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CASE STUDY

The EUIA scale for fostering learners' AI competencies through assessment

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ABSTRACT

This case study introduces the *Escala de Uso de la IA* (EUIA; Scale of AI Use), a new framework designed to assess and promote AI literacy. The EUIA scale explicitly links AI usage levels with assessment design and ethical considerations, supporting the development of AI-specific competencies. The framework consists of six levels of interaction for Generative AI (GenAI) in assessment. Each level provides adaptable assignment instructions, design examples, and an overview of the digital skills developed at that stage. The scale was piloted with participants in the 'CAIE2X Strategies for the Integration of AI in Assessment' module. Evaluation data indicate that the EUIA scale is an effective tool for understanding the ethical and pedagogical implications of GenAI. This framework offers a structured pathway for educators to integrate AI into curricula while fostering critical AI literacy among learners.

KEYWORDS: AI literacy, generative AI, assessment, digital literacy, AI competency, higher education.

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Introduction

The EUIA scale is taught as part of the Module CAIE2X Strategies for Integrating Generative AI into Assessment to Develop AI Competencies.[1] This module was developed in response to growing demand from teaching staff at the University of Las Palmas, Spain (ULPGC), for guidance on designing assessments that align with institutional policies on the ethical use of

[1]Estrategias de integración de la IAGen en la evaluación para desarrollar competencias en IA.

Generative AI (GenAI). The module is worth one ECTS (European Credit Transfer and Accumulation System) credit and has been running during the first and second semesters of the academic year 2024–2025. Students enrolled in the module are teaching and research staff at the ULPGC.

Module CAIE2X was structured around four core learning objectives:

- To develop a pedagogical understanding of AI literacy.
- To explore the competencies associated with AI literacy.
- To examine assessment strategies based on the role of the student.
- To design assessments that foster both AI competencies and student creativity.

To support those aims, the module introduced participants to the following key international frameworks for defining AI literacy and AI competencies:

- Miao and Cukurova's (2024) UNESCO AI Competency Framework for Teachers was the first one to articulate five multidimensional aspects of AI competency, including human-centred and ethical considerations, as well as to introduce progression levels for mastery.
- INTEF's framework (2024), developed by Spain's National Institute for Learning Technologies and Teacher Training, builds upon the European Digital Education Hub's model (2023), which distinguishes between competencies for teaching for, with, and about AI — an approach noted for its conceptual clarity.
- Paradox Learning's (2025) framework contributes a distinctive focus on AI pedagogy and assessment, emphasising the critical adaptation of teaching and evaluation practices.
- Finally, Jisc's Attewell (2024) offers a metaphorical approach to AI literacy, framing educators' engagement with AI as a spectrum of roles — from intern to equal partner — thus encouraging reflective and critical evaluation of AI's educational potential.

The national and international frameworks were chosen as they provide a comprehensive pedagogical understanding of the concept of AI literacy and the type of AI competencies and skills encompassed under that concept.

The EUIA scale

The EUIA scale adopts the distinction between AI literacy and AI competency proposed by Chiu et al. (2024): AI literacy refers to the knowledge and skills required to understand how AI functions and affects society, and to use it ethically and responsibly. AI competency builds on this foundation by incorporating confidence, self-reflection, and the ability to apply AI knowledge skilfully and effectively when completing tasks.

Table 1 presents the EUIA scale, linking to the AI literacy and competency frameworks discussed in the previous section. Please note that the acronym 'EU' in the EUIA acronym does not imply, in this case, any official endorsement from the European Union (EU).

The scale aligns the various roles or 'levels' that AI can assume in assessment with the development of specific AI literacy and competencies. The technical knowledge, digital skills, and competencies associated with each level are derived from a review of academic literature (García Vallejo, 2024) on AI literacy and from the international frameworks previously discussed.

Strengths and limitations of the scale

The EUIA scale adopts an assessment-scale approach (Corbin et al., 2025), drawing on Furze's revised AIAS (Artificial Intelligence Assessment Scale) model (Perkins et al., 2024) and distinctively integrating the PAIR (Problem, AI, Interaction, Reflection) framework (Acar, 2023). This combination enables educators to assess students' interactions with AI and the specific forms of AI literacy and competency that those interactions foster. Grounded in an assessment-for-learning orientation, as enacted in module CAIE2X, the scale requires students to engage with AI tools and to submit reflective accounts of their interaction processes, thereby evaluating appropriateness of use rather than presuming compliance. Its non-sequential, non-hierarchical design also recognises that refraining from AI use can be a legitimate pedagogical choice rather than an obstacle to innovation.

The scale, however, presents limitations. Its effectiveness depends on declarative compliance: in non-surveilled environments, there is no reliable means to verify whether students have adhered to agreed rules of AI use. Although the scale aims to engage students in assessment design as collaborators and creators of added value, the role of students is constrained at lower levels, and boundaries between levels can blur in practice, complicating categorisation.

Table 1. The EUIA scale for the integration of AI in assessment.

Role of AI	Assessment design	Development of AI Literacy and Competencies	Example of assignment instructions	Example of assignment types
No AI	Assessment takes place in a controlled and supervised environment. This assessment approach is recommended when students need to provide evidence of achievement in core academic knowledge and/or competencies such as academic writing, study skills, and reflective thinking (Oakley et al., 2025).	Not applicable	Not applicable	Medical school exams: Objective Structured Clinical Examination (OSCE). Language exams (DELE, diploma of Spanish as a second language, Cambridge English Certificates). Proctoring exams for first-year students
AI as an editor and language assistant	The assignment task should comprise a complex problem/task that AI cannot solve in one interaction. AI is used for grammar, punctuation, syntax review, clarity and structure, but the student is expected to write the essay or dissertation independently.	AI literacy: Effective use of prompting techniques. Familiarisation with GenAI software (Attewell, 2024; European Digital Education Hub, 2023). AI competency: Teaching with AI, digital skills (INTEF, 2024).	The use of institutionally supported AI software is permitted for this assignment. You may use approved generative AI (GenAI) apps to review clarity, grammar, spelling and punctuation.	Coursework, essays, dissertations, and written compositions, especially for students who are not native speakers and who are studying their degrees in a foreign language.

	The student designs the research, gathers and analyses data, and presents conclusions. The assessor/instructor should not design summative assessments whose only focus is summarising, analysing, or comparing data (GenAI agents tend to perform well on those kind of tasks).		You may **not** use GenAI to write the entire assignment or to rewrite substantial parts of it. To provide evidence of authorship in the appendix of your assignment, you should include: • Your original text and the AI-corrected version. • A brief explanation of which changes you accepted and why. • A brief explanation of which changes you rejected and why.	
AI as a digital assistant	The task should involve a complex problem that AI cannot solve independently; however, at this level, AI use is permitted to support the initial stages of the research process, particularly to help overcome the 'blank page syndrome': planning tasks, coursework, developing ideas or initial sketches; producing a first	AI competency: Technical proficiency in using generative AI tools to support learning and problem-solving (Miao & Cukurova, 2024; European Digital Education Hub, 2023).	You may use institutionally approved GenAI to help plan, initiate, or break down the task. You are required to describe in detail your interaction with the AI in a **processfolio**, focusing on the following aspects: • How did you define the initial problem or query?	Poster or infographics covering the academic subject. Multimedia assignment producing a short video on an academic subject. Programming-focused assignments

	draft or digital artefact to be refined by the student. The student must demonstrate how they improve and refine the initial AI-generated ideas. Assessment design may include a 'processfolio' — documenting the process and steps taken to reach the final solution (Pearson, 2021) — in addition to the presentation of the solution to a complex problem.	AI Literacy: • Ability to formulate and break down complex tasks/problems into subtasks (Acar, 2023). • Reflection on limitations and potential biases in AI-generated outputs (Miao & Cukurova, 2024; Paradox Learning, 2025).	• Which AI tool did you choose and why? • What elements of the AI-generated output did you choose to retain or modify, and what informed those decisions? • What prompting techniques or steps did you use to improve the initial output or result provided by the AI?	where AI generates initial code and the student refines it. Coursework, essays, dissertations.
AI as a partner and collaborator	AI is used to provide a second opinion or alternative perspective in the completion of a complex project, enquiry, or consultancy task. AI may also act as an assessor, offering feedback or evaluation on student work. In some cases — particularly when the pedagogical aim is to foster	All of the above competencies apply. AI competency: • Creating with AI (Miao & Cukurova, 2024). • Critical reflection on AI's impact on assessment, academic integrity and authorship (Miao & Cukurova, 2024; Paradox Learning, 2025).	Assignment design may include a processfolio — documenting the steps taken to reach the final solution — in addition to the presentation of the solution to a complex problem: Explain your interaction process with AI to produce the final output. Include a critical reflection covering:	Marketing campaign for product launch. Feasibility study for a solar panel plant in a certain region. Architectural plans for soundproofing a building.

	advanced AI competencies — AI may be permitted to complete subtasks or even the entire task. However, this must be done under conditions where the student demonstrates how they guided and interacted with the AI to achieve the assessment goal. Students are expected to engage with AI in creative, ethical, and critical ways, reflecting the progression levels of 'Deepen' and 'Create' within the AI competency framework proposed by Miao and Cukurova (2024). AI Pedagogy, as defined by Paradox Learning (2025), applies to assessment design. Students should be considered partners in assessment (European Digital Education Hub, 2023). Assignments should reflect authentic professional tasks,		• Which AI tool did you choose and why? • How did you define/formulate the problem? • How did you break down the problem in subtasks/subproblems? • Which AI-generated outputs did you get for any subtasks? • How did the AI-generated outputs influence the result?	In general, doctoral thesis, master's dissertations, and final-year projects.

	aligning with principles of authentic assessment, assessment as learning, and project-based learning. Incorporating self-assessment rubrics — where AI serves as a secondary evaluator — can be particularly beneficial for assessment-literate students, fostering critical reflection and justification of their evaluative decisions.			
AI as a creator of added value	AI is used to enhance human capabilities: improve problem-solving, offer alternative perspectives, analyse complex datasets, or identify trends. The student assumes full responsibility for the assessment by: • Defining the research question, project or problem. • Agreeing with assessor/instructor on assessment criteria.	All of the above competencies apply. AI competency: • The student reflects critically on the ethical implications of AI in research and assessment. • The student reflects on broader ethical and moral issues related to AI in academic and professional contexts, as	No fixed instructions. Guidelines are co-developed and agreed upon by the student and the instructor as equals. The student uses specialised AI software and Large Language Models (LLMs), and may include detailed reports on how AI was used as part of the research or professional project.	Doctoral theses, master's dissertations, and final projects involving: • Quantitative research requiring the analysis of large and diverse datasets. • Innovative, artistic, or creative approaches involving digital

	The student becomes the subject expert, while the assessor acts as a facilitator and supervisor. The student must demonstrate advanced AI literacy and competencies, as well as the ability to use AI ethically and with academic rigour, in accordance with institutional guidelines (Miao & Cukurova, 2024).	well as the impact of AI on society (Miao & Cukurova, 2024).		artefacts or multimedia. • Qualitative research with extensive data sets (e.g., focus groups, interviews). Creating dreamlike worlds or artistic photography using DALL·E, Midjourney, or Leonardo. Medical postgraduate studies using LLMs to analyse items such as MRIs and tomography-scanned images. Research using AI for spectroscopic mapping of astronomical objects.

Finally, translating the levels into discipline-specific assessment designs is challenging, signalling a need for further subject-based guidance in future iterations of the module. The following sections explain in more detail the different columns of the scale.

Defining the EUIA scale levels

The scale defines five levels of AI integration into assessment design that are not intended to be sequential or hierarchical; the goal is not to progress from a non-permitted use of AI to a use of AI 'as a creator of added value'. Instead, the scale emphasises contextual appropriateness: AI may play different roles in formative and summative assessments, depending on the specific AI competencies and literacy outcomes targeted. The use of a non-hierarchical colour-coding system — which avoids implying a 'traffic light' progression — reinforces this idea of non-linearity in AI integration.

The roles of AI in assessment and the development of AI literacy and competencies

The roles, or levels, of AI use defined in the EUIA scale are based on the metaphors employed by the UK-based digital agency Jisc to illustrate the concept of AI literacy (Attewell, 2024):

AI as an intern

This metaphor corresponds to two levels of the EUIA scale:

1. AI as an editor and language assistant.
2. AI as a digital assistant.

AI as a partner, assistant, or co-creator

This metaphor aligns with the 'AI as a partner and collaborator' level of the scale, where AI becomes an equal contributor to human skills, offering second opinions or alternative perspectives to tackle complex tasks, much like peer collaboration.

AI as a relation, AI as prediction vs relation

In both metaphors, AI augments, expands, or enhances human insight — either by analysing large datasets to predict future trends (AI as Prediction) or by engaging with students and learning from those interactions (AI as Relation).

This metaphor is encapsulated in the scale's level 'AI as a creator of added value', where GenAI is used to enhance human capabilities, improve problem-solving, analyse complex datasets, or identify patterns and trends.

At the levels of the EUIA scale where AI is used as an assistant, the emphasis is on developing foundational AI literacy and competencies — basic digital skills, familiarity with generative AI behaviours, and a general awareness of ethical and practical constraints (Attewell, 2024; European Digital Education Hub, 2023; García Vallejo, 2024). By contrast, the levels in which AI is regarded as an equal partner and creator of added value prioritise the development of advanced cognitive capacities that underpin proficient level AI competency: critical thinking, problem formulation and decomposition and reflective metacognition (Acar 2023), together with discipline-appropriate application of AI technology to complex tasks (Miao & Cukurova, 2024; Paradox Learning, 2025).

Assessment design

In Table 1, the column 'Assessment design' provides guidance on how to design assessment tasks appropriate for each level, and the types of tasks that the permitted use of AI enables.

The evolving relationship between learners and instructors across the EUIA scale reflects a shift from a traditional, hierarchical model — where learners are passive recipients of assessment and AI is treated as an ancillary technology — to a more collaborative and egalitarian relationship. When AI is considered partner and creator, assessment becomes a co-constructed process, with both parties negotiating its terms and fostering shared ownership and agency in employing AI.

This shift also reframes academic integrity and intellectual authorship: institutional policies remain important, but academic integrity can be reconceptualised as a trust-based relationship underpinned by the six values of the International Centre for Academic Integrity (ICAI) — honesty, trust, fairness, respect, responsibility and courage (ICAI, n.d.). Intellectual authorship is understood as a substantial intellectual or practical contribution to conception, design or interpretation of the final work (University of Cambridge, n.d.).

When AI is used in assessment as a language or digital assistant, instructors clarify citation for AI inputs (for example, disclosing AI drafts or reflecting on intermediate outputs); when AI is used as a partner in assessment, these matters are negotiated with students, who are

encouraged to define ethical boundaries consistent with institutional and broader ethical frameworks.

Assignment instructions and types

The final two table columns ('Example of assignment instructions', 'Example of assignment types') draw on the PAIR framework developed by Acar (2023) and Pearson's processfolio concept (2021).

Pearson (2021) defines a processfolio as a portfolio-based assessment that documents student work while fostering critical reflection, self-awareness and agentic engagement; applied to AI, it encourages learners to record and critically reflect on their interactions with a GenAI agent or Large Language Model (LLM), emphasising process over product.

Acar's (2023) PAIR framework proposes that GenAI can enhance learning only after students develop five higher-order cognitive skills — formulation, exploration, experimentation, critical thinking, and willingness to learn — which the framework seeks to cultivate.

At the level of 'AI as a creator of added value', there are no specific instructions for students: they act as subject experts, formulating research or inquiry questions and using AI both as a collaborative partner and as specialised LLMs to extend human cognitive capacities (Acar, 2023).

Initial feedback for the EUIA scale

The EUIA scale was piloted during the 2024–2025 academic year with students enrolled in the CAIE2X course. The scale was introduced to both Semester 1 and Semester 2 cohorts. Across the two presentations, a total of 30 students provided direct feedback on the scale — 10 from the first presentation and 20 from the second. Participants taught a variety of disciplines, with predominance of languages, social work and law. Among the STEM subjects, computing and mathematics were identified.

Ethical approval was granted by the university to collect participants' feedback. Feedback was collected through the following channels to capture both immediate reactions and more reflective responses:

- Informal discussions held during an asynchronous mid-module session, approximately seven days after students were first introduced to the scale.

- End-of-module survey, which included a question asking participants to identify the most useful content in the module. 70% of the 20 participants who completed the survey selected the EUIA scale as the most valuable content learnt.

During the informal sessions, participants highlighted several aspects of the scale that they found particularly beneficial:

- Guidance on gradually integrating AI into assessment design, which helped them conceptualise pedagogical uses of AI in their own practice.
- Clarity around the skills, competencies, attitudes, and knowledge associated with each level of scale, which supported their understanding of how AI literacy and competency can be scaffolded.
- Practical examples, including assignment instructions and assignment types aligned with each level, which made it easier to incorporate into participants' teaching practices.

On the other hand, participants expressed uncertainty about the distinction between 'AI as a language assistant' and 'AI as a digital assistant'. They felt that the two roles overlapped, particularly in areas related to writing support, organisation, and task management. This feedback suggests that these categories may benefit from clearer differentiation or consolidation.

When asked which levels of the scale participants felt most comfortable applying, most of them s identified 'AI as a digital assistant' and 'AI as a partner and collaborator' as the most relevant to their current teaching and learning contexts. These levels were perceived as offering the appropriate levels for using AI to support critical thinking and human creativity. The level of 'creator of added value' was viewed as aspirational but challenging (only one participant from a sample of 30 felt confident trying this level with their PhD students).

Further development

The participant feedback indicates several important directions for further development of the EUIA scale. A recurring theme was the need for clearer guidance on how the scale can be adapted to specific subject areas, along with exemplars of assignment types that illustrate how each level can be meaningfully applied in different disciplinary contexts. Providing such subject-sensitive scaffolding would help ensure that the scale moves beyond conceptual

understanding and becomes a practical tool that educators can confidently integrate into their assessment design.

To support this, the next phase of work will involve creating a structured questionnaire to guide participants in selecting an appropriate level of the scale when designing a formative or summative assignment. This questionnaire will also prompt reflection on the design process, the challenges encountered, and the lessons learned after implementing the assignment. Collecting feedback from the students who complete these assignments through additional questionnaires and informal discussions will also be essential for understanding how the scale influences learner engagement, perceptions of AI use, and assessment design.

In addition, a focus group will be organised with participants enrolled in the 2024–2025 module to explore how they adapted the scale within their own teaching practice. This discussion will examine which levels they selected, the instructions they provided to students, the types of assignments they developed, and the methods they used to gather student feedback. Insights from this focus group will help refine the scale, identify areas where further clarification or examples are needed, and ensure that the tool continues improve to support instructors' requirements.

Conclusion

The EUIA scale offers a significant advancement over existing frameworks by explicitly linking AI usage levels with assessment design. It creates a non-sequential level system that supports the development of AI-specific competencies and provides adaptable examples of assessment types and assignment instructions. Unlike other scales and frameworks, the EUIA scale explicitly links the concepts of AI literacy and AI competency with the international frameworks on such matters to assignment design and ethical considerations. Beginning with ‘AI acting as a digital assistant in assessment’, this level helped build confidence among the module’s participants to integrate AI into their assignment practices.

However, a risk remains: the assumption that students will adhere to the ethical and permitted uses of AI, especially when AI is only permitted as a language assistant or to ‘bypass the blank page’. The EUIA addresses this by innovatively assessing the process of AI interaction, including the selection of approved tools, prompt engineering, and iterative problem-solving. Unlike other assessment scales, students are asked to provide evidence of

their interactions with the AI, and this evidence is provided in the form of intermediate results or drafts.

The development of the EUIA scale will require more targeted guidance that can be adapted to the specific needs of different programmes and academic disciplines, ensuring that instructors can translate the framework into meaningful assessment practices. Establishing more systematic methods for gathering instructor feedback — through structured questionnaires and focus groups — will be essential for understanding how the scale is being implemented and where further refinement is needed.

Equally important will be collecting feedback from students who engage with assignments designed through the scale, as their perspectives will help evaluate the pedagogical value of the approach and reinforce the principle that learners should play an active role in shaping assessment design.

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