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Reframing The Concept Of Training In The Age Of Artificial Intelligence: A Study Of University Teachers' Perceptions In The Humanities And Social Sciences

إعادة تشكيل مفهوم التكوين في ظل الذكاء الاصطناعي: قراءة في تصورات أساتذة العلوم الإنسانية والاجتماعية

Lamia HAMOUYA
Laboratory of Religion and Society, Abou El Kacem Saâdallah University, Algiers(2), Algeria
lamia.hamouya@univ-alger2.dz

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Corresponding Author: *Lamia HAMOUYA, lamia.hamouya@univ-alger2.dz*

ملخص:

تُشخِّص هذه الورقة، إعادة تَشكُّل مفهوم التكوين البيداغوجي في عصر الذكاء الاصطناعي، من خلال رصد تصورات أساتذة العلوم الاجتماعية والإنسانية في الجامعة الجزائرية، انطلاقًا من التحليل الموضوعي لمقابلات نصف موجهة مع ستَّة عشرة أستاذًا جامعيًا ، توحي المكاشفة السوسيولوجية إلى بناء تصورات متباينة إزاء استعمال التكنولوجيات الذكية، تُراوح مكانها بين وضعيتين بمفترضاتهما من جهة تحاول استدماج التقنية وتوظيفها في مجال البحث والتدريس في ومن جهة أخرى تُنبأُ بمخاوف تتعلّق بالجانب القيمي والأخلاقي وَ الفكر النقدي. أفضت الدراسة إلى تَموضع أزمة غياب براديغم توافقي يُزاوج بين مُتطلبات التكنولوجيا وَ التَّأسيس الإبستمولوجي في حقل العلوم الاجتماعية والانسانية، تتعاظم هذه الأزمة تَزامُنًا وغياب مَأسسة فعلية لِحزمة البرامج وسياسات التكوين والدَّعائم التِّقنية لمسارات التَّكوين؛ تَحيل هذه الدراسة إلى إعادة تشكيل مفهوم "التَّكوين الذَّكي" التَكيُّفي الذي يَنْبني على ثلاث أُسُس رئيسة وهي: المهارة التقنية، اليقظة الابستيمية النقدية وَ الالتزام الأخلاقي، مع الأخذ بعين الاعتبار خصوصية-سياق التكوين الذي يستجيب للخصوصية السوسيو-ثقافية والبيداغوجية الجزائرية في تَفرُّداتها.

الكلمات المفتاحية:

التكوين، الذكاء الاصطناعي، التصورات، أساتذة العلوم الإنسانية والاجتماعية، العملية البيداغوجية.

Abstract:

This study examines the reconceptualization of academic training in the age of artificial intelligence through an analysis of humanities and social sciences faculty perceptions. Employing thematic analysis of semi-structured interviews with 16 university professors from Algiers2 University, the research reveals fundamental tensions in adopting intelligent technologies, balancing their transformative potential for research and teaching against profound concerns regarding threats to humanistic values and critical thinking. The study identifies a core dilemma: the absence of an integrative paradigm that reconciles technological demands with the epistemological foundations of humanities and social sciences disciplines, exacerbated by institutional gaps in training policies and technical support. The paper proposes a conceptual framework for "adaptive smart training" built on three pillars: technical competence, critical awareness, and ethical responsibility, while emphasizing the need for context-specific training strategies that address the Algerian linguistic and cultural particularities.

Keywords: *Artificiel Intelligence; HSS Teachers; Operational Pedagogy; Perceptions; Training.*

1. INTRODUCTION

The educational landscape across the world is changing by leaps and bounds and much of the credit goes to Artificial Intelligence (AI) which is advancing rapidly. Even the debates revolved heavily around AI's potential to increase efficiency, personalize learning, and simplify administrative tasks, there is an urgent need to consider how these technologies are interpreted and incorporated in various local contexts. At the very least, across regions where historical, cultural, and linguistic forces combine in non-obvious ways. Algeria, due to the nature of its postcolonial educational setting and to its multilingual academic field, constitutes an interesting case to examine the specific role of AI in higher education.

Despite the increasing worldwide concern for digital pedagogy, the Algerian higher educational sector is underrepresented in AI and education research. The existing literature and previous studies are based on technologically advanced or resource-rich settings, often overlooking the perspectives of educators working within more constrained or transitional systems. Moreover, within Algerian universities, the humanities and social sciences occupy a particularly significant space in shaping critical discourse, values, and cultural identity; areas where the implications of AI adoption may be especially contested. Understanding how teachers in these disciplines perceive and interact with AI is therefore vital to developing informed, inclusive, and context-sensitive educational policies.

This study responds to these gaps by examining the perspectives of university teachers in the humanities and social sciences. Through a qualitative approach, and an integrated theoretical framework combining three analytical levels: at the macro level, Institutional Theory helps us understand how Algeria's organizational structures, policy frameworks, and resource disparities systematically constrain or enable AI adoption in higher education. Moving to the meso level, Social Constructivism reveals how HSS educators actively interpret and give meaning to AI technologies through their disciplinary lenses and pedagogical traditions. Finally, at the micro level, Critical Pedagogy offering lens for understanding the deconstruction and reconstruction of the concept of training before and after the age of AI. In order to investigate how academic staff conceptualize AI in relation to their pedagogical beliefs, disciplinary values, and institutional environments rather than treating AI as a neutral technological tool, the research situates it within broader debates around academic autonomy, epistemological change, and digital differences. Given these considerations :

How do humanities and social sciences (HSS) faculty in Algerian universities perceive the integration of Artificial Intelligence in higher education ?

Under this main question, three sub questions were involved :

- How do HSS teachers conceptualize AI's role and potential in teaching, learning, and academic training?
- What ethical, pedagogical and institutional concerns emerge regarding AI adoption in HSS education?
- How do institutional training programs, policies, and infrastructural support shape AI integration in humanities and social sciences disciplines?

2. Training and AI: Between Epistymological Stakes and Conceptual Expansion

2.1 Etymology of Training Concept

The concept of training, often used interchangeably with formation in Francophone contexts, has evolved significantly over time, reflecting broader societal, economic, and technological changes. Its origins trace back to Latin roots: *trainare*, meaning (to drag) or (pull), and *formare*, meaning (to shape) or (develop) (Etymonline, n.d.). By the 16th century, the term had acquired meanings related to instruction, discipline, and education, marking its early association with deliberate skill and character development. According to Madeleine Grawitz in Lexique des sciences sociales (2004), training is defined as a planned and continuous process aimed at developing individuals' professional skills and competencies within social and organizational contexts (Grawitz, 2013, p182). This definition highlights training as both a systematic and socially embedded activity.

Historically, the formalization of training accelerated during the 20th century, especially within industrial expansion and wartime needs. During World War II, the urgent need for skilled labour in technologically advanced industries led to programs like the US' Training Within Industry (TWI) initiative, which significantly improved manufacturing productivity and established structured workforce training (Ray Chaudhuri, Roy, Mehrotra, &Talukdar, 2022, p. 3). Prior to such formalization, vocational education and apprenticeships were the main means of skill development, laying the foundation for modern training models centered on practical skill acquisition.

The 1960s introduced a paradigm shift with Becker's Human Capital Theory, which reframed training from a cost to a strategic investment in human productivity and economic growth. He provided an economic rationale linking training to productivity and development. (Becker, 1975)

In educational contexts, particularly higher education, training traditionally refers to structured, goal-oriented programs focused on mastering specific skills and competencies, often delivered via courses, workshops, or digital platforms (Cascio, 1995, pp. 212–215). However, in Francophone academic discourse, the concept of formation broadens this view to a holistic, continuous, and reflective process through which university teachers develop pedagogical skills alongside their professional identity, ethical stance, and critical thinking (García, 1999, p 7–9).

With the rapid digital transformation, both training and formation now incorporate e-learning, virtual simulations, and data analytics to offer personalized and competency-based development. Formation especially emphasizes ethical digital literacy and the mediation of learning environments that balance humanistic values with technological innovation (Bernard & Fluckiger, 2019, p125–127; Frenay, Deaudelin, & Morizot, 2024). In the AI era, teacher development must also include adaptive learning pathways, real-time feedback, and micro-credentialing, alongside fostering critical understanding of AI's pedagogical and ethical implications (ETUCE, 2008; Frenay et al., 2024).

This evolving understanding of training and formation as a dynamic, reflective, and context-responsive process invites us to question what historical events contributed to the formalization of training in the 20th century? how emerging digital tools, especially Artificial Intelligence, fit within this framework? what AI truly means in the context of higher education, and how it reshapes pedagogical thought and practice?

2.2 Definition of Artificial intelligence

The birth of AI goes back to the 1950s when John McCarthy organised a two-month workshop at Dartmouth College in the USA. In the workshop proposal, McCarthy used the term artificial intelligence for the first time in 1956 (Russel & Norvig, 2010, p. 17). McCarthy (2012) defined "Artificial Intelligence" as "the science and engineering of making intelligent machines, especially intelligent computer programs. It is related to the similar task of using computers to understand human intelligence but AI does not have to confine itself to methods that are biologically observable". Baker and Smith (2019) provide a broad definition of AI: "Computers which perform cognitive tasks, usually associated with human minds,

particularly learning and problem-solving" (p. 10). AI gathers multiple technologies as Zawacki-Richter et al (2019) "It is an umbrella term to describe a range of technologies and methods, such as machine learning, natural language processing, data mining, neural networks or an algorithm" (p.3)

3.Understanding AI in Education and its Pedagogical Applications

Luckin (2018, pp. 12–14, 74–89) defines AI in education as systems that recognize learners' needs, model their knowledge, and provide personalized feedback to enhance learning outcomes. She emphasizes that AI should augment human intelligence by fostering metacognition, self-efficacy, and social learning, empowering teachers with contextual insights rather than merely automating tasks. Ethical AI must ensure explainability, protect learner agency, and prevent erosion of self-regulation. Russell and Norvig (2010) highlight foundational AI applications such as learning agents that adapt through student interaction, knowledge-based systems for specialized training, natural language processing for automated grading and conversational agents, and machine learning techniques to analyse student data and optimize teaching. Together, these views underscore AI's potential to create personalized, adaptive, and ethically grounded educational environments that enhance human learning without replacing it.

Automation of Administrative Tasks: AI diminishes educators' workload by automating repetitive tasks such as grading and evaluation. As mentioned in the UNESCO: "Moreover, when considering the tremendous amount of time spent on grading tests and homework, AI as an assessment tool can be applied to learn how a teacher grades and thus free up the teacher's time. AI is not only being used to grade multiple choice tests, but also to assess essays" (UNESCO, 2021, P13).

Smart Content: AI transforms traditional textbooks into interactive study tools by generating exam questions and summaries. Applications like Cram101 and JustTheFacts101 create chapter summaries, flashcards, and practice tests, enhancing comprehension and navigation. Platforms like Netex use AI to design digital curricula with online support, audio, and videos. (Wang et al., 2024, p10-13)

*Intelligent Tutoring Systems***:** *(ITS)* are goal-based agents that leverage AI to emulate human tutors, providing personalized learning through model-based and utility-based decision-making. Rooted in knowledge representation and automated reasoning, ITS emerged from educational psychology in the 1970s and have since evolved into sophisticated learning agents that adapt instruction dynamically**.** (Russell & Norvig, 2010, pp 2,34,50)

4- Ai in Algerian Higher Education: From Integration to Deficient Institutionalisation

4-1 Toward Institutionnalisation

On February 9, 2023, the University of Algiers 1 hosted the inauguration of the House of Artificial Intelligence, led by the Minister of Higher Education and Scientific Research alongside the Minister of Knowledge Economy. The event took place at the university's tunnel headquarters and featured presentations from 13 universities, showcasing 40 student-led AI projects to the ministers, university officials, and attendees.

The Director of the University, Professor Fares Mokhtari, welcomed the delegation, followed by speeches from the two ministers. They emphasized their joint commitment to promoting artificial intelligence and declared 2023 as the "Year of AI" in Algeria. The House of Artificial Intelligence was highlighted as a strategic hub designed to connect researchers with societal stakeholders, aiming to transform innovative ideas into real-world applications and support national development through advanced scientific research.

The National Higher School of Artificial Intelligence (NHSAI) in Algeria plays a pivotal role in the integration of artificial intelligence (AI) into higher education. Established to meet the growing demand for AI expertise, NHSAI offers specialized programs that equip students with advanced knowledge and practical skills in AI technologies. NHSAI is shaping the future of AI in Algeria through research, collaboration with global institutions, and innovative teaching methods. Its contributions extend beyond education, fostering an AI-driven ecosystem that supports technological advancement and economic growth in the country.

The United States has made a modest contribution to supporting an important initiative by the Algerian Ministry of Higher Education. In early October, the US Embassy in Algeria launched the Research Hub, a three-year project led by Notre Dame University (Indiana, USA). The project aims to create research networks within and outside of Algeria, fostering collaboration between Algerian universities, researchers, and the private sector. Additionally, it seeks to enhance the research capabilities of universities like Sidi Abdallah Technopole, particularly in areas that could positively impact Algeria's economy.

4-2 AI in Humanities and Social Sciences: Insights from Research and Actor Perceptions

Research is still evolving as artificial intelligence (AI) implementation is still is being studied by several researchers in different Algerian universities and institutes. Studies like Haddadi and Zidane (2024), Achili and Zerrouki (2024), and Hadef (2025) are among the newest studies dealing with the integration of AI from different angles.

Haddadi and Zidane (2024): Teachers' Perceptions towards Using AI Apps in Algerian Higher Education

Haddadi and Zidane (2024) surveyed 200 Algerian university teachers, revealing strong positive views on AI, with 83% seeing it as vital for modernizing education. Educators use AI tools like ChatGPT, Duolingo, and Google Bard for research, content creation, and language learning, valuing AI's role in personalized learning and productivity. However, 61% learned AI skills independently, while only 16% had formal training, highlighting a systemic gap. AI tools were considered moderately effective due to limited support, need for human oversight, and inconsistent information quality. Challenges include poor infrastructure, insufficient training, and lack of clear AI policies, alongside ethical concerns about privacy and academic integrity. The authors recommend structured faculty training, AI-inclusive curricula, infrastructure investment, and national ethical AI policies. Despite willingness, systemic barriers remain, requiring coordinated institutional and governmental efforts to fully leverage AI in education.

Achili and Zerrouki (2024) Using Artificial Intelligence in Algerian Higher Education: Opportunities and Challenges from Teachers' Perspectives.

Achili and Zerrouki (2024) surveyed 41 Algerian university teachers, revealing that while AI is valued for research and content preparation, classroom use is limited—ChatGPT being the most used tool. Adoption is hindered by lack of formal training (87.8% untrained) and low engagement with AI platforms for professional development. Teachers recognize AI's potential to improve education and personalize learning but remain uncertain about its impact on roles and habits. Ethical concerns like cheating and over-reliance affect nearly half, while 87.8% report poor infrastructure. The authors call for professional development, infrastructure investment, and ethical guidelines to bridge the gap between AI's promise and practical use in Algerian higher education.

Hadef (2025): Integrating Artificial Intelligence Technology in Algerian Education: A Blessing in Disguise.

Hadef (2025) examines AI integration in Algerian higher education, focusing on ChatGPT use among seven doctoral researchers. AI is widely used individually for paraphrasing, translation, and literature reviews, but formal institutional use is minimal, with users lacking support or guidance. Benefits include time savings, idea clarification, translation aid, lesson planning, and enhanced student engagement. Some report faster doctoral progress, showing AI's potential to boost productivity. Concerns involve plagiarism, overreliance reducing creativity and independent thinking, threats to human-centered teaching, and job displacement fears. Structural issues include poor infrastructure, lack of formal training, and outdated policies. The study calls for curriculum updates, resource access, training, and institutional support for responsible AI use. Hadef stresses AI should support, not replace, teachers and advocates national strategies and reforms, highlighting the National School of Artificial Intelligence as a key step. AI is a promising but complex tool requiring cautious, collaborative efforts for ethical, effective integration.

5. ***Methodology***

This study employs a qualitative exploratory design to examine university teachers' perceptions, challenges, and readiness regarding AI integration in humanities and social sciences (HSS) education. The research focuses on 16 faculty members from Algiers 2 University, selected to capture diverse perspectives.

5.1 Data Collection Procedure

Data was conducted using semi structured interviews which were conducted in person, and were recorded with consent, and transcribed for thematic analysis.

The research design aimed to uncover patterns in teachers' attitudes, perceived challenges, and readiness for AI integration. Ethical considerations included informed consent, anonymity, and the voluntary nature of participation. The participants were selected through purposive sampling to cover various backgrounds within the humanities and social sciences, in oredr to capture academic orientation, and exposure to educational technologies.

The interview collects:

- *Demographics*: Gender, age, university, specialization, teaching experience.
- *AI Familiarity:* Prior experience with educational technology/AI tools.
- *Perceptions:* Definitions of AI in education, perceived applications in teaching/research.
- *Usage:* Tools used (e.g., ChatGPT, DeepSeek), barriers to adoption.

- *Benefits/Challenges:* AI's role in reducing workload, ethical/pedagogical concerns.
- *Institutional Support:* Infrastructure, training needs, policies.
- *Future Outlook:* Predictions and recommendations for policymakers.

The interview guide was designed to mainly elicit views on:

- Personal definitions and conceptualizations of AI in education.
- Perceived pedagogical benefits and risks of AI.
- Institutional support and training experiences.
- Ethical implications of AI in the humanities and social sciences.

5.2 Data Analysis Procedure

Interview recordings were transcribed, where necessary, translated into English for consistency. Data were analysed using thematic analysis, following Braun and Clarke's six-phase approach:

1. Familiarization with the data
2. Generating initial codes
3. Searching for themes
4. Reviewing themes
5. Defining and naming themes
6. Producing the paper

To enhance the credibility of the findings, preliminary interpretations were shared with a subset of participants to validate interpretations.

6. RESULTS AND DISCUSSION

Sixteen interviews with teachers from different fields in humanities and social sciences are analysed following Clarke and Braun (2013) six-phase approach. The fields in question are psychology (3 participants), English (4 participants), Sociology (3 participants), Economy (1 participants), Political Sciences (1 participants), Education (2 participants), Philosophy (2 participants), as illustrated in Table 1

This study reveals complex, discipline-mediated perspectives on AI adoption among Algerian university faculty, structured around thematic findings that collectively address the research questions.

➢ *Perceptual Dichotomies in AI Conceptualization*

Faculty exhibited a distribution of AI perceptions shaped by disciplinary epistemologies. Applied disciplines (English, Education) predominantly adopted an instrumentalist view, framing AI as a pedagogical tool for: Lesson planning automation (P4, P6) - Writing process scaffolding (P4, P5)- Global competency

development ("building global citizens", P4)

Conversely, theoretical disciplines (Philosophy, Sociology) manifested critical skepticism, articulating concerns about: Epistemological dilution (P15) -Mechanistic thinking (P16) - Data bias in social analysis (P8)

➢ *Adoption Patterns and Digital Literacy*

The study documents stratified adoption correlated with career stage and institutional support:

- Active Users (6/16): Primarily early-career (<10 years) English/Sociology faculty employing ChatGPT/DeepSeek for:
  a) Content generation (P4, P9)
  b) Research assistance (P5, P9)
- Resistant Non-Users: Senior faculty (>15 years) citing:
  c) Philosophical incompatibility (P15, P16)
  d) Pedagogical distrust (P7, P12)

Notably, 100% of users reported self-directed learning, corroborating Haddadi and Zidane's (2024) finding of 61% self-taught adoption amidst 16% institutional training penetration. This suggests an emergent "guerrilla professionalization" pattern where motivated faculty bypass systemic deficits through informal upskilling.

➢ Operational Benefits and Transformative Potential

Participants identified three value domains:

- Pedagogical Efficiency: [Automated assessment (P14) -Personalized feedback (P6)]
- Research Enhancement: [Data analysis acceleration (P11)- Literature review support (P9)]
- Global Connectivity: [Linguistic mediation (P4)- Cross-cultural competency (P4)]

These align with Hadef's (2025) "blessing in disguise" while revealing discipline-specific utility gradients - from English faculty's tool-oriented applications to Sociology's guarded research assistance.

4. Ethical-Pedagogical Tensions

Four critical concerns emerged transdisciplinarily:

a. Academic Integrity: [Plagiarism normalization (P4, P7)- Assessment cheating (P2, P12)].
b. Cognitive Impacts: [Critical thinking erosion (P15, P16)- Passive learning (P1, P5)]

c. Humanistic Values: [Therapeutic dehumanization (P3)- Dialogic impoverishment (P7)]
d. Political Economy: [Surveillance risks (P12)- Labor displacement (P7)]

These findings extend Achili and Zerrouki's (2024) ethical framework by demonstrating how concerns manifest differently across disciplines - from Psychology's clinical cautions to Philosophy's epistemic warnings.

➢ Institutional Readiness Deficit: a unanimous consensus (14/16) identified systemic barriers:

- Infrastructure: [Absent smart classrooms (P2) -Limited connectivity (P5, P6)]
- Policy: [No ethical guidelines (P9, P12) - Uncoordinated initiatives (P4, P13)]
- Capacity Building:[Training vacuums(P1-P16)-Technical support gaps (P6, P9)]

This institutional lag mirrors Haddadi and Zidane's (2024) documentation of "islands of innovation" amidst systemic under preparedness, suggesting Algerian universities remain in the awareness stage of AI adoption curves.

➢ Strategic Recommendations

Participants proposed a multilayered integration framework:

- Micro Level
  - Discipline-tailored workshops (P6, P9)
  - Ethics review boards (P15)
- Meso Level
  - Infrastructure modernization (P5, P6)
  - Pilot programs (P1, P10)
- Macro Level: [National AI Policy (P12, P13)- Cross-sector collaboration (P7, P16)]

These prescriptions align with Hadef's (2025) call for "ethical scaffolding" while adding the novel dimension of disciplinary differentiation in capacity building.

Theoretical Synthesis

Three lenses elucidate these findings:

a. *Institutional Theory*: Explains adoption barriers through resource disparities and policy vacuums
b. *Social Constructivism*: Reveals how disciplinary epistemologies shape technological meaning-making
c. *Critical Pedagogy:* Highlights power asymmetries in AI's educational deployment

The study ultimately demonstrates that AI integration in Algerian Higher Education constitutes not merely technological implementation, but a complex negotiation of:
Disciplinary identities, Pedagogical philosophies, Institutional capacities , and Ethical boundaries

The study revealed nuanced perspectives on AI in Algerian higher education, with faculty definitions ranging from instrumental tools for pedagogical enhancement (e.g., writing support, lesson planning) to existential threats to humanistic education, particularly among philosophy and sociology scholars. Participants acknowledged AI's potential benefits including personalized learning, research efficiency, and global connectivity, but expressed significant concerns about passive learning, critical thinking erosion, and academic integrity violations. Institutional support was universally described as inadequate, with reports of non-existent training programs, insufficient infrastructure, and absent policy frameworks. Ethical concerns emerged as particularly salient in humanities and social sciences, where teachers emphasized on risks of dehumanized pedagogy, data bias in social analysis, and the mechanization of critical thought, suggesting AI adoption in these fields requires careful ethical scaffolding to preserve disciplinary epistemologies while leveraging technological advantages. These findings collectively highlight the tension between AI's transformative potential and the need for context-sensitive, ethically-grounded implementation strategies in resource-constrained environments.

7. ***CONCLUSION***

The study highlights diverse and often conflicting perspectives on AI in Algerian higher education, particularly within the humanities and social sciences. While faculty recognize AI's potential to enhance learning and research, they also express serious ethical, pedagogical, and institutional concerns. The findings emphasize the need for context-sensitive, discipline-specific strategies that respect epistemic diversity, address systemic inequalities, and ensure ethical implementation through adequate infrastructure, training, and policy support.

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