

incte' 25

international
conference on
teacher education

**IX Encontro Internacional
de Formação na Docência**
*9th International Conference
on Teacher Education*

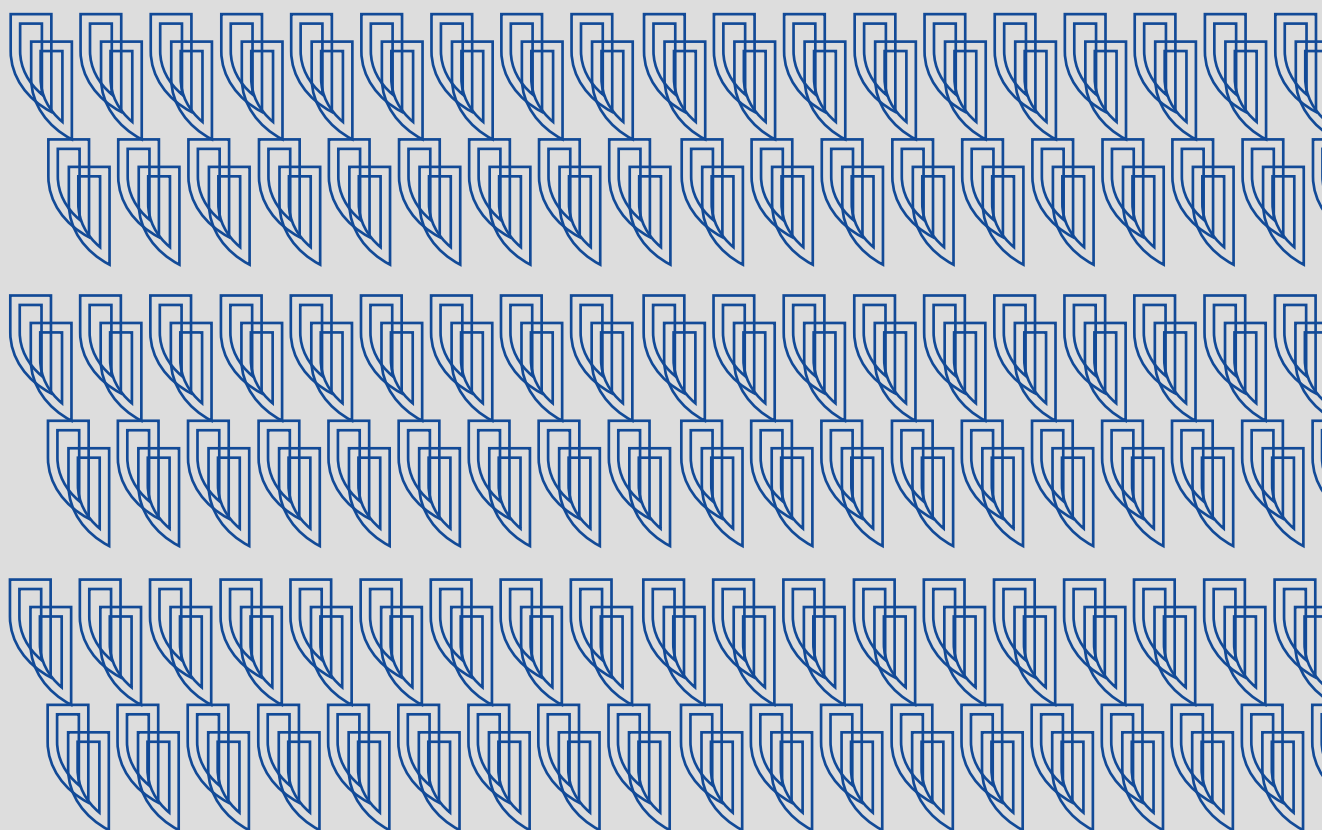
ESCOLA SUPERIOR DE EDUCAÇÃO
IPB - Bragança - PORTUGAL

Livro de Atas Conference Proceedings

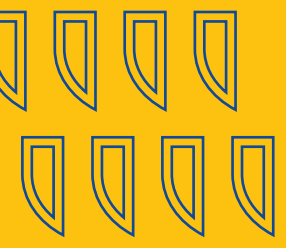
incte.ipb.pt

**Inteligência Artificial na Educação:
consciência crítica, relacional e ética**

*Artificial Intelligence in Education:
critical, relational and ethical awareness*



incte'25
international
conference on
teacher education



Título | Title

IX Encontro Internacional de Formação na Docência | Livro de Atas
9th International Conference on Teacher Education | Conference Proceedings

Editores | Editors

Elisabete Mendes Silva, Rui Pedro Lopes (CeDRI), Cristina Mesquita, Paula Vaz,
Ana Raquel Prada, Jacinta Costa, Manuel Luís Castanheira, Manuel Vara Pires
CITeD, Instituto Politécnico de Bragança

Editores Gráficos | Graphic Editors

Jacinta Costa, Carlos Casimiro da Costa
Instituto Politécnico de Bragança

Apoio Técnico | Technical Support

Clarisse Pais
Instituto Politécnico de Bragança

Publicação | Publisher

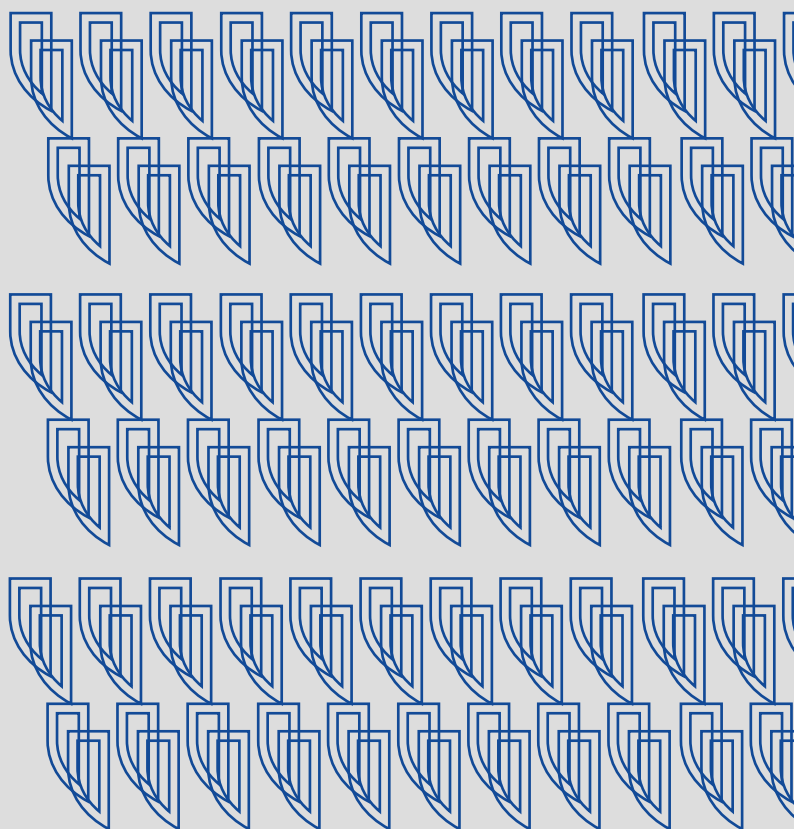
Instituto Politécnico de Bragança

Morada | Address

Escola Superior de Educação de Bragança
Campus de Santa Apolónia
5300-253 Bragança . Portugal
<http://incte.ipb.pt/> - incte@ipb.pt

ISBN: 978-972-745-354-2

DOI: 10.34620/978-972-745-354-2



Comissão Organizadora | Organising Committee

Ana Raquel Prada | Instituto Politécnico de Bragança, Portugal
Cristina Mesquita | Instituto Politécnico de Bragança, Portugal
Elisabete Mendes Silva | Instituto Politécnico de Bragança, Portugal
Jacinta Costa | Instituto Politécnico de Bragança, Portugal
Luís Castanheira | Instituto Politécnico de Bragança, Portugal
Manuel Vara Pires | Instituto Politécnico de Bragança, Portugal
Maria da Conceição Martins | Instituto Politécnico de Bragança, Portugal
Paula Vaz | Instituto Politécnico de Bragança, Portugal
Rui Pedro Lopes | Instituto Politécnico de Bragança, Portugal

Secretariado | Secretariat

Alexandra Fernandes | Instituto Politécnico de Bragança, Portugal
Basília Cabral da Luz | Instituto Politécnico de Bragança, Portugal
David Boaventura | Instituto Politécnico de Bragança, Portugal
Diana Afonso | Instituto Politécnico de Bragança, Portugal
Eduarda Ribeiro | Instituto Politécnico de Bragança, Portugal
Filipe Pires | Instituto Politécnico de Bragança, Portugal
Hérson Martins | Instituto Politécnico de Bragança, Portugal
Marian Lonsodoe | Instituto Politécnico de Bragança, Portugal
Vasco Costa Santos | Instituto Politécnico de Bragança, Portugal

Organizado por | Organised by



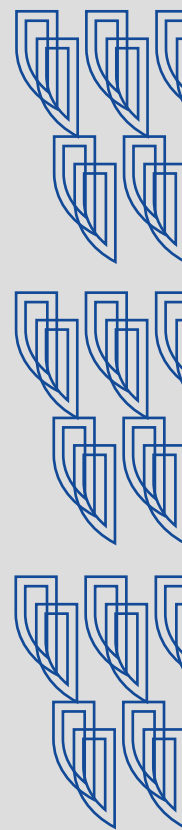
Apoios | Sponsors



Comissão Científica | Scientific Committee

Adorinda Gonçalves (IPB, Portugal)
Alessandra Straniero (UC, Itália)
Alexia Dotras Bravo (IPB, Portugal)
Amélia Marchão (IPPortalegre, Portugal)
Ana Claudia Loureiro (IPB, Portugal)
Ana García Valcárcel (USAL, Espanha)
Ana Lúcia Pinto (IPB, Portugal)
Ana Paula Florêncio Aires (UTAD, Portugal)
Ana Paula Laborinho (FEA, Portugal)
Ana Paula Martins (UMinho, Portugal)
Ana Raquel Prada (IPB, Portugal)
António Carlos Cortez (UMinho, Portugal)
António Domingos (ULisboa, Portugal)
António Guerreiro (UAlgarve, Portugal)
António Nóvoa (ULisboa, Portugal)
António Vasconcelos (IPS, Portugal)
Ariana Cosme (UPorto, Portugal)
Carla Araújo (IPB, Portugal)
Carla Guerreiro (IPB, Portugal)
Carlos Neto (ULisboa, Portugal)
Carlos Teixeira (IPB, Portugal)
Carlos Silva (UMinho, Portugal)
Catarina Vasques (IPB, Portugal)
Chee Hoo Lum (NIENTU, Singapura)
Christine Pascal (CREC, Reino Unido)
Cláudia Martins (IPB, Portugal)
Cristina Martins (IPB, Portugal)
Cristina Mesquita (IPB, Portugal)
Daniela Gonçalves (ESEPF, Portugal)
Delmina Pires (IPB, Portugal)
Domingos Fernandes (ULisboa, Portugal)
Eduardo Lopes (UEvora, Portugal)
Elisabete Mendes Silva (IPB, Portugal)
Elza Mesquita (IPB, Portugal)
Evangelina Bonifácio (IPB, Portugal)
Feliciano Henriques Veiga (ULisboa, Portugal)
Fernando Martins (IPC, Portugal)
Flávia Vieira (UMinho, Portugal)
Gabriela Portugal (UAveiro, Portugal)
Gianina Ana-Massari (UAICDIasi, Roménia)
Graça Santos (IPB, Portugal)
Helena Rocha (UNova, Portugal)
Henrique Teixeira-Gil (IPCB, Portugal)
Ilda Freire-Ribeiro (IPB, Portugal)
Isabel Cabrita (UAveiro, Portugal)
Isabel Mociño-González (UVigo, Portugal)
Isabel Chumbo (IPB, Portugal)
Isabel Vale (IPVC, Portugal)
Isolina Oliveira (UAberta, Portugal)
Jacinta Costa (IPB, Portugal)
Joaquim Machado (UCP, Portugal)
Jorge Garcês Ferrer (UV, Espanha)
Jorge Ramos do Ó (ULisboa, Portugal)
José Manuel Cardoso Belo (UTAD, Portugal)
Juan R. Coca (UVa, Espanha)
Juan Carlos Hernandez Beltran (USAL, Espanha)
Júlia Oliveira-Formosinho (UCP, Portugal)
Ledia Kashahu (AM UDurrês, Albânia)
Leoncio Veja Gil (USAL, Espanha)
Letizia Cinganotto (INDIRE, Itália)
Lídia Machado dos Santos (IPB, Portugal)
Lídia Sanz Molina (UVa, Espanha)

Lina Fonseca (IPVC, Portugal)
Lourdes Montero (USC, Espanha)
Lucía Casal de la Fuente (UVigo, Espanha)
Luciana Cabral Pereira (UTAD, Portugal)
Luís Barbeiro (IPLeiria, Portugal)
Luís Castanheira (IPB, Portugal)
Luís Sebastião (UEvora, Portugal)
Luisa Panichi (UPisa, Itália)
Maja Ljubetic (USplit, Croacia)
Manuel Meirinhos (IPB, Portugal)
Manuel Vara Pires (IPB, Portugal)
Maria Mezquita-Fernández (UVA, Espanha)
Maria Assunção Flores (UMinho, Portugal)
Maria da Conceição Martins (IPB, Portugal)
Maria do Céu Ribeiro (IPB, Portugal)
Maria do Céu Roldão (UCP, Portugal)
María Alonso-Cortés (ULEón, Espanha)
Maria Figueiredo (IPV, Portugal)
Maria Isabel Castro (IPB, Portugal)
Maria José Rodrigues (IPB, Portugal)
Maria Raquel Patrício (IPB, Portugal)
Marília Castro Cid (UEvora, Portugal)
Mário Cardoso (IPB, Portugal)
Mark Daubney (IPLeiria, Portugal)
Marta Saracho Aranaiz (IPPorto, Portugal)
Mercedes López-Aguado (ULEón, Espanha)
Michiel Heijnen (MAcademy, Netherlands)
Miguel Guerra (UMálaga, Espanha)
Miguel Ribeiro (UCampinas, Brasil)
Nélia Amado (UAlgarve, Portugal)
Nelson Zagalo (UAveiro, Portugal)
Neusa Branco (IPSantarém, Portugal)
Nuno Paulo Santos (IPB, Portugal)
Olga Santos (IPLeiria, Portugal)
Paula Maria Barros (IPB, Portugal)
Paula Vaz (IPB, Portugal)
Paula Quadro Flores (IPPorto, Portugal)
Paulo Afonso (IPCB, Portugal)
Pedro Mucharreira (ULisboa, Portugal)
Pedro Tadeu (IPG, Portugal)
Pilar Gútez Cuevas (UCMadrid, Espanha)
Rafaela Camargo Maia (IFECTC, Brasil)
Rosa Novo (IPB, Portugal)
Rui Pedro Lopes (IPB, Portugal)
Rui Trindade (UPorto, Portugal)
Rui Vieira (UAveiro, Portugal)
Sandie Mourão (UNova, Portugal)
Sandra Regina Soares (UNEB, Brasil)
Sani Rutz da Silva (UTFPR, Brasil)
Sara Barros Araújo (IPPorto, Portugal)
Sofia Bergano (IPB, Portugal)
Sónia Galinha (IPSantarém, Portugal)
Sonia Rodríguez Cano (UBU, Espanha)
Susana Carreira (UAlg, Portugal)
Susana Colaço (IPSantarém, Portugal)
Susana Gómez Redondo (UVa, Espanha)
Susana Peralta (NSBE, Portugal)
Tony Bertram (CREC, Reino Unido)
Vanessa Delgado Benito (UBU, Espanha)
Victoria Stratan (ICSP UC, Moldávia)
Vítor Gonçalves (IPB, Portugal)



Eixos temáticos

O Encontro estrutura-se em torno de cinco grandes eixos temáticos:

Eixo Temático 1:

Currículo e formação de educadores e professores

Este eixo temático aborda questões relacionadas com o currículo, a inovação curricular e novas perspetivas curriculares no contexto da formação inicial ou contínua de educadores e professores. Inclui a discussão de modelos e processos curriculares de vários tipos, bem como trabalhos ou propostas para a formação de educadores e professores em contextos diversos.

Eixo Temático 2:

Didática e formação de educadores e professores

Este eixo temático inclui aspetos de diferentes saberes disciplinares em contextos escolares, refletindo sobre os contributos da didática para a formação de educadores e professores na construção progressiva de formas de compreender e atuar conscientemente em situações educativas.

Eixo Temático 3:

Práticas educativas e supervisão pedagógica

Este eixo temático aborda o desenvolvimento de práticas de formação de educadores e professores em escolas, incluindo a problematização dos papéis a desempenhar por diversos intervenientes, numa perspetiva de trabalho colaborativo e construção de uma identidade profissional consciente, comprometida e responsável.

Eixo Temático 4:

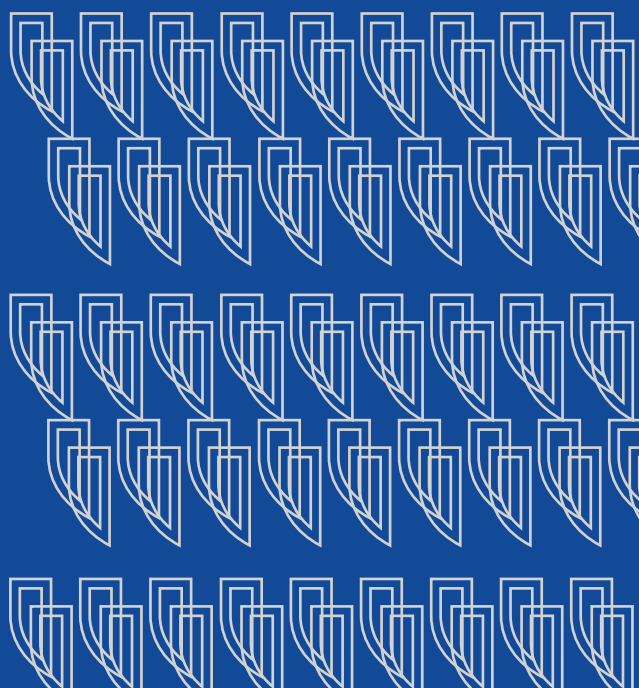
Formação de professores e educação para o desenvolvimento

Este eixo temático aborda aspetos educativos do ensino e da aprendizagem relacionados com a promoção de uma cidadania global responsável. Inclui a discussão de projetos e práticas educativas que promovam a educação para o desenvolvimento.

Eixo Temático 5:

Práticas pedagógicas no ensino superior

Este eixo temático aborda questões relacionadas com os desafios pedagógicos que o ensino superior enfrenta atualmente, englobando a discussão, partilha e disseminação de experiências pedagógicas neste nível de ensino.



Thematic axes

The Meeting is structured around five major thematic axes:

Thematic Axis 1:

Curriculum and the training of educators and teachers

This thematic axis addresses issues related to the curriculum, curricular innovation, and new curricular perspectives in the context of initial or continuing education for educators and teachers. It includes the discussion of models and curricular processes of various types, as well as works or proposals for the training of educators and teachers in diverse contexts.

Thematic Axis 2:

Didactics and the training of educators and teachers

This thematic axis includes aspects of different disciplinary knowledge in school contexts, reflecting on the contributions of didactics to the training of educators and teachers for the progressive construction of ways to consciously understand and act in educational situations.

Thematic Axis 3:

Educational practices and pedagogical supervision

This thematic axis addresses the development of training practices for educators and teachers in schools, including the problematization of the roles to be played by various stakeholders from a perspective of collaborative work and the construction of a conscious, committed, and responsible professional identity.

Thematic Axis 4:

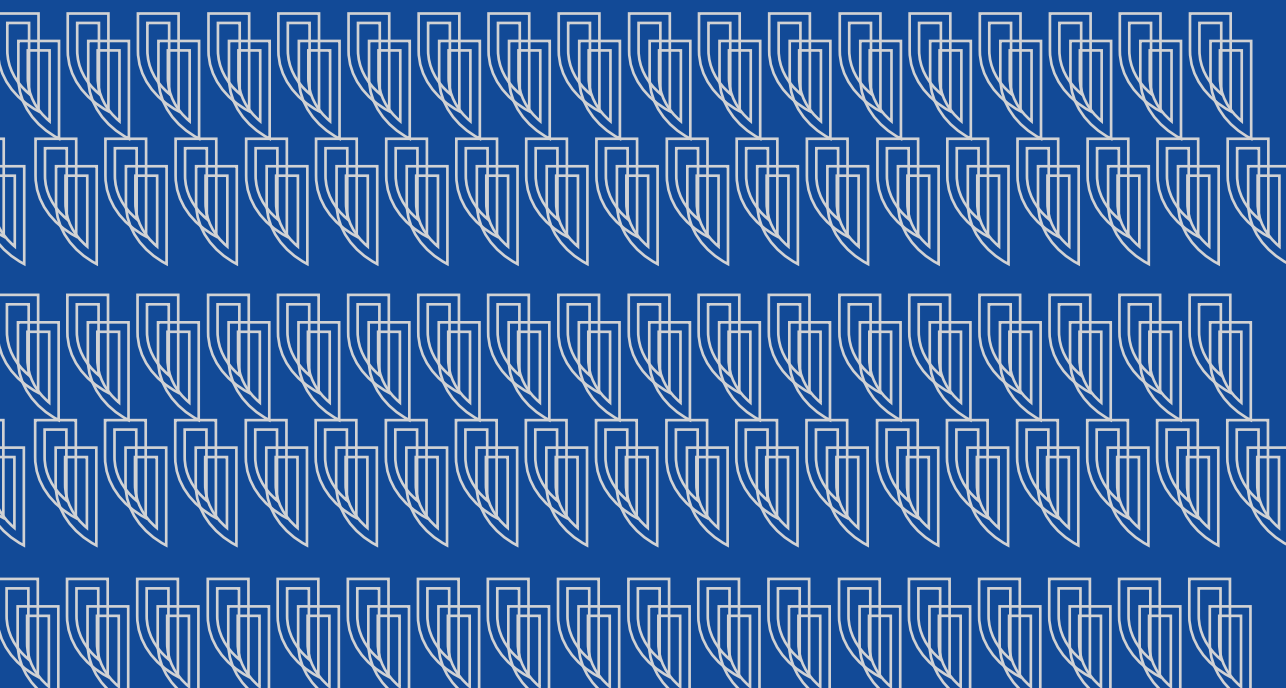
Teacher training and education for development

This thematic axis addresses educational aspects of teaching and learning related to promoting responsible global citizenship. It includes the discussion of projects and educational practices that foster education for development.

Thematic Axis 5:

Pedagogical practices in higher education

This thematic axis addresses issues related to the pedagogical challenges faced by higher education today, encompassing the discussion, sharing, and dissemination of pedagogical experiences at this level of education.



*In memoriam de Maria da Conceição Martins
Membro da Comissão Organizadora do INCTE'25*

Pela seriedade com que abraçou cada desafio, pela dedicação constante e pelo contributo valioso à
construção do INCTE.
A sua marca permanece no rigor do trabalho, no cuidado com os detalhes e na forma como continua
a inspirar e a iluminar, discreta, mas decisivamente, o que fazemos e como fazemos.

Com gratidão e serena saudade.

Índice

INCTE'25 – IX Encontro Internacional de Formação na Docência

Nota de abertura	1
Perspetivas para a inteligência artificial em educação: consciências críticas, relacionais e éticas . <i>Elisabete Mendes Silva, Rui Pedro Lopes, Cristina Mesquita, Paula Vaz, Ana Raquel Prada, Jacinta Costa, Luís Castanheira, Manuel Vara Pires, Maria da Conceição Martins</i>	3
Conferências Plenárias	9
Artificial Intelligence and Education: A Critical Studies Perspective	11
<i>Wayne Holmes</i>	
IA: Potencial e Risco	19
<i>Rui Pedro Lopes</i>	
Mesa Redonda	27
Artificial Intelligence in Education: Challenges and Opportunities for Pedagogical Awareness ..	29
<i>Cláudia Martins (chair)</i> <i>Agnė Paulauskaitė-Tarasevičienė, Carles Sierra, Filipe Portela (participants)</i>	
Currículo e Formação de Educadores e Professores	35
Aprender a tornar-se professor: Um estudo com alunos de Mestrado em Ensino	37
<i>Adriana Cunha, Maria Assunção Flores</i>	
Conhecimento pedagógico da Estatística: currículo e avaliação	43
<i>Giane Correia Silva, Cristiane de Fatima Budek Dias, Guataçara dos Santos Junior</i>	
Conhecimento pedagógico da Estatística: estratégias pedagógicas	49
<i>Giane Correia Silva, Cristiane de Fatima Budek Dias, Guataçara dos Santos Junior</i>	
La competencia digital docente, un caso de estudio en un centro de educación concertada en la ciudad de Burgo	55
<i>Miguel Ángel García Delgado, Sonia Rodríguez Cano, Vanesa Delgado Benito, Paula Puente-Torre</i>	
Elaboración de recursos y herramientas digitales para la atención a la diversidad	61
<i>Inmaculada García Martínez, Lara Checa Domene, Antonio Rodríguez-Fuentes, Carmen del Pilar Gallardo Montes</i>	
Estudio descriptivo de las percepciones de los futuros docentes sobre las Ciencias Computacionales para atender al alumnado con NEAE	68
<i>Lara Checa Domene, Inmaculada García Martínez, Carmen del Pilar Gallardo Montes, Christian Cid-González</i>	

Evolución de la competencia socioemocional en la formación inicial de educadores y educadoras sociales de León y Braganza	75
<i>Mercedes López-Aguado, Ana M^a de Caso Fuertes, Lourdes Gutiérrez-Provecho, Ana Raquel Russo Prada, Maria do Céu Ribeiro, Rosa Maria Ramos Novo</i>	
Formação continuada no Brasil: os desafios impostos pela lógica tecnicista e caminhos para a superação	81
<i>Denize Luana Korzeniewski, Débora Danieli Pontarollo Gonçalves, Marizete Righi Cechin</i>	
Mestrado em pedagogia e didática da Universidade da estrutura curricular à ação - UMUM ...	87
<i>Edgar Lamas, Estela Lamas, Magali Freira Veríssimo</i>	
Perceções das alterações climáticas pelos alunos do ensino superior: conhecimentos, crenças e compreensão	95
<i>José Semedo, Ricardo Ramos</i>	
Promoção do pensamento matemático em sala de aula com a integração do software GeoGebra nas práticas usuais.....	102
<i>Pedro Mateus, Lino Sidónio Viegas, Abudo Atumane Ossufo</i>	
Didática e Formação de Educadores e Professores	109
A voz das crianças sobre as relações de poder em educação pré-escolar	111
<i>Cristiana Ribeiro, Cristina Mesquita, Juan Carlos Beltrán</i>	
Sesgo en el tratamiento educativo de la biodiversidad mediante el empleo de aplicaciones de inteligencia artificial	117
<i>Luis de Pedro Noriega, Javier Bobo-Pinilla, Jaime Delgado Iglesias, Roberto Reinoso Tapia, Ana María Gallego Díaz, Susana Quirós Alpera</i>	
Contributo da inteligência artificial para a literacia ambiental dos jovens – estudo exploratório sobre biodiversidade das Aves.....	124
<i>Nuno Paula Santos, Paulo Mafra</i>	
Critical Thinking as an Education Ideal Goal: Theoretical review	131
<i>Samir Zedam, Helena Santos Silva, Caroline Elizabeth Domínguez, Luís Castanheira</i>	
Desenvolvimento do Pensamento Computacional em Matemática centrado numa abordagem STEAM: uma revisão sistemática da literatura	138
<i>Henrique de Carvalho Faria, Cristina Martins, Márcio Pironel, Patrícia Teixeira</i>	
Dinâmicas de Integração Disciplinar na Abordagem STEAM	144
<i>Patrícia Teixeira, Helena Rocha, Cristina Martins</i>	
Inteligência artificial e educação matemática: avaliação do ChatGPT na solução de questões do ENEM.....	150
<i>Neumar Albertoni, Sani de Carvalho Rutz da Silva, Albino Szesz Junior, Manuel Meirinhos, Silvio Luiz Rutz da Silva</i>	
La Inteligencia Artificial en la Formación Profesional Sanitaria: Oportunidades desde la percepción del alumnado y del profesorado.	157
<i>Olalla Gracia-Fuentes, Manuela Raposo-Rivas</i>	
La competencia emocional en los futuros maestros: analisis de las necesidades actuales	163
<i>Haridian Santana León, María Brígido Mero</i>	

Manuais escolares do 2.º ciclo do ensino básico: o contexto das tarefas no tema Dados e Probabilidades	169
<i>Paula Maria Barros, José António Fernandes</i>	
PBL and MOODLE: The Educational Experience at the University of Palermo	175
<i>Eleonora Spada, Elena Mignosi, Claudio Fazio, Onofrio Rosario Battaglia</i>	
Students' beliefs about the use of Artificial Intelligence in teacher training: challenges and opportunities in music creation	182
<i>Gerson Rafael Nascimento, Yurima Blanco García, Ángela González Alonso, Pablo García Barrul</i>	
Perceções dos professores sobre a utilização dos Recursos Educativos Digitais em matemática com alunos do 1.º ao 6.º ano de escolaridade	188
<i>Paulo Renato Silva, Teresa Fernandez Blanco, Fernando Fraga Varela</i>	
Competências Docentes / Uso de Recursos Educativos Digitais no Ensino da Matemática	195
<i>Paulo Renato Silva, Teresa Fernandez Blanco, Fernando Fraga Varela</i>	
Metodologías didácticas para una educación crítica en tiempos de incertidumbre	201
<i>Davinia Heras-Sevilla, David Llanos-Ruiz, Mariano Rubia-Avi, Laura Alonso-Martínez</i>	
Tecnologia digital e metodologias ativas no ensino de matemática: estratégias inclusivas para estudantes com deficiência intelectual	208
<i>Josiane M. Hornung, Eliana C. M. Ishikawa, Cristiane de Fátima Budek Dias, Vítor Gonçalves</i>	
Laços além do tempo: a pluralidade textual e as fontes históricas no ensino da era muçulmana	214
<i>Ana Pimenta, Ana Falcão, Maria Ferreira, Maria Maia, Ana Lopes, Cristina Maia</i>	
Práticas Educativas e Supervisão Pedagógica	221
A formação continuada de professores para promoção da Autorregulação da Aprendizagem dos estudantes: o Projeto WAY	223
<i>Uaiana Prates, Ana Mouraz</i>	
A formação de professores em estágio: um estudo da produção científica do Instituto de Educação da UMinho	229
<i>Flávia Vieira, Maria João Gomes, Francisco Alfredo, Luciana Brito, Sara Cruz</i>	
A práxis supervisiva e os supervisores: entre a pedagogia e a autoridade	236
<i>Feliciano Henriques Magaíssa, Evangelina Bonifácio</i>	
Da prática pedagógica à performance: “50 anos de Abril: (Re)viver a Liberdade”	241
<i>Maria Cristina Aguiar, Mara Maravilha, Jorge Adolfo Marques, Mariana Veloso</i>	
Desenvolvimento do Pensamento Computacional no 1.º CEB: Resultados de uma investigação na Prática de Ensino Supervisionada	247
<i>Carina Matos, Henrique Gil, Paulo Silveira</i>	
Estudo de caso de um agrupamento de escolas no Alto Alentejo enquanto comunidade de aprendizagem para a inclusão	253
<i>Joana Pisco Véstia da Silva, Maria José D. Martins, Amélia Marchão, Teresa Oliveira</i>	
Avaliação formativa: práticas dos professores em contextos de supervisão colaborativa	259
<i>Luís Cláudio Queiroga, Carlos Barreira, Isolina Oliveira</i>	

Interações sociais na sala de aula de matemática no 2.º ciclo do ensino básico	267
<i>Cláudia Pinheiro, António Guerreiro</i>	
O mundo infantil: um lugar ideal para aprendizagem efetiva das crianças	273
<i>Lúcia Chipuca, Augusto Chipuca</i>	
Observar, explorar e conhecer a Natureza: uma experiência desenvolvida no 1.º ciclo do ensino básico	279
<i>Maria Moniz, Sara Aboim</i>	
Projeto AquiMeEncontro: Integração de crianças e jovens imigrantes e refugiados no sistema educativo português	285
<i>Ana Beatriz Matos, Ana Mouraz</i>	
Trocar a genética por miúdos: uma abordagem interdisciplinar no primeiro ciclo do ensino básico	291
<i>Sara Aboim, Cláudia Maia-Lima, Lúgia Nogueira, Xana Sá-Pinto</i>	
Formação Docente e Educação para o Desenvolvimento	297
Entre expressões e sentimentos - a cultura artística e a consciência estética na formação inicial .	299
<i>Marília Castro, Maria do Céu Ribeiro</i>	
Expectativas e Desafios dos professores de Matemática em formação do regime a distância: Estudo de caso de formação superior em Moçambique	305
<i>Natércio Paulo Mucavele, Lino Sidónio Viegas, Zacarias Mendes Magibire, Dulce Maria Firmino</i>	
Formação docente e educação para o desenvolvimento: mobilizando competências digitais para a igualdade de género nos PALOP	312
<i>Irina Borges, Ana Mouraz</i>	
Habilidades do Pensamento Computacional através do GeoGebra no ensino de matemática: Uma revisão sistemática da literatura	318
<i>Nadime Centeno, Manuel Meirinhos</i>	
Trabajo en red con apoyo en la inteligencia artificial para la búsqueda y clasificación de información	324
<i>Maria Obdulia González Fernández, Ana Belén Pérez-Torregrosa, Paula Quadros-Flores, Manuela Raposo-Rivas</i>	
O potencial da Inteligência Artificial para a inclusão de crianças neurodivergentes: uma análise de escopo.	330
<i>Manuel Meirinhos, Ana Claudia Loureiro</i>	
Percepções e desafios da formação docente em estágios de doutorado no Brasil	336
<i>Queli Cancian, Andreia Eduardo de Deus, Vitor Gonçalves</i>	
Pesquisa na formação inicial de professores de matemática: processos de raciocínio matemático identificados numa tarefa.	343
<i>Anna Luíza Alino dos Santos, Eliane Maria de Oliveira Araman, Cristina Martins</i>	
Proposal for the integration of artificial intelligence in a STEAM+H collaborative work within higher education in Gastronomic Sciences	350
<i>Pablo Orduna Portús, Virginia Pascual López</i>	

Raciocínio Matemático no 6º ano: explorando uma situação de partilha	357
<i>Anna Luíza Alino dos Santos, Eliane Maria de Oliveira Araman</i>	
Percepções docentes sobre a inteligência artificial: a importância de saber pensar com	363
<i>Fernanda Neves, Daniela Gonçalves</i>	
Práticas Pedagógicas no Ensino Superior	371
AI and Academia: Designing Curricula for a New Era	373
<i>Frida Gjermeni, Inês Sena, Manjola Zeneli</i>	
Development of AI-Based Software for teaching and learning musical conducting	378
<i>Erickinson Lima</i>	
Entorno rural como facilitador inclusivo: historia de vida de un estudante con Síndrome de Williams	385
<i>Lilian Johanna Obregón, Juan Romay Coca, Nicolás Plaza Gómez, Susana Gómez Redondo</i>	
Exemplo do uso das tecnologias de informação e comunicação e da inteligência artificial em sala de aula	391
<i>Rosário Santana, Helena Santana</i>	
Explorando transformações lineares com recurso ao Geogebra	397
<i>Edite Cordeiro, Paula Maria Barros</i>	
O ChatGPT na perspectiva de um grupo de estudantes no ensino superior	403
<i>Maria Lopes de Azevedo, Amélia Marchão</i>	
Origens e evolução do conceito de nomofobia e a sua relação com a educação	410
<i>Maria Lopes de Azevedo, Cristiana Madureira, Evangelina Bonifácio, Emila Alves</i>	
Percepção de estudantes de pedagogia sobre a prática na formação docente: aplicação de atividades investigativas na Educação Infantil	416
<i>Patrícia Cavalcante de Sá Florêncio, Elton Casado Fireman</i>	
Potenciando tareas con inteligencia artificial en educación superior	422
<i>Victor Abella-García, Vanesa Ausín-Villaverde, David Llanos-Ruiz, Sonia Ramos-Gómez</i>	
Reading Utopia through the lens of AI tools	428
<i>Elisabete Mendes Silva</i>	
Recortes de transformação: Aprender em cooperação	435
<i>Cristina Maia, Sónia Moreira, Maria Rebelo, Diogo Salgado</i>	
Supervisão na educação pré-Escolar: necessidades emergentes e oportunidades de mudança em São Tomé e Príncipe	441
<i>Cristina Mesquita, Maria José Rodrigues, Luís Castanheira, Vitor Gonçalves, Diana Afonso</i>	
Tecnologia e inovação pedagógica na formação inicial de professores	448
<i>Gorete Pereira</i>	
Uma experiência colaborativa entre estudantes de diferentes cursos do ensino superior	456
<i>Flora Silva, João Ribeiro, Paula Maria Barros</i>	

Una visión de los Paradigmas en la educación médica	461
<i>Mirrael Optaciano Alvarez Pereira, Valentina Canese, Cristina Mesquita</i>	
Uso de la inteligencia artificial en la corrección automática de textos escritos	467
<i>Luis Eduardo Wexell Machado, Valentina Canese</i>	
“En busca del Esquema del Cambio” gamificación, patrimonio local y herramientas de inteligencia artificial para la motivación.	474
<i>Raúl Maján Navalón, Lidia Sanz Molina</i>	
Índice de Autores	481

Reading Utopia through the lens of AI tools

Análise da obra literária *Utopia* através de ferramentas de IA

Elisabete Mendes Silva¹
<http://orcid.org/0000-0002-1782-2567>
esilva@ipb.pt

¹ *Centro de Investigação Transdisciplinar em Educação e Desenvolvimento, Instituto Politécnico de Bragança, Portugal*

Abstract

This article results from a pedagogical experience involving AI and the literary work *Utopia* by Thomas More, conducted with BA students. It aims to achieve two primary goals. Firstly, we intend to discuss the relevance of AI as an assisting tool in higher education, particularly in teaching literary works to undergraduate students. We shall demonstrate how this can be done effectively, engaging students and fostering their critical thinking. Secondly, we aim to show that this approach could be replicated in similar contexts, paving the way for other appealing and effective activities performed with AI. The methodology used for this activity was active learning, with the students working autonomously in groups, thinking and deciding on the questions they wanted to ask the selected AI tool. The results show that AI tools proved valuable as they helped to visualise some ideas in the book or give a more realistic approach to the plot. Regarding the obstacles encountered while doing the task, students responded that the tool did not understand correctly what was intended or found it challenging to find images related to euthanasia or slavery, topics addressed in *Utopia*.

Keywords: AI tools, pedagogical innovation, critical thinking, active learning, English culture.

Resumo

O presente artigo resulta de uma experiência pedagógica envolvendo a IA e a obra literária *Utopia*, de Thomas More, realizada com alunos de licenciatura. Subjacentes estão dois objetivos principais. Por um lado, pretendemos discutir a relevância da IA como ferramenta de apoio no ensino superior, nomeadamente no ensino de obras literárias a alunos de licenciatura. Demonstraremos como isto pode ser feito eficazmente, envolvendo os alunos e fomentando o seu pensamento crítico. Por outro, pretendemos mostrar que esta abordagem pode ser replicada em contextos semelhantes, abrindo caminho para outras atividades apelativas realizadas com IA. A metodologia utilizada foi a aprendizagem ativa, com os alunos a trabalhar autonomamente em grupos, decidindo as perguntas que queriam colocar à ferramenta de IA selecionada. Os resultados mostram que essas ferramentas se revelaram valiosas, pois ajudaram a visualizar algumas ideias do livro ou a conferir uma abordagem mais realista ao enredo. Sobre os obstáculos encontrados durante a realização da tarefa, os alunos responderam que a ferramenta não compreendeu corretamente o que se

pretendia ou que foi difícil encontrar imagens relacionadas com a eutanásia ou a escravatura, temas abordados em *Utopia*.

Palavras-Chave: ferramentas de IA, inovação pedagógica, pensamento crítico, aprendizagem ativa, cultura inglesa.

1 Introduction

Teaching sixteen-century literary works, or any literary work, to undergraduate students can be quite challenging nowadays. It is commonly known that the student profile has changed quite a lot over the last 20 years, prompted by the constant and rapid changes in the digital and technological world. Artificial intelligence (AI) has recently made significant changes to the learning environment, and questions about its uses and misuses have been raised by all education players (teachers, students, education policymakers and stakeholders). Consequently, higher education discussions revolve around how the education context should adjust to this new reality. If one wants to capture the students' attention and make them learn critically about the topics discussed, it is paramount that the learning methodologies also adapt to this reality, keeping up with the rapid pace of technological advances in education.

Literature on generative AI in education and how to teach with AI has proliferated in the last two years (Bowen et al., 2024; Huang et al., 2024; Khan, 2024; Knight, 2025; Merrill and Merrill, 2025). In fact, some authors have come up with expressions like “the AI infused classroom” (Holly, 2023), demonstrating how meaningful learning can be maximised using AI in teaching methodologies. According to Huang et al. (2024), “the call for transforming education using digital technologies has placed higher education institutions (HEIs) under increasing pressure to embrace technology-enhanced learning (TEL)”. (p. 279). Consequently, the authors argue educational institutions must accompany these increasing and steadfast technological changes, which unavoidably require digital technologies for learning and teaching (p. 280).

Many large language models have been released since the beginning of OpenAI and the first large language models. This is the case of ChatGPT, Leonardo.Ai, Co-Pilot, and, very recently, DeepSeek, only to mention a few.

For Salman Khan (2024), Khan Academy founder,

We are at a turning point in education, one with far-reaching implications that is changing, and will continue to change, everything about learning, work, and human purpose.” (p. xxxiii)

Khan Academy was indeed the first education platform to incorporate GPT4 before it was launched in 2022 (p. 9), just a few months before “Open AI released ChatGPT to the public (p. xxix).

If the internet changed the way we interact with knowledge, Bowen and Watson claim that “AI is going to change our relationship with thinking” (p. 2), raising issues around creativity and originality, drastically changing “how we think about thinking” (p.2). Subsequently, the big questions are how to think with AI, how AI can be a useful tool, and, more importantly, how it can transform education for better and not for worse. Bowen and Watson believe that AI, despite its inequity features,

It also has the potential to be a tool for equity: AI can provide more feedback to improve learning, increase human creativity, and customize materials for groups or individual students. Teachers will be in an important position to determine whether AI transforms education for better or worse. (p. 3)

A positive aspect that Khan (2024, p. 12) highlights is the rise of the AI tutor, one-to-one-instruction, that will meet the real needs of students, providing for more autonomous learning and supporting the teacher in the classroom.

However, regardless of the feared pitfalls of AI, such as plagiarism and cutting down on originality, it is how we use AI that matters. We must teach students how to use AI ethically and productively. Students who do that, following Khan's words (2024):

may learn not only at an exponential higher rate than others but also in a way that allows them to remain competitive throughout their careers. They will have a deeper understanding of the given subject-matter, because they will know how to get their questions answered. (p. 6)

The real challenge is teaching students to ask the right questions to AI tools and chatbots and use them responsibly. Based on the assumption that AI can become a useful tool in the learning and teaching process, the pedagogical experience focused on in this article was implemented in a real classroom context. This teaching strategy aimed to try a new teaching approach supported by AI tools and confirm whether it was effective for students' learning process. Next, we shall describe and reflect upon this experience, showcasing some results, followed by the students' activity evaluation and concluding remarks.

2. Description of the activity: aims and methodology

About thirty years ago, students of culture and literature at the Faculties of Arts and Humanities were taught conventionally, having to read literary works and then write a critical review. Nowadays, students struggle to read complete works as their attention span and concentration levels seem to have drastically reduced. Having taught English culture for the last 15 years, we have witnessed a drastic change in students' profiles over the last 5 years. We have been faced with students' lack of enthusiasm or inability to analyse mandatory reading texts in a more in-depth way.

Subsequently, we have decided to experiment with a different pedagogical approach that could meet students' profiles while being appealing, innovative and engaging. The challenge presented to the students enrolled in the BA degree of Foreign Languages: English and Spanish was to read the sixteenth-century work *Utopia* by Thomas More in English Culture I class, using AI tools.

Utopia (1516), a mandatory syllabus reading, focuses on the idea of a perfect society in contrast with England's sixteenth-century society. By depicting an alternative society based on a communal and, supposedly, egalitarian society, with "wise social planning" (More, 1965, p. 40), More called attention to many fracturing social and political issues of his time. The main topics addressed in this work are the Utopian way of life, crime, euthanasia, work, education, war, slavery, marriage and common property. Students' task was to read Book II of *Utopia*, where they found evidence for these topics.

The task consisted of selecting at least 3 of the abovementioned topics and creating AI-generated images that could represent the chosen topics. Students had to think carefully about the most adequate prompts to be asked to the AI tools selected. By doing so, they were actively thinking, creating, solving a problem, and evaluating final results. All these steps are seminal in the active learning method, which presupposes “high-order thinking tasks as analysis, synthesis, and evaluation”. The instructional activity we gave to students involved them “in doing things and thinking critically about it” (Bonwell and Eison, 1991, p. iii). This active task did, in fact, enhance active learning.

Twenty-one students, divided into groups of 3 or 4, chose an AI tool of their preference (e.g. ChatGpT, Leonardo.Ai, among others), so it generated an image using the prompts they presented to AI. Students were given total liberty to proceed as they found fit. The teacher’s role was one of a facilitator. In the end, all the groups presented their research work to the class, explaining the prompts and analysing the images obtained.

3. Results

As Figures 1, 2 and 3 illustrate, the results were quite interesting, considering the prompts presented. If students were not pleased with the generated image, they could always refine their research by trying to change or improve the prompt and assess the reliability of the image when confronted with the real text. Some groups copied an excerpt from *Utopia* and used it as their prompt. This procedure allowed them to read and select text carefully to obtain the best results, as illustrated in Figure 1.

Figure 1

Example of an image depicting Farmwork from Group 1

Farmwork

Prompt: “depict farm work in the Utopia by Thomas More”

“Agriculture is that which is so universally understood among them, that no person, either man or woman, is ignorant of it. They are instructed in it from their childhood, partly by what they learn at school, and partly by practice; they are led out often into the fields, about the town, where they not only see others at work, but are likewise exercised in it themselves.”

(Thomas More’s “Utopia”, Book II)

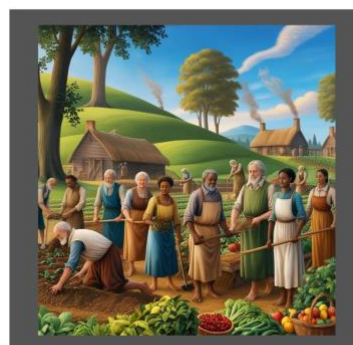


Figure 2

Example of an image depicting the Utopian society from Group 2

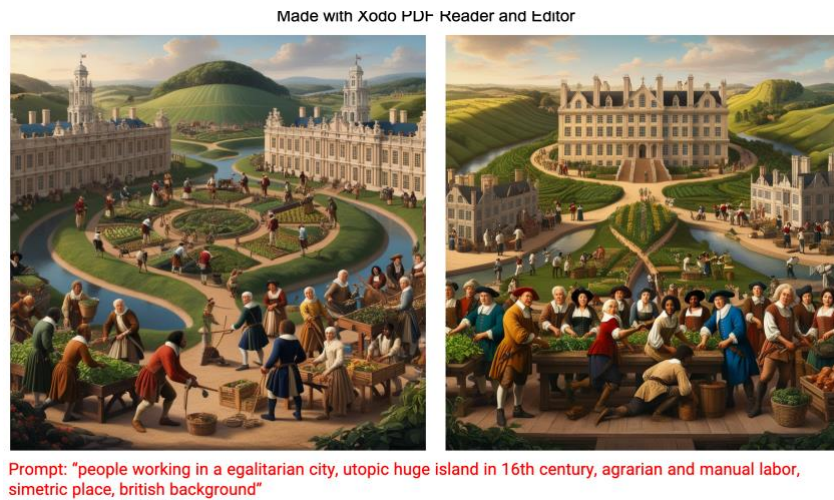



Figure 3

Example of an image depicting education in Utopia from Group 3

Education

- *Lunch and supper begin with a piece of improving literature read aloud. – book 2, page 83*
- *Most people spend these free periods on further education, for there are public lectures first thing every morning. – book 2, page 76*



Created by Leonardo AI (Prompt: "Create an image of people practicing their education during the 16 century in the vision of Tomas More and his book Utopia.")

3.1. Activity evaluation

This activity was assessed qualitatively through questions students responded to on Mentimeter, another class-supportive and engaging digital tool. To the question, "Which AI tool did you rely on the most during this activity?" ChatGPT and Leonardo.Ai were the most common answers.

“In what ways did AI tools prove helpful and valuable to your work?” was another question to which they answered the following: “It helped me visualise some ideas in the book, “give a more realistic vision of the content of the story”, “To create photos about events that are not real or there is no information about”, “imagine making”.

About the question: “What obstacles did you encounter with AI tools that hindered the image generation process?” students were very critical about it, as they mentioned that AI tools “couldn’t generate all the details because they were too graphic”; “Sometimes they’re not quite clear about what we ask and it’s hard to find a relatable image” or words like euthanasia, nudity or slavery were forbidden and therefore impossible to generate a relatable image.

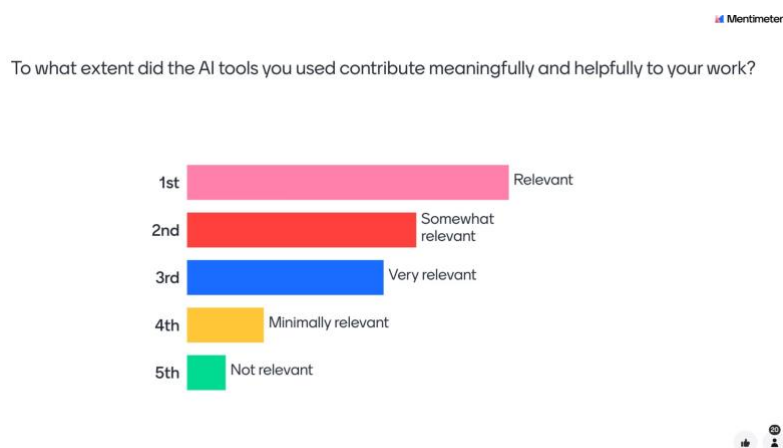
Students were also asked to describe how they felt while doing this activity. The answers varied from “I really liked feeling able to use my imagination to create the right prompt to the image I wanted” or “This was the first time I used AI to create images, it was a fun and interesting experience” to “At first I was confused and I hated the work, but when I started reading I found myself really enjoying the book, not much the images, it was really stressing.”

Finally, students had to indicate at least two things they learned about *Utopia* while doing this activity. Some of the answers were as follows: “I could visualise the buildings and clothing of that time. The country was too much perfect to be real. Everyone looked so happy.”, “The good things got easier to represent as it became part of the desires for a better society. And the taboo things aren’t able as become a forbidden topic.”

Overall, most students considered using AI tools relevant and a valuable and meaningful contribution to their work, as Figure 4 illustrates.

Figure 4

Students’ overall appreciation of the use of AI tools



4 Concluding remarks

Considering the positive reactions to the activity and the active learning method using generated AI tools, we can conclude that this pedagogical experience represents a good example of how it can help teachers foster a more dynamic and engaging learning

environment. Concurrently, students also benefit from such a learning approach as they feel motivated and engaged during the activity. As this was the first time the teacher and the students were doing such a task, everyone felt curious about the procedure and the results. This task was also a novel way to read a literary text, which had to be analysed for the work given. Despite there being no evidence that all students read the book, many, who would probably never read it, read parts of it and understood its intents and plot. Nonetheless, students were also able to develop their critical thinking skills when analysing the adequacy of AI-generated images, becoming aware of the strengths and shortcomings of AI tools.

Regardless of the subject areas one teaches, we believe this teaching experience could be easily replicated in other teaching scenarios due to its pedagogical benefits. It enhances learner-centred learning supported by a digital context. Furthermore, the methodology allowed students to develop creativity, autonomy and critical thinking skills. It is also noteworthy that we intend to share this pedagogical experiment not as a prescriptive formula but as a mere suggestion for enhancing students' autonomy and motivation.

Despite all the concerns about ethics and originality, AI is already revolutionising education. As higher education teachers, we must also seek ways to use AI responsibly and effectively, boosting students' creativity and critical thinking. It was based on this assumption we applied this experience in the classroom context. Therefore, we should embrace it as a good thing and find ways of minimising AI's muddier aspects because AI can become a powerful and beneficial educational tool. On this hope we must rest.

5 References

- Bowen, J. A. & Watson, C. E. (2024). *Teaching with AI. A Practical Guide to a New Era of Human Learning*. Johns Hopkins University Press.
- Bonwell, C. C. & Eison, J. A. (1991). *Active Learning: Creating Excitement in the Classroom*. ASHE-ERIC Higher Education Reports. ERIC Clearinghouse on Higher Education, The George Washington University.
- Clark, H. (2023). *The AI Infused Classroom: Inspiring Ideas to Shift Teaching and Maximize Meaningful Learning in the World of AI*. Elevate Books Edu.
- Huang, R., Adarkwah, M. A., Liu, M., Hu, Y., Zhuang, R., & Chang, T. (2024). Digital Pedagogy for Sustainable Education Transformation: Enhancing Learner-Centred Learning in the Digital Era. *Frontiers of Digital Education*. 1(4): 279-294. Higher Education Press. <https://doi.org/10.1007/s44366-024-0031-x>
- Khan, S. (2024). *Brave New Words. How AI will revolutionize Education (and why it's a good thing)*. Allen Cane.
- Knight (2025). *A Little Guide for Teachers: Generative AI in the Classroom*. Corwin.
- Merrill, J. & Merrill, K. (2025). *The InterACTIVE Class: Creation in the World of AI: Empowering Educators to Inspire Creativity and Innovation in an AI-Driven Classroom*. Elevate Books Edu.
- More, T. (1965). *Utopia*. Penguin Books.