



AI-HED.EU

BEST PRACTICE · PILOT COURSE

Digital Transformation



How AI was integrated as a research and design support tool in a master-level bridging course at the Faculty of Organization and Informatics, University of Zagreb.

INFORMANTS

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INTERVIEW

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INSTITUTION

FOI · Zagreb

COURSE AT A GLANCE

A master-level bridging course — real-world AI-assisted projects, 64 students, 5 ECTS

5

ECTS CREDITS

64

STUDENTS

1st

SEMESTER

MA

MASTER LEVEL

COURSE OVERVIEW

Digital Transformation

UNIVERSITY

Faculty of Organization and Informatics — University of Zagreb

PROGRAMME

Information and Software Engineering · Informatics in Education · Business Systems Organization

COURSE LEVEL

Master · 1st semester · 5 ECTS

TYPICAL STUDENT BACKGROUND

Graduates of undergraduate programmes in information and business systems, IT and business digitalisation, and students from other faculties completing Digital Transformation as a bridging requirement. Prior competencies include software and IS development, data analysis, machine learning, AI for business processes, and networked systems.

PREREQUISITES

None.

SUMMARY OF AI USAGE



Artificial intelligence was integrated into the course through seminar sessions. Students actively used AI tools in the development of their course projects, which involved preparing a digital transformation proposal for a selected real-world business case (organization). AI was primarily used as a support tool for conducting deeper analyses and for clarifying and interpreting the analytical results related to the chosen business case. In addition, students used AI to create visualizations of the proposed digital transformation models, develop conceptual prototype designs, and visually present selected analytical methods applied in their projects.

— LARISA HRUSTEK & ANA KUTNJAK, COURSE TEACHERS

SECTION 02

02

Learning outcomes

Ten outcomes spanning analysis, innovation, and digital transformation design.

INTENDED LEARNING OUTCOMES

Ten outcomes spanning analysis, design, and business transformation

- 01** Recommend appropriate digital technologies for business process transformation.
- 02** Design a proposal for improving the user experience.
- 03** Evaluate the need for innovation for a given business problem.
- 04** Develop innovations in business processes and models to enhance organizational success.
- 05** Design business process transformation based on organizational, process, and technological innovations.
- 06** Propose technological innovations for business processes and create an integration plan for a given business problem.
- 07** Assess the application of digital transformation methods in a selected specific case.
- 08** Justify the need for upgrading software support as part of a transformation initiative.
- 09** Construct a project implementation plan considering financial, human, and informational resources.
- 10** Estimate the costs and effects of business process improvement.

AI SUPPORT · ILO 1

Analysing industries and identifying relevant technologies

01

**INTENDED LEARNING
OUTCOME**

**Recommend appropriate
digital technologies for
business process
transformation.**

“

AI tools supported students in analysing technologies and industry contexts, conducting literature reviews, and identifying relevant digital disruptions. By generating structured overviews of technology landscapes, AI helped students build the analytical base needed to recommend appropriate digital technologies for their chosen business case.

AI SUPPORT · ILO 2

Structuring conceptual models and iterating on prototype designs

02

**INTENDED LEARNING
OUTCOME**

**Design a proposal for
improving the user
experience.**

“

AI helped students structure and refine conceptual solution models and prototypes through iterative design. Students used AI to explore design directions, visualize proposed improvements, and develop prototype concepts — then critically evaluated the generated content before integrating it into their proposals.

AI SUPPORT · ILO 3

Evaluating innovation needs and exploring digital solutions

03

**INTENDED LEARNING
OUTCOME**

**Evaluate the need for
innovation for a given
business problem.**

“

AI supported students in conducting literature reviews and identifying relevant disruptions, helping them evaluate the scope and direction of innovation needed for their selected business problem. AI-generated analyses provided starting points that students then critically assessed and refined for their specific case.

AI SUPPORT · ILO 7 & 8

Selecting and visualizing methods — and evaluating digital technologies

07

**INTENDED LEARNING
OUTCOME**

**Assess the application
of digital transformation
methods in a selected
case.**

“

AI tools supported the selection and visualization of appropriate analytical methods such as the Business Model Canvas and Value Proposition Canvas.

AI SUPPORT · ILO 7 & 8

Selecting and visualizing methods — and evaluating digital technologies

08

**INTENDED LEARNING
OUTCOME**

Justify the need for upgrading software support as part of a transformation initiative.

“

The evaluation of digital technologies that could support proposed digital transformation initiatives and create value for organisations and stakeholders.

SKILLS ENHANCED

Critical thinking, analytical skills, and decision-making — sharpened through AI



Students who used artificial intelligence appropriately strengthened their critical and creative thinking, analytical skills, and decision-making skills. AI tools helped students refine and expand their ideas, critically evaluate them, and identify their strengths and weaknesses, which contributed to the development of both critical and creative thinking skills. Analytical skills were enhanced through the need to verify, synthesize, and interpret the outputs generated by AI prompts, and to structure and integrate this content effectively into their projects. Decision-making skills were improved by evaluating the validity and reliability of AI-generated content before incorporating it into their projects.

AI-SPECIFIC LEARNING OUTCOMES

No formal AI outcomes — but responsible use ran through every deliverable

NO FORMAL ILO

The course did not include formally defined AI-specific learning outcomes. AI was integrated as a supporting tool to achieve subject-matter ILOs — not as a subject in itself.

An **implicit objective** ran through every assessed deliverable: students approach AI as a responsible learning companion — not a shortcut. *enhances* rather than replaces student thinking and judgment.

SECTION 03

03

Purpose & benefits

Two perspectives — learning to work with AI, and embracing AI as a learning companion.

MAIN MOTIVATION FOR USING AI

Two perspectives — mastering AI tools and embracing AI as a learning companion



The use of artificial intelligence was motivated by two perspectives: (1) to enable students to learn how to work effectively with AI tools (properly apply the tools, integrate the results into their work, and critically evaluate the generated content); (2) to help them understand how AI can serve as a learning companion (to explore the range of possibilities available and to use AI to further develop and refine their ideas).

BENEFITS FOR STUDENTS

Deeper analysis, richer visualizations, and a better grasp of the case



AI tools helped improve the work on student projects. The benefits of using AI tools for students were reflected in conducting an in-depth analysis of the current state of the selected case, which enabled students to better understand the case they were addressing, as well as in visualizing the digital transformation concepts they proposed. In addition, AI tools enabled students to present the business case they worked on through visualizations of other methods.

BENEFITS FOR THE LECTURER

A collaborative learning environment where both sides grew



The lecturers also strengthened their competencies in the use of AI tools, as they needed to prepare teaching materials and practical examples demonstrating how artificial intelligence can be used effectively and ethically. This process contributed to the further development of their skills in exploring AI tools, designing AI-supported learning activities, and transferring this knowledge to students. Additionally, during seminar sessions, lecturers and students jointly engaged in critical reflection on the outputs generated by AI tools. This created a collaborative learning environment in which both students and lecturers evaluated the reliability, relevance, and limitations of AI-generated results, thereby fostering a more critical and informed use of artificial intelligence in academic work.

SECTION 04

04

Implementation details

Six seminar sessions, team projects, and structured AI guidance across the semester.

HOW AI WAS USED IN CLASS

Team projects on real-world digital transformation cases — AI woven in across six sessions



AI tools were used in the development of the group project. Students worked in teams of 4–5 members. AI tools were used in approximately six seminar sessions. Specifically, during the seminars, instructors first explained the basic theoretical concepts, and the remaining time was allocated for students to work on their team project. The project topic was: “Digital Transformation of a Selected Business Case.” The use of AI tools was integrated into multiple course units, particularly for analyzing the current state of the selected organization, exploring the potential application of digital technologies for the organization’s specific needs, creating visualizations of the organization’s digital transformation concept, and visualizing methodological frameworks such as the Business Model Canvas and the Value Proposition Canvas.

TOOLS & PLATFORMS

Three recommended tools — plus independent student experimentation

01

**GENERAL-PURPOSE GENERATIVE
AI**

ChatGPT

Used for deeper analyses, structuring ideas, literature support, and refining project narratives across seminar sessions.

02

RESEARCH & KNOWLEDGE AI

Perplexity

Recommended for sourcing and fact-checking in the analytical phases — helping students identify relevant information and verify claims.

03

AI-POWERED DESIGN

Canva AI

Used for visualizing digital transformation concepts, Business Model Canvas, Value Proposition Canvas, and conceptual prototype designs.

Gemini and other tools also used independently by students. All recommended tools available on free tier; paid versions was not required, although approximately 70% of students reported that they had used paid versions.

ACCESS TO TOOLS - FREE VS PAID

Free tiers sufficient — and team coordination covered the gap

Free

RECOMMENDED FOR ALL STUDENTS

Paid versions were not required. Free versions provided sufficient functionality for all course activities.

“

Some students used free AI tools, while others used paid versions. However, paid versions were not required for the course activities, as the free versions provided sufficient functionality. When free tools reached usage limits (e.g., prompts or output restrictions), students coordinated within their teams to continue the work. Since teams typically consisted of four to five members, another team member could submit the next query, ensuring continuity in the workflow.

GUIDANCE & SUPPORT FOR USING AI EFFECTIVELY

Theoretical grounding, hands-on demonstration, and clear referencing rules



During the first part of the seminar sessions, the lecturer presented the theoretical concepts from the course units in which the use of AI tools was planned. Through prepared teaching materials, the lecturer provided students with clear guidance on how to apply AI tools to specific methods and theoretical concepts, and they also demonstrated the practical use of AI tools. In addition, students received clear instructions on how to properly reference the use of AI tools, how to use content generated by AI tools, and how to appropriately integrate such content into their projects.

AI IN STUDENT ASSESSMENT

AI use assessed against specific learning outcomes

YES

Assessed against specific ILOs

“

Students' use of AI was evaluated in relation to the achievement of specific Learning Outcomes (ILOs). For ILO 1 and ILO 3, assessment focused on how students used AI tools to analyse industries, identify disruptions, and explore relevant technologies and good practices. ILO 2, ILO 7, and ILO 8 were assessed through students' ability to develop conceptual solution models, visualize the current state, and present proposed digital transformation solutions using AI-supported tools (e.g., Canva AI). Overall, students were evaluated on how effectively they used AI to enhance the quality and clarity of their project.

SECTION 05

05

Evaluation & risk management

Project work and seminar discussions as the primary evaluation lens.

HOW AI IMPACT WAS EVALUATED

Project transparency and critical seminar reflection



The impact of AI on teaching and learning was evaluated primarily through students' project work and seminar discussions. In their projects, students were required to explicitly describe how they used AI tools, indicating which AI-generated outputs they accepted, how they further developed or refined them, and how these outputs contributed to their final solutions. Additionally, the use and results of AI tools were regularly discussed during seminar sessions. Students critically reflected on the outputs generated by AI, both in peer discussions and in dialogue with the lecturers.

METRICS & KPIS

No formal metrics — quality assessed through project work and reflection

NO

“

No specific metrics or KPIs were established to monitor the success of AI integration.

Evaluation relied on **qualitative insights** — through the quality of project work and the depth of critical reflection demonstrated in seminar discussions.

FORMAL COURSE EVALUATION

AI integration evaluated within AI-HED — not in the standard institutional review

NO

Outside the standard institutional process

RISK MANAGEMENT IN AI USE

Ethical reminders, hands-on revision, and demonstrated AI failures as safeguards

YES

Built into every seminar session

“

Certain risk management measures regarding the use of AI were implemented throughout the course. During the semester, students were consistently reminded that AI tools must be used ethically and responsibly. AI was intended to serve as a supporting companion in gathering and exploring information, rather than as the primary creator of the students' work. If it was identified that AI tools had been used in a way that replaced the students' own work entirely, and this was recognized by the lecturers during the evaluation process, the projects were returned to the students for revision. In such cases, students were required to further develop the work themselves and demonstrate appropriate and responsible use of AI tools.

SECTION 06

06

Overall impact

Polarized results — strong teams thrived, others leaned on AI without critical engagement.

OVERALL IMPACT ON TEACHING & LEARNING



An evaluation of the use of AI tools in teaching and learning shows that the experience included both positive and negative aspects. Some teams performed very well: they followed the learners' guidelines, used AI tools appropriately, and developed solutions that were high-quality, comprehensive, and meaningful. They also achieved better project outcomes. On the other hand, there were student teams that did not approach the use of AI tools seriously. They relied on AI-generated content without meaningful adaptation, critical evaluation, or consideration of the content in the context of the case they were working on. It can be assumed that student engagement varied across teams. No noticeable impact was observed in terms of accessibility or personalization. However, overall student effectiveness increased when AI tools were applied appropriately.

— LARISA HRUSTEK & ANA KUTNJAK, COURSE TEACHERS

IMPACT ON STUDENT LEARNING OUTCOMES

Positive overall — AI as companion, not shortcut



The impact of AI on student learning outcomes can be considered positive. Students recognized that the outputs generated by AI must be carefully evaluated and critically assessed. At the same time, they learned to view AI as a supportive learning companion that can help them develop and refine ideas, rather than as a tool that completes tasks on their behalf. As a result, students strengthened several important competencies, particularly critical thinking and problem-solving skills. The use of AI tools encouraged them to reflect more deeply on the information they received, evaluate its relevance and integrate it meaningfully into their project.

MAIN CHALLENGES & HOW THEY WERE MANAGED

Irresponsible AI use and the challenge of building genuine critical awareness



Challenges related to students were primarily associated with the irresponsible use of AI tools, particularly submitting content that was entirely generated by AI tools, improper referencing of AI use, and sharing incorrect information that resulted from AI-generated outputs. This challenge was addressed through discussions with students, during which the issues were highlighted and project-related mistakes were reviewed. Lecturers also faced the challenge of fostering students' awareness that AI tools should be used responsibly and conscientiously, and that AI-generated content must be critically evaluated. To support this, lecturers presented several examples within specific course units demonstrating that AI tools do not fully understand certain theoretical concepts covered in class. It was shown that artificial intelligence can hallucinate, misinterpret information, or produce biased results. Despite these efforts, some student teams did not adequately assess the quality of the content generated by AI tools.

SECTION 07

07

Scalability & transferability

Transferable to any project-based course, with institutional support already in place.

SCALING TO OTHER COURSES AND NEED FOR INSTITUTIONAL SUPPORT

Yes — transferable to any project-based course, with institutional backing in place

100%

YES — SCALABLE

The experience is scalable to other courses, particularly those with project-based work. AI integration allows students to explore technologies, develop ideas, and enhance analytical and creative skills — making this approach broadly transferable.

“

Experience from this course can be scaled and applied to other courses, particularly those that include project-base. The integration of AI tools in project work allows students to explore technologies, develop ideas, and enhance their analytical and creative skills, which makes this approach transferable to a wide range of courses. At the institutional level, the Faculty has established Guidelines for the Use of Artificial Intelligence in the Teaching Process. In addition, the institution regularly organizes workshops and training sessions for lecturers focused on the application of AI tools in teaching. Further educational activities are also planned to address the ethical use of AI tools by students. Through these initiatives, the institution provides structured support for both lecturers and students in the responsible and effective integration of AI into the learning process.

KEY ADVICE FOR EDUCATORS

Four principles for bringing AI into courses responsibly and effectively

Address AI actively.

01

Students are already using AI — don't avoid it. Bring it explicitly into the course and set clear expectations for responsible, critical use from day one.

Show AI's limits in class.

03

Demonstrate within specific course units that AI can hallucinate, misinterpret, and produce biased content. Seeing it fail builds genuine critical awareness.

Frame AI as a companion.

02

Help students understand that AI supports exploration and refinement — but does not replace their own thinking, judgment, or voice in the work.

Assess the process, not just the product.

04

Require students to describe how they used AI — which outputs they accepted, adapted, or rejected. Transparency about the process reveals the depth of understanding.

A project-based pilot that brought AI into the analysis— and built the critical habits students will need long after the course ends.

COURSE

Digital Transformation

INFORMANTS

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INSTITUTION

FOI · University of Zagreb

PROGRAMME

Information and Software
Engineering · Informatics
in Education · Business
Systems Organization

ABOUT AI-HED

An Erasmus+ cooperation project on AI in higher education

The project "**Artificial Intelligence in Higher Education Teaching and Learning**" (AI-HED), launched with co-funding from the European Commission under the Erasmus+ Programme in the fields of education, training, youth, and sport for the 2021–2027 period, was submitted and awarded under **Key Action 2: Cooperation among organisations and institutions**.

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