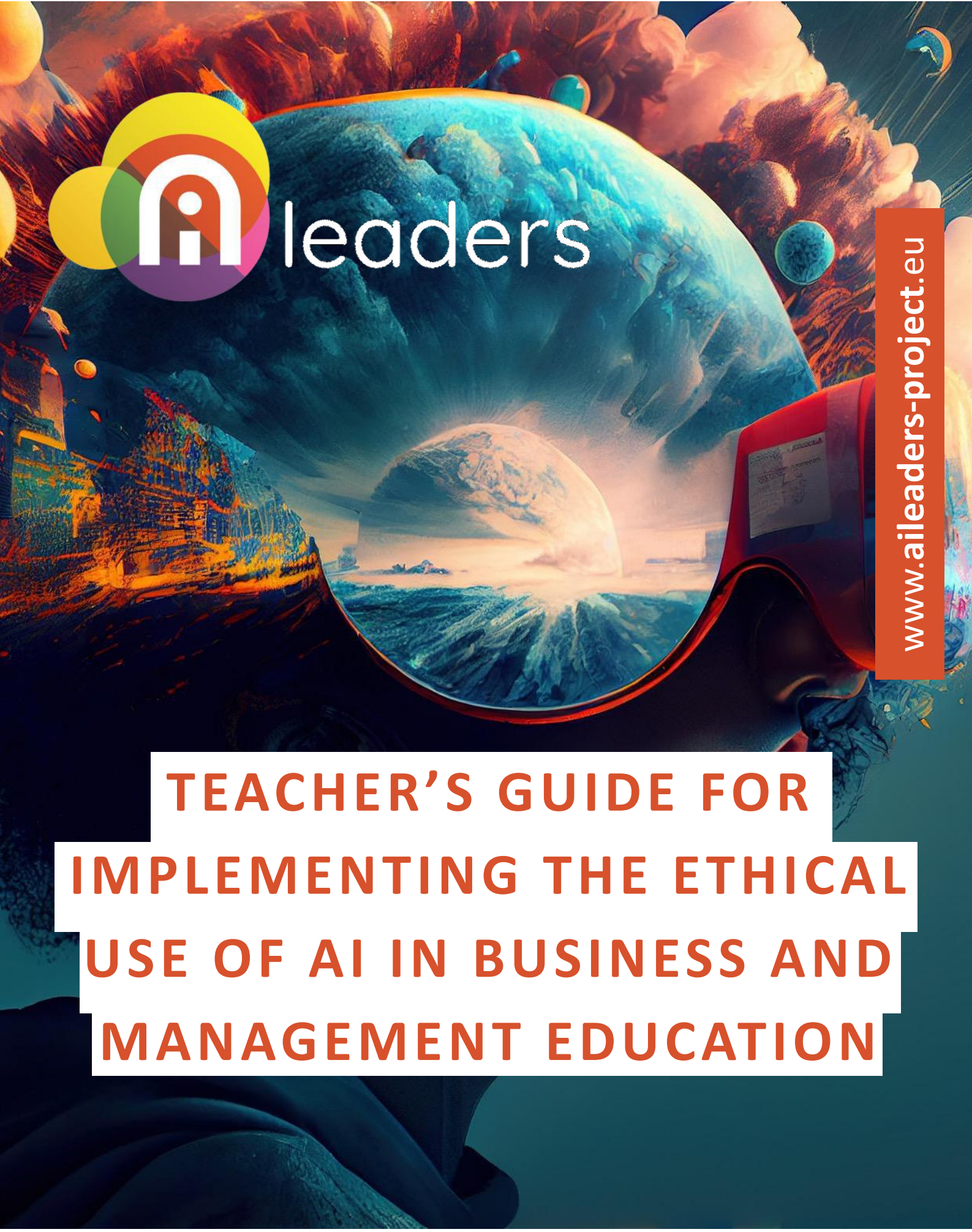

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TEACHER'S GUIDE FOR IMPLEMENTING THE ETHICAL USE OF AI IN BUSINESS AND MANAGEMENT EDUCATION

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CONTENTS

1. Introduction

Artificial intelligence (AI) is a transformative force that is reshaping industries, driving economic growth, and redefining the future of business. As AI continues to integrate into every facet of society, its ethical use becomes increasingly critical, especially within business and management practices. The European Digital Strategy has rightly identified the importance of creating "ethical, secure, and cutting-edge AI made in Europe." Universities play a vital role in this transformation by not only educating students about the technical capabilities of AI but also embedding ethical considerations into their curricula, ensuring future business leaders understand how to navigate the complexities of an AI-driven world.

Many higher education institutions (HEIs) still limit their AI content to data analytics, overlooking the social, ethical, and legal implications of AI. Yet, in today's business landscape, employers increasingly seek graduates who not only possess technical expertise but also demonstrate critical thinking, ethical judgment, and cultural awareness when applying AI. This gap between what students are learning and what the industry demands highlights the need for innovative teaching that integrates AI's ethical dimensions into business education.

The AI Leaders project seeks to bridge this gap by providing comprehensive resources and strategies for embedding AI education, including its ethical aspects, into business and management programs. The AI Leaders project is built around three primary goals:

a) First, to help educators understand the significance of AI and its ethical implications in business;
b) Second, to develop innovative pedagogical approaches that focus on the ethical considerations of AI; and
c) Third, to equip students with the skills to design AI systems that are trustworthy, socially responsible, and aligned with European values.

These goals are realized through a unique combination of resources, case studies, and hands-on learning experiences, which empower educators to integrate ethical AI into their curricula.

This Teacher's Guide has been created to support educators in this endeavor, offering clear guidance on how to navigate the project's contents and implement them into existing courses effectively. The guide also highlights dynamic teaching strategies that are integral to the project's success. Using Open Educational Resources (OERs) and immersive activities like AI in Business Management Hackathons, students will gain practical, hands-on experience with AI tools while honing their ethical decision-making and problem-solving abilities.

2. Objectives of this guide

The Teacher's Guide aims to empower higher education lecturers with the tools, resources, and insights needed to effectively integrate AI topics into their courses, while emphasizing the ethical dimensions of AI use in business and management. The guide will serve as a comprehensive resource, designed to support educators in making AI-related content more engaging, accessible, and aligned with ethical standards.
The most relevant goals of the guide include:

- Provide lecturers with clear strategies for seamlessly incorporating AI topics into their curriculum, ensuring that students gain a well-rounded understanding of AI's impact on business and management practices.
- Offer detailed recommendations on pedagogical methods and teaching strategies to enhance student engagement, fostering critical thinking and discussions around the ethical implications of AI in business contexts.

- Ensure that the learning objectives in the guide are in line with the European Digital Competence Framework for Citizens (DigComp), enabling lecturers to help students develop the necessary digital competencies for the future workplace.
- Offer practical guidance on the effective use of artificial agents, such as generative AI, in classroom settings. The guide will present strategies for implementing at least two types of AI agents, fostering experiential learning through AI-driven simulations and interactive learning environments.

3. European DigiComp Framework

The Digital Competence Framework for Citizens (DigComp) provides a common understanding to identify and describe the key areas of digital competence. This EU-wide tool aims to help policy-makers formulate related initiatives, and plan education and training initiatives to improve proficiency of specific target groups while improving citizens' digital competence.

Digital competence involves the 'confident, critical and responsible use of, and engagement with, digital technologies for learning, at work, and for participation in society. It is defined as a combination of knowledge, skills and attitudes'. (Council Recommendation on Key Competences for Life- long Learning, 2018)
The DigComp framework identifies the key components of digital competence in 5 areas:

Figure 1. DigComp competence areas

Source: DigComp Framework

The Open Educational Resources (OERs) are designed to support students in developing the competencies outlined in the DigComp framework. In the AI Leaders project syllabus, the learning outcomes are closely aligned with the DigComp framework and the OERs. This alignment enables educators to easily select the most relevant OERs based on the competencies they wish to focus on in their classrooms and the desired learning outcomes.

In this link, you will find much more detailed information about the EU DigComp Framework:

https://joint-research-centre.ec.europa.eu/scientific-activities/education-and-training/digital-transformation-education/digital-competence-framework-citizens-digcomp_en

4. Structure of the teaching materials to work with the ethical use of AI in business and management

The teaching materials of the AI Leaders project are structured in two main parts: Responsible AI Case Studies and Introductory Toolkit, and Open Educational Resources (OERs).

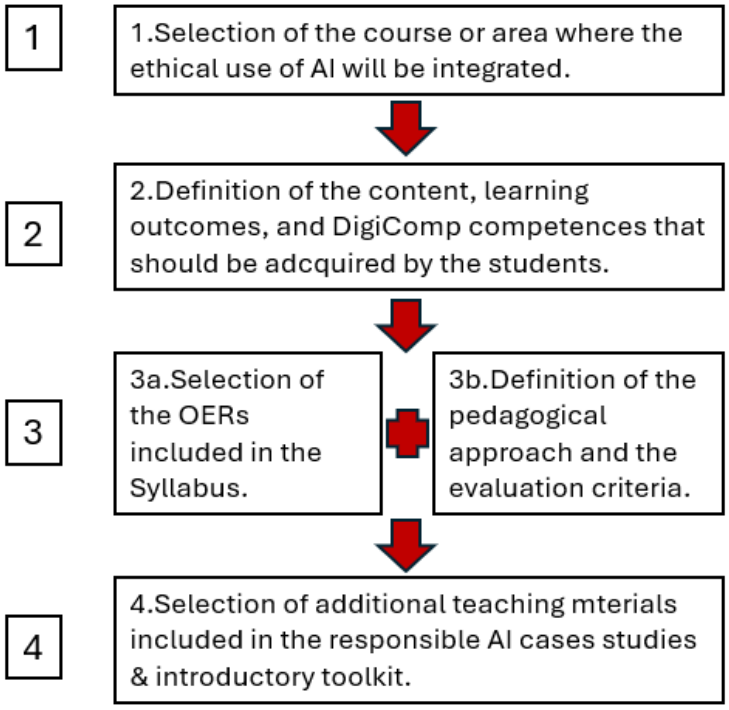
a) The Responsible AI Case Studies and Introductory Toolkit comprises three essential resources:

- State of the Art Review. A concise overview of applied and ethical AI, exploring its role in modern business and management education.
- Compendium of Case Studies. A collection of 12 multimedia examples showcasing real-world applications of AI in business, downloadable and ready to use.
- Toolbox of Recommended Digital Tools. Practical guidance on tools and methods to teach applied and ethical AI in face-to-face, hybrid, and digital classrooms.

b) The Open Educational Resources. This part will include +20 ready-to-use learning activities organized in thematic areas: Marketing and Sales, Human Resources, Accounting and Finance, Supply Chain, and Leadership.These activities will be cross-referenced according to DigComp and the EU "Ethics Guidelines and Principles." They will include case studies, simulations, set of guidelines/ quizzes, and scenario exercises.

Figure 2 illustrates a step-by-step process for integrating the ethical use of AI into business and management courses. This suggested framework guides the structure of this document, providing a clear approach to embedding AI ethics in education. The following sections describe the teaching materials aligned with the four steps outlined in the figure.

Figure 2. Steps to include the ethical use of AI in business and management courses



Source: Own work

Step 1. Selection of the course or area

The ethical use of AI is a cross-cutting topic that can be integrated into any area of business and management. However, the AI Leaders project focuses on the areas where AI has had the most significant impact and where the most pressing ethical challenges may arise.
This project features a curated collection of open educational resources, organized into the following key business and management areas:

- Marketing and Sales
- Human Resources
- Accounting and Finance
- Supply Chain
- Leadership

In the first step, the teacher will have to choose a course or module, linked to one of these business areas, where the contents on the ethical use of AI will be embedded.

Step 2. Definition of the content, learning outcomes and Digicomp competences

The AI Leaders project provides teaching materials linked to the key business and management areas included in the previous section. Below you will find a list of contents or topics classified by each one of the key business

and management areas:

Marketing and Sales

- Personalization and Customer Engagement
- Content Creation and Optimization
- Predictive Analytics
- Customer Support

Human Resources

- Recruitment and Candidate Screening
- Employee Performance Management

Accounting and Finance

- Financial Forecasting and Analysis
- Lending, Credit Scoring and Risk Assessment
- Auditing and Regulatory Compliance
- Portfolio Management

Supply Chain

- Demand Forecasting
- Inventory Management

Leadership

- Decision-Making Support

After choosing the content or topic that will be integrated in the course and explained to the students, the teacher should define the expected learning outcomes. These refer to the specific knowledge, skills, and competencies that students should acquire by the end of the module of ethical use of AI. They define what learners are expected to know, do, and demonstrate because of their learning experience.

Below, you will find a list of recommended learning outcomes for each content or topic category:

Marketing and Sales

- **Personalization and Customer Engagement**
    - The student will be able to identify ethical challenges and regulatory considerations in AI-driven personalization for marketing and sales.
    - The student will be able to design recommendation systems that prioritize fairness and inclusivity, using algorithms like FairGBM.
    - The student will be able to evaluate the impact of unethical personalization practices on customer trust and opportunities.

- **Content Creation and Optimization**
    - The student will be able to responsibly generate and optimize content using AI tools, ensuring inclusivity in language and imagery.
    - The student will be able to identify and mitigate potential biases or inaccuracies in AI-generated content.
- **Predictive Analytics**
    - The student will be able to design and evaluate models that avoid introducing biases in customer behavior predictions.
    - The student will be able to apply tools like Model Cards to uncover and address biases in predictive AI systems.
- **Customer Support**
    - The student will be able to evaluate the impact of replacing human agents with bots on customer satisfaction and trust.
    - The student will be able to create a functional chatbot using beginner-friendly tools, incorporating ethical design principles.

Human Resources

- **Recruitment and Candidate Screening**
    - The student will be able to identify ethical pitfalls and best practices in AI-driven recruitment and candidate screening.
    - The student will be able to implement fairness-aware algorithms, such as FAIR* or FairGBM, to ensure diverse and equitable candidate rankings.
    - The student will be able to audit AI models for fairness and inclusivity using tools like the What-if-Tool and Google Fairness Indicators.
- **Employee Performance Management**
    - The student will be able to understand how AI tools track and analyze employee performance metrics transparently and ethically.

Accounting and Finance

- **Financial Forecasting and Analysis**
    - The student will be able to analyze and address ethical challenges in financial forecasting and analysis.
    - The student will critically analyze potential biases in AI algorithms used in financial forecasting and analysis.
- **Lending, Credit Scoring, and Risk Assessment**

- The student will be able to identify ethical risks in credit scoring models and propose corrective measures.
- The student will understand the key ethical issues in AI applications for lending and credit scoring, including bias, discrimination, transparency, and data privacy.

- **Auditing and Regulatory Compliance**
  - The student will be able to identify potential conflicts in AI audits and propose strategies to address them.
  - The student will be able to use tools like Aequitas to audit predictors for bias and fairness in regulatory settings.
- **Portfolio Management**
  - The student will be able to understand the ethical implications of algorithm-driven trading platforms.

Supply Chain

- **Demand Forecasting**
  - The student will be able to understand the ethical use of AI in demand forecasting, respecting regional purchasing power and promoting fairness.
- **Inventory Management**
  - The student will be able to design inventory management strategies based on environmental impact metrics.
- **Logistics optimization**
  - The student will be able to understand the function of AI in streamlining reverse logistics operations.
  - The student will be able to assess the benefits and limitations of AI in the context of sustainability and operational performance.
  - The student will be able to explore ethical and reputational risks associated with automated return management.
  - The student will be able to develop critical thinking around AI implementation in supply chain and circular economy initiatives.

Leadership

- **Decision-Making Support**
  - The student will be able to identify and avoid data sources that could introduce bias into AI predictions.
  - The student will be able to validate AI-driven predictions through diverse team input to ensure fairness and accuracy.

To complete this step, it is recommended to identify the DigiComp competences that will be linked to the module on the ethical use of AI. In Section 3, the five key areas of digital competence outlined in the DigiComp framework

are detailed. Additionally, the section includes a link to a website with further resources and comprehensive information.

Step 3a. Selection of the Open Educational Resources (OERs)

In this section, the course content and learning activities are presented. These materials are open educational materials (OERs) that can be integrated into the courses, to make the students aware of the ethical issues of using AI in business and management environments, and to provide them with the tools, abilities and skills to address these issues in future professional scenarios.

OERs have been classified according to the main disciplines of business and management education, following the same structure as in the syllabus of the AI Leaders project.

This section includes an abstract with concise information for each OER. This abstract describes: i) the typology of the OER, ii) its goal or purpose, iii) the expected learning outcomes, iv) the suggested methodological approach, and v) some keywords. A link to the OER has also been included to facilitate the accessibility of the content.

Marketing & Sales

CASE STUDIES ON THE BAD USE OF RECOMMENDER SYSTEMS (INFORMATION BUBBLES)

Type of OER:

This OER is a case study on recommender algorithms and information bubbles, and how it relates to algorithmic recommendation practices in advertising. The case is essentially divided into two parts. First, the case emphasizes the role of algorithmic recommendation in shaping information distribution and the associated risks for society in general. The second part of the case focuses on algorithmic recommendations used for online advertising, explaining how these types of algorithms work using Amazon as an example.

Goal or Purpose:

The goal of this case study is to illustrate how recommended algorithms have become an essential part of how we consume information and content in our society and to highlight the problems and challenges that arise from the widespread use of this technology.

Expected Learning Outcomes:

- The student will be able to identify ethical challenges and regulatory considerations in AI-driven personalization for society at large and connect this with practices related to advertising.
- The student will be able to evaluate the impact of personalization practices on information ecosystems.
- The student will be able to propose possible solutions to mitigate the negative effects of recommender algorithms on our society and that prioritize fairness and inclusivity.

Suggested Pedagogical Approach:

This case works best as problem-based learning in which instructors should guide a discussion with students once they have familiarized themselves with concepts and technology.

Keywords:
Recommender algorithms, Information Bubbles, Algorithmic Advertising, information and data literacy, bias

Link to the OER:
https://aileaders-project.eu/wp-content/uploads/2026/01/MS1.2-AI-Leader-Case-Studies-Algorithms-and-information-bubbles.pdf

GUIDELINES ON HOW TO CREATE A FAIR RECOMMENDER SYSTEM

Type of OER:
This OER is an expanded case study providing comprehensive guidelines on creating fair recommender systems. It delves into the ethical challenges and potential solutions associated with algorithmic recommendations, with a strong focus on ensuring fairness, inclusivity, and accountability.

Goal or Purpose:
The goal of this case study is to provide detailed guidelines on how to develop fair recommender systems that mitigate negative impacts such as bias, discrimination, and exclusion. It aims to equip students and practitioners with a deep understanding of the importance of fairness and inclusivity in algorithmic design, and to offer actionable strategies for creating more equitable and responsible recommendation systems.

Expected Learning Outcomes:
- identify and analyse various potential sources of bias in recommender algorithms, including data-related, algorithmic, and user-interaction biases;
- evaluate the multifaceted impact of different algorithmic choices on fairness and inclusivity, considering diverse perspectives and stakeholders;
- design and implement effective strategies to mitigate bias, promote fairness, and enhance transparency in recommender systems;
- critically assess the ethical and societal implications of recommender systems in different contexts.

Suggested Pedagogical Approach:
This case study is designed for problem-based learning, encouraging students to actively engage with the material and develop solutions to complex, real-world problems.

Keywords:
recommender algorithms, fairness, bias, inclusivity, algorithmic design, ethical AI, responsible AI, transparency, accountability, data ethics

Link to the OER:
https://aileaders-project.eu/wp-content/uploads/2026/01/MS1.1-AI-Leader-Case-Studies-Guidelines-on-how-to-create-a-fair-Recommender-System.pdf

SCENARIO-BASED EXERCISE ON ONLINE RECOMMENDER SYSTEMS

Type of OER:
Scenario Exercise using Google Colab (riverML)

Goal or Purpose:
This scenario-based exercise puts students in the role of a machine learning (ML) practitioner tasked with analysing the fairness of online recommender systems. It explores how continuous adaptation to user behaviour can amplify existing biases over time. Students will be challenged to identify bias and evaluate mitigation strategies.

Expected Learning Outcomes:
- Identify potential sources of bias in ML-generated recommendations;
- Compare fairness metrics such as demographic parity and exposure equity;
- Understand how feedback loops affect fairness over time in online recommender systems.

Suggested Pedagogical Approach:
Problem-Based Learning.

Keywords:
Machine Learning, Recommendation, Biases, Fairness

Link to the OER:
https://aileaders-project.eu/wp-content/uploads/2026/01/MS1.3-AI-Leaders-OER-Scenario-Exercise-Recommender-MKT.pdf

INTRODUCTORY GUIDE FOR AN ETHICAL USE OF GEN AI IN BUSINESS WITH PRACTICAL EXAMPLES

Type of OER:
This Open Educational Resource is a guide about ethical use of Generative Artificial Intelligence in Business with practical examples.

Goal or Purpose:
This guide offers an introduction to the concept of Generative Artificial Intelligence, which underpins widely used models today, such as ChatGPT. To understand how these models have come about, we will delve into topics such as Deep Learning, Neural Networks, and Machine Learning.

Expected Learning Outcomes:
- The student will be able to responsibly generate and optimize content using AI tools, ensuring inclusivity in language and imagery.

- The student will be able to identify and mitigate potential biases or inaccuracies in AI-generated content.

Suggested Pedagogical Approach:
Role-Playing Simulation (RPS). We suggest learners take on specific roles (e.g., marketing specialists, HHRR personnel, business analysts, etc.) to simulate interactions with Generative AI platforms and see possible ethical dilemmas and how to mitigate them.

Keywords:
Generative AI; Responsible AI; AI in Business.

Link to the OER:
https://aileaders-project.eu/wp-content/uploads/2026/01/MS2.1-AI-Leader-Case-Studies-Guide-to-an-ethical-use-of-Gen-AI-in-Business.pdf

DEMO ON LARGE LANGUAGE MODELS (LLM) HALLUCINATIONS

Type of OER:
Demo/Simulation on LLM hallucinations

Goal or Purpose:
Show and discover how LLM (large language models) may provide inaccurate information or 'hallucinations'.

Expected Learning Outcomes:
The student will be able to identify and mitigate inaccurate information or 'hallucinations' in AI-generated content.

Suggested Pedagogical Approach:
Problem-based learning.

Keywords:
Generative AI, large language models, hallucinations, biases, inaccuracies

Link to the OER:
https://aileaders-project.eu/wp-content/uploads/2026/01/MS2.2-AI-Leaders-OER-Demo-on-LLM-Hallucination.pdf

SCENARIO-BASED EXERCISE ON CONTENT MODERATION DECISIONS

Type of OER:
Scenario exercise.

Goal or Purpose:

Puts students in the shoes of a social media company manager and shows the complexity of content-moderation decisions and how these affect the performance of the company using two videogames (Trust & Safety Tycoon and Moderator Mayhem)

Expected Learning Outcomes:
The student will be able to analyze the impact of content moderation and ethical decision-making on user experience and business performance.

Suggested Pedagogical Approach:
Problem-based learning.

Keywords:
Content moderation, stakeholder engagement, fundamental rights, ethical management, tech companies, business performance.

Link to the OER:
https://aileaders-project.eu/wp-content/uploads/2026/01/MS2.3-AI-Leaders-OER-Scenario-Exercise-Trust-and-Safety-Tycoon-and-Moderator-Mayhem.pdf

SIMULATION ON DIFFUSION BIAS EXPLORER

Type of OER:
Demo/Simulation using Open Access Tool Diffusion Bias Explorer.

Goal or Purpose:
Compare outputs from AI image generation to expose biases comparing results by the same model or across models.

Expected Learning Outcomes:
The student will be able to identify and mitigate potential biases or inaccuracies in AI-generated content.

Suggested Pedagogical Approach:
Problem-based learning.

Keywords:
Generative AI, AI image generators, outputs, biases, inaccuracies.

Link to the OER:
https://aileaders-project.eu/resources/ai-oers-open-educational-resources-for-business-management-pt/

SCENARIO-BASED EXERCISE ON THE IMPORTANCE OF DATA QUALITY IN AI-TARGETED MARKETING CAMPAIGNS

Type of OER:
Scenario Exercise

Goal or Purpose:
Raise awareness about the importance of data quality for implementing automated decision-making algorithms (ADMS), particularly in the marketing sector.

Expected Learning Outcomes:
The student will be able to implement measures to address bias in customer behavior predictions.

Suggested Pedagogical Approach:
Problem-based learning

Keywords:
Data quality, biased algorithms, unbalanced data, marketing campaigns, ADMS.

Link to the OER:
https://aileaders-project.eu/wp-content/uploads/2026/01/MS3.1-Bank-Deposit-Scenario-Exercise.pdf

CASE STUDY ON HOW SOME COMPANIES ARE USING BOTS TO REPLACE HUMANS

Type of OER:
Case study

Goal or Purpose:
- Analyze Klarna’s decision to adopt AI technology, focusing on the rationale, expected benefits, and potential risks.
- Assess whether Klarna's adoption of AI improved customer support quality and response times.
- Explore how Klarna’s competitors are responding to similar technological advancements.
- Examine the broader implications of AI-induced workforce displacement on employees and society.

Expected Learning Outcomes:
The student will be able to evaluate the impact of replacing human agents with bots on customer satisfaction and trust.

Suggested Pedagogical Approach:
Case-based learning

Keywords:
Chatbots, AI-driven workforce reduction, fintech automation, ethical AI implications, customer support, marketing.

Link to the OER:
https://aileaders-project.eu/wp-content/uploads/2026/01/MS4.1-AI-Leader-Case-Studies-Chatbots-Replacing-Humans-Klarna.pdf

SCENARIO-BASED EXERCISE ON HOW TO DEVELOP YOUR OWN ETHICAL CHATBOT

Type of OER:
Scenario Exercise

Goal or Purpose:
Provide a hands-on, low-cost prototype showing how to build and deploy an ethical chatbot in Google Colab.

Expected Learning Outcomes:
The student will be able to create a functional chatbot using beginner-friendly tools, incorporating ethical design principles.

Suggested Pedagogical Approach:
Problem-based learning

Keywords:
Ethical AI, Chatbot Prototype, Google Colab, Hugging Face Transformers, DialoGPT, Gradio UI, Content Moderation, Disclaimers.

Link to the OER:
https://aileaders-project.eu/wp-content/uploads/2026/01/MS4.2-Ethical-chatbot-Scenario-Exercise.pdf

Human Resources

CASE STUDY ON THE EFFECTIVENESS OF AI TOOLS IN TALENT ACQUISITION

Type of OER:
Case study.

Goal or Purpose:
The case study describes the principles of operation of tools for candidate selection, scheduling recruitment

interviews, and automation of recruitment process cycles used by TA team in one of the major corporations in the healthcare sector operating in Poland. answer about the current impact of AI support in the process and raises questions about its future use.
The goal is to present a case study on the effectiveness of the AI tool used by the Talent Acquisition team. The aim is to demonstrate how this AI based tool enhances the recruitment process. By showcasing specific benefits and outcomes, we will highlight its impact on efficiency and success. The study will not only identify benefits, but also potential threats and issues caused by tool usage and areas for improvement. This will provide a comprehensive understanding of AI support in recruitment operations.

Expected Learning Outcomes:

- Know how tools work and optimize the recruitment process
- Observe the specific benefits that it brings to Talent Acquisition team
- Evaluate areas for improvement or further development
- Be able to participate in the best practices description for integrating tools into daily recruitment activities
- Be a part of the discussion about potential threats and barriers for using the tools from a legal, ethical and compliance perspective

Suggested Pedagogical Approach:

Case-Based Learning

Keywords:

Artificial Intelligence, Human Resources, Talent Acquisition, Innovation, Process Support, Tool

Link to the OER:

https://aileaders-project.eu/wp-content/uploads/2026/01/HR1.1-AI-Leader-Case-Studies-AI-tool-effectiveness-in-talent-acquisition.pdf

SIMULATION ON ETHICAL CHALLENGES IN HUMAN RESOURCES (USING TOOLS FOR DETECTING BIASES IN DATA OR ALGORITHMS)

Type of OER:

Demo/Simulation using Google Colab (RandomForest vs FairGBM Classifier)

Goal or Purpose:

To provide students with a practical and critical exploration of how algorithmic decision-making in recruitment can reproduce structural inequalities by comparing outputs from fairness metrics. This simulation encourages reflection on the ethical dimensions of AI in Human Resources and promotes the development of fairer, more inclusive predictive models.

Expected Learning Outcomes:

- Detect and interpret algorithmic bias in AI-driven hiring;
- Reflect on the ethical implications of automated recruitment systems
- Use fairness metrics to evaluate model outcomes;

Suggested Pedagogical Approach:
Problem-Based Learning.

Keywords:
Machine Learning, Classification, Human-Resources, Biases, Fairness

Link to the OER:
https://aileaders-project.eu/wp-content/uploads/2026/01/HR1.2-AI-Leaders-OER-Simulation-HR-Recruitment.pdf

CASE STUDY ON A TOOL FOR ANALYZING EMPLOYEE PERFORMANCE

Type of OER:
Case Study.

Goal or Purpose:
Analyzing Employees' Performance with AI is the process of using artificial intelligence to evaluate employee efficiency based on collected data and analytical algorithms. Systems like PerfAI at SkyRoad Logistics promise greater objectivity and transparency by eliminating managerial bias in assessments. However, their implementation raises significant ethical concerns, including employee privacy, the risk of algorithmic biases, and the impact on workplace atmosphere and motivation.
The primary goal of this case study is to critically assess the ethical implications of using AI-driven performance assessment tools in the workplace. It explores how AI can enhance efficiency and objectivity while raising concerns about employee privacy, bias, and fairness in evaluations. The study aims to determine whether AI-driven assessments truly benefit employees or contribute to surveillance, stress, and workplace inequalities.

Expected Learning Outcomes:
- analyze the ethical challenges of AI-based employee monitoring, including privacy, transparency, and fairness.
- understand the potential risks of algorithmic bias in performance evaluations.
- evaluate the psychological and professional impact of AI-driven assessments on employees.
- explore strategies for designing ethical AI systems that balance efficiency with employee well-being.
- develop guidelines for responsible AI implementation in workforce management.

Suggested Pedagogical Approach:
In-class work in groups

Keywords:
Ethical AI in HR; Workplace surveillance; AI bias in performance evaluation; Employee rights and privacy; Algorithmic transparency; Fairness in AI-driven HR; Psychological impact of AI monitoring; Responsible AI implementation

Link to the OER:
https://aileaders-project.eu/wp-content/uploads/2026/01/HR2.1-AI-Leader-Case-Studies-Analysing-employees-

performance-with-AI.pdf

Accounting and Finance

SIMULATION ON ETHICAL CHALLENGES IN FINANCIAL ANALYSIS

Type of OER:
Demo/Simulation using Google Colab (RandomForest vs FairGBM Classifier)

Goal or Purpose:
To provide students with a practical and critical exploration of how algorithmic decision-making in financial analysis and forecasting can reproduce structural inequalities by comparing outputs from fairness metrics. This simulation encourages reflection on the ethical dimensions of financial automation and promotes the development of fairer, more inclusive predictive models.

Expected Learning Outcomes:
- Detect and interpret algorithmic bias in credit approval;
- Reflect on the ethical implications of automated financial decisions.
- Use fairness metrics to evaluate model outcomes;

Suggested Pedagogical Approach:
Problem-Based Learning.

Keywords:
Machine Learning, Classification, Biases, Fairness

Link to the OER:
https://aileaders-project.eu/wp-content/uploads/2026/01/AF1.1-AI-Leaders-OER-Simulation-Credit-Application-V2.pdf

CASE STUDY ON THE USE OF BIASED OR NON-REPRESENTATIVE DATA IN AI MODELS FOR CREDIT SCORING.

Type of OER:
This OER is a case study on how biased or non-representative data can lead to undesirable outcomes, discrimination and inclusion through the use of automated credit scoring services.

Goal or Purpose:
The case study analyses the emergence and growth of automated credit decision systems that use algorithms to analyze various data points to assess an individual's creditworthiness to decide to approve or decline a credit application. The case focuses on how credit score systems work, using a simulation to illustrate what kind of data points they collect and what kinds of personal data they use to make decisions. The case study also raises

awareness about the issues generated by biased or non-representative data sets and how they can make credit scoring systems unfair, functioning as barriers and not as improvements in the way citizens can access credit and lending services in fair conditions.
The goal of this case study is to raise awareness of the potential of automated credit scoring systems to improve access to credit, as well as of the challenges and the risks for privacy and discrimination the use of these systems entails, particularly when they use biased data sets and are trained with data that is not representative of the populations they are indented to serve, and how this can exacerbate lack of access to credit in populations that already had trouble doing this to begin with.

Expected Learning Outcomes:

- The student will be able to identify ethical risks in credit scoring models and propose corrective measures.
- The student will understand the key ethical issues in AI applications for lending and credit scoring, including bias, discrimination, transparency, and data privacy.

Suggested Pedagogical Approach:

This case works best as problem-based learning in which instructors should guide a discussion with students once they have familiarized themselves with concepts related to access to credit, credit scoring services and contemporary credit application and lending practices.

Keywords:

Lending, credit scoring, privacy and personal data protection, transparency, bias, discrimination.

Link to the OER:

https://aileaders-project.eu/wp-content/uploads/2026/01/AF2.1-AI-Leader-Case-Studies-Biased-AI-models-used-for-Credit-Scoring.pdf

CASE STUDY ON THE RISKS OF AI-DRIVEN CREDIT SCORING IN HOUSING DECISIONS

Type of OER:

Case Study.

Goal or Purpose:

This case study focuses on FindtheRightTenant a ficitional company that uses AI and credit history to decide access to housing, and it is an example of how algorithmic decision making can lead to consumer harm and even infringe on people's rights when they do not work properly.
The goal of this case study is to illustrate how algorithmic decision-making is integrated into business decisions related to access to housing and highlight the ethical and legal that come from the widespread use of this technology. It does so by exploring the experiences of a fictional company, FindtheRightTenant and the challenges and issues it faced when its algorithm did not work as intended and had very real consequences for people seeking to rent housing.

Expected Learning Outcomes:

- The student will be able to identify ethical risks in automated decision-making and scoring models and propose corrective measures.

- The student will understand the key ethical issues in AI applications for decision-making enabled by algorithms, including bias, discrimination, transparency, and data privacy.

Suggested Pedagogical Approach:
This case works best as problem-based learning in which instructors should guide a discussion with students once they have familiarized themselves with the company and with concepts and technology.

Keywords:
Algorithmic decision-making, Access to housing, transparency, information and data literacy, bias.

Link to the OER:
https://aileaders-project.eu/wp-content/uploads/2026/01/AF2.2-AI-Leader-Case-Studies-Find-the-Right-Tenant.pdf

DEMO OF A TOOL FOR AUDITING PREDICTORS

Type of OER:
Demo using AEQUITAS in a Google Colab Environment

Goal or Purpose:
To provide students a tool for auditing machine learning predictors regarding bias and fairness. By focusing on a fraud detection scenario, students learn how to critically assess algorithmic performance not only in terms of accuracy, but also in terms of equitable treatment across demographic groups.

Expected Learning Outcomes:
- Apply Aequitas to audit classification models (decision Tree, Radom Forest, FairGBM) for fairness;
- Interpret key fairness metrics such as False Positive Rate (FPR), False Discovery Rate (FDR), and Statistical Parity;
- Identify and explain group-level disparities in prediction outcomes;
- Reflect on the role of bias auditing and fair ML techniques in high-risk decision-making contexts,

Suggested Pedagogical Approach:
Problem-Based Learning.

Keywords:
Machine Learning, Aequitas, Auditing, Biases, Fairness

Link to the OER:
https://aileaders-project.eu/wp-content/uploads/2026/01/AF3.1-AI-Leaders-OER-Demo-Aequitas.pdf

CASE STUDY ON THE USE OF ALGORITHM-DRIVEN TRADING PLATFORMS

Type of OER:

This OER is an expanded case study exploring the use of algorithm-driven trading platforms. It examines the evolution of algorithmic trading, its impact on financial markets, and the ethical and regulatory considerations surrounding its deployment.

Goal or Purpose:

The goal of this case study is to provide a comprehensive analysis of algorithm-driven trading platforms, their benefits, risks, and implications for the financial industry. It aims to equip students and practitioners with a deep understanding of how these platforms function, their impact on market dynamics, and the challenges they pose for regulators and market participants.

Expected Learning Outcomes:

- Describe the evolution of trading from traditional methods to algorithm-driven platforms.
- Explain the key components and functionalities of algorithm-driven trading systems.
- Analyze the impact of algorithm-driven trading on market efficiency, liquidity, and volatility.
- Evaluate the ethical considerations and regulatory challenges associated with algorithm-driven trading.
- Discuss the future trends and potential developments in algorithm-driven trading.

Suggested Pedagogical Approach:

This case study is designed for problem-based learning, encouraging students to actively engage with the material and develop solutions to complex and real-world problems.

Keywords:

algorithm-driven trading, algorithmic trading, high-frequency trading, financial markets, market microstructure, market efficiency, market liquidity, market volatility, financial regulation, ethical trading

Link to the OER:

https://aileaders-project.eu/wp-content/uploads/2026/01/AF4.1-AI-Leader-Case-Studies-Algorithm-driven-trading-platforms.pdf

Supply Chain

CASE STUDY ON THE USE OF AI FOR DEMAND FORECASTING

Type of OER:

Case Study

Goal or Purpose:

This case study explores the application of artificial intelligence (AI) in forecasting drug demand within the pharmaceutical industry. It focuses on how AI-driven tools enhance the accuracy of demand prediction, optimize supply chain management, and mitigate risks such as drug shortages and overproduction. Additionally, the study highlights ethical and reputational challenges associated with AI-based decision-making in healthcare.

The primary objective of this case study is to analyze the effectiveness of AI in pharmaceutical demand

forecasting and its broader implications for business strategy, operational efficiency, and ethical considerations. The study aims to provide a comprehensive understanding of how AI influences supply chain optimization and decision-making in a highly regulated industry.

Expected Learning Outcomes:

- Understand the role of AI in improving forecasting accuracy and efficiency in the pharmaceutical industry.
- Identify key challenges and limitations associated with AI-driven demand prediction, including ethical concerns and regulatory compliance.
- Evaluate the impact of AI adoption on supply chain management, drug availability, and cost efficiency.
- Develop critical thinking on how AI-based decision-making affects public trust and corporate reputation.

Suggested Pedagogical Approach:

Case-Based Learning

Keywords:

artificial intelligence in pharmaceuticals, drug demand forecasting, supply chain optimization

Link to the OER:

https://aileaders-project.eu/wp-content/uploads/2026/01/SC1.1-AI-Leader-Case-Studies-The-use-of-AI-for-demand-forecasting.pdf

CASE STUDY ON THE USE OF AI TO AVOID WASTAGE

Type of OER:

Case study

Goal or Purpose:

- Demonstrate Value: show how a narrow AI solution can deliver rapid, measurable reductions in food waste and operating costs within a large hotel chain.
- Quantify Impact: present pilot metrics (waste reduction percentages, CO_2 avoided, annual savings per hotel) to illustrate environmental and financial benefits.
- Identify Success Factors: analyse the technical, operational and cultural enablers required for scaling AI waste-tracking across 200+ properties.
- Highlight Challenges & Risks: discuss data-privacy, franchise buy-in, model accuracy and integration hurdles that could limit long-term success.
- Extract Transferable Lessons: provide insights and best practices that other hospitality and foodservice operators can adapt to their own sustainability roadmaps.

Expected Learning Outcomes:

The student will be able to design AI driven inventory management strategies based on environmental impact metrics.

Suggested Pedagogical Approach:

Case-based learning.

Keywords:
Artificial intelligence (AI), Computer vision, Food-waste reduction, Sustainability / ESG, Hospitality industry, Cost savings & ROI.

Link to the OER:
https://aileaders-project.eu/wp-content/uploads/2026/01/SC2.1-AI-Leader-Case-Studies-Using-AI-to-Avoid-Wastage.pdf

CASE STUDY ON LEVERAGING AI FOR REVERSE LOGISTICS OPTIMIZATION

Type of OER:
Case study

Goal or Purpose:
This case study investigates the use of artificial intelligence (AI) to enhance reverse logistics operations within a global consumer goods company. The study outlines how AI technologies such as machine learning, computer vision, and data analytics are applied to automate inspection, optimize routing, and reduce environmental impact. It also explores how AI supports strategic decision-making in product disposition while aligning with circular economy goals.
The primary objective is to examine how AI-driven tools can improve the efficiency, cost-effectiveness, and environmental sustainability of reverse logistics. The case illustrates how automation and predictive analytics help companies adapt to the growing volume and complexity of returns in both physical retail and e-commerce contexts.

Expected Learning Outcomes:
By engaging with this case study, learners will:
- Understand the function of AI in streamlining reverse logistics operations.
- Assess the benefits and limitations of AI in the context of sustainability and operational performance.
- Explore the ethical and reputational risks associated with automated return management.
- Develop critical thinking around AI implementation in supply chain and circular economy initiatives.

Suggested Pedagogical Approach:
Case-based learning.

Keywords:
Reverse logistics, artificial intelligence, circular economy, returns management, machine learning, warehouse automation, consumer goods, AI ethics, supply chain innovation, sustainability

Link to the OER:
https://aileaders-project.eu/wp-content/uploads/2026/01/SC3.1-AI-Leader-Case-Studies-Leveraging-AI-for-Reverse-Logistics-Optimisation.pdf

Leadership

SCENARIO-BASED EXERCISE ON FAIRNESS AND BIAS IN THE CRIMINAL JUSTICE SYSTEM

Type of OER:
Scenario Exercise

Goal or Purpose:
Analysis of bias in a machine learning algorithm for the criminal justice system

Expected Learning Outcomes:

- Awareness of bias in machine learning algorithms predictions
- Detecting bias in predictions

Suggested Pedagogical Approach:
Case-Based Learning

Keywords:
Bias, fairness, machine learning, criminal justice system

Link to the OER:
https://aileaders-project.eu/wp-content/uploads/2026/01/LD1.1-AI-Leaders-OER-Scenario-Exercise-Criminal-Justice-System-Bias.pdf

Step 3b. Definition of the pedagogical approach and the evaluation criteria

In this section, a selection of pedagogical approaches and evaluation criteria is suggested. The criteria for selecting these pedagogical approaches have been: i) the topic of the project, ii) the characteristics of the OERs presented in the previous section, and iii) the innovative nature of this project.
In the following sections, three different pedagogical approaches have been presented. The content linked to each one is divided into four different parts, trying to answer the following questions:

- What is the pedagogical approach?
- Why use the pedagogical approach?
- How to use the pedagogical approach?
- How to evaluate and give feedback to the students?

Case-Based Learning (CBL)

What is Case-Based Learning?

This approach involves using real-world or hypothetical case studies to help students explore and understand complex ethical dilemmas, business scenarios, and decision-making processes related to AI. It encourages critical thinking and problem-solving by presenting students with situations where AI is being used, and they must analyze and discuss ethical issues that arise.
Case-based teaching simulates real world situations and asks students to actively grapple with complex problems. This method of instruction is used across disciplines to promote learning, and is common in business, law, medicine, among other fields.

Why use Case-Based Learning?

Case-Based Learning has been found to improve student learning, to increase students' perception of learning gains, and to meet learning objectives. Faculty have noted the instructional benefits of cases including greater student engagement in their learning, deeper student understanding of concepts, stronger critical thinking skills, and an ability to make connections across content areas and view an issue from multiple perspectives.

Through case-based learning, students are the ones asking questions about the case, doing the problem-solving, interacting with and learning from their peers, "unpacking" the case, analyzing the case, and summarizing the case. They learn how to work with limited information and ambiguity, think in professional or disciplinary ways, and ask themselves "what would I do if I were in this specific situation?"

The case method bridges theory to practice, and promotes the development of skills including: communication, active listening, critical thinking, decision-making, and metacognitive skills, as students apply course content knowledge, reflect on what they know and their approach to analyzing, and make sense of a case.

How to use Case-Based Learning?

Before the Class (Preparation Phase)

a) Define the Content and Learning Outcomes

Begin by defining the content or topic that you will teach to your students, ensuring that it directly aligns with the goals of the course and the broader themes of AI ethics and management. Clearly articulate the learning outcomes you aim to achieve using the case study method. The syllabus provided by the AI Leaders project offers specific guidelines to help you tailor the content and outcomes to ensure they meet the ethical challenges posed by AI in business and management. The learning outcomes should guide students toward mastering ethical frameworks, developing analytical skills, and understanding the implications of AI decision-making within business contexts.

b) Select a Relevant Case

Select cases from the open educational resources (OERs) offered by the AI Leaders project that align with both your course content and the defined learning outcomes. Consider using a mix of cases, both successful and controversial examples, so students can gain insight into best practices as well as the potential pitfalls of AI applications in business.

c) Prepare Guiding Questions

Once you have chosen a relevant case, prepare guiding questions to facilitate critical thinking and discussion. These questions should be designed to help students analyze the key ethical and business aspects of the case. Encourage students to think critically about how businesses can balance innovation with ethical responsibility.

d) Provide Pre-Class Material (If needed)

To ensure that students are adequately prepared for the case discussion, provide them with relevant pre-class materials.

During the Class (Engagement & Analysis Phase)

e) Introducing the Case

Begin the session by presenting the case study in an engaging and interactive format. Use videos, reports, podcasts, or other materials to immerse students in the scenario and make the ethical dilemmas more tangible. Clearly outline the learning objectives, emphasizing how the case connects to key ethical, business, and regulatory considerations in AI. Encourage students to approach the discussion with an open mind and consider the broader societal impact of AI technologies beyond the business context.

f) Encourage Debate & Critical Thinking

Foster an interactive discussion by implementing role-playing activities where students take on different professional roles to debate AI governance issues. Structure the debate around real-world challenges. Use questioning to challenge students' assumptions and encourage deeper analysis. By critically assessing AI decision-making, students will learn to approach ethical dilemmas with a strategic and well-rounded perspective.

g) Synthesize Lessons Learned

Conclude the discussion by summarizing key insights and lessons from the case study. Encourage students to reflect on the broader implications of AI ethics in corporate governance, long-term business sustainability, and global AI regulation. By synthesizing the discussion, students will leave with a deeper understanding of how ethical AI practices shape the future of business and management.

How to evaluate and give feedback to the students?

In the AI Leaders project, case-based learning (CBL) helps students develop critical thinking, ethical reasoning, and problem-solving skills in AI-related business contexts. To ensure effective learning, the following evaluation methods will be used:

a) Rubric-Based Assessment

Since students will be analyzing real or hypothetical AI-related business cases, rubrics help assess both their analytical and ethical reasoning skills.

Key criteria for evaluating cases linked to the ethical use of AI in business and management in rubric-based assessment:

- Problem Identification – Does the student recognize the ethical dilemmas and business implications of AI use?
- Application of AI Ethics Principles – Have they applied key AI ethics frameworks (e.g., EU AI Act, Fairness, Transparency, Accountability)?
- Risk Assessment & Mitigation Strategies – Did they evaluate potential risks (bias, privacy, misinformation) and suggest solutions?
- Creativity in Ethical AI Implementation – Did they propose innovative, yet ethical AI solutions?
- Clarity & Justification – Are their arguments well-structured and supported by evidence?

Implementation Tip: Share this rubric before the activity so students understand how ethical AI decisions will be assessed.

b) Presentation and Discussion Assessment

Oral communication is crucial for students, as they need to advocate for ethical AI policies and decisions.

Assessing students' ability to present and defend their case findings helps reinforce key learning outcomes.

Key criteria for evaluating cases linked to the ethical use of AI in business and management in presentation and discussion assessment:

- Clarity of Explanation – Are AI concepts explained in a way that is accessible to different stakeholders?
- Ethical Justification – Do students convincingly argue for ethical AI solutions?
- Use of Evidence & Data – Are AI-related risks and benefits supported by real-world cases or studies?
- Engagement & Response to Challenges – Can students address critical feedback and ethical dilemmas effectively?

Implementation Tip: After presentations, conduct a debate-style Q&A where peers challenge each other's ethical AI solutions.

c) Written Case Reports

Written case reports play a crucial role in helping students develop structured thinking, analytical reasoning, and ethical decision-making skills in AI-related business contexts. A well-prepared report allows students to organize their ideas systematically, connect case study content to AI ethics principles, and propose responsible solutions to real-world AI challenges.

The structure of a case report will depend on the type of case and the specific questions students need to answer.

Key criteria for evaluating cases linked to the ethical use of AI in business and management in written case reports:

- Problem Identification– Clearly defines the AI-related challenge, ethical concerns, and business implications, demonstrating a deep understanding of the case.
- Analysis of Alternative Solutions– Identifies and evaluates multiple possible solutions, weighing the ethical and practical implications of each approach.
- Final Recommendation & Justification– Provides a well-supported final recommendation with logical reasoning and ethical justification, referencing real-world examples or data where appropriate.
- Clarity & Structure– Organizes the report clearly and logically, ensuring that ideas are presented in a coherent structure, with clear writing and minimal errors.

Implementation Tip: Share these criteria with students before they start working on their reports to guide their research and writing.

Problem-Based Learning (PBL)

What is Problem-Based Learning?

Problem-Based Learning (PBL) is a student-centered teaching approach in which learners engage with real-world problems to develop critical thinking, problem-solving, and collaborative skills. Instead of passively absorbing knowledge, students actively explore complex, open-ended challenges, often working in teams to analyze issues, research potential solutions, and present their findings.

In the context of AI ethics education, PBL encourages students to tackle dilemmas such as bias in AI, privacy concerns, and the societal impact of automation, fostering a deeper understanding of ethical principles and

responsible AI use.

Why use Problem-Based Learning?

PBL is particularly effective in AI ethics education because it promotes critical inquiry and ethical reasoning skills, essential for future AI leaders. The open educational resources (OERs) developed within the AI Leaders project provide a foundation for this approach by presenting real-world ethical dilemmas and problems related to AI technologies. These resources allow students to explore issues such as bias in AI decision-making, privacy concerns, and the impact of automation on employment through structured discussions and collaborative problem-solving.

Using PBL in the AI Leaders project offers several benefits:

- Active Engagement: Students take ownership of their learning by investigating AI ethics challenges rather than passively receiving information.
- Critical Thinking and Ethical Reasoning: By analyzing AI-related dilemmas, students develop the ability to assess complex situations, weigh ethical considerations, and propose responsible solutions.
- Collaboration and Communication: Working in teams fosters the ability to discuss and debate ethical perspectives, mirroring the interdisciplinary nature of AI governance in real-world settings.
- Application of AI Ethics Frameworks: Through PBL, students actively apply ethical theories, legal guidelines, and policy frameworks to concrete AI challenges, reinforcing their understanding in a practical context.

How to use Problem-Based Learning?

To effectively implement Problem-Based Learning (PBL), teachers can follow a structured process that guides students through problem analysis, research, discussion, and solution development. Below are the key steps to prepare and facilitate a PBL activity using the AI Leaders project's open educational resources (OERs).

a) Define the Content and Learning Outcomes

The first step in preparing for a PBL activity is to clearly define the content and learning outcomes. Teachers should determine what they want students to achieve by engaging in the ethical problem. In section 6 of this guide (STEP 2. Definition of the content, learning outcomes and Digicomp competences), an extended list of suggested contents and learning outcomes classified by knowledge areas is included. The AI Leaders project's OERs Syllabus also provide valuable resources that help structure these objectives within real-world contexts.

By setting clear goals, educators ensure that the PBL activity aligns with broader course outcomes and enhances students' ability to navigate ethical challenges in AI.

b) Select or Design a Problem Scenario

The heart of PBL is a well-crafted, open-ended problem that challenges students to think critically and engage in ethical reasoning. Teachers can either select ethical dilemmas provided in the AI Leaders OERs (see Section 7; STEP 3a. Selection of the Open Educational Resources) or design their own case studies based on current AI applications. A strong PBL scenario should be relevant to students' academic and professional interests, involve multiple stakeholders with differing perspectives, and require a thoughtful analysis rather than a straightforward answer.

c) Organize Students into Groups

Since collaboration is a fundamental aspect of PBL, students should work in small, diverse groups where they can exchange ideas, challenge assumptions, and develop solutions together. Teachers can either assign groups or allow students to form their own teams, ensuring a balance of perspectives and backgrounds. Within each group, students can take on specific roles, such as a researcher responsible for gathering information, a discussion

leader who facilitates conversations, or a presenter who communicates the group's findings. Encouraging active participation from all members fosters teamwork and enhances the collective problem-solving experience.

d) Present the Problem and Facilitate Initial Discussion

Once the groups are formed, the teacher introduces the problem scenario, providing enough context to spark curiosity while avoiding excessive guidance. Students should begin by analyzing the problem, identifying key ethical concerns, and brainstorming potential approaches. At this stage, they should also reflect on what they already know about the topic and identify gaps in their understanding that require further research. The teacher's role is to facilitate rather than instruct, posing open-ended questions, encouraging debate, and prompting students to consider different angles without offering direct answers. This initial discussion helps students articulate the ethical dimensions of the problem before diving into deeper investigation.

e) Conduct Research and Develop Solutions

With a clear understanding of the problem, students engage in research to explore ethical theories, legal frameworks, and technical aspects related to AI. They may consult AI Leaders' resources, academic articles, policy documents, and expert opinions to build a well-informed perspective. As they gather information, students should evaluate different viewpoints, debate the ethical trade-offs involved, and work collaboratively to propose solutions. The teacher continues to guide the process by ensuring students rely on credible sources, encouraging critical questioning, and prompting discussions that challenge assumptions and biases. The research phase is crucial for students to develop a well-rounded understanding of the AI ethics dilemma before formulating their final recommendations.

f) Share Findings and Debate Possible Solutions

After completing their research, each group presents their analysis and proposed solutions to the class. This presentation can take various formats, such as a structured debate, a formal report, or an interactive discussion. The goal is not only to communicate findings but also to engage in critical dialogue with peers. Other groups are encouraged to question assumptions, challenge ethical justifications, and offer alternative perspectives. This exchange allows students to refine their reasoning, recognize potential biases, and appreciate the complexity of ethical decision-making in AI. By debating different approaches, students gain a deeper insight into the real-world challenges of balancing technological innovation with ethical responsibility.

g) Reflect and Conclude

To solidify learning, the activity should conclude with a reflection session where students analyze their decision-making process, and the lessons learned. They should consider which ethical principles influenced their choices, how different stakeholders might perceive their proposed solutions, and what challenges they faced in navigating the dilemma. This step reinforces key takeaways from the activity, helping students connect their learning to broader AI ethics frameworks. Teachers can highlight important insights, address misconceptions, and encourage students to apply similar ethical reasoning skills in future problem-solving situations.

How to evaluate and give feedback to the students?

Teachers should assess student learning based on multiple criteria, including problem analysis, ethical reasoning, teamwork, research quality, and communication skills. One way to do this is through rubrics that clearly define expectations for each aspect of student work. For example, an assessment rubric might include categories such as:

- Understanding of the Problem - Did the students identify the key ethical issues and stakeholders?
- Application of Ethical Frameworks - Did they use relevant ethical principles and AI guidelines to justify their arguments?

- Critical Thinking and Problem-Solving - Did they evaluate multiple perspectives and propose well-reasoned solutions?
- Collaboration and Teamwork - Did they work effectively as a group, sharing responsibilities and engaging in discussions?
- Presentation and Communication - Was their explanation clear, well-organized, and supported by evidence?

Assessments can be conducted through different formats, such as written reports, oral presentations, etc. Peer and self-assessment can also be integrated to encourage students to evaluate their own contributions and the work of their peers critically.

Throughout the PBL process, teachers can give formative feedback by asking guiding questions, prompting students to consider alternative perspectives, and encouraging deeper reflection on ethical dilemmas.

After the activity, teachers should offer summative feedback that highlights students' strengths and areas for improvement. Rather than focusing solely on the correctness of a solution, feedback should address the quality of their reasoning, the depth of their ethical analysis, and their engagement in the learning process.

Scenario-Based Learning (SBL)

What is Scenario-Based Learning?

Scenario-Based Learning (SBL) is a learner-centered instructional approach that uses immersive, real-world scenarios to develop students' critical thinking, decision-making, and problem-solving skills. Rather than simply presenting theoretical content, SBL places students in the middle of a realistic situation where they must actively apply their knowledge, often under conditions of uncertainty or ambiguity.

This method is especially effective in areas such as business and management education, where learners can explore complex scenarios like launching an AI-driven product, managing ethical dilemmas in data usage, or navigating the impact of automation on workforce strategy. By simulating professional challenges, students engage more deeply with the material, preparing them for real-life decision-making in fast-evolving fields where AI plays an increasingly central role.

Why use Scenario-Based Learning?

Scenario-Based Learning (SBL) offers distinct benefits that align closely with the aims of the AI Leaders project, particularly in fostering ethical awareness, digital literacy, and responsible leadership in the age of artificial intelligence. By placing students in realistic, AI-related dilemmas, SBL allows them to explore the real-world impact of AI technologies on individuals, organizations, and society. This method promotes deeper engagement and helps learners develop not only technical understanding but also critical soft skills, including ethical reasoning, communication, collaboration, and empathy. Through SBL, students learn to navigate the complexity and ambiguity inherent in AI decision-making processes, preparing them to become thoughtful and responsible leaders in their future careers.

How to use Scenario-Based Learning?

To effectively implement Scenario-Based Learning (SBL), teachers can follow a structured process that guides students through analysis, research, discussion, and solution development. Below are the key steps to prepare and facilitate a SBL activity using the AI Leaders project's open educational resources (OERs).

a) Define the Content and Learning Outcomes

The first step in preparing for a SBL activity is to define the content and learning outcomes. Teachers should determine what they want students to achieve by engaging in a real scenario. In section 6 of this guide (STEP 2. Definition of the content, learning outcomes and Digicomp competences), an extended list of suggested contents and learning outcomes classified by knowledge areas is included. The AI Leaders project's OERs Syllabus also provide valuable resources that help structure these objectives within real-world contexts.

b) Select or Design a Realistic Scenario

A core element of Scenario-Based Learning is a thoughtfully designed, open-ended scenario that immerses students in a realistic setting, encouraging them to apply critical thinking and consider ethical implications in their decision-making.
Teachers can either select AI-related scenarios and dilemmas provided in the AI Leaders OERs (see Section 7; STEP 3a. Selection of the Open Educational Resources) or design their own, drawing from current developments in AI.

A strong SBL scenario should be grounded in real-world contexts, relevant to students' academic or professional fields, and involve multiple stakeholders with diverse and sometimes conflicting interests. Rather than leading to one "correct" answer, the scenario should require students to navigate complexity, weigh ethical considerations, and justify their decisions from multiple viewpoints.

c) Set the Scene and Provide Background Information

Once a scenario has been selected or designed, it's important to establish a clear and engaging context that allows students to fully immerse themselves in the situation.

- Begin by introducing the scenario with a brief narrative that outlines the setting, the key stakeholders involved, and the central challenge or dilemma. The goal is to make the situation feel authentic and relevant, capturing students' interest and encouraging them to step into the roles of decision-makers.
- To support deeper understanding, provide students with background materials that reflect the complexity of real-world issues. This might include news articles, data reports, stakeholder profiles, excerpts from AI ethics guidelines, or short videos. These resources help students grasp the technical, social, economic, or legal aspects of the scenario. In section 9 of this guide, additional teaching materials can be found. These materials can help to provide further information and knowledge to the students.
- Teachers should also clarify the expectations for how students will engage with the scenario—whether they will analyze it individually, debate in groups, or prepare a presentation. Providing guiding questions or a framework for analysis can help students organize their thinking, identify key issues, and approach the scenario from multiple angles.

d) Facilitate Student Exploration and Discussion

In Scenario-Based Learning, the exploration phase is where students actively engage with the scenario, analyze the challenges presented, and begin to formulate possible responses or solutions. This step emphasizes inquiry, discussion, and critical reflection—making it an ideal opportunity to cultivate both independent thinking and collaborative learning.

Students can approach the scenario individually, in pairs, or in small groups, depending on the learning objectives and classroom dynamics. Individual work encourages deep personal reflection and ethical reasoning, which can be particularly useful at the initial stage. Group work, on the other hand, fosters dialogue, exposes students to diverse viewpoints, and mirrors the collaborative decision-making processes often required in real-world

situations. A blended approach can also be effective, for example, asking students to first reflect on the scenario independently and then bring their ideas to a group discussion.

To support meaningful exploration, teachers should adopt the role of facilitator rather than instructor. This means guiding rather than giving answers, encouraging students to ask questions, consider alternatives, and challenge assumptions. Teachers can prompt discussion with questions such as:

- Who are the stakeholders in this scenario, and what are their interests?
- What ethical concerns are raised by this situation?
- What information is missing, and how might that affect your decision?
- What are the short- and long-term consequences of your choices?

e) Debrief and Reflect

Debriefing and reflection are essential to help students consolidate their learning and draw meaningful insights from the scenario. After students have explored the scenario and proposed solutions, the teacher should guide a structured, whole-class discussion that encourages them to revisit their decision-making process, and the ethical considerations involved. It's important to create a respectful and open atmosphere where students feel comfortable sharing their thoughts, acknowledging uncertainties, and exploring different viewpoints. Rather than focusing on whether a particular answer was right or wrong, the emphasis should be on how students approached the problem, what perspectives they considered, and how their thinking evolved throughout the activity.

To deepen the reflective process, teachers can invite students to express what they found challenging or surprising, and to articulate what they learned about the ethical, technical, or social aspects of AI. Teachers can also encourage students to connect the scenario to real-world AI applications and to their future roles as professionals and citizens. By highlighting the relevance of the activity and linking it back to the learning objectives of the course, this final step reinforces not only knowledge acquisition but also the development of ethical awareness and responsible leadership.

How to evaluate and give feedback to the students?

The evaluation can be done through oral discussion or short reflective writing tasks, such as journal entries, one-minute papers, or peer feedback exercises. Depending on the type of activity developed by the students, different types of evaluation methodologies can be used. As is explained in the Problem-Based Learning, one way to do this is through rubrics that clearly define expectations for each aspect of student work.

Peer and self-assessment can also be integrated to encourage students to evaluate their own contributions and the work of their peers critically.

Throughout the SBL process, teachers can give formative feedback by asking guiding questions, prompting students to consider alternative perspectives, and encouraging deeper reflection on ethical dilemmas.

After the activity, teachers should offer summative feedback that highlights students' strengths and areas for improvement.

Step 4. Selection of additional teaching materials

The overall objective of these additional teaching materials is to empower business and management professors, lecturers and teaching staff to understand both the applied and ethical aspects of AI within their courses. It also contributes to equip teachers with new knowledge about applied and ethical AI, its significance and how it can

be applied to improve students' business acumen and awareness.

To achieve this objective this Toolkit is an open access integrated digital resource containing:

- State of the art review,
- Compendium of case studies, and
- Toolbox of recommended digital tools.

State of the Art Review

This document presents a summary of the State-of-the-Art Review, a foundational component of the AI Leaders project. It aims to explore the current understanding and teaching of applied and ethical Artificial Intelligence (AI) in business and management education. By examining how AI is taught and applied across institutions, this review highlights both opportunities and challenges in integrating AI into academic and professional training.

The State-of-the-Art Review serves as a resource for educators and stakeholders, providing insights to help navigate the complexities of teaching AI in a rapidly evolving business landscape while ensuring students are equipped with both the technical expertise and ethical awareness required for the future.
The review seeks to address critical questions such as:

- How can educators effectively teach the applied and ethical aspects of AI to future business leaders?
- What are the current gaps in knowledge, skills, and motivation among educators in this field?
- How can practical tools and case studies support educators in embedding AI in their courses?

Through a synthesis of online research, focus groups, and expert consultations, this condensed version outlines the key findings and recommendations for fostering responsible AI education that aligns with European values and ethical guidelines.

Link to the State-of-the-Art Review synthesis: https://aileaders-project.eu/download/242/?tmstv=1769425568

Compendium of Responsible AI Success Stories

This section includes a collection of 14 Succes Stories that highlight real-world challenges and opportunities in applied and ethical AI in business and management, gathered through research, consultations, and interviews.

A Succes Story is a real-life instance where artificial intelligence (AI) has been applied in a manner that conscientiously regards ethical principles, societal impacts, regulatory compliance, and respects the rights and welfare of all. A Responsible AI Succes Story serves as both a learning tool and a benchmark for organizations, or future business leaders to aspire to in terms of navigating the complex landscape of AI ethics.

Each Succes Story includes a description of the setting, an introduction to the challenge of the ethical use of AI in a real situation, and a conclusion. It also includes a video with more accurate information about the case study (interviews to experts, professionals, etc.), and some reference to dive deeper into the topic of the case study.
These Succes Stories have been classified in the following 6 topics:

a) **Fairness**
   - Balancing Fairness and Transparency in AI Fraud Detection
   - Balancing Automation with Human Oversight in AI Driven Marketing
   - Optimising Product Data and Navigating in Ecommerce with AI

- Building Trustworthy AI: Navigating Ethics, Equity, and Innovation in Global Healthcare

b) Accountability

- Strategic AI Integration in Higher Education - Navigating Privacy, Bias, and Governance

c) Societal Impact

- Leveraging AI for Reliable and Secure Emissions Reporting
- Bridging AI Ethics and Accountability in Academic and Professional Settings
- Building Trust and Privacy in AI-Driven Civic Discourse

d) Transparency and Explainability

- Building Trust in AI: Dynamic Pricing
- Addressing the Ethical Challenges of AI Use in Academic Settings

e) Ethical Design

- Enhancing Surgical Decisions: Balancing Innovation and Ethics in AI-Driven Healthcare
- Balancing Human Creativity and AI Efficiency in Business Operations

f) Regulatory Compliance

- Balancing Automation, Ethics, and Compliance in AI Tax Systems

Link to the Compendium of Responsible AI Success Stories: https://aileaders-project.eu/download/247/?tmstv=1769425568

Toolbox of Recommended Digital Tools

The Toolbox of Recommended Digital Tools is a collection of 13 digital tools to help business and management educators implement applied and ethical AI in presential, hybrid, and digital higher education classes. This guide presents users with tutorials for using the tools and examples for implementing them in the classroom.

This toolbox of recommended digital tools presents several resources that support the teaching of applied and ethical AI, and guides educators on how to implement the tools in the classroom. The toolbox was developed with business and management educators in mind, but due to the nature of the tools, may be useful to educators outside of these fields. This toolbox supports the pedagogical upskilling of educators by making them aware of existing digital tools, and offering instructions and examples for utilizing the tools in the classroom. The resources included aid teachers in understanding the importance, relevance, and possibilities for integrating applied and ethical aspects of AI into their courses, and aim to further motivate them to implement these aspects in the future.

Tools have been sorted into three user categories based on AI knowledge and skill level. In each category, the tools can be used independently.

a) Beginner. Bachelor level or elective interest - little to no expertise is required to understand and/or use these tools.

- Teachable Machines by Google
- Perplexity

- Equitas

b) Intermediate. Bachelor or Master level -some computer programming or technical expertise is required to understand and/or use these tools.

- What-If Tool (WIT)
- Helix.ml
- Jupyter
- Notebook
- Google
- Colaboratory

c) Advanced. Master or other post-graduate level - a great deal of computer programming or AI-specific expertise is required to understand and/or use these tools.

- DALex
- FairLearn
- IBM AI Fairness 360
- SHAP
- LIME

For each digital tool, a common structure of contents has been developed, including the following information:

- A brief description
- Link to the resource
- Note on accessibility
- Ethical criteria the tool addresses
- Guidance for classroom implementation
- Link to user tutorial

Users should be aware that the tools and tutorials are externally created content. At the time of publication, all resources linked in this Toolbox are publicly available, but the AI Leaders Project cannot guarantee that they will remain so. Further, each tool and site operate under its own security and data privacy settings, and users should access the materials at their own risk and according to their own institution's policies.

Link to the Toolbox of Recommended Digital Tools: https://aileaders-project.eu/download/250/?tmstv=1769425568

5. Concluding reflections and Implementation: Tips for Teachers

Throughout the development of this project, it has become evident that while scholars possess a foundational understanding of ethical issues surrounding the use of AI in business and management, there remains a clear need to broaden and deepen this knowledge. Importantly, this knowledge must be effectively transferred to students (future business leaders) so they can make informed, ethically sound decisions in increasingly AI-driven business environments.

The primary objective of this project is to raise awareness and enhance the understanding of the ethical implications of AI within the realm of business and management. This will be achieved through the integration of AI ethics into a range of existing courses within bachelor's and master's degree programs in business and management. The project's teaching resources, including Open Educational Resources (OERs), an Introductory Toolkit, and a Success Studies Compendium, are designed to be accessible and engaging. These materials aim to provide essential knowledge on ethical AI use, without requiring prior expertise in AI technologies or programming from either educators or students. Following extensive discussions with scholars, several practical recommendations have been compiled to guide the integration of AI ethics into business and management curricula:

Identify and prioritize key ethical issues relevant to your course

Although AI's impact on business is broad and cross-cutting, it is important to focus on the most pertinent ethical challenges within the context of each subject. Selecting targeted teaching materials that align with these challenges will allow for more meaningful and in-depth exploration. A deep dive into a specific issue can be more impactful for student engagement and learning than a superficial overview of many topics.

Encourage hands-on exploration of AI tools

Introducing students to AI tools as part of the curriculum not only enhances engagement but also helps them understand the real-world implications of AI use in business scenarios. Allowing students to experiment with these tools fosters critical thinking about both their benefits and potential ethical pitfalls. AI tools presented in the previous sections, such as the Toolbox of Digital Tools, or the Compendium of Case Studies, can be helpful for students.

Promote interdisciplinary collaboration

Since AI influences various facets of business, ranging from marketing and finance to human resources, cross-course collaboration among instructors can greatly enhance the effectiveness of AI ethics education. Coordinating efforts across different subjects can create a more cohesive learning experience and allow faculty to share the best practices and insights.

Assess and reflect on learning outcomes

It is essential to evaluate the effectiveness of integrating AI ethics into the curriculum. Section 8 of this project (Step 3b: Definition of the Pedagogical Approach and Evaluation Criteria) outlines three pedagogical models, each with tailored assessment methods. Employing these tools enables educators to measure student progress and ensure that learning outcomes and competencies are being met.

6. References

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