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Philosophical Foundations and Pedagogical Approaches to Artificial Intelligence in Algerian Higher Education

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ABSTRACT

This study examines the pedagogical and philosophical implications of artificial intelligence (AI) use at four Algerian university sites. It combines a survey of 200 students, interviews with 20 faculty members and a review of institutional documents. Humanism, constructivism, pragmatism and critical pedagogy provide the interpretive framework. The reported student indicators show more use for writing and translation than for activities labelled critical analysis. Faculty accounts identify both practical uses and concerns about academic integrity, while participants also describe difficulties with access, training and institutional guidance. These findings concern the participating sample and perceptions of AI; they do not establish national adoption rates or measured improvements in learning. Incomplete reporting of recruitment, item-level denominators and institutional documentation limits the analysis. The article proposes that institutions evaluate AI through explicit educational aims, support for human judgement and attention to equitable access. The philosophical framework is an analytical proposal whose effectiveness requires further study.

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1. Introduction

Artificial intelligence has expanded the range of tools available for teaching, learning and academic work. Educational applications include language assistance, feedback and the analysis of learning data. Their value depends on the task, the conditions of use and the educational aims they serve. International guidance also identifies concerns about privacy, bias and human responsibility (OECD, 2019; UNESCO, 2021; Miao & Holmes, 2023).

In the Algerian settings examined here, students and faculty describe uses of AI alongside uncertainty about appropriate practice and institutional guidance. The study considers these accounts in relation to the purposes of higher education. Individual use of a tool, a university-wide service and a formal institutional policy represent different forms of adoption and require different evidence.

The article asks how AI use can support learning, autonomy and critical judgement within the participating university sites. It applies four philosophical perspectives to the reported survey and interview material. These perspectives help frame questions about educational purpose; they do not provide a substitute for evaluating learning outcomes. Selwyn (2019) similarly draws attention to

the social and relational dimensions of teaching when considering AI in education.

2. Literature review

The OECD (2019) discusses human values, fairness and accountability in the wider use of AI. UNESCO's Recommendation on the Ethics of Artificial Intelligence, adopted in 2021, provides a framework for considering rights, inclusion and human oversight (UNESCO, 2021). For education and research, Miao and Holmes (2023) address the pedagogical evaluation of generative AI and the need to develop human capacity alongside institutional guidance.

Holmes et al. (2019) examine the promises and implications of AI for teaching and learning. Zawacki-Richter et al. (2019), in a systematic review of higher education applications, identify weak connections to pedagogical theory and a need for more critical attention to educational and ethical questions. These contributions support examining the purposes and contexts of AI use, rather than assuming that access to a tool is evidence of better learning.

Humanist approaches direct attention to personal growth and learner autonomy. Rogers (1969) considers self-directed learning, while Maslow (1943) offers a theory of human motivation. We use these ideas to ask whether an AI-supported activity respects the learner and supports development. Piaget (1970) and Vygotsky (1978) provide perspectives on active knowledge construction and the social dimensions of learning. Applied to AI, these perspectives invite attention to what students do with feedback, how they discuss ideas and how they justify their conclusions.

Dewey's (1938) account of experience and education supports evaluating learning activities through their consequences for further inquiry. We apply this perspective to the assessment of AI-supported tasks. Freire (1970) provides a basis for examining dialogue, power and participation in education. The application of these ideas to contemporary AI systems is our interpretation, not a claim that these authors wrote about current technologies.

Research on AI applications includes assessment, adaptive systems and intelligent tutoring, but evidence about one system or task cannot establish the effectiveness of all AI tools (Zawacki-Richter et al., 2019). Cope et al. (2021) discuss knowledge and assessment in AI-enabled learning environments and distinguish the operations of computing from the work of human teachers. Williamson and Eynon (2020) place educational AI within historical, commercial and institutional contexts. Together, these sources support an examination of both educational aims and the conditions under which tools are used.

Table 1 Philosophical perspectives and questions for AI use in education

Perspective	Educational focus	Question for evaluating AI use
Humanism	Autonomy, dignity and personal development	Does the activity support the learner and preserve access to human guidance?
Constructivism	Active inquiry and social learning	Does the student explain, discuss and revise ideas when using the tool?
Pragmatism	Educational consequences of experience	Does evaluation show progress towards the intended learning aims?
Critical pedagogy	Dialogue, participation and power	Who has access, whose knowledge is represented and how can outputs or decisions be questioned?

Source: Authors' interpretation of Rogers (1969), Maslow (1943), Piaget (1970), Vygotsky (1978), Dewey (1938) and Freire (1970). The AI applications are proposed interpretations of these perspectives.

3. Research questions and propositions

The study asks how participants use AI in teaching and learning, what benefits and concerns they report, and how philosophical perspectives can inform the interpretation of these practices. It also considers what forms of guidance and support might help institutions respond to the issues identified.

Five propositions organise the enquiry. H1 concerns whether students report more use for writing and language support than for explicitly labelled critical analysis. H2 concerns possible differences in reported practices across faculty disciplines. H3 concerns differences between student and faculty perceptions of educational benefits and academic integrity. H4 concerns barriers involving access, training and institutional guidance. H5 proposes humanism, constructivism, pragmatism and critical pedagogy as a framework for responsible AI use. H1-H4 guide descriptive and thematic interpretation. H5 is a conceptual proposal; its effectiveness is not tested in this study.

4. Scope of the study

The research covers sites identified as Algiers, Tlemcen, Constantine and Oran. The student sample includes undergraduates and postgraduates in the humanities, sciences, engineering and social sciences. The faculty sample covers related disciplinary areas. The analysis uses these site labels because the precise institutional entities and campuses are not specified in the study record.

The findings concern the participating students and faculty. They cannot establish adoption rates for all Algerian universities or represent all institutions in each named city. The case accounts focus on participants' experiences and on questions of pedagogy. They do not constitute an independent audit of institutional AI deployment.

5. Methodology

The study reports a convergent mixed-methods design involving document analysis, semi-structured faculty interviews and a student survey. The survey and interview material is identified as 2025 fieldwork. The document review covers policies, course syllabi and guidance issued during 2021-2023. This earlier document period is considered separately from participants' later accounts; it cannot establish whether an institution had adopted an AI policy by 2025.

The reported sample comprises 200 students, including 150 undergraduates and 50 postgraduates, and 20 faculty members. Faculty were selected for their engagement with digital teaching tools. The student recruitment procedure and the number invited are not documented, so a response rate cannot be calculated. Interviews addressed pedagogical aims, experiences with tools and ethical concerns. The study reports that interviews were recorded with consent and transcribed.

Table 2 Reported participant composition

Participant category	Reported number	Fields represented
Undergraduate students	150	Humanities, sciences, engineering and social sciences
Postgraduate students	50	Humanities, sciences, engineering and social sciences
Faculty members	20	Humanities, social sciences, engineering and natural sciences

Source: Sample information reported by the authors for the present study. Participants were drawn from four university sites; sites are not an additional participant category.

The student questionnaire includes usage, perceptions and open-ended items. The interview guide and questionnaire appear in the appendix. The study reports thematic analysis of interviews and open-ended responses and descriptive analysis of survey responses. Quantitative indicators and qualitative themes are brought together for interpretation through the philosophical framework. No inferential tests or direct measures of learning gains are reported.

Several reporting limits affect the interpretation. Item-level response counts, the handling of missing responses and the coding of purpose categories are not available. The questionnaire does not specify whether students could select multiple purposes of use. The percentages are therefore presented as reported indicators without reconstructing counts or treating the categories as an exhaustive distribution. A document inventory and site-level participant breakdown are also unavailable. Participation was voluntary, informed consent was obtained and responses were anonymised for analysis.

6. Findings

The findings combine descriptive student indicators with themes from the faculty interviews. They provide a basis for examining the research propositions within this sample.

6.1. *Student use of AI*

The study reports regular academic AI use at 78%. The reported purposes are writing assistance (62%), translation (58%), summarisation (49%), research support (33%) and critical or analytical use (21%). Table 3 presents these indicators separately. The percentages for purposes total more than 100% and should not be read as shares of a single whole.

Table 3 Reported student use indicators

Indicator	Reported percentage
Regular academic use of AI	78%
Writing assistance	62%
Translation	58%
Summarisation	49%
Research support	33%
Critical or analytical use	21%

Source: Student survey percentages reported by the authors for 2025, with a total student sample of 200. Item-specific denominators and the multiple-response procedure are not documented.

Writing and translation have higher reported percentages than the category labelled critical or analytical use, which is consistent with the descriptive focus of H1. These task labels do not measure depth of thinking: writing, translation and summarisation can themselves involve critical reasoning. The available results also do not support comparisons between individual sites.

6.2. *Faculty accounts by discipline*

Faculty accounts describe uses such as programming support, simulation and data analysis in technical fields. Accounts from the humanities and social sciences place

emphasis on original writing and the risks of dependence on generated text. These themes suggest differences worth examining, but discipline-specific sample sizes and adoption counts are not reported. The study therefore cannot establish that one disciplinary group adopts AI more frequently than another or confirm H2 statistically.

6.3. *Student and faculty perceptions*

The reported student indicators show that 68% believed AI had improved their academic performance and 54% associated AI use with an increased risk of academic dishonesty. These responses concern perceptions, not independently measured learning gains or documented misconduct. Faculty interviews also raised concerns about writing standards, originality and intellectual development. The material allows comparison of themes, but it does not support a quantified gap between students and faculty because comparable faculty response counts are unavailable.

6.4. *Reported institutional barriers*

Participants described difficulties involving devices, internet access, professional development and clear guidance on acceptable AI use. These accounts are consistent with the concerns addressed by H4. They identify needs within the reported sample; they do not establish that every participating institution lacks a policy or that the same conditions apply nationally. National fixed-broadband subscription rates alone would not measure students' access to usable internet services, devices or campus support.

6.5. *Assessment of the propositions*

The reported student indicators are descriptively consistent with H1. Faculty themes offer material relevant to H2, but comparative adoption rates are unavailable. Student and faculty accounts inform H3 without establishing a statistically significant perception difference. Reports of barriers provide contextual support for H4, subject to the limits of the document review and sampling. H5 remains the authors' conceptual framework and cannot be described as empirically confirmed or endorsed by all participants.

7. Accounts from the four university sites

The following accounts summarise applications and concerns attributed to participants at each site. They draw on the reported interviews and survey material. Specific platforms, deployment records and institution-level evaluations are not identified, so the accounts describe reported experiences rather than verified university-wide programmes. The interpretations distinguish perceived convenience from demonstrated educational benefit.

7.1. *Language assistance at the Tlemcen site*

Students described using grammar checkers, translation platforms and writing assistants to revise essays, translate academic material and summarise readings. Faculty acknowledged possible help with language barriers while emphasising ethical use and continued writing practice. These accounts do not establish how widely the tools are used across the institution or whether they improve assessed language proficiency.

A humanist interpretation asks whether such assistance supports confidence and learner autonomy. A constructivist interpretation asks how students respond to feedback and revise their understanding. An appropriate learning activity would require students to explain their choices and practise the language skills for which they remain responsible.

7.2. *Chatbot services at the Algiers site*

The site account describes chatbot use for registration questions, course information and scheduling. Participants associated these services with quicker access to routine information. The study does not identify a particular system or provide evidence of an institution-wide implementation. It therefore treats this material as an account of perceived service convenience.

Participants also described incorrect or generic responses and difficulty obtaining help with individual circumstances. These concerns point to the need for access to human staff when questions require judgement or personal guidance. Faster responses to administrative enquiries should be assessed separately from improvements in teaching or student learning.

7.3. *Automated assessment at the Constantine site*

The site account describes automated marking of multiple-choice questions and online quizzes. Faculty and students associated it with faster results and feedback. Automated scoring alone does not establish the use of AI: the underlying system and method are not documented here. The account therefore supports discussion of automated assessment without demonstrating the effects of a particular AI technology.

Faculty raised questions about the evaluation of sustained reasoning and creativity, while students expressed concerns about fairness and transparency. The educational issue is whether the assessment captures the intended learning and gives students a way to understand and challenge a result. Human review remains relevant where interpretation is required.

7.4. *Research assistance at the Oran site*

Postgraduate participants described using AI tools to organise information, explore literature and prepare initial drafts. They associated these uses with support for academic work and language difficulties. These are accounts of perceived usefulness; the study does not measure research quality or productivity.

Faculty stressed the need to check generated material, verify references and develop an argument grounded in disciplinary knowledge. From a pragmatic perspective, the value of a tool would depend on the quality of the resulting research process and output. A constructivist per-

spective would also ask whether the student can explain, evaluate and revise that work.

Table 4 Reported applications and questions arising from the site accounts

Site	Reported application	Perceived benefit	Issue for evaluation
Tlemcen	Language and writing assistance	Help with language and revision	Independent writing practice and verification of learning
Algiers	Chatbot information services	Quicker access to routine information	Accuracy and access to human advice
Constantine	Automated marking and feedback	Faster results	Whether the system uses AI and assesses the intended learning
Oran	Research assistance	Help with organising information and initial drafts	Verification of sources and development of the student's own argument

Source: Authors' synthesis of the reported 2025 fieldwork. Applications and benefits are participant accounts, not independently verified institutional outcomes.

Across these accounts, similar tools serve different purposes. Language assistance, access to administrative information, automated feedback and research support each require an appropriate form of evaluation. Educational purpose matters alongside access, system reliability and institutional arrangements. None of the accounts establishes a general effect of AI on learning.

8. Discussion

The study describes practical uses of AI together with concerns about integrity, access and guidance. The philosophical framework helps examine what would count as an educationally worthwhile use. Its contribution is interpretive: it connects reported practices to questions about autonomy, knowledge construction and responsibility.

A humanist perspective directs attention to students' dignity, development and access to human guidance. Constructivism directs attention to the learning activity, including discussion, revision and explanation. Pragmatism calls for an assessment of educational consequences. These perspectives suggest that institutions should evaluate student learning, rather than use tool uptake or speed as a sufficient measure of success.

Critical pedagogy directs attention to who can access a tool, whose knowledge it represents and who can question its outputs or the decisions made with it. Williamson and Eynon (2020) likewise place educational AI within wider political and institutional arrangements. Applying these questions to the present case requires caution: the sample does not measure the national distribution of digital inequality or the effects of a particular commercial system.

Students' reported optimism about academic performance and faculty concerns about original work raise questions for teaching and assessment. The study cannot quantify a reliable difference between these groups. Institutions could use structured discussion to clarify expectations, identify disagreements and connect permitted uses to the aims of particular courses.

9. Recommendations

The following recommendations draw on the reported concerns and the philosophical analysis. They are proposals for practice, not interventions whose effectiveness has been tested by this study.

Institutions should develop clear guidance with students and faculty on permitted assistance, disclosure, assessment and the handling of data. Course-level AI literacy should include checking claims and references, recognising limitations and explaining the student's own reasoning. Staff development should connect tools to disciplinary teaching aims and assessment design. Institutions should also assess barriers involving devices, connectivity and accessible alternatives before requiring a tool. Students need routes to human advice and review when an automated service or assessment cannot address their circumstances.

These proposals are consistent with the emphasis on human agency and pedagogical evaluation in UNESCO guidance (Miao & Holmes, 2023). Institutions would need to assess their effects through defined learning aims, participation measures and feedback from those affected.

10. Conclusion

This study examines reported AI use at four Algerian university sites through student indicators, faculty accounts and a philosophical framework. Writing and language assistance have higher reported percentages than explicitly labelled critical analysis. Participants also describe issues concerning academic integrity, access and guidance. These observations provide a basis for local discussion of educational aims and responsibilities.

Humanism, constructivism, pragmatism and critical pedagogy offer questions for evaluating the purposes and conditions of AI use. This study does not establish that the framework improves learning or that participants endorse every element. Its value lies in organising an examination of learner autonomy, active inquiry, educational consequences and power.

The findings are limited by incomplete reporting of recruitment, item-level denominators and institutional documentation, and by the absence of independently verified outcome measures. They cannot establish national adoption rates, institutional policy absence or causal learning gains. Further research should document sampling and analysis, identify the systems used and evaluate changes in learning with appropriate measures. A comparative design could also examine differences across sites and disciplines without treating reported impressions as adoption rates.

Declarations

Funding. This research received no external funding.

Conflicts of Interest. The authors declare no conflicts of interest.

Ethics Approval and Informed Consent. Participation was voluntary. Informed consent was obtained before data collection, and interviews were recorded with consent. Responses were anonymised for analysis.

Data Availability Statement. Requests for supporting research materials may be addressed to the authors.

Declaration of Generative AI Use. The authors used Grammarly solely for language refinement. They reviewed the content and take full responsibility for the published article.

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Appendices

Appendix Research instruments

The student questionnaire and faculty interview guide are reproduced below. They provide the wording of the instruments; the limitations concerning response procedures and analysis are described in the methodology.

Student survey questionnaire

Part A: General Profile

1 What is your academic level? (Undergraduate / Postgraduate)

2 What is your field of study? (Humanities / Sciences / Engineering / Social Sciences / Other)

3 Which university do you attend?

Part B: AI Use Patterns

4 How often do you use AI tools for academic purposes? (Daily / Weekly / Occasionally / Never)

5 Which AI tools do you most commonly use? (Please tick all that apply: ChatGPT / Grammarly / DeepL / Gemini / Other)

6 For what academic purposes do you primarily use AI? (Writing assistance / Translation / Summarisation / Research support / Critical analysis / Other)

7 Do you feel that your use of AI has changed how you approach your studies? If yes, please describe briefly.

Part C: Perceptions of AI in Learning

8 To what extent do you agree that AI has improved your academic performance? (Strongly agree / Agree / Neutral / Disagree / Strongly disagree)

9 Do you believe AI tools support or undermine your independent thinking? Please explain.

10 How confident do you feel in critically evaluating AI-generated content? (Very confident / Fairly confident / Somewhat confident / Not confident at all)

11 Do you think your university provides sufficient guidance on how to use AI responsibly?

Part D: Ethics and Academic Integrity

12 Do you agree that the use of AI increases the risk of academic dishonesty among students? (Strongly agree / Agree / Neutral / Disagree / Strongly disagree)

13 Have you ever submitted AI-generated content as your own original work? (Yes / No / Prefer not to say)

14 Does your university have a clear policy on the use of AI in academic work? (Yes / No / I am not aware of one)

15 Do you think AI use in your institution is fair to all students, regardless of their economic background or access to technology?

Part E: Looking Forward

16 Do you believe AI should be formally integrated into university teaching and assessment in Algeria? Please justify your view.

17 What types of training or support would you find most helpful in learning to use AI responsibly and effectively?

18 In your view, what is the most significant benefit of AI for students at Algerian universities?

19 What is the most significant risk or concern you associate with AI in your academic environment?

20 Is there anything else you would like to share about your experience of AI in your studies?

Faculty semi-structured interview guide

Opening and Context

1 Could you briefly describe your current teaching role and the disciplines you work in?

2 When did you first begin engaging with AI tools in your professional or teaching practice?

AI Use in Teaching and Learning

3 Which AI tools or platforms have you used in your teaching, and for what specific purposes?

4 How do you think AI has influenced the way students engage with course content and academic tasks?

5 Have you observed differences in AI adoption across different disciplines or student groups? Please describe.

Pedagogical Reflections

6 Do you feel that AI supports or risks undermining the core aims of higher education, such as critical thinking, creativity, and intellectual growth?

7 From your perspective, how should AI be positioned within the teaching and learning relationship?

8 What pedagogical principles do you feel should guide the responsible use of AI in your field?

Ethical and Institutional Concerns

9 What are your main concerns regarding the use of AI in academic assessment and student work?

10 Does your institution have any formal policies on AI use in teaching and learning? If so, how effective do you find them?

11 How do you address the issue of digital inequality among students when it comes to access to AI tools?

Future Directions

12 What forms of professional development or institutional support would help faculty integrate AI more responsibly?

13 How do you envision the role of AI in Algerian higher education evolving over the next decade?

14 Is there anything else you would like to add about AI in pedagogy that has not been addressed in this interview?