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# Generative AI in Higher Education Teaching & Learning
## AI Fluency Framework

Authors

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HEA Generative AI Policy Framework
https://hub.teachingandlearning.ie/genai/policy-framework

HEA Generative AI Resource Portal
https://hub.teachingandlearning.ie/genai/

# Introduction

The Framework for AI Fluency presented in this document has emerged from an ongoing research collaboration between Prof Rick Dakan (Professor of Creative Technologies, Ringling College of Art and Design, Florida), and Prof Joseph Feller (Professor of IS and Digital Transformation, Cork University Business School, University College Cork, Ireland), exploring the intersections between AI, creativity, cognition, innovation and learning.

The framework has also been informed by the ongoing design and delivery of student courses, as well as faculty seminars and workshops, at both institutions in the 2023/2024, 2024/2025, and 2025/2026 academic years.

This document presents an overview of the framework as a practical tool that is designed to support and inform discourse and practice in higher education on curriculum and assessment design, academic policy setting, student employability and career coaching, and similar topics in the context of AI and particularly generative AI digital disruption. Although primarily aimed at higher education, the framework in this form will also benefit other educational levels, and indeed organisations more widely addressing the challenges and opportunities of generative AI.

The Framework for AI Fluency describes the interconnected competencies needed to use AI in creative, innovative, and problem solving work. Rather than viewing AI merely as an efficiency engine, the framework recognises the potential for AI to act as an authentic thinking partner for doing meaningful cognitive work, while acknowledging that this potential can only be realised through the development and performance of specific human competencies.

The framework defines AI Fluency as the ability to work effectively, efficiently, ethically, and safely within emerging modalities of Human-AI interaction.

## Key Advantages of the Framework

The framework offers several key advantages:

1. It is Platform and Technology Agnostic: independent of specific tools or platforms, and adaptable to emerging and rapidly evolving technologies and use cases.

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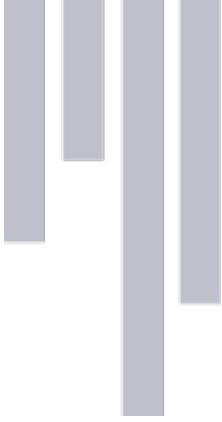
2. It is Contextual and Flexible: characterising effective action rather than prescribing rigid processes, and compatible with other skills taxonomies in a variety of professional contexts.

3. It is Ethics-Centred: treating ethical considerations as fundamental, and recognising that responsible and safe AI use is as important as responsible and safe AI design.

## Modalities of Human-AI Interaction

In its current version, the framework identifies three modalities of interaction observable in the current state-of-the-art. Human-AI interactions often bridge multiple modalities, and practitioners often move between contexts even within single projects or workflows.

### Modality 1: Automation (AI Performs Human-Defined Task)

AI performs tasks based on direct human instructions (e.g. in response to a prompt). This modality is particularly useful for improving the efficiency of repetitive, time-consuming, or data-intensive tasks. It requires clear task definition and quality control measures. Examples include emails, summaries, social media posts, and basic coding.

### Modality 2: Augmentation (AI and Human Perform Task Collaboratively)

AI and human co-define and co-execute tasks in an iterative way, collaborating towards an end goal. This modality focuses on enhancing human creativity rather than replacing it through the addition of an AI thinking partner. It involves a dynamic interplay between human and AI contribution. Examples include writing stories, essays, research papers, and complex coding tasks.

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## Modality 3: Agency (Human Configures AI to Perform Tasks Independently)

Human configures AI to independently perform future tasks (including for others) on behalf of the user. This modality defines the characteristics and future behaviour of an AI, rather than a specific task. It requires sophisticated understanding of AI capabilities and limitations. Examples include interactive game characters, tutors, and chatbots.

# Core AI Competencies ('The 4 Ds')

The four core competencies describe the interconnected human skills, knowledge and values that enable effective, efficient, ethical, and safe Human-AI interaction. These competencies enable practitioners to make appropriate decisions about if, when, and how to use AI tools; effectively communicate desired outputs and behaviours to AI systems; accurately assess the quality and appropriateness of AI outputs and behaviours; and ensure ethical practice, transparency and accountability.

## Delegation

*Creative vision and selection of the right AI tools and techniques to realise that vision.*

Delegation refers to the ability to identify when and how to use AI tools and modalities effectively in creative and problem-solving processes. It involves understanding the capabilities and limitations of various AI technologies and making informed decisions about when to use AI for automation, augmentation, or independent agent-mediated experiences.

1. Goal and Task Awareness
   Envisioning an effective goal for a project. Understanding the nature and requirements of the task(s) towards the defined goal. Ability to analyse and deconstruct a task into AI, human, and collaborative components. Necessary for effective integration of AI into creative workflows.

2. Platform Awareness

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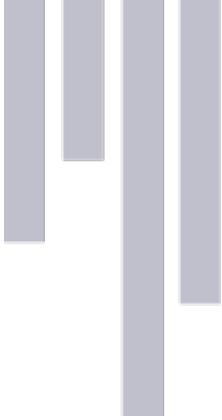
Understanding the capabilities and limitations of current AI tools. Knowledge of various AI platforms and their specific strengths and limitations in relation to the project's goal. Ability to evaluate AI tools based on project requirements, budget, operational and regulatory needs. Necessary for selecting the optimal AI tools for specific tasks.

3. Task Delegation
Balancing AI and human capabilities throughout a project to best realise the creative vision. Understanding the different affordances of each modality (Automation, Augmentation, Agency). Ability to assign project tasks to human and AI tools optimally. Necessary for successful collaboration between human and AI in creative processes.

## Description

*Effectively describing a vision and/or tasks to prompt useful AI behaviours and outputs.*

Description encompasses the skills needed to effectively communicate ideas, requirements, constraints, and other aspects of creative visions to AI systems. It involves crafting clear, specific, and well-structured prompts (using a wide range of prompting techniques) and other elements that guide and enable AI tools to produce desired behaviours and outputs.

1. Product Description
Prompting to define desired output. Ability to clearly articulate desired characteristics, features, and qualities of the final AI-generated output. Skill in translating creative vision into explicit, AI-understandable terms. Crucial for guiding AI tools to produce results aligned with the creator's intentions.

2. Process Description
Dialogic prompting to produce effective iterative collaboration. Ability to engage in dynamic, back-and-forth communication with AI tools. Skill in breaking down complex tasks into a series of smaller, manageable prompts. Essential for guiding AI through multi-step creative processes aligned with the human collaborator.

3. Performance Description
Directive prompting to define future AI behaviours and enable positive user experience. Ability to define how AI-generated content or systems should behave or interact with the world. Skill in anticipating user needs and translating them into guidelines for AI behaviour.

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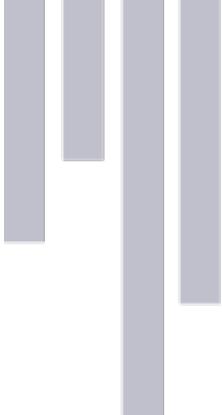
Critical for enabling future AI-driven agential behaviours that are aligned with the human's vision and values.

# Discernment

*Accurately assessing the usefulness of AI outputs.*

Discernment involves the critical evaluation of AI-generated outputs, understanding their quality, relevance, potential biases, and other salient characteristics. It also includes the ability to iterate and refine the collaborative process with AI tools.

1. Product Discernment
   Evaluating output quality and identifying ways to improve it. Ability to critically assess the quality, relevance, and effectiveness of AI-generated content. Skill in identifying strengths and weaknesses in AI outputs. Crucial for maintaining high standards in AI-assisted creative work.

2. Process Discernment
   Assessing if the human-AI collaborative dynamic is fruitful or not and how to improve it. Ability to evaluate the effectiveness of the human-AI collaborative process. Skill in identifying which aspects of human-AI interactions are most beneficial and where improvements can be made. Essential for optimising the use of AI tools in creative collaborative work.

3. Performance Discernment
   Evaluating if AI-driven independent behaviours enable positive user experiences and how to better direct the AI to improve outcomes. Ability to assess the effectiveness of AI systems in independent, user-facing scenarios. Skill in gathering and interpreting human feedback to refine and ensure intended AI-driven behaviours and experiences. Essential for designing user experiences aligned with the project's vision and values.

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# Diligence

*Taking responsibility and vouching for final products created using AI.*

Diligence refers to the responsible use of AI, including ethical considerations, transparency about AI use, and taking accountability for the final products created with AI assistance.

1. Creation Diligence
   Responsible use of AI tools, maintaining ethical and legal best practices, awareness of biases, flaws, stakeholder impacts, and other externalities. Understanding and applying ethical principles throughout the AI-assisted creative process. Ability to identify and mitigate potential biases and ethical risks in AI-generated content. Crucial for ensuring responsible and socially conscious use of AI.

2. Transparency Diligence
   Transparency and accountability when distributing the end product. Understanding of audience, industry, and legal expectations and norms around AI-generated content. Skill in clearly communicating the nature of AI involvement in the process. Essential for maintaining trust and integrity when distributing AI-assisted work.

3. Deployment Diligence
   Taking responsibility for verifying and vouching for AI-assisted outputs, including thorough fact-checking, testing for accuracy, and validating claims. Implementing appropriate safety checks and testing procedures before releasing AI-assisted work. Understanding, managing, and assuming responsibility for potential risks and impacts of deployed AI-assisted content and/or agents. Essential for ensuring the quality, safety, and reliability of content and/or agents created through Human-AI interaction.

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# Open Educational Resources

A suite of four open educational resources based on the AI Fluency Framework has been developed and produced by Rick Dakan, Joseph Feller, and Anthropic, with support from the Higher Education Authority, Ireland, through the National Forum for the Enhancement of Teaching and Learning. All course materials including videos are freely available under the CC BY-NC-SA license. The courses are available on Anthropic Academy and OpenCourses.ie.

## AI Fluency: Framework and Foundations

This foundational course provides an introduction to the AI Fluency Framework and practical exercises for applying the concepts to AI interactions. The course comprises twelve lessons requiring approximately three to four hours of engagement, including approximately seventy minutes of video content.

## Teaching AI Fluency

Teaching AI Fluency empowers educators of all kinds to help their students develop values, judgment, and practical skills, and to foster more thoughtful approaches to human-AI collaboration. The course covers approaches and entry points to teaching the AI Fluency Framework, AI Fluency assessments and assignments, and engaging thoughtfully with AI's impacts while integrating AI Fluency into curricula and disciplines. The course comprises seven lessons with in-depth exercises, requiring approximately five to six hours including approximately seventy minutes of video content.

## AI Fluency for Educators

AI Fluency for Educators applies the 4Ds of Delegation, Description, Discernment and Diligence to educator workflows for course design, lesson planning, and the creation of learning materials. The course covers applying the 4Ds to build context-rich workflows, and collaborating with AI on course and lesson design and development of learning materials. The course comprises four lessons with in-depth exercises, requiring approximately three hours including approx. thirty-five minutes of video content.

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## AI Fluency for Students

AI Fluency for Students applies the 4Ds to two key areas of collaborating with AI as a student: learning and career planning. It addresses the central foundation for an AI-infused future, namely human beings willing to build responsible and reflective practice, to stay curious, to stay principled, and to meaningfully act as the human in the loop. The course covers applying the 4Ds to working with AI in learning and career planning, and building a personal policy for responsible AI engagement. The course comprises five lessons with in-depth exercises, requiring approximately three hours including approximately thirty minutes of video content.

## Reach and Impact

The open courseware has achieved significant reach and demonstrated strong engagement metrics. There have been over 90,000 enrolments in the Anthropic Academy versions of the courses, including more than 2,500 academic users comprising both staff and students from over 750 higher education institutions globally. Course completion rates average approximately twice the rate typical of online courses, indicating strong learner engagement with the material.

The framework and courseware have been adopted across multiple sectors. The core course has been cloned and adopted by the London School of Economics and Political Science. Beyond higher education, the courseware and framework are being applied in multiple companies, government departments, and non-profit organisations, demonstrating the framework's applicability across diverse professional contexts.

# About the Authors

Rick Dakan is Professor of Creative Technologies, AI Coordinator, and Interim Co-Director of the Center for the Creative Economy at Ringling College of Art and Design, Florida. He also oversees the college's Undergraduate Certificate in Artificial Intelligence and the Professional Certificate in Fundamentals of AI for Creatives. He is a game designer and author of more than thirty games and books spanning video games and tabletop games to novels, nonfiction, and comics.

Joseph Feller is Professor of Information Systems and Digital Transformation at the Cork University Business School, University College Cork, Ireland. His research is focused on AI-human hybrid creativity, innovation, and learning. His work has been published in Information Systems Research, Journal of MIS, Journal of the AIS, Journal of Information Technology, Information Systems Journal, European Journal of Information Systems, and Journal of Strategic Information Systems, and has been funded by the European Commission, Irish Research Council, Irish HEA, and other funding bodies.

# Resources and Further Information

Framework website
https://aifluencyframework.org/

Practical summary
https://ringling.libguides.com/ai/framework

Anthropic Academy courses
https://anthropic.skilljar.com/

OpenCourses.ie
https://opencourses.ie/

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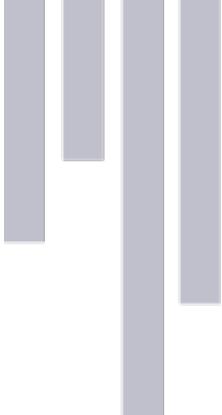
# Diligence Statement

In the creation of this document, generative AI tools were used to assist in text creation and refinement. The authors affirm that all AI-generated and co-created content underwent thorough vetting, editing, and curation by the human co-authors. The final document accurately reflects the authors' understanding, expertise, and intended meaning. While AI tools were instrumental in the writing process, the authors maintain full responsibility for the content, its accuracy, and its presentation. This disclosure is made in the spirit of transparency and to acknowledge the evolving role of AI in content creation and other intellectual work.

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