Digital Education Council

AI Foundations to Enhance Human Skills

FUNDAMENTOS IA: Embedding transversal skills and AI literacy: Integrating transversal competencies, such as Critical Thinking, Communication, Ethics, Future Thinking and Entrepreneurial Innovation.

1. Descriptive Title:

AI Foundations to Enhance Human Skills

2. Author and Institution where practice is applied:

Irving Hidrogo, Olga Ballin, Alan Román Méndez, José Alberto Herrera Bernal, Adriana Plata.

3. General description (100 words)

Within the 2030 Strategic Plan, priority is given to the integration of Artificial Intelligence (AI) into the teaching-learning process through the Educational AI strategy, which is based on the *Fundamentals of AI to enhance human skills*. This line establishes a common framework of technical, ethical, and practical knowledge about AI, necessary to understand it, use it critically, and apply it responsibly in different contexts of daily, academic, and professional life. AI Fundamentals at Tec is a core element to be included in the study plan update across the institution in 2026 recognizing the importance of creating educational experiences that foster in all students the development of 5 competencies: Critical Thinking; Ethics; Communication; Future Thinking; and Innovation.

4. Please give a description of how this best practice was applied in your institution.

The creation and pedagogical implementation of the AI Foundations for Enhancing Human Skills at Tecnológico de Monterrey is a central pillar of the AI in Education Strategy which is part of the institution's 2030 Strategic Plan, designed to move beyond reactive tool adoption toward a comprehensive institutional capability.

The process to develop this framework was rooted in an exhaustive research phase conducted to identify the essential skills students need for a future dominated by AI. This research included:

- External Benchmarking: The institution analyzed nine global reference frameworks from organizations like the Digital Education Council, UNESCO and universities such as Stanford and Adelaide, alongside twelve specialized publications and three industry impact reports.
- Identifying Core Characteristics: The research highlighted that training must not be purely technical; it must prioritize critical thinking, ethical awareness, and creative problem-solving.
- Contextualization: A key conclusion of the research was the necessity of generating a customized framework that reflects the specific values, educational models (Tec21), and social reality of the institution rather than adopting a generic global model.

Implementation of Framework Components at the Pedagogical Level

The framework is organized into four core components: Understanding AI, Ethics and Responsibility, Efficient Use, and Application in Solution Design, which are developed through cross-disciplinary competencies (Critical Thinking, Communication, Ethics, Futures Thinking and Entrepreneurial Innovation). This ensures comprehensive training in the use of this technology, tailored to the learning requirements of today. There are distinct pedagogical pathways across educational levels:

1. Integration Across Academic Levels

- High School: The strategy is integrated into strategic learning trajectories, most notably through the course "AI Fundamentals for Curious Minds," which reached over 11,000 students by late 2025.
- Undergraduate (Professional): AI foundations are embedded into the General Education curriculum via focused modules and digital learning experiences integrated into both existing programs and new "Learning Units" currently under development.
- Postgraduate: Transversal academic trajectories are being established through two specific courses: "Fundamentals of AI I" and "II," which will be available across all postgraduate programs.

5. Please give a description of how the impact of this best practice was measured (300 words).

The impact of this best practice was measured in a comprehensive way according to the different components forming part of it. The development of a Foundations Framework as a National guidance for the institutional transformation has produced long term positive outcomes visible as the development of Learning Digital Experiences (EDA) that are starting to influence the overall update of study plans across the Institution.

To date, we have several indicators showing our progress and that continue to strengthen and provide feedback to our strategies ensuring the lines of action we deploy with each school and faculty member generate sustainable and high-quality results. This ongoing evaluation process allows us not only to document progress, but also to identify opportunities for continuous improvement and scalability across educational contexts.

We have thrived in the implementation of a group of 35 Designer teachers from different disciplines who are developing Learning Digital Experiences (EDA). Through their collective efforts, fostering collaboration, knowledge exchange, and pedagogical innovation EDAs have been incorporated into teaching practices, currently impacting more than 1,000 students across all schools.

In addition, the course “AI for Curious Minds” was designed and implemented at the high school level on a national scale. This initiative has reached over 11,000 students, promoting early engagement with AI concepts and strengthening digital and analytical abilities among learners from diverse educational backgrounds.

In addition, Fundamentals of AI I and II courses are currently being designed and will be available to all postgraduate level students.

Finally, it’s important to share that the Directorate for educational AI is promoting the systematic integration of EDAs into the instructional design of courses at the national level. This effort seeks to embed AI Fundamentals directly into curriculum development processes, ensuring a long-term, transformative impact on academic programs and institutional teaching practices.

6. What status do you feel best describes this best practice?

The status that best describes the "AI Foundations for Enhancing Human Skills" at Tecnológico de Monterrey is a holistic, institution-wide strategic priority. The following characteristics define its status:

- Institutionalized and Integrated: These foundations are a "core educational capability" and one of the three fundamental pillars of the university's broader AI in Education Strategy. It is officially recognized as an institutional priority aligned with the "2030 Institutional Strategic Plan".
- Scalable and Operational: The practice is currently being deployed at scale across all academic levels, including High School, Undergraduate, and Postgraduate programs.
- Governed and Standardized: The status of this best practice is supported by a "multi-level governance model" and a dedicated "Directorate of AI in Education". This ensures that the implementation is consistent across the institution's 26 campuses and maintains high ethical and academic standards.
- Dynamic and Iterative: This is an ongoing institutional transformation part of the 2030 strategic plan. The framework is flexible, innovative and aligned with rapidly evolving technological trends.

7. How would you describe the implementation complexity of this best practice?

NOTA: Aqui ya no hay que escribir ya que solo se escoge una opción:

A Low

B Medium

C High

The implementation complexity of the AI Foundations for Enhancing Human Skills at Tecnológico de Monterrey is defined by its thorough, integrated, holistic, and enduring nature. It moves beyond simple tool adoption to become a core institutional capability aligned with the university's 2030 Strategic Plan.

A Thorough Research-Based Foundation

The framework's complexity begins with its exhaustive and rigorous design process. It was not built in isolation but through a systematic review of nine global reference frameworks (including DEC, UNESCO and Stanford), twelve specialized publications, and multiple industry reports. This thoroughness ensured the framework captured technical, ethical, and applied dimensions, establishing a common baseline of knowledge across an ecosystem of 26 campuses.

An Integrated, Multi-Level Deployment: The implementation is integrated into the institutional teaching and learning process:

• Curricular Integration: The foundations are embedded across all academic levels—from High School to Undergraduate and Postgraduate.

• Human-Centered Approach: It explicitly prioritizes human skills like critical thinking, ethical reasoning, and creativity over mere technical mastery, viewing AI as a "pedagogical support" rather than a replacement.

An Enduring and Sustainable Transformation: The complexity is further heightened by the fact that this is an enduring, ongoing transformation rather than a one-time initiative. Long-Term Focus: The strategy is built for the long term, 2030 plan focusing on professional relevance, sustainability, and the establishment of strategic alliances within the global AI ecosystem to ensure the institution remains at the forefront of educational innovation.

8. Please provide any links to relevant resources for this best practice.

AI education @TEC: https://tec.mx/es/ia

AI in Teaching & Learning @TEC: https://tec.mx/es/ia/ensenanza-y-aprendizaje?srsltid=AfmBOopKCMAv1wTABalLB2BhVLwgiVqCXNxFAMMABVhkjWmyiTO9Fvqu

Ethics and AI Foundations @TEC:

https://tec.mx/es/ia/etica-y-fundamentos-de-ia?srsltid=AfmBOooVDZlxeaIdFEJd_r1ceu7I7coFxLkf8zoBXt0RHGfl5sG8BamL