

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1. Research Question and Format

My research question is placed within the context of a didactic innovation format, interpreted as an experimental research seminar, in which the entire **learning process** has been designed as a collaborative **(re)search process**. The underlying motivation was twofold:

1. To test **collective peer learning as a method and didactic practice**,
2. to test a **research-focused teaching** format for a recent and highly cross-disciplinary topic of ecological sustainability in video gaming (referred to in this portfolio as "green gaming").

The seminar was conceptualized and delivered in the M.A. Digital Games program in the summer semester of 2021.

The high concept behind the seminar rests on a fundamental reflection of the **interplay between teaching and research**, stemming from the 19th century Humboldtian ideal of teaching in higher education. With the increasing neo-liberalization of the university (Maisuria and Cole 2017)[1], teaching tends to rely on the delivery of content applicable to the existing labor market. Humboldt's higher education surpassed and opposed its understanding as a place for purely vocational training. His vision of a university was that of an institution, which empowers individuals to become independent thinkers and world citizens (concomitant with

[1] Alpesh Maisuria and Mike Cole. 2017. The neoliberalization of higher education in England: an alternative is possible. *Policy Futures in Education* 15(5), 602-619. Available online: https://journals.sagepub.com/doi/pdf/10.1177/1478210317719792.

"global citizenship", one of TH Köln's strategic directions for teaching). In my international didactic career throughout the years (mostly in the UK-based institutions), I had been oftentimes standing at the crossroads between the conviction of universal humanist education as underpinned by critical thinking and the pressure to "serve" a highly applied marketable skillset. Teaching according to Humboldtian principles has remained a remote signpost and a challenge.

The "Green Gaming" seminar at the Cologne Game Lab was envisioned as an experiment able to break that impasse. It has become a collaborative teaching place and process guided by the most current interdisciplinary research questions on sustainability of digital media and video games. My aim was to design an environment, in which the students could learn by asking their own questions, working in collaboration with peers and most importantly taking responsibility for their own research positions; all this embedded within a topic, which is currently reshaping the games industry most of them will become part of. Many video game companies address the problem of unsustainable production and consumption but the attempts to make a change are very recent.[2] In the "Green Gaming" seminar then the students had the chance to confront themselves with a problematic that is not an established knowledge but a knowledge in the making; also, one of highly ethical relevance and often critical towards its own modes of production.

The idea for **collective learning**, which constitutes the foundational pedagogical framework in the innovative seminar format, is an interpretation of "peer learning", described as the process, in which students are simultaneously learning and by doing so contributing to other students' learning (Boud 2002)[3]. I am particularly interested in the so-called "reciprocal peer learning" understood as an equal and mutual communication experience. David Boud elegantly compares it to "… Habermas' notion of an 'ideal speech act' in which issues of power and domination are less prominent than when one party has a designated 'teaching' role and thus takes on

[2] United Nation's "Playing for the Planet" initiative established in 2019. It assembles 29 worldwide video game companies who have pledged to fulfill ecological actions and goals and set a greener standard for the industry.

[3] David Boud, Ruth Cohen, Jane Sampson. 2002. Chapter 1, Introduction: Making the move to peer learning, in Peer Learning. In *Higher Education: Learning From & With Each Other*, edited by David Boud, Ruth Cohen & Jane Sampson. London: Kogan Page Limited. Also available online: https://tomprof.stanford.edu/posting/418.

a particular kind of authority for the duration of the activity" (2002). The temporary removal of authority in a specific learning situation then allows the students to learn from one another, to gain more independence in their actions and to voice their opinions more freely. In such a set-up, the professor or lecturer takes on a role of the moderator, facilitator or a mentor rather than an authoritative teacher. The learning activities are student-directed, so they resemble workshops rather than one-sided lectures. Also, peer learning as a didactic framework gives a lot of interpretational freedom as it is not a single practice. It may refer to a wide range of activities, such as: peer mentoring, group work, group discussions, collaborative writing and reading.

The "Green Gaming" experimental seminar was designed to systematically reflect **learning by doing** beyond the neo-liberal understanding of what "applied" knowledge means. Peer learning has been set-up as a series of research tasks performed in predefined groups and aligned with three research workshop sessions, in which the students were working in teams towards specified research outcomes (a detailed description of the innovative format will follow in part 3 "My Didactic Experiment").

The learning outcome of this teaching portfolio can be summarized as follows:

WHAT: To reflect my own teaching practice and its influence on the students' learning process

HOW: by designing didactic method and format within the context of a selected seminar

WHY: in order to enhance the students' learning capacity and to share the findings with other colleagues across humanities and design-informed disciplines.

The main takeaways for further considerations based on the delivered format:

1) Learning as/by doing
2) Doing as a cognitive process
3) Team-led research as the central element of doing
4) Peer learning
5) Taking responsibility and action (the format of the seminar makes it difficult for a student to stay a passive observer; everybody needs to actively participate)

2. My Teaching

2.1 Target Group and Content (Context)

At Cologne Game Lab (TH Köln) I teach students across all semesters in two study programs: B.A. Digital Games and M.A. Digital Games. As a professor for Media and Game Studies I design seminars in the interdisciplinary field of game studies, taking into account perspectives from: media theory, play theory and player research. Since summer semester 2020 when I joined TH Köln, I have delivered the following seminars:

Summer Semester 2020

- **Introduction to Player Research** (B.A. Digital Games, 2nd semester)
- **Diverse Perspectives on Players I** (B.A. Digital Games, 4th semester)
- **Diverse Perspectives on Players II** (B.A. Digital Games, 6th semester)
- **Critical Study of Players** (M.A. Digital Games, 2nd semester)

Winter Semester 2020

- **The Study of Play** (B.A. Digital Games, 1st semester)
- **We are All Players** (B.A. Digital Games, 3rd semester)
- **Self-initiated Project** (B.A. Digital Games, 5th semester)
- **The Ambiguity of Play** (M.A. Digital Games, 1st semester)

Summer Semester 2021

- **The Study of Players** (B.A. Digital Games, 2nd semester)
- **Games and Queerness** (B.A. Digital Games, 4th semester)
- **Work and Play** (B.A. Digital Games, 6th semester)
- **Green Gaming** (M.A. Digital Games, 2nd semester)

Since the seminar I am describing within the context of innovative didactic format (part 3, “My Didactic Experiment”) has been delivered in the M.A. Digital Games, I would like to shortly discuss my teaching against the backdrop of the CGL’s M.A. graduate profile.

CGL's M.A. graduate profile[4]:

"In view of the dynamic development of audio-visual media in the process of digitization in general and the rapid development of the games industry in particular, graduates have the necessary **knowledge of media history and media theory** as well as sound **artistic knowledge** and perspectives **to not only serve the status quo of this industry, but also creatively shape it for the future**.

Finally, the graduates are **well-rounded artistic-academic personalities** who are not only capable of practical media work in the field of digital games and other gamified applications, both nationally and internationally, but also of **further artistic-academic research and teaching**, especially doctoral studies, in fields such as Game Design, Game Studies, Media Studies, Informatics, Fine Arts etc."

In the above graduate profile excerpt the emphasis is laid not on the acquirement of purely practical and vocational skills, but on the cross-disciplinary knowledge with high humanist values, which would contribute to shaping our graduates into "well-rounded artistic-academic personalities". Such a graduate profile extends towards the media industry's expert labor market on the one hand, and prepares for the academic career path on the other. In my teaching in the M.A. program, I try to confront the students with challenging academic questions as well as give them an idea of what academic research as a process entails to inspire and inform potential doctoral candidates. In the last three semesters, all the seminars I offered (Critical Study of Players, The Ambiguity of Play, Green Gaming) challenged the popular perceptions of digital media and video games, introducing historical, ethical and political dimensions. By choosing topics such as "green gaming", I am also anticipating the future skillset, which is not yet part of the video game industry, but which will be increasingly opening up as video game companies try to understand the impact of their production on climate change.

The interdisciplinary field of game studies is of great interest to both B.A. and M.A. students at CGL. In the modules representing more applied and artistic perspectives (Game Arts, Game Informatics and Game Design) the students acquire and polish their

[4] Graduate profile as described in the M.A. Digital Games Module handbook: https://colognegamelab.de/wp-content/uploads/2020/09/MA-Digital-Games-Module-Handbook-September-2020.pdf.

technical and artistic skills. The Media and Game Studies modules (delivered across all semesters) allow them to reflect their own practice in a more critical and scholarly way. Game Studies (to a certain degree comparable to Film Studies) give our students the theoretical horizon and the analytical toolset to understand the medium in which they are expressing themselves. Many of the students at CGL see themselves as conscious artists and designers, not only as mere content creators. The program strengthens such a profile by interweaving artistic and scientific teaching and closely connecting research with application in order to develop artistic-scientific action and reflection skills in the students (as specified in the Module handbook in footnote 4). Another important emphasis is laid on the ability for interdisciplinary collaboration in project work. The "Green Gaming" seminar, introduced in this teaching portfolio, has been an attempt to train the students in **collaborative research** as opposed to applied collaborative work on game projects, which is familiar to most of them. Since the seminar has been designed as a series of collaborative research workshops, the students gained a perspective on modern humanities research as one that is not only carried out individually but increasingly pursued in interdisciplinary research teams as well.

The emphasis on team research-led work and in-depth academic analysis of the sustainability question in gaming also contributes to the professional orientation of our graduates in science: "the program qualifies students for activities in the fields of education and science as well as for a doctorate in the field of game studies or game design" (see Module handbook referenced in footnote 4).

2.2 Teaching Philosophy

Motto: *Curiosity and independent thinking as the main drivers of learning*

My interest in and the admiration for teaching stem largely from the motivating attitude I was exposed to as a child of a passionate teacher that my mother had been. Therefore, as a scholar I am not only devoted to conducting high-quality research, but also to educating media and game studies researchers as well as practitioners. I see didactic activity as a vital part of professorial career path, which gives me an opportunity to share cutting-edge research and shape the curriculum for my discipline on the one hand, and get inspired by the students' work and thinking on the other.

The driving force behind my didactic philosophy is to inspire future generations beyond the use of their knowledge in applied contexts. As a humanist, I see curiosity and independent thinking as central factors, which make it possible to critically approach the digital media landscape beyond neo-liberal frameworks. It is vital that my students stay restless, learning to question, to (re)search, and to never be content with ultimate answers. Humanities-driven approaches within media and game studies equip the students with **analytical tools** to approach digital media not as products to sell or objects to design, but as complex networks of relationships underpinned by issues of ethical nature.

My approach to higher education didactics has been shaped by my own experience as a young student of English Philology back in years 2002-2008. The professors and lecturers who inspired me the most and whose teaching stayed with me until today were those, who managed to create an atmosphere of epiphany in their seminars, leaving the students metaphorically in the clouds for hours after the seminar had ended. Such sessions were not only transporting knowledge but more importantly strengthening my inner drive to pursue the topics and questions further. The best seminars made me feel as a partner in the discussion, always able to challenge the perspective of my student peers and the professors. These ideals of a humanist university education have accompanied me throughout my didactic career. On the other hand, the didactic coaching at TH Köln in the past year, allowed me to rethink my own teaching in a more structured and strategic way, taking into consideration the importance of well-designed learning outcomes and evaluation formats.

As an academic teacher I have always tried to foster active student participation. In my understanding, seminars and lectures are not places for one-directional instruction or schooling, but arenas for experimentation and free exchange of ideas and academically-informed opinions. Such a perspective requires a transition from an authority-oriented towards student-oriented teaching model. Therefore, in my teaching I always mix the traditional delivery of knowledge (e.g. lecture format) with student-led processes, in which they can learn in a more active way (workshops, research seminars, discussion seminars).

3. My Didactic Experiment

Institute: Cologne Game Lab, TH Köln

Program: M.A. Digital Games

Module: Advanced Media & Games Studies

Seminar: “Green Gaming”

The didactic innovation discussed in this portfolio has been tested in the seminar delivered within the framework of the module Advanced Media & Game Studies offered at Cologne Game Lab in the M.A. Digital Games program. The Advanced Media & Game Studies module includes seminars in media theory and media history, play theory and entrepreneurship. As one of three professors involved in the module, I offer humanities-focused sessions in digital media theory, game studies and play theory.

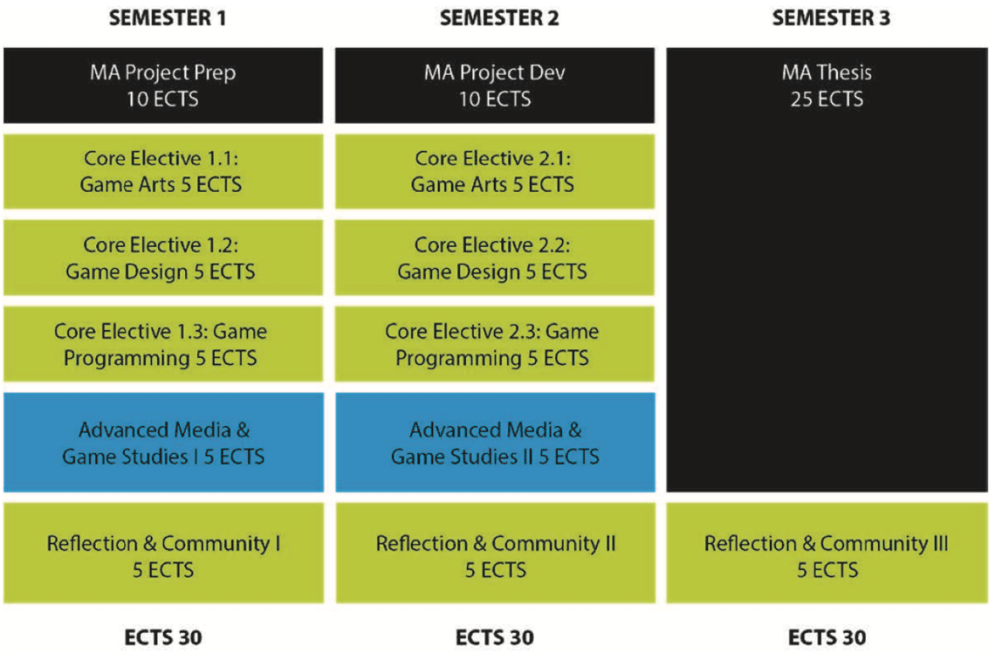


Fig. 1 Existing didactic framework in the M.A. Digital Games program. The “Core Elective” courses belong to the Advanced Game Development module.

3.1 Concept

The learning outcome of this teaching experiment can be summarized as follows:

WHAT: To study sustainability within the context of video games development, design and gameplay
HOW: by working collaboratively in research teams (searching and reading relevant literature, brainstorming, discussing)
WHY: in order to become more aware game designers, media users and researchers, equipped with a scholarly toolset to foster future change.

My didactic experiment took the form of a seminar designed in a format of **collaborative research workshops**, in which the students actively explored the thematic areas by collecting relevant resources, formulating possible research questions and thinking about the most suitable methods to approach them. The goal was to map out a research landscape for green gaming by building up an archive of validated scientific and journalistic resources accompanied by potential research questions, which the students could further explore in their final essays.

The **collaborative research character** of the seminar format was not only applied to the seminar sessions (three workshops) but also to the evaluation format. The collective research outcome of the seminar is a "Green Gaming" magazine including selected data collected during the seminar and all the essays written by the students. The goal is to distribute the magazine to the student and researcher community at CGL and TH Köln (in a digital and if possible, print version). The students are required to submit drafts of their essays, which will then undergo a peer-review process (by their student fellows and the professor). Only then, will the students be asked to complete their essays and submit before the official deadline on the 30th of July 2021. The peer-reviewing step has been built into the seminar format in order to:

a) extend the students' participation into the evaluation phase,
b) allow the students to learn how peer-reviewing works in a professional academic context (the students are reviewing their work according to a guide based on an existing reviewing guide used by the *Journal of Gaming and Virtual Worlds*, I co-edit),

c) develop a sense of team work in the students, also in the evaluation phase, which is usually a solitary endeavor.

On a thematic level, the seminar was an attempt to rethink video games and gaming within the context of (un)sustainability of digital media. The students were confronted with a map of crossovers between gaming and ecology including three perspectives and based on those were divided into three research groups, each one confronted with a guiding "leading research question":

1. **Material infrastructures**

   Leading research question: *How much is digital gaming culture grounded in earthly matter?* We will approach questions related to gaming hardware, material excavation, digital waste, cloud computing and CO2 production.
2. **Development and production**

   Leading research question: *How does game development relate to sustainability?* We will explore the idea of "green coding", energy saving and an eco-friendlier video game production.
3. **Games for future**

   Leading research question: *How can games educate about climate change?* We will explore diverse serious games about ecology and try to locate game mechanics and design patterns, which have the capacity to critically approach the complexity of climate-related problems.

Planned learning outcomes

The participants of this will:

a) reflect the question of sustainability and energy consumption in video games,
b) map out and collect interdisciplinary scientific material on sustainability in gaming,
c) rethink game design and gaming practice from the perspective of sustainability,
d) work in research groups on one of the selected green gaming perspectives,
e) submit essay projects, choosing a specific aspect of gaming to analyze within the context of sustainability.

Exam format

Essay project (**100%**): Students will choose an aspect of green gaming (material infrastructures, development and production, games for future) and explore the selected perspective within the context of sustainability. The essay may be a descriptive work mapping out the field, an argumentative intervention into the topic, an opinion piece or a green video game review.

Format and submission: between 2250 and 2500 words (excluding bibliography). Make sure you stay within the word-limit (10% length-adjustment is allowed). Submit your essay to our Spaces website by the 30th of July 2021.

Before the final submission, the students are submitting "first drafts" on the 25th of June. By the 1st of July, they all receive feedback aligned with the peer-reviewing form (shared beforehand with every student). Peer-reviewing is done by the students themselves as well as by the professor. Based on the reviews, the students are reworking their essays toward the final submission. Such a design of the submission phase allows the professor to give both **formative** and **summative feedback**.

During the grading phase (by mid-September 2021), two student research and teaching assistants will be working on a layout for the "Green Gaming" magazine, which will bring all the student essays together into a coherent digital publication to be then distributed amongst CGL students and staff, and if successful also in other interested departments at TH Köln.

3.2 The Process

Teaching took place online over four platforms:

a) **Zoom** for seminar "kick-offs", discussions and communication of research outcomes after each workshop session
b) **Discord** for asynchronous follow-up discussions between the students and an efficient way to reach out to the professor
c) **Miro** as a collaborative group work canvas

d) **Spaces** as a static seminar website where lecture notes, reading materials and seminar syllabus can be accessed at. It is also a platform for submitting the drafts, peer-reviews (in the comments section) and final essays.

The "funnel" structure of the seminar

The students start the seminar working in teams. They use the outcomes of their group work to prepare their own essays. In the end phase, their individual work will be brought back onto the collective stage. The peer-review process and the magazine will encourage all the students to read their peers' articles. Such a model facilitates a co-learning context; one in which the students not only learn from the lecturer/professor and from academic sources, but also from one-another.

- **Session 1:** Introduction to Green Gaming

  12th of April 2021 (14:00 – 17:15)

  Opening lecture and discussion on Zoom based on reading assignment for session 1. Division into research groups for the upcoming three workshop sessions.

  Assigned reading:

  Chang, Alenda, Parham, John. Green Computer and Video Games. An Introduction. *Ecozona,* vol. 8, no. 2: http://ecozona.eu/article/view/1829/2095
- **Session 2:** Research Workshop

  19th of April 2021 (14:00 – 17:15)

  Group work with Miro board and break-out rooms in Zoom

  Group 1 *Material infrastructures*

  Group 2 *Development and production*

  Group 3 *Games for future*

  Session 2 research output per group will comprise a broad map of the selected thematic field, including:

  A list of applicable academic and journalistic resources or "green video games" and green game design initiatives (in case of group 3)

  At the end of the session, you will share your research output, first critical impressions and any questions that will have arisen during the mapping out phase (Zoom).
- **Session 3:** Research Workshop

26th of April 2021 (14:00 – 17:15)

Group work with Miro board and break-out rooms in Zoom

Group 1 *Material infrastructures*

Group 2 *Development and production*

Group 3 *Games for future*

Session 3 research output per group will involve:

A close analysis of a selected reading from the pool you have collected in workshop 1 (in case of group 3, a close-play of a selected serious game about climate change, sustainability, ecology etc.)

At the end of the session, you will share your research output via Zoom.

- **Session 4:** Research Workshop

  3rd of May 2021 (14:00 – 17:15)

  Group work with Miro board and break-out rooms in Zoom

  Group 1 *Material infrastructures*

  Group 2 *Development and production*

  Group 3 *Games for future*

  Session 4 research output per group will involve:

  Formulated initial research questions and problems related to your thematic field. The third group can focus on e.g. three best-practices in applying game mechanics to educate about and visualize the problem of sustainability and climate change.

Exemplary screen captures of the platforms used for teaching

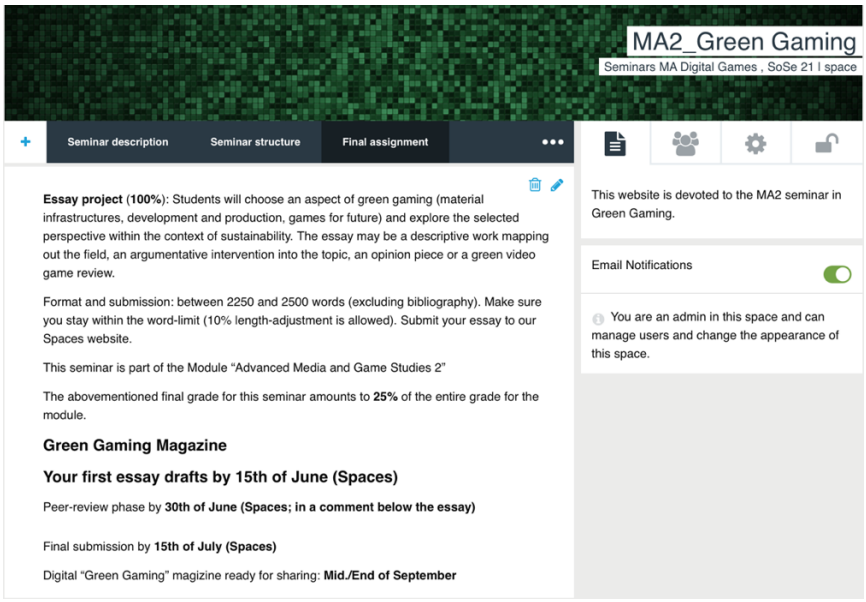


Fig. 2 Spaces website set-up for the seminar

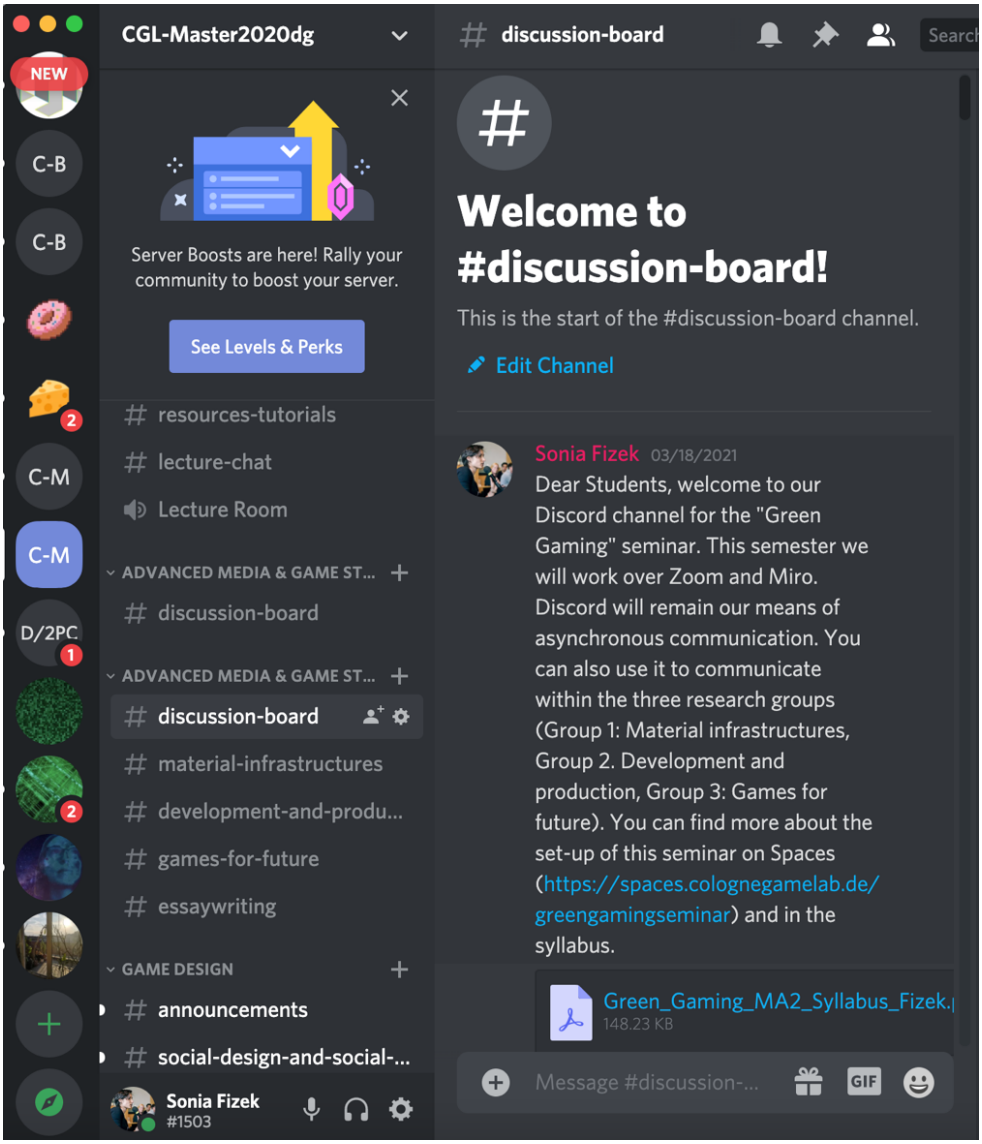
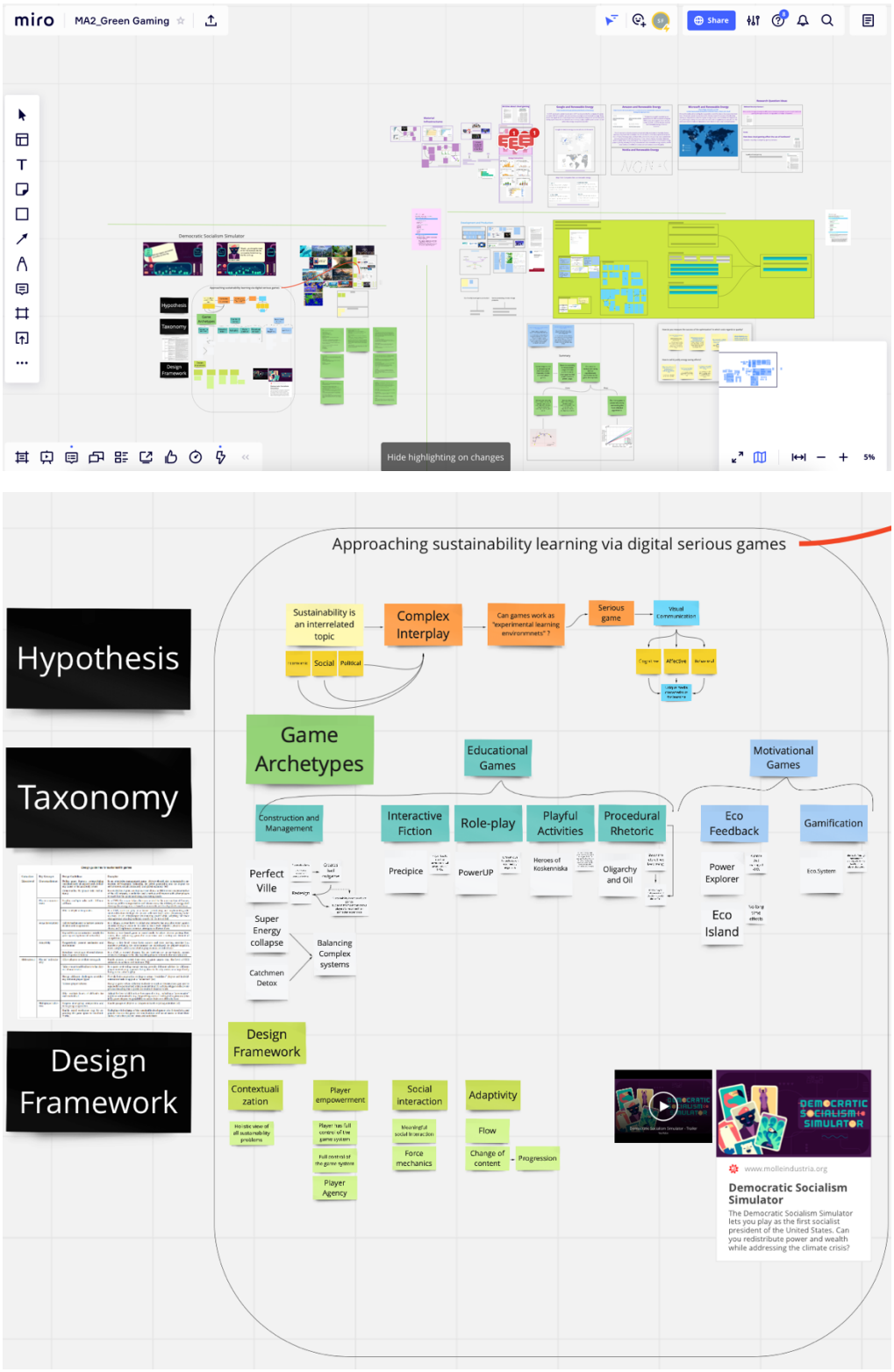


Fig. 3 Dedicated **Discord** server with four thematic channels: discussion board (for general announcements), material infrastructures (for research group 1), development and production (for research group 2), games for future (for research group 3) and essay writing (a channel used in the draft writing, peer-reviewing and submission phase)



Figs. 4, 5 A **Miro** board illustrating the outcomes of student team work in three research groups. Figure 4 shows an entire board with all the groups and their outcomes. Figure 5 is a close-up of the central part of the bord belonging to group 3: Games for future.

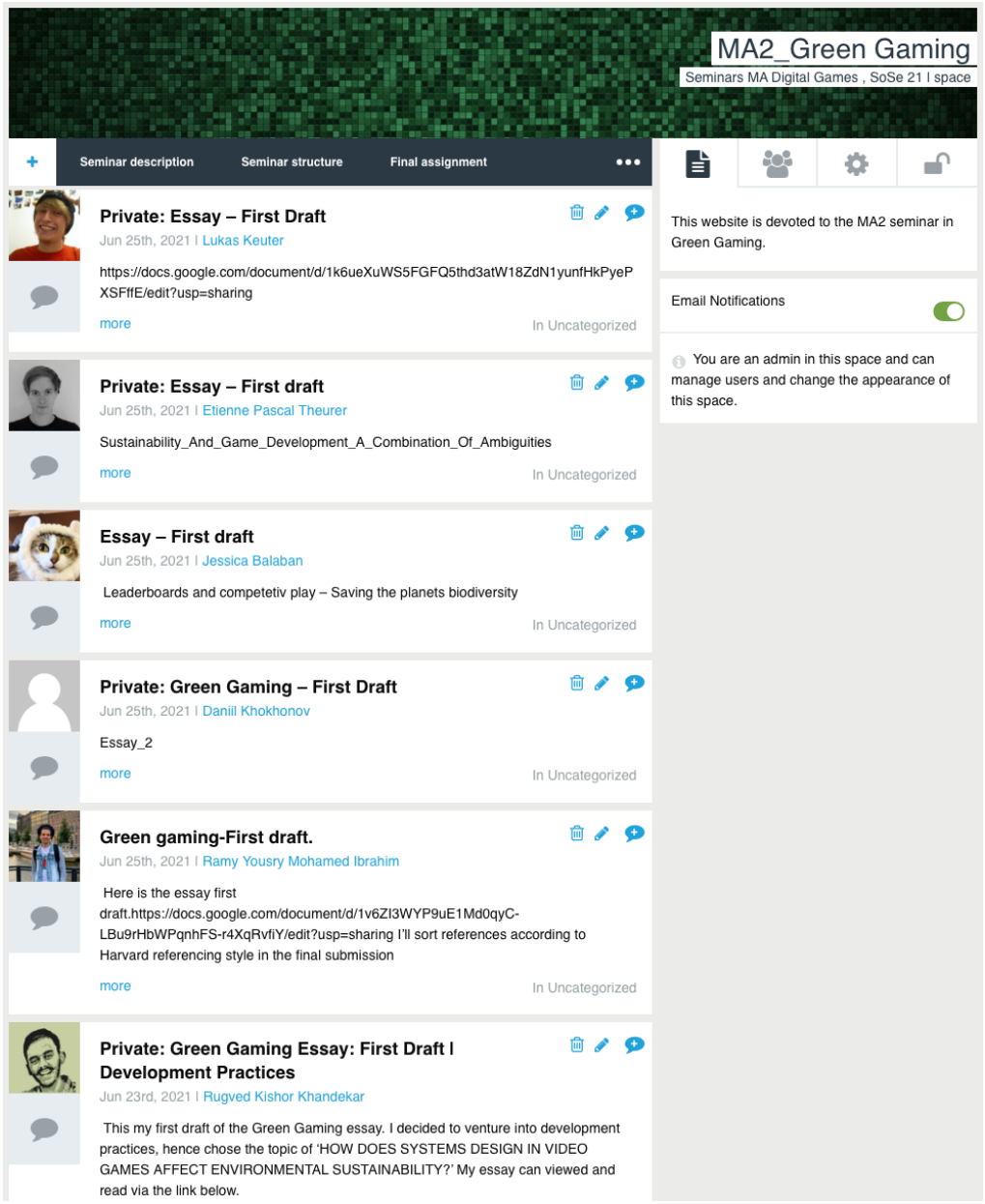


Fig. 6 First drafts of the written work, submitted by the students on the 25th of June.

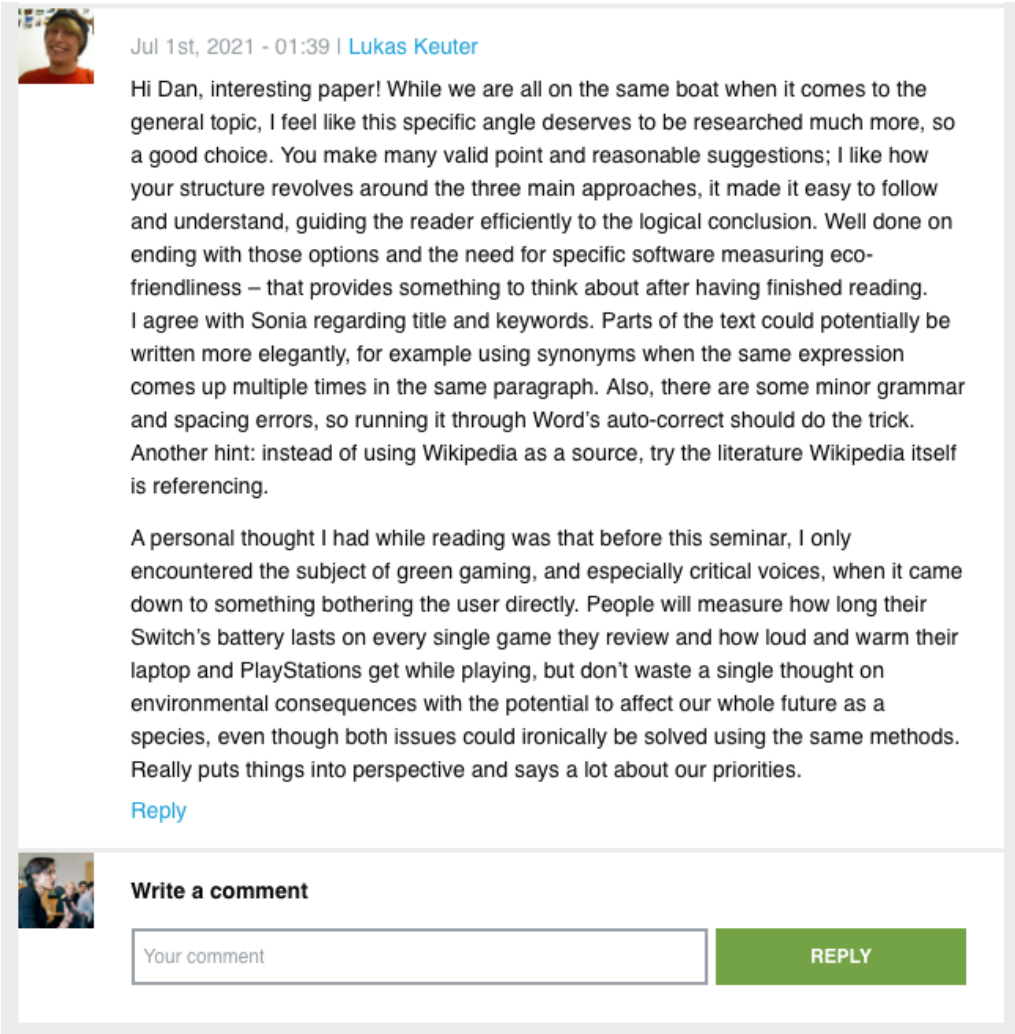


Fig. 7 An exemplary peer-review provided on Spaces by one of the students for their colleague (all submitted essay drafts received peer-reviews from the students themselves as well as from the professor / myself)

Wider context

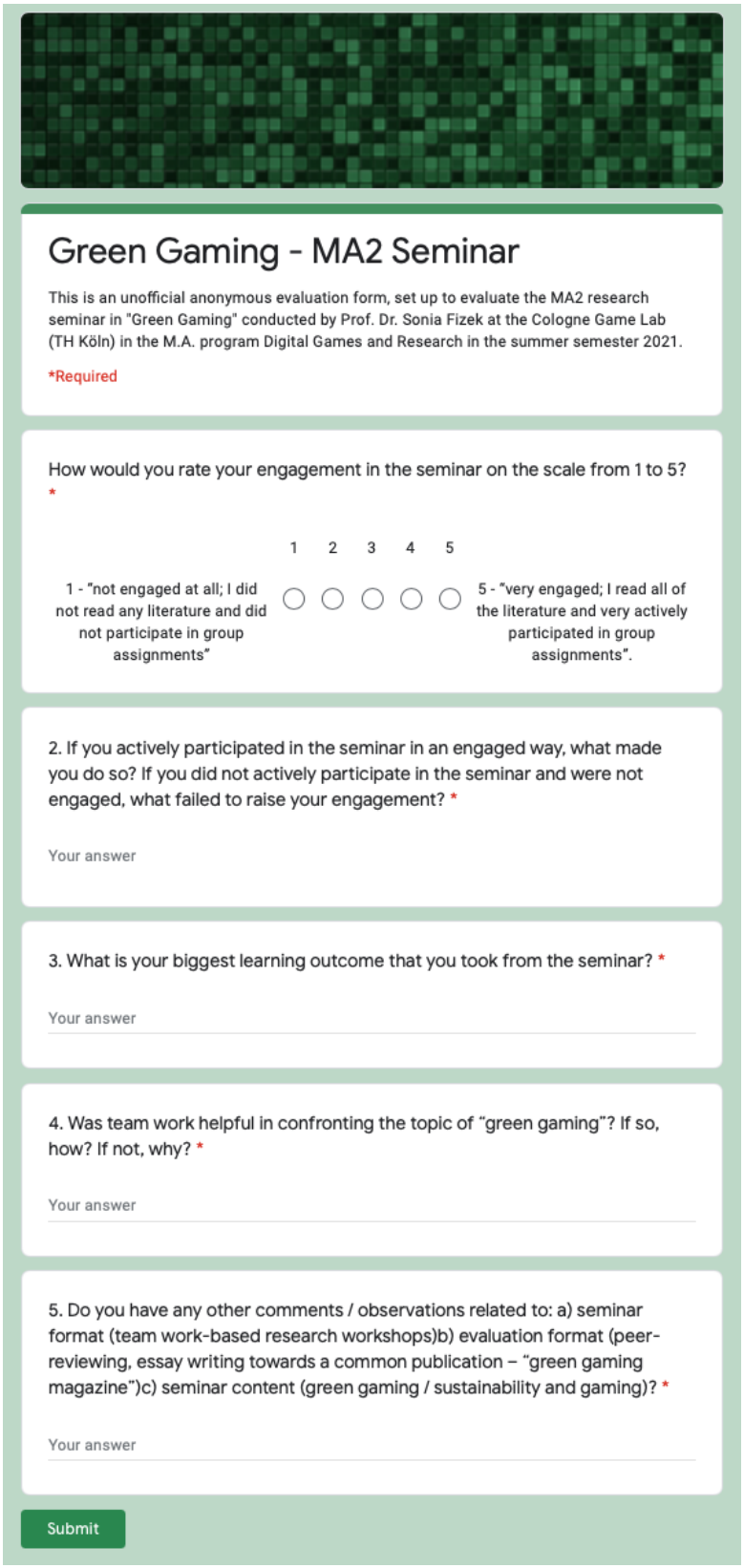
The seminar's format took place within the context of CGL's M.A. program, TH Köln's didactic strategy and within a broader context of an interdisciplinary grant application submitted within the framework of European Union's Erasmus Plus funding program.

The research seminar has been introduced as a pilot experiment of a bigger international project (see attachment 1), planned with three partnering universities, in which we will be working on modular curriculum on green gaming and the means to integrate it into the diversity of game-related higher education programs. In this portfolio, I would like to briefly expand the chosen format by reaching out to the curriculum and showing how the conceptualized modules (partially reflected in the

topics covered in the pilot seminar) could be implemented into the already existing BA and MA programs at CGL.

3.3 Evaluation

In this section I would like to provide my own reflection based on the observations, the students' answers provided in the evaluation questionnaire (see figure 8 on the following page 19) as well as feedback received from my didactics coach, Dr. Cornelia Kenneweg. Questions for a short evaluation survey were distributed amongst the students on the 29th of June via the official seminar Discord channel. The form was to be filled out anonymously by the 4th of July. The entire feedback has been shared in Attachment 4 (see Appendix list at the end of this document). What I wanted to find out through the questionnaire is how the student estimate their own engagement, how they perceive collaborative team work, whether working towards a common goal (the "green gaming" magazine") has influenced their overall motivation for learning, whether they have a sense of having learned something about sustainability in the context of video games.



Green Gaming - MA2 Seminar

This is an unofficial anonymous evaluation form, set up to evaluate the MA2 research seminar in "Green Gaming" conducted by Prof. Dr. Sonia Fizek at the Cologne Game Lab (TH Köln) in the M.A. program Digital Games and Research in the summer semester 2021.

*Required

How would you rate your engagement in the seminar on the scale from 1 to 5? *

	1	2	3	4	5	
1 - "not engaged at all; I did not read any literature and did not participate in group assignments"	◯	◯	◯	◯	◯	5 - "very engaged; I read all of the literature and very actively participated in group assignments".

2. If you actively participated in the seminar in an engaged way, what made you do so? If you did not actively participate in the seminar and were not engaged, what failed to raise your engagement? *

Your answer

3. What is your biggest learning outcome that you took from the seminar? *

Your answer

4. Was team work helpful in confronting the topic of "green gaming"? If so, how? If not, why? *

Your answer

5. Do you have any other comments / observations related to: a) seminar format (team work-based research workshops)b) evaluation format (peer-reviewing, essay writing towards a common publication – "green gaming magazine")c) seminar content (green gaming / sustainability and gaming)? *

Your answer

Submit

Fig. 8 Evaluation questionnaire

Reflection based on selected student feedback

The first question of the questionnaire pointed towards self-assessment of engagement on a scale from 1 to 5, where 1 describes the lowest engagement and 5 the highest degree thereof.

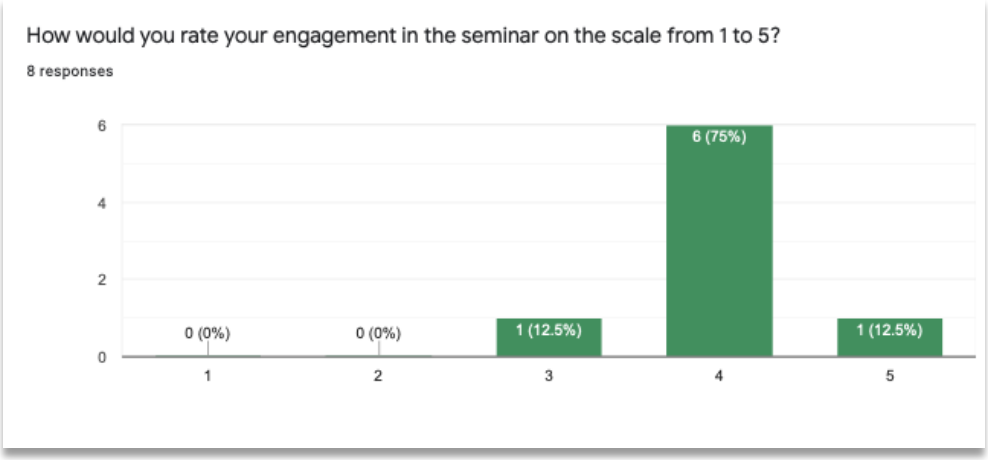


Fig. 9 A graphical representation of the responses to the first question (based on data collected from 8 respondents)

As a reason for high engagement, most students tend to point towards Miro board, one of the tools we used for team work. They had the feeling they were able to collaborate and voice their opinions in a balanced way. Some suggested a more focused thematic scope, so that the shared ideas have more relevance to the other research groups (we had three in the seminar).

> ***Respondent 3:*** *The subject is very close to my heart and your way of teaching and interacting with the students is exemplary, I really want to stress that.*

> ***Respondent 1:*** *I liked the discussion part, but i general many students like myself need a better spotlight. Ideas they come up with, should be relevant to the rest of the class. In a normal lecture its impossible to have agency without taking it away from others. So in class we need a way to contribute individually. I would suggest given different students different roles. The Miro board was a pretty smart and engaging tool, just needs a little more push.*

> ***Respondent 6:*** *I was engaged because the methodology used in the seminars. We students were very actively involved and contributing during it. It wasn't just some professor telling tall tales. Also one of the important factor was the freedom granted to us. We had the freedom to choose any of the 3 green gaming branches, then we had the freedom to choose any*

topic, any literature, read it, note our findings down anyway possible. No rules and restrictions. It can't get any more free than this.

Respondent 7: All in all the topic is very new and I had to make it fun myself by choosing interesting groups for the group tasks, and interesting topics for the assignment.

It seems that most of the students were able to gather a lot of knowledge and inspiration from the collaborative seminar.

Respondent 1: *That Cloud-Gaming has a huge ecological Footprint and that green has no value for the industry at the moment. I could reflect on that in my essay. Good connection about these seminar tasks!*

Respondent 2: *The first step towards sustainability in game development is linked to the identity of the developer. It is primarily about the motivation and understanding of your own work and philosophy as a developer and what you want to achieve in a sustainable context.*

Respondent 3: *Generally, in what ways games and sustainability are connected in the first place, and personally the analysis of our game of choice as well as the research for the paper gave me a lot.*

Respondent 6: We need to spend way more effort in research on the question, how software (and in particular games) can be become more sustainable. But also all processes of development, Hardware, ... need to be reworked. And we need to rise awareness on such topics, change the mind of our society. we dont have another earth to live on.

Respondent 7: *Learningthat Green Gaming exists and what it means. I personally never thought about it since the media around us tends to focus on more glaring examples on how to contribute to a cleaner planet.*

When it comes to the perception of the efficiency of team work, the opinions were a bit more critical. All students appreciated team work as it gave them more responsibility and sense of contribution, but some wished more direction or management on the part of the professor by e.g. assigning specific roles to the students in the team.

Respondent 1: *Its a tricky one. Much more discussion is needed on that one. I would stick with the team idea because it lowers the chances that somebody just "floats with the river". Give the students more direct roles/jobs to foster responsibility.*

Respondent 2: *It was very helpul in exploring the (three, in our case) different aspects of Green Gaming because you could focus on what you wanted to work on the most, but still get a lot of input in the other regards.*

The teamwork itself however suffered, as I mentioned before, but has quite some potential regardless, in my opinion.

***Respondent 5**: Yes. It was helpful. All of us coming from different knowledge backgrounds and experiences, it was a good way to put diversity in the thoughts. Also my team wasn't too small and was neither too big and the members are pretty competent and thoughtfull as well. That might also be the reason I find the team work beneficial here.*

The last open question gave the student the possibility to voice their opinion regarding the **seminar format** (collaborative research workshops), **evaluation format** (peer-reviewed essays to be published in a self-made "green gaming magazine") as well as **seminar content** (sustainability and gaming). Here, the majority of feedback was positive. Some students wished more emphasis on game design (as opposed to media and ethics). This wish corresponds to my observation related to their comfort zone (see next section). The evaluation format seems to be a very motivating factor, which is very helpful in making the students deliver as good final submission as possible. Usually, the final work is delivered in order to "score" a desired grade. My rationale behind the common publication was to bring more attention to their inner motivation in the laborious process of writing.

***Respondent 1:** I like your style. I think game design should be much more in your attention, even when its not the academical core. It links interests.*

***Respondent 3:** b) The magazine is a brilliant idea - hugely motivating to work towards! Nothing feels "wasted" and you begin to feel a sense of pride. :)*

***Respondent 5:** Yes, I do have some suggestions regarding the peer reviewing process. Maybe it's better to let students choose their own peers to review their texts. Because the topics of the essays are very diverse and not everybody knows each topic. But sometimes we students just know that this specific student knows comparatively more about our topic and hence think it would be better for us to be get reviewed by them. For me, I am happy. My partner is the best peer reviewer I could wish to have from our class at least. But I have noticed unrest and dissatisfaction among the others.*

***Respondent 8:** If we had covered these topics as lectures and slides, I probably wouldn't have learned anything. It has been very useful for me to research and write an essay myself. If it were not for the guidance of the lecturer in the course, I probably would not have learned so effectively. In general, I can say that this course was the best of the courses I took this semester. I wanted to do peer-reviewing. The reason for this is that I do not want to be informed not only about my own position, but also about the subject of others. So the peer-reviewing system seems like a useful one.*

Concluding remarks

The design of the seminar as a series of research workshops has allowed me to decentralize the teaching process and provide the students with more empowerment and responsibility. This took place within a specific framework, however, the students had a lot of freedom with regards how they interpret the research task, what literature they collect, what they decide to read as a team and how they use the research outcomes to build up their own essay topics. It is not the first time I have used mentoring and facilitation in the context of collaborative learning, but this time I have decided to apply this method to the entire seminar. I have also decided to empower the students in the evaluation phase and give them the opportunity to read their colleagues' essays and provide guided peer-reviews. This was not a mandatory task, but a great majority of studentsßüä+# participated in the peer-reviewing stage. If I had the chance to run a similar seminar format in the future, I would consider streamlining the thematic scope a bit. Some of the topic clusters were more demanding than others and the students had to reach out of their comfort zone (also noted by the coach after the hospitation). The research group assigned to the third theme (*Games for future*) performed at the highest level. The reason may have been the closeness of the topic to their applied and artistic practice. The second theme cluster (*Development and production*) required more abstract thinking; hence it was more challenging. The students performed quite well due to their own interest and experience in the game development processes. The first thematic cluster (*Material infrastructures*) was the most problematic one. It was embedded in media theory, ethics, politics and required the most abstract and theoretical thinking. This turned out quite challenging. It may have been due to the capacity of the students. If I could thematically iterate on this seminar, I would divide the students into three research groups and ask each to focus on: production, development and design respectively. The material and ethical aspect would be a smaller part of each of the themes. This could make the task potentially more approachable. Also, based on selected feedback in the evaluation form, I would consider giving a bit more guidance within the framework. Some students felt they needed concrete "roles" to be assigned in their teams.

Diversity question

The question of diversity has been embedded into the format and the topic of the seminar. The format allows for a diversity of opinions and gives the students possibility to create their own knowledge, form opinions and decide on the reading material (within a specified framework). The student group is quite diverse, culturally and ethnically (at CGL, we have students from over 40 different countries). The topic itself ("green gaming") is politically and ethically sensitive, so it fosters a certain non-hegemonial and partially non-capitalistic position towards the art of video game making and playing.

4. Summary and Future Didactics Research

The efficiency of **collective peer learning** in a research-led seminar has not been confirmed by a quantitative study. However, a lot of conclusions may be drawn based on the observations of students' engagement in the sessions, their contribution to the research tasks as well their readiness to participate in non-compulsory peer-reviewing of essay drafts (13 out of 15 students confirmed their readiness to read and review their peers' essays). For the first time in my over 12-year-long teaching career, I could observe not only a near 100% attendance in all the sessions (CGL seminars tend to have very high attendance rates), but also a student involvement of the whole group. In an average seminar scenario, usually a few students are quite active while the rest participates as a more passive audience. The high engagement of the students in this seminar may be due to the fact that the individual essays are planned as contributions to a collective digital magazine. This makes the students see a common goal to work towards beyond the in-seminar tasks.

The coaching program offered by the Zentrum für Lehrentwicklung of TH Köln created an opportunity for me to reflect my own didactic practice and think about new ways to approach teaching. It was the first course in higher education teaching, which turned out to be a genuine support rather than a bureaucratic hurdle. It inspired me to perceive didactics as a viable option for a research project. Also, the personal mentor (Dr. Cornelia Kenneweg) assigned to me for the duration of the year was of immense support. We have been meeting in one-hour-long sessions a few times each semester, discussing seminar ideas, evaluation models and portfolio possibilities. Dr.

Kenneweg has also observed one of the sessions in the “Green Gaming” seminar, providing me with evaluation and feedback.

The “LehrendenCoaching” program inspired me to consider didactic research as a viable option for an international project and grant acquisition. In May 2021 on behalf of the Cologne Game Lab (Principal Investigator) I submitted a grant within the framework of the Erasmus Plus program (Cooperation partnerships in higher education), inviting three other higher education institutions: University of Turku in Finland, Charles University in Czech Republic and Breda University in the Netherlands. The main objective of the project titled “Greening Games – Building Higher Education Resources for Sustainable Video Game Production, Design and Critical Game Studies” is to develop, test and distribute flagship didactic materials addressing the interdisciplinary nature of green digital gaming. These are to be tested in selected higher education programs and finally shared as open access content for the broader academic and teaching community to use. It is our core strategic responsibility to educate students about the relations between digital games and environment. The more aware students of today will become greener game designers, programmers, and academic leaders of tomorrow. At the center of our partnership’s didactic philosophy are human responsibility, ethical game design and sustainable gaming culture. The specific objectives of the project are:

a) To raise awareness among bachelor and master’s degrees students enrolled in media and game related programs about the environmental impact of digital games.
b) To increase students’ knowledge and adaptation of existing solutions allowing to reduce negative impacts and maximize the medium’s potential for conveying positive environmental behaviors.
c) To spark research interest in the improvement of those existing solutions and in the development of new ones by getting more students to choose topics related to green gaming for their bachelor and master thesis.
d) To facilitate the uptake of pedagogical resources on green gaming by lecturers and professors in game design, media, and cultural studies degrees. SO5: To lay the ground for the establishment of a European community working on green gaming.

The “Green Gaming” seminar will allow me to more consciously approach the task specified in the grant application and rethink the importance of format and content, teaching and research. The collaborative research-focused workshops are a possible option to teach ground-breaking contemporary topics in a student-focused way.

5. Appendix

a) **Attachment 1:** Grant proposal

b) **Attachment 2:** Seminar syllabus

c) **Attachment 3:** Peer-review guide

d) **Link:** Evaluation questionnaire (may be accessed under: https://forms.gle/M45e4c2BX1RK12ic8; also visible in figure 8)

e) **Attachment 4:** Evaluation results (answers from the filled-out questionnaire represented in an attached spreadsheet document)

f) **Links to Spaces, Discord, Miro:**

Spaces: https://spaces.colognegamelab.de/greengamingseminar

Miro: https://miro.com/app/board/o9J_lJQfht8=/

Discord server name: CGL-Master2020dg