



## Innovative and Ethical Early Childhood Education in the Age of Artificial Intelligence: The Spirit of Collaboration (=İmece)

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### ABSTRACT

In an era defined by artificial intelligence and rapid technological transformation, early childhood education stands at a crossroads between innovation and ethics. This paper explores how innovative, project-based, and collaborative methodologies—particularly the Turkish ‘İmece Circles’ model—can cultivate creativity, empathy, and moral responsibility from the earliest years. Integrating findings from the Innovative Teachers Program and the ICT Seagulls Projects, this research highlights how the PDCA (Plan–Do–Check–Act) framework and total quality philosophy empower both teachers and learners to co-create meaningful learning experiences. The discussion draws on global theories of change and educational leadership while emphasizing the ethical use of Artificial Intelligence (AI) in nurturing Total Quality Persons (TQPs). The paper concludes with recommendations for integrating empathy-based, technology-supported pedagogies in early education worldwide.

### Introduction

Education in the 21st century demands an urgent rethinking of values, methods, and leadership. While technological tools such as artificial intelligence (AI) promise to make learning more personalized and efficient, the essence of education remains deeply human. Teachers are no longer transmitters of information but facilitators of lifelong learning. Early childhood educators, in particular, carry the



profound responsibility of nurturing creativity, empathy, and ethics from the beginning of life. This study argues that innovation and ethics must coexist harmoniously and that the spirit of collaboration, embodied in the Turkish concept of ‘İmece,’ offers a powerful model for integrating AI into human-centered education.

## Literature Review

The relationship between innovation, leadership, and education has been extensively explored by scholars such as Michael Fullan (2001) and David Hargreaves (1999), who argue that schools must evolve into ‘learning organizations’ capable of adapting to complex social change. Erwin (2004) and Bonstingl (2001) emphasize quality-centered approaches in classrooms where teachers serve as moral leaders. Köksal (2003, 2004, 2005, 2010) introduced the concept of ‘İmece Circles’ to Turkish education, based on participatory problem-solving and project-based teamwork. Through her Innovative Teachers Program and ICT Seagulls Projects, she localized global educational trends by combining the PDCA cycle with Total Quality Management (TQM) and peace education principles. The OECD (2021) and UNESCO (2023) have also highlighted the need for AI ethics and sustainability frameworks in early learning environments, reinforcing the alignment of innovation with empathy.

## Objectives

The main objectives of this research are to:

1. Examine how the İmece Circles methodology can be adapted for early childhood education.
2. Explore the intersection of AI-supported learning and ethical awareness in young learners.
3. Demonstrate how innovative project-based approaches foster collaboration, empathy, and leadership.
4. Propose a global model for integrating human-centered innovation into early learning curricula.

## Methodology

This qualitative study is based on longitudinal reflections from over two decades of implementation of the Innovative Teachers and ICT Seagulls Projects, involving more than 5,000 İmece Circles in Turkish schools and universities. The PDCA (Plan–Do–Check–Act) framework guided project development, evaluation, and continuous improvement. Teachers and students collaboratively identified local or social problems, analyzed data using basic quality tools (brainstorming, fishbone diagrams, Pareto charts), implemented creative solutions, and presented their results publicly. The approach was reinforced



through case studies, reflective reports, and peer assessments. International literature on AI ethics, quality education, and project-based learning informed the comparative analysis.

### **Data Analysis and Findings**

Findings from the İmece Circles and ICT Seagulls projects indicate that children and teachers develop stronger communication, problem-solving, and leadership skills when engaged in collaborative learning environments. AI-supported tools, when integrated with human guidance, improved motivation, inclusivity, and creative output. For example, preschoolers using digital storytelling applications within an İmece framework showed higher empathy scores and collaborative tendencies compared to control groups. Teachers reported that technology became a bridge, not a barrier, when coupled with moral discussions and reflection sessions. These results echo the OECD's findings that digital innovation is effective only when combined with social-emotional learning.

### **Conclusion**

This paper concludes that the spirit of İmece—collective collaboration and mutual support—offers a transformative pathway for integrating artificial intelligence into early childhood education ethically and meaningfully. Teachers must be empowered as innovative leaders who guide children in using technology for good. Project-based methodologies such as İmece Circles not only enhance academic learning but also cultivate peace, empathy, and social responsibility from an early age. Future policies should emphasize teacher training in ethical AI use, cross-cultural collaboration, and sustainable innovation. By raising Total Quality Persons who think critically, act compassionately, and collaborate effectively, education can truly become a force for peace. The Brochure of the 23<sup>rd</sup> International ICT Seagulls Project might be seen at the Appendix part of the paper.

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## APPENDIX

### 23rd INTERNATIONAL “ICT SEAGULLS” PROJECTS INFORMATION BROCHURE

Celebrating its 23rd year, the “International ICT Seagulls” projects have been redesigned with a strong focus on Artificial Intelligence (AI) and AI-supported processes. The aim is to encourage youth, academics, and all societal actors to develop ethical, sustainable, and innovative AI solutions. The design, continuous updating, and coordination of the project process are under the responsibility of Prof. Dr. Hayal Köksal. The project management is carried out by the “Association for Innovative Collaboration (YİMEDER)” and the “World Council for Total Quality and Excellence in Education (WCTQEE)—Türkiye General Directorate”. It is supported by Istanbul Kent University.

#### Purpose

- To raise social awareness by addressing the benefits and potential risks of artificial intelligence.
- To develop innovative and feasible projects through interdisciplinary collaboration (=İmece).
- To integrate principles of sustainability, equality, and ethics into all processes.
- To teach youth and community members team-oriented problem-solving methods and the use of



scientific quality tools, using the “Imece Circles” method—which won the World Bank Award in the 2005 Turkey Creative Development Ideas Competition. More than five thousand projects have been managed with this method so far. To see the reflections of the participants visit the web page: [www.bilisimcimartilar.com/english](http://www.bilisimcimartilar.com/english)

### **Target Audience Categories**

- K–12 students and teachers including all pre-school organizations (ICT Seagulls)
- Associate, undergraduate, and graduate university students (Leading Seagulls)
- Young professionals, local entrepreneurs, experienced businesspeople, NGO representatives, and local governments (Community Seagulls)

*(Participation of individuals with disabilities is encouraged in all categories. To realize this aim, Disability NGOs are most welcome.)*

### **\*Leading Seagulls → Re-designed for Universities.**

**Objective:** To encourage students from all university faculties to collaborate creatively and scientifically to develop solutions to current global issues such as artificial intelligence and sustainable living. Projects are conducted within the 23-year-long collective action culture (Imece) of ICT Seagulls and the PDCA Mindset (Plan–Do–Check–Act) a quality cycle approach.

### **Participants and Team Structure of Leader Seagull Projects:**

#### **• Faculties:**

- o Faculties of Education (especially teacher candidates and educational technology departments)
- o Faculties of Engineering and Technology (Computer, Electrical-Electronics, Food, Mechatronics, Environmental Engineering, etc.)
- o Faculties of Architecture and Design (Sustainable Architecture, Industrial Design, Landscape Architecture)
- o Faculties of Science and Letters and Social Sciences (Physics, Chemistry, Mathematics, Psychology, Sociology, History, Literature, Archaeology, Philosophy)
- o Faculties of Economics and Administrative Sciences (Governance, Social Entrepreneurship, Leadership, etc.)
- o Faculties of Health Sciences (Public Health, Hygiene, Disability Studies, Elderly Care)



- o Faculties of Fine Arts (Awareness through Art, Social Innovation Spaces)
- o Other faculties and disciplines (Law, Communication, Sports Sciences, etc.)

**Main Theme: \***

Artificial Intelligence—Benefits, Risks, Ethics, and Use for Good.

\*→ **Teams/Circles:** 5–10 students, 1–2 academic advisors, preferably an external stakeholder (NGO representative, local administrator, artist or engineer). Multidisciplinary teams between faculties are encouraged.

**Suggested Sub-Themes by Category:**

The list below presents the recommended sub-themes for different disciplines and projects.

Education and Learning:

- AI-supported teaching methods, learning analytics, and personalized education.
- AI applications strengthening critical thinking and creativity against rote learning.
- Equal opportunities and accessibility in education (AI for students with disabilities or in rural areas).

Example: Faculties of Education → “AI-Supported Teaching and Ethical Boundaries”.

Environment and Sustainability:

- AI for combating climate change (energy optimization, waste management).
- Ecological data analysis, biodiversity conservation, and disaster early-warning systems.
- Green technology and AI solutions for “Smart Villages/Cities”.

Example: Engineering–Architecture Faculties → “Eco-Friendly AI Applications”, “Smart and Sustainable Living Spaces”.

Health and Human Well-Being:

- Ethical AI use in early diagnosis, telemedicine, and public health.
- Supportive technologies for the elderly and disabled.
- AI-based drug development and genomic research risk/benefit analysis.

Example: Medical and Health Sciences → “Early Diagnosis and Health Equity through AI”.

Social Impact and Human Rights:



- Bias, discrimination, and justice issues in AI.
- Privacy, data security, and protection of personal rights.
- The impact of AI on labor, employment, and social justice.

Example: Social Sciences, Law → “AI and Rights/Justice in Society”.

#### Art, Culture, and Creativity:

- The role of AI in artistic production (music, painting, literature) and copyright issues.
- Digital preservation of cultural heritage and augmented reality projects.
- AI-assisted storytelling and intercultural dialogue.

Example: Fine Arts, Communication, History → “Raising Awareness through Art and AI”.

#### Science and Future Visions/Futurism:

- The future of AI in quantum computing, robotics, and space exploration.
- Limits of AI and human intelligence: Collaboration or competition?
- Long-term ethical compliance strategies for societies and AI.

Example: Computer Engineering, Space Sciences, Physics, Philosophy, Sociology → “Humans and Ethics in the 22nd Century”, “Key Issues in a Robotic World”.

### **Project Process and Steps**

#### 1. Registration and Initial Training (3 Months: Nov–Dec 2025 and Jan 2026)

o Teams are formed and register; initial training dates and locations are set with Coordinator Prof. Hayal Köksal.

o Training on the history of Informatics Seagulls, sustainable living principles, and project management (delivered by H. Köksal via Zoom or in person).

#### 2. Planning and Data Collection (2 Months: Jan–Feb 2026)

o Teams perform problem analysis and literature reviews. Planning marks the first step of the PDCA cycle using quality tools.

o Continuous communication with the coordinator ensures guided project development.

#### 3. Project Development (3 Months: Mar–May 2026)

o Teams complete the remaining three steps of the PDCA cycle: Do, Check, and Act, using quality



tools.

4. Mentorship and Support (Optional, ongoing throughout the process):

- o Academics, engineers, artists, and NGOs provide mentorship.

5. Presentation Sharing (1 Month: June 2026)

- o Projects are presented in PPT format along with a short film, website, or blog.
- o Projects are exhibited and evaluated by jury members.

6. Evaluation (2 Months: July–Aug 2026)

- o *50% Peer Evaluation* (by other teams).
- o *50% Jury Evaluation* (international jury).

7. Award Ceremony, Outputs, and Dissemination (2 Months: Sept–Oct 2026)

- o Categories include “Best Interdisciplinary Project,” “Most Creative AI Solution,” and “Special Award for Social Impact,” etc.
- o Successful teams receive certificates at an online ceremony or at international conventions.
- o Selected projects are published as a Ready-to-Implement Project Booklet and digital catalog.

**Evaluation Criteria**

- Creativity and innovation
- Interdisciplinary approach and contribution to imece culture
- Ethical, social, and environmental impact
- Feasibility and sustainability
- Compliance with Total Quality Management principles

**Application and Dates**

- Registration and project applications: November 1, 2025 – January 31, 2026 (via YİMEDER).
- For registration forms and details, contact Prof. Dr. Hayal KÖKSAL.

hayal@yimeder.org.tr **or** hayal@hayalkoksal.com **or** koksalhayal@gmail.com

- For more info, please visit the web page of the project: [www.bilisimcimartilar.com/english](http://www.bilisimcimartilar.com/english)



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