Cómo entrenar tu dragon: developing a module to build up AI literacy of HE lecturers

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Abstract

This case study summarised the findings from the first academic presentation of the module 'Cómo entrenar tu dragon (How to train your dragon)', which is part of the development and training programme offered by the Universidad de Las Palmas de Gran Canaria to new and experienced teaching staff. The module aims to equip participants with a theoretical understanding and practical skills to use Generative AI (GenAI) multimodal languages to enhance learning and to develop a critical awareness of the umbrella term 'AI literacy'. The module covers topics such as GenAI and data protection, copyright issues, regulatory frameworks, getting familiar with GenAI large language models (LLM) and the impact of GenAI on assessment. The case study provides information on the type of learning activities undertaken by participants and the final summative assessment. Participants found the module insightful, giving it a total score of 4.813 out of 5 on a Likert scale. Participant feedback suggests that institutional guidance and policies are needed to introduce GenAI tools at the Universidad de Las Pal mas de Gran Canaria so they can use GenAI tools confidently with their students.

Keywords: Spain; HE sector; generative AI; teacher training.

Introduction

The debate around the introduction of Generative AI (GenAI) in higher education (HE) has been present in the Spanish HE sector since 2021. In 2023, the Conferencia de Rectores de las Universidades Españolas (Conference of Rectors of Spanish Universities [CRUE]), which is the biggest association of the HE sector in Spain comprising 77 leading universities, commissioned the report 'La inteligencia artificial generativa en la docencia

universitaria (The AI generative in HE teaching)' (Cruz Argudo et al, 2024) that established the recommendations for introducing GenAI in the Spanish HE sector to enhance teaching. The report also involved the effective training of docentes universitarios (teaching staff) in GenAI through appropriate development and training programmes.

In response, the Universidad de Las Palmas de Gran Canaria (ULPGC), located in the Canary Islands, launched the module 'CETD23 Cómo entrenar a tu dragón: Inteligencia Artificial Generativa para mejorar el aprendizaje en entornos online e híbridos' (How to train your dragon: generative AI to enhance learning in online and hybrid environments) as part of its broader 2021-2025 training plan for teaching and research staff named Plan de Formación de Docentes y Personal Investigador (Training Plan for Teaching and Research Staff [PFD]) 2021-2025.

This case study has been completed with ethical approval from the Director de la Innovación Educativa y Formación del Profesorado (Director of Educational Innovation and Teacher Training). in accordance with institutional policy 'Reglamento 1/2024 del Comité Ético de Investigación Humana de la ULPGC' (Regulation 1/2024 of the Human Research Ethics Committee of ULPGC).

Pedagogical rationale for module CETD23

The module was launched in February 2024 (semester two) to address five key pedagogical objectives:

1. Familiarising teaching staff with Generative AI (GenAI) tools to enhance teaching and assessment.
2. To explore a conceptualisation of AI literacy that prioritises ethical considerations and compassion in HE.
3. To encourage critical discussions on the risks and limitations of GenAI, with a focus on ethics, social challenges and impact on human wellbeing.
4. To explore a reconceptualisation of assessment, academic integrity, intellectual property and copyright in light of the capabilities and limitations of GenAI.
5. Equipping teaching staff with the knowledge and skills to guide their own students.

The module leader supported a vision of HE whose purpose was to bring good and compassion to society and which is rooted in Czerniewicz and Cronin's inspiring book 'Higher Education for Good' (2023) as well as in Krisnamurti's views on education (Forbes 1997). The module leader aimed to write a module that explored the concept of 'AI literacy' and the use of LLMs from a perspective of bringing compassion to HE, rather than focusing on increasing the 'efficiency' of staff and students. This approach was also consistent with the mission statement and core values of the ULPGC.

One of the main challenges the module leader experienced when writing CETD23 was that the ULPGC did not have an institutional policy on AI, nor had it adopted a framework to define the concept of 'AI literacy'. This led the module leader to undertake a literature review of the term, from which a conceptualisation of AI literacy emerged as an umbrella term that comprised the following elements:

- A critical review of existing digital pedagogies to adapt them to the opportunities and challenges that AI brings to teaching and learning (Bearman and Ajjawi, 2023; Okagbue et al, 2023).
- Technical knowledge and understanding of how to use the most common AI multimodal LLMs, such as ChatGPT, Claude, and Copilot (King's College London, 2023).
- A critical debate focused on aspects such as AI ethics, human-centred considerations (egalitarian access, accountability, safety, etc.) (Chai et al, 2020), impact on copyright (Guadamuz, 2024; Marcus, 2024; Narayanan and Kaapor, 2024) and data protection (European Commission, 2021).
- Higher-order thinking skills (Ng et al., 2020) including problem formulation and the ability to break down complex problems into smaller, manageable sub-problems (Acar, 2023a).
- An active awareness of the affordances and limitations of AI technologies that involves both critical thinking and digital skills (King's College London, 2023).

To raise awareness of how Anglo-Saxon capitalism has influenced the perception of GenAI and LLMs across capitalist countries, which also applies to HE, the module leader wanted to include reflections from alternative voices to the dominant vision of AI in a globalised world (Klein, 2023; Morley, 2023; Beetham, 2024). The module leader aimed to

raise awareness of how capitalist attributes such as productivity and efficiency have influenced the set of skills and knowledge identified under the umbrella term 'AI literacy'.

Module CETD23 offers a conceptualisation of AI literacy that integrates dominant trends in academic literature as well as critical voices to the conception of GenAI and LLMs in capitalism. The module sought to build up the AI literacy of teaching staff, understood as the development of both a set of technical skills and critical awareness of the potentiality, limitations, technological, social, environmental, and ethical challenges that the use of Generative AI in HE entails. The module also supports a vision of AI that promotes social awareness, compassion and personal growth in learners, instead of being used merely as a technology to increase learners' efficiency.

Module's development

The CETD23 'How to Train Your Dragon' module is an optional part of the current PFDI. It is worth one ECTS credit (European Credit Transfer and Accumulation System), which is equivalent to roughly two UK CATS (Credit Accumulation and Transfer Scheme) credits. The module includes 25 study hours, spread over six weeks from February 2nd to March 10th, 2024, including the submission of a final assignment.

This module follows a blended learning approach, combining online courses delivered through the university's learning management system (LMS) with live sessions held at the ULPGC's campus and online sessions conducted via Microsoft Teams.

Embedding a critical approach to GenAI through the module's activities

The module is structured into 10 self-contained units, including a welcome/induction section and a final project assignment section (a full module syllabus is provided in the Appendix).

The module's learning activities serve three main purposes.

1. To allow participants (primarily teaching staff) to experience GenAI software, explore its features as students, and use the activities as inspiration for developing their own GenAI-based learning resources.

2. To provide guidance on AI use in teaching, particularly in the absence of an institutional AI policy, by incorporating international guides and recommendations (for example, UNESCO, Jisc, QAA).

3. To encourage participants to question the influence of capitalism on LLMs and GenAI in HE and consider alternative approaches for using AI at universities to support learning.

Key learning activities are listed as follows:

Comparative evaluation of AI chatbots

Participants compared the most popular AI chatbots in Spain (ChatGPT, Bard, LuzIA, Microsoft Bing/Copilot) using evaluation criteria developed by the module leader. The evaluation included technical features, pedagogical uses, and the social responsibility of the companies behind the LLMs (for example, tax locations or the environmental impact of computational resources).

Analysis of terms and conditions and privacy policies

Participants reviewed the terms and conditions and privacy policies of various LLMs, focusing on data processing, storage, legal bases, third-party sharing, and General Data Protection Regulation (GDPR) compliance.

Customisation of AI chatbots

Participants customised AI chatbots (ChatGPT subscription or the free option customising the chatbots of the platform POE free versions) for specific purposes by providing specific sources, data, and writing styles. The exercise highlighted the risks of using commercial GenAI chatbots for institutional or confidential data.

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Practical exercises with different LLMs

Participants engaged in exercises to understand the risks and limitations of GenAI, including hallucinations, cultural biases, and ethical concerns.

Ethical debates

Discussions focused on AI ethics, regulatory frameworks, and the challenges of using copyrighted materials in training LLMs under EU copyright law.

Comparison of regulatory frameworks

Participants compared the EU AI Act with emerging frameworks in the USA and China, using resources like CLaiRK (n.d.), The EU Artificial Intelligence Act (Future of Life Institute, 2024) or The EU AI Act Newsletter (Uuk, 2024). This helped them understand the global AI regulatory landscape and its implications for HE.

Critical reflection on the links between political ideology, economic systems, and GenAI

Online tutorials encouraged debates on the social responsibility and ethical values of LLMs, ownership of prominent systems, and the incorporation of minority cultures and languages into LLMs.

Final project assignment

The module's summative assessment was based on a final project where participants designed a learning activity or assessment method utilising GenAI. The project required participants to write down the following information:

1. Describe the learning activity or assessment method.
2. Identify the target student demographic and academic context.
3. Justify the choice of the GenAI tool and explain how it would enhance learning or assessment.

4. Reflect on the risks and challenges associated with using GenAI in their proposed activity.

The final project allowed participants to apply their understanding of AI literacy to their own teaching practices. The grade for the final project was pass or fail, consistent with the assessment criteria applied to the PFDI. To pass the final assessment, participants were asked to explain how the learning activity they designed related to the digital skills, knowledge, and awareness encompassed under the vision of 'AI literacy' that the module sustained; for example, developing a multimedia artefact using advanced prompting techniques.

Participants were particularly encouraged to design a formative assessment method in which students could use multimedia GenAI software to help them with the final task, but not to complete the final task (this ethical use of GenAI was being piloted at ULPGC as a cornerstone of its institutional policy on AI).

Participation and feedback

The module received positive feedback from participants, with a total score of 4.813 out of 5 on the final evaluation survey.

The initial cohort of participants was limited to 20 (the maximum number of participants per module is 50). Participants comprised academic staff with previous teaching experience, PhD students acting as teaching assistants, and postdoc staff who were new to teaching. The ice-breaking activities included in the introductory unit of the module showed that the first cohort of students were 'early adopters of new technologies', with 100% of the participants feeling confident in their technology skills and reporting that they were accustomed to using approved learning technologies in their classes.

The fact that participants were confident with technology explained their positive attitudes towards the use of GenAI in HE, recognising the potential benefits for enhancing student engagement and personalising learning experiences. However, there was also a level of scepticism regarding the reliability of LLMs as a source of information for specific academic subjects. Technical glitches such as hallucinations (responses by the LLM that

contain false or misleading information as if it were a fact) and inconsistencies were also reported by participants while working with different LLMs to create multimedia content for their own modules. In this respect, several participants reported that, with certain academic sources, ensuring the results created by the GenAI model did not contain any inconsistencies or fabrications took them more time than it would have to create the learning materials by themselves. This view was supported by the rest of the class.

Participants appreciated the international perspective of the module, where they were provided with guidance from international bodies such as UNESCO, Jisc, or QAA, as well as the introduction of a critical perspective, bringing in approaches from non-capitalist countries. In this respect, participants praised the keynote session provided by UK-based researcher and activist Helen Beetham, who offered a critical approach to ethics and regulatory frameworks for AI.

Debates were a popular learning activity within the module, focusing on key aspects such as ethical frameworks and copyright issues. At a time when there was no specific institutional policy on the ethics of AI and the EU AI Act had not yet been adopted, participants had the opportunity to explore the final drafts of the Act and discuss ethical codes, such as the Russell Group's 'Principles on the use of AI in education' (2023), discussing their pros and cons.

The first presentation of the module occurred at a time when the legal use of copyrighted material to train LLMs was unclear. This uncertainty made participants particularly interested in how the module addressed this issue. Specifically, the unit on GenAI and copyright included a thought-provoking article by Guadamuz (2024), which examined pressing questions such as:

- Does the access to copyrighted works for AI training constitute copyright infringement?
- Can AI-generated outputs infringe copyright laws or being considered plagiarism?

The author's analysis was supplemented by different perspectives from blog posts by key AI experts such as Narayanan and Kaapor (2024) and Marcus (2024). These readings were followed by a class debate in which participants were asked to prepare a

comparative analysis of proposed EU legislation and selected cases from the United States. Participants praised this debate as one of the most engaging learning activities of the module, noting that it gave them a new perspective on intellectual property, copyright law, and plagiarism—subjects that are still evolving and open to interpretation.

It is particularly significant to analyse the learning activity or assessment method that participants chose for their final project. None of the participants chose to design an assessment method that promoted the ethical use of GenAI. It is worth noting that the module covered the impact of GenAI on assessment in one of its units, encouraging participants to reflect on concepts such as academic integrity, authorship, and plagiarism. Authentic assessment was introduced within that unit as an approach to design more intelligent assessment methods, including project-based learning, case studies, and inquiries. The unit also provided participants with guidance on how students could make ethical use of GenAI, based on various frameworks, such as the concept of process folio or the PAIR framework (Acar 2023b). Yet, none of the participants applied these new approaches to the design of their assessment methods. During class discussions in the assessment unit, participants expressed that they did not feel confident applying the principles of authentic assessment to their own teaching practices until there was clear policy and guidance from the university on how students should be allowed to use GenAI for assessment.

For their final assessment, participants overwhelmingly chose to customise a GenAI chatbot to act as a digital assistant or tutor for their own students, with 15 out of 20 submissions reflecting this choice. This preference aligns with the fact that the first cohort of participants were early adopters who felt confident in developing prompting techniques and formulating problems so an AI chatbot could act as an online tutor, providing basic guidance and information to students. Participants planned to use these digital assistants while minimising the risks of providing false or inconsistent information.

Two participants designed a learning activity that fostered ethical debate around GenAI, focusing on the risks of using institutional confidential data when formulating questions to GenAI LLMs such as ChatGPT or Copilot.

Finally, three participants designed learning activities that promoted the use of GenAI chatbots (ChatGPT and Copilot) to customise rubrics for formative assessment. In their

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final projects, participants reported that human supervision was still needed to review the customised rubrics before providing feedback to students. They noted that this use of GenAI could only reduce workload for modules with large numbers of students, where generic feedback is provided.

Among the aspects of the module that could be improved, participants highlighted the following key messages:

- A need for more time to work through the different module units and readings.
- A need for more live sessions and synchronous hands-on activities with GenAI chatbots to improve technical skills like prompting, problem formulation, decomposing complex problems into sub-tasks, and getting the best results when working with AI chatbots.

Conclusions

The delivery of the module CETD23 'Cómo entrenar tu dragón' highlighted several key insights.

Need for institutional policies

Participants consistently emphasised the need for institutional guidance on how to use GenAI to support learning, which pedagogical approaches to adopt, and how to guide students in using GenAI ethically. They also expressed a need for institutional direction on the new pedagogical approaches that should be adopted to make the most of GenAI.

The impact of GenAI on human wellbeing

The module effectively demonstrated the importance of raising awareness among participants about the impact of GenAI on social equality (such as equal access to GenAI tools), data protection, cultural bias in training LLMs, and intellectual property, among other issues. Participants gained a deeper understanding of the ethical challenges and responsibilities associated with using AI in education.

Awareness of GenAI risks

The module exposed gaps in participants' awareness of the risks and limitations of GenAI, highlighting the need for informed discussions on these topics.

AI literacy should not be limited to technical and digital skills

The module revealed that participants found critical awareness and reflection on GenAI to be just as valuable as learning how to provide effective prompts to these large language models.

Overall, the delivery of the module could be defined as a successful pilot module to help teaching staff acquire an 'AI literacy' which includes a critical awareness of LLMs and how those models affect society and HE.

Acknowledgements

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Licence

Appendix

The topics covered by the units of module 'CETD23 Cómo entrenar a tu dragón: Inteligencia Artificial Generativa para mejorar el aprendizaje en entornos online e híbridos' (How to train your dragon: Generative AI to enhance learning in online and hybrid environments) are as follows:

- Foundational Concepts of AI, LLM, and Generative AI.

- Risks and limitations of Generative AI, with special emphasis on bias, transparency and equity in access.

- Ethical and regulatory frameworks for AI, with special emphasis on how to safeguard data privacy and intellectual property when using GenAI.

- Getting familiar with multimodal AI LLMs (which also included prompting engineering and problem-formulation techniques).

- Uses of GenAI as digital assistants/tutors.

- AI to enhance assessment (introduction to a more authentic assessment).

- AI to support marking and feedback (rubric design and customisation of feedback).

- International guides and recommendations, where participants examine best practices from international agencies like UNESCO or Jisc.