

Challenges and Risks of AI in Open and Distance Learning in Higher Education

-Case Study of University of Continuing Education in Algeria-

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Abstract:

This study investigates the use of Artificial Intelligence (AI) in Open and Distance Learning. We investigate the features and benefits of AI technology for tailoring the learning experience. However, this study examines the challenges and threats connected with AI in ODL, such as privacy concerns, over-reliance on technology and potential biases within AI algorithms. Furthermore, the paper includes a case study of the University of Continuing Education in Algeria, which highlights the unique challenges this institution experiences while integrating AI in ODL. These barriers include faculty training requirements, content development considerations and data privacy constraints, particularly with the recently released DATA CENTER. The study also investigates possible dangers unique to the Algerian environment, such as cultural and social factors and language challenges. Finally, the study suggests strategies for addressing these problems and assuring ethical AI deployment in ODL systems. These measures include government initiatives, engagement with international organizations, an emphasis on open-source AI tools and data privacy awareness campaigns. Finally, the study highlights the necessity for careful planning and context-specific solutions to use the potential of AI for improving the learning experience at the University of Continuing Education in Algeria.

Key Words : UCE, Higher education, Artificial Intelligence, ODL

JEL Classification: I2, I230, O33, O23

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1. Introduction

The first subtitle opens with an introduction that presents the specific problem under study and describes the research strategy. The first subtitle opens with an introduction that presents the specific problem under study and describes the research strategy. (Times New Roman13, interline 1.15)

The ODL or Open and Distance Learning, it refers to the way of delivering education to students who are not physically attending in classrooms in person. Its importance shows up the most during Covid-19 (Ali, Murray, Momin, Dwivedi, & Malik, 2024), when governments has implemented heavy quarantines. Since the open learning it adopted the idea of students being able to take courses or programs without prerequisites and being able to choose to study any subject they wish, otherwise in distance learning learners are separated from their teachers and the teaching institution, where diverse educational media and tools are used as a bridge (Zawacki-Richter & Jung, 2023).

Open learning is not the same as distance learning, but both are complementary and hence the two terms are often used together as open and distance learning (UNESCO, 2020).

AI or machine intelligence is an area of computer science where machines are programmed with the ability to perform intelligent tasks that are usually undertaken by humans (Ali, Murray, Momin, Dwivedi, & Malik, 2024).

At the light of this definitions, open learning is different from distance learning. And the main difference is in the objective of the learner, while the target learning for open learning student is the self-learning like learning programming or learning languages or craft industries ...etc, the distance learner has to finish his studies online with obligations related to an administration he belongs to it. But, both of them use the IT tools to communicate and get knowledge through correspondence courses, video lectures, and other medias.

All of these concepts are limited today with the AI approach, in fact the AI may replacing all tutors and methods used by traditional on-line learner. Moreover, these days, AI-based applications especially in education are widespread in our daily lives. The ChatGPT app is the most known AI app, used in different ways and purposes, and recently google company launched Gemini app that bring more advantages to learners.

In addition, educational software with an artificial intelligence component is an intelligent tutoring or intelligent system (Kurni, Shaik Mohammed, & K G, 2023). Then, AI in distance education has the potential to promote the learning experience by providing personalized instruction more adequate to individual learners' needs and preferences in a smart way.

Furthermore, while AI in distance education called intelligent tutoring system shows potentials for personalized learning experiences, there are also significant limitations to consider. One of these limitations is the potential for over-reliance on AI systems, which mean the lack of human interaction or students may miss out on the human touch.

In this intervention, and to take of everything about AI, we will explore the essentials of its challenges and risks focusing on ethical side.

2. Previous Studies

2.1 Ali and all. *The effects of artificial intelligence applications in educational settings: Challenges and strategies (2024)*. This study discussed the growing use of Artificial Intelligence (AI) tools in education and the need to evaluate their effectiveness. The researchers reviewed dozens of research papers to identify challenges like user acceptance, privacy concerns, and ensuring fair AI. They recommend using AI like ChatGPT as a teaching aid, but with modifications for teachers. The study explores how AI can improve learning and proposes solutions to challenges. This research is useful for educators and policymakers considering using AI in schools

2.2 Sarah A. Chauncey. *A framework and exemplars for ethical and responsible use of AI Chatbot technology to support teaching and learning (2023)*. This study investigated how AI chatbots, such as the sophisticated ChatGPT version 4, can be utilized in an ethical and responsible manner to improve education. The paper focused on how these chatbots can help students develop critical thinking skills, adaptability (cognitive flexibility) and self-directed learning (self-regulation). By analysing existing research, the authors hope to develop a framework for ethically integrating AI chatbots in education, with a focus on their function in building cognitive flexibility in AI-rich learning settings. They will also give practical examples of how chatbots can be used to help students overcome learning gaps in topics such as math, English and studying. Finally, the goal of this research is to help lead the creation of ethical and responsible AI chatbots that are specifically built to improve teaching and learning.

2.3 Katerina Kubikova and all. *Student adaptation to distance learning: An analysis of the effectiveness, benefits and risks of distance education from the perspective of university students (2024)*. This study analysed how well students adapted to distance learning during the COVID-19 pandemic. It combines surveys and student comments to explore the factors influencing adaptation. The research found that besides teaching methods and materials, a student's own characteristics like motivation and study skills significantly impacted their success. The study highlighted the importance of maintaining contact with teachers, even virtually, to avoid student disappointment. It concludes that not all subjects are equally suited for distance learning, and universities need to invest in both technology and training teachers in online pedagogy to ensure a successful shift to combined learning models.

2.4 Kershnee Sevnarayan and Kgabo Bridget Maphoto. *Exploring the Dark Side of Online Distance Learning: Cheating Behaviours, Contributing Factors, and Strategies to Enhance the Integrity of Online Assessment (2024)*. This study investigated cheating in online learning environments and focused on why students cheat and how to avoid it. Researchers in this study investigated the motivations why students are cheating in online courses. The study included first-year students from an online learning institution and looked at the reasons for cheating, contributing factors, and potential remedies. The study found, through focus groups and interviews that cheating is a major issue in online education. Students admitted to numerous types of cheating during online tests. The study attributed this behaviour to a social cognitive concept in which students utilize mental justifications to reduce the wrongness of their behaviours. To minimize cheating, the study advises developing interactive online courses, increasing staff training in student support and implementing more powerful academic integrity

policies. The study highlighted the need for additional research to investigate the broader impact of cheating and the effectiveness of various ways to avoid it and promote academic integrity in online assessments.

3. An overview of AI functionalities and technologies in ODL

3.1 AI technologies

- **Natural language processing (NLP):** NLP refers to a branch of AI which enables computers, designed to understand, and generate either spoken or written human language (Shamsuddinova, Heryani, & Naval, 2024), e.g. may the NLP be an application or a software like the used in email filters, smart assistants, predictive texts, language translation...etc. The applications Siri of Apple, ChatGPT of Microsoft and Gemini of Google are called chatbot. These apps allow interacting with users in the real-time.
- **Speech and image recognition and processing:** these techniques are AI-based image recognition (AI-IRT) and AI-base speech recognition (AI-SRT). It refers to the algorithms that allow machines identify, capture and understand what the image or speech containing. Studies found that students responded significantly better to and gained significantly more knowledge from the use of visuals and pictures than they did from traditional methods of instruction (Fan, 2023). Medical students are among those who benefit most from image and sound recognition in many fields, especially surgery classes.
- **Autonomous agents:** Autonomous agents have long been recognized as a promising approach to achieving artificial general intelligence (AGI), which is expected to accomplish tasks through self-directed planning and actions (Wang, et al., 2024). That's mean the machine is doing the detection of actions without the intervention of the human, e.g. self-driving car, recommendation systems of your computer. Student has given suggestions about personalized learning materials or autonomous agents can be utilize for tasks and assessments, and the Duolingo, Alison, Coursera, Saylor are platforms using autonomous agents.
- **Affect detection:** It aims at giving machines a human-like capability of understanding and responding to human emotions, this allows more natural interaction between humans and machines (AlZoubi, Tawalbeh, & AL-Smadi, 2022). refers to recognize the user's emotions and analysing facial expressions during the online learning. e.g. analysing both of facial and voice recognition to detect the tone and signs of confusion, boredom or frustration.
- **Data meaning for prediction:** The algorithmic predictive capability or "decision support" of AI is an input into the decision-making process, and the human expert's final decision (judgment) remains critical (Gondocs & Dorfler, 2024). This algorithm allows making prediction about if the student is in dropping risk based on deeded data by analysing poor performance on quizzes, or predict how a student engage with courses by participation in discussions ...etc.
- **Artificial creativity:** it refers to describe machine-based generative outputs, examined the attributes of artificial creativity and compared them to human creativity (Ivcevic &

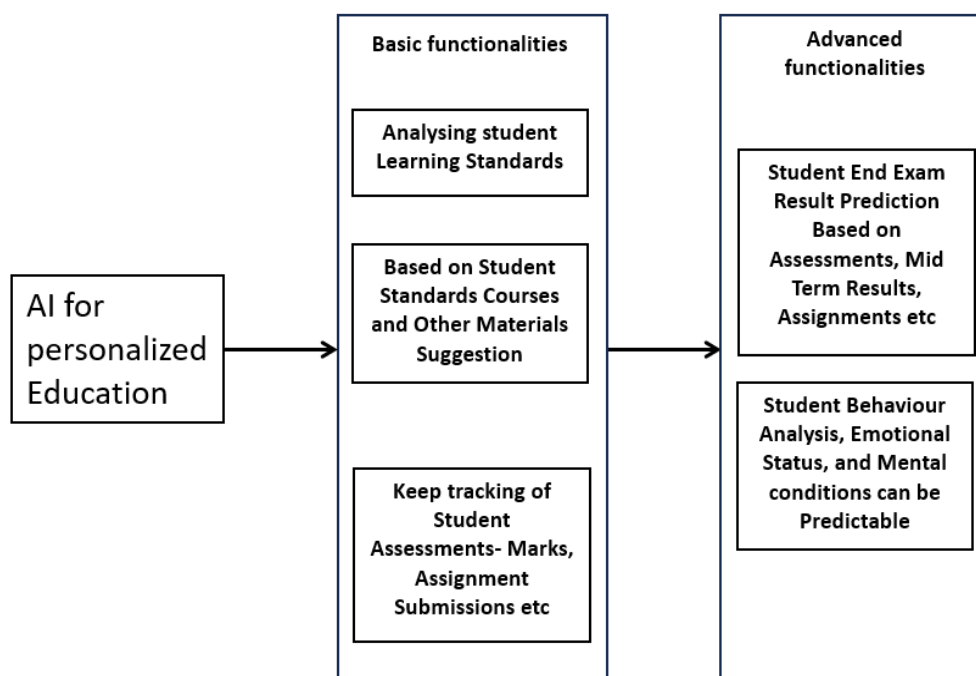
Grandenetti, 2024). The artificial creativity is the creative text format, compose music, artistic visuals. It helps to promote student engagement to enhance interactive learning activities by generating a virtual world related to the course subject for example.

3.2 AI functionalities

There are two main functionalities:

- **Basic functionalities:** including analysing student learning standards, based on the course's standards and other material suggestion.
- **Advanced functionalities:** it includes the student and result exams prediction based on assessments and assignment. It includes also, analysing student behaviour, emotional status, and mental conditions can be predictable.

Fig.1. AI functionalities in higher education



Source. (Kurni, Shaik Mohammed, & K G, 2023)

4. Challenges of AI in ODL

Despite the advantages of artificial intelligence (AI), users face several challenges:

4.1 AI technologies Privacy and security: the first significant challenge is the privacy of pupil information, these include: Data breaches: Student data stored in insecure data connections, or servers can escalate the threat of unauthorized which may also increase the threat of crimes and data forgery, plagiarism, and copyright violation (Ali, Murray, Momin, Dwivedi, & Malik, 2024). When student use these platforms, the AI systems collecting and analysing its data which means there is a risk of privacy violation and unauthorized access to sensitive information found in e-mails and devices through subscribing process. This can increase worries among students and educators about the protection of their personal data in an AI-driven distance education setting.

4.2 Over-reliance on Technology: an over-reliance of such tools may result with students being deprived of developing foundational skills (Tayan, Hassan, Khankan, & Askool, 2024). AI can lead to neglecting independent study and critical analysis skills of both students and tutors. The over-reliance refers to the dependence on technological systems or tools for various tasks or decision-making processes, potentially reducing human skills and critical thinking abilities of the users even distract their attention. It implies a situation where users rely on technology resulting potential vulnerabilities.

4.3 Data is “a limited representation of reality: AI tools depend on the data they are trained in, thus raising the question of inherent bias and dominant ideologies present in AI tools. While AI algorithms can adjust content based on given data, they may neglect the social aspect of the learning which is important for the education process especially in case of diplomatic problems between countries or the religion aspect.

4.4 Proper hardware inadequate: while students’ problems with DL can be summarised in terms of access to the internet, hardware equipment (lack of or inadequate computer, tablet, mobile phone, etc) (Kubikova, Bohacova, Slowik, & Pavelkova, 2024). In another hand, from many different technologies of AI used in education are the augmented virtual reality (VR) and augmented reality (AR). The challenge in this case is the accessibility of devices used in these developed systems in the hand of tutors and especially students. These devices and applications and moreover internet with high speed is expensive and not inaccessible to the majority of learners.

4.5 The limited abilities of users with IT Tools: the students’ abilities to benefit from AI-supported learning may vary (Wang, et al., 2023). the AI is used by diverse learners and tutors with indetermined fields and specialties, this obliges users must manipulate well enough these technologies. The tutors in literature have to install multiple applications or subscribe in e-platforms without any previous knowledge about IT technologies.

5. Risks of AI in ODL

To adopt AI in the ODL, the user must take into consideration these risks:

5.1 Cheating behaviours: in the study of Sevnarayan and Maphoto (Sevnarayan & Maphoto, 2024), one of the most reason make students cheating is students’ ease of access to AI tools, the pressure of being an online student and being isolated from lecturers. The study approved that on-line learning technologies facilitates the cheating and create a lazy student incapable of doing tasks and writing essays.

5.2 Addiction to the virtual world: the risk of young people becoming dependent on their online environments is equally substantial (Kurni, Shaik Mohammed, & K G, 2023). The permanent use of AI in learning implies kind of permanent addiction and student become high dependent on the virtual environment crated by AI space. This addiction can appear via:

- **Constant Feedback Loop:** AI feedback speed result an obsession about continuing learning.
- **Gamification and Rewards and motivations:** through provided points, rewards, badges...etc.
- **Social Isolation and Escapism:** via neglecting the real-world connections when student become more isolated from his social exterior environment

5.3 Privacy Concerns: more imminent concerns involve AI's social and ethical implications – such as the misuse of personal data and the possibility that AI might actually exacerbate rather than reduce existing inequalities (Chauncey & McKenna, 2023). Unauthorized access to sensitive information, and potential misuse of AI systems, leading to compromised privacy and loss of trust in AI technologies (Habbal, Ali, & Abuzaraida, 2024) as we mention above, the using of AI hold the risk of the violation of user's confidential information. This may lead to the risk on their life and their privacy through wide range of cyberattacks techniques.

5.4 Algorithmic Inequality: these biases can perpetuate systemic discrimination and inequality, with detrimental effects on individuals and communities in areas. AI algorithms frequently contribute to the continuation of inequality, especially concerning race, gender or religions. It contributes also in unfair assessments for certain student with certain demographics characteristics.

5.5 Less Teacher-student interaction: while AI can help overcome cognitive biases, it also introduces new ones arising from human-AI interactions. Biases may emerge due to issues like excessive attention demands or dysfunctional attention allocation, hindering effective decision-making (Broekhuizen, et al., 2023). In this virtual environment students are completely isolated from connecting with teachers this lead to disturb their interactions and compromise effective human communication.

5.6 Teacher Job displacement: limited availability of human educators and high student-to-teacher ratios (Al-Emran, 2024). In this case, the AI can replace human teachers in ODL settings.

5.7 Functionality issues, costs and damages: errors are to be expected in every computer program (Kurni, Shaik Mohammed, & K G, 2023). the using of computers is always attached with system errors and failures. Then, when a technical issue occurs it will cause the halting of the learning process. And the student incapable to learn until the issue is solved. Moreover, this could be cost expensive supplementary costs.

6. Strategies and Solutions

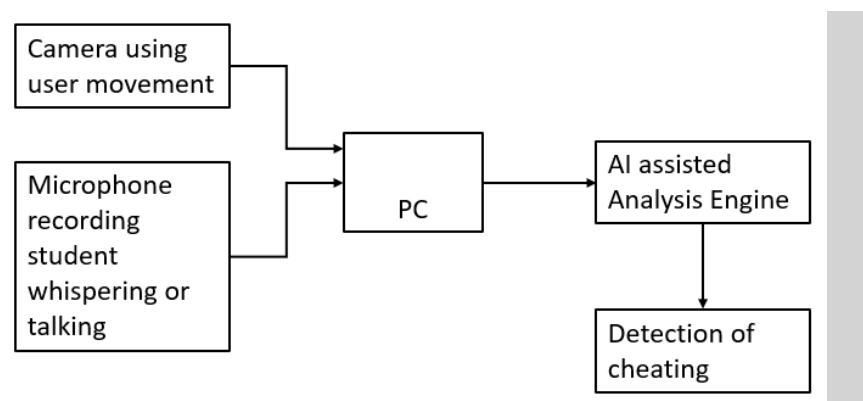
In this paper we propose strategies to mitigate the challenges and risks mentioned above:

5.1 Cheating behaviours:

- **Create strategies for Ethical AI Implementation in Distance:** online learning also suffers from issues such as high dropout rates, dearth of learner motivation, and lack of engagement (Diwan, Srinivasa, Suri, Agarwal, & Ram, 2023). However, it is crucial to combine the integration of AI in distance learning the consideration of ethical matter: bias mitigation, data privacy and the balance between technology and human interaction.
- Educators and developers must work together to avoid bias in AI-driven systems, to ensure providing fair and equitable educational experiences for all learners.
- There is a necessity to reach a balance between the use of AI and the human touch in learning. While AI can automate tasks and provide personalized support based on given information, human teachers are irreplaceable because they helping in terms of tutoring, emotional support and motivation.

- This section details an AI-assisted proctoring software (Al bartamani, AL Hadhrami, AL-Azri, & Muralidharan, 2021), to keep tabs on students taking tests online. This system can track when the student is no longer in view, also identify if students move out of the camera and identify whispering or uttering based on related words.

Fig.2. AI Assisted Proctoring of Online Exams Model



Source: (Al Bartamani, Al Hadhrami, Al-Azri, & Muralidharan, 2021)

7. Information and Communication Technology in University of Continuing Education in Algeria

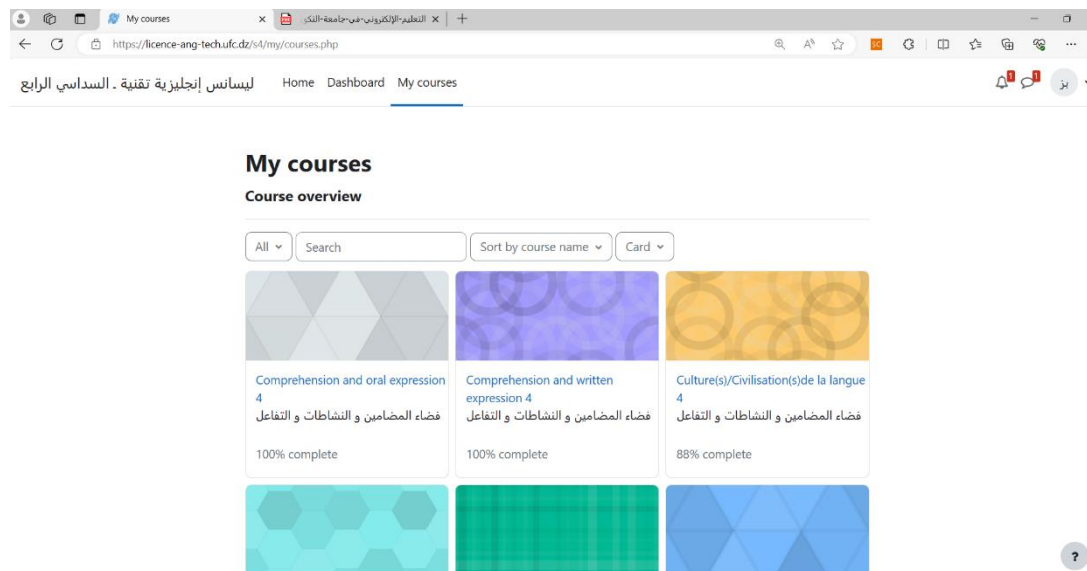
With more than 70957 students, the university faced a challenge to manage all what those students need and to enhance their knowledges in many fields. Those students are categorized in two main classes. The first are the students of the distance academic training and the second are the distance continuing training. A platform was created to manage these needs and allow the users from teachers and students to exploit of these online services.

7.1 Distance Education from Correspondences to E-University: In the 1990s, the university embraced distance learning to reach a wider audience of students across the nation. Following the historical timeline, here's a summary of the stages involved (UFC, 2022):

- **Stage of Correspondences:** the University of Continuous Training has always used distance learning methods, similar to those used by other universities around the world. In the beginning, this involved sending course materials through the postal mail.
- **Stage of Distance Education:** The University of Continuous Training faced problems with its initial method of distance learning using postal mail. These issues included incorrect addresses, damaged mail, high costs, and slow delivery. To fix these challenges, they introduced CD-ROMs for delivering course materials. While this increased student enrolment and gained recognition, it still received criticism for not fully replicating in-person learning experiences. In response to limitations of CD-ROMs and the lack of interaction, the university embraced a new approach: virtual classrooms delivered over the internet. This method, known as "Open and Distance Learning", aimed to overcome the physical distance and provide a more interactive learning environment.
- **Stage of Open and Distance Education:** The University of Continuous Training adopted online learning to meet the needs of the students. Partnering with educational organizations and holding conferences, they built a program of "Open and Distance

Learning". To ensure a smooth transition, professors were trained in designing virtual lessons and administrators learned platform management. International partnerships further augmented their expertise. Course content itself was reviewed and updated. Teachers created new materials following specific guidelines, and staff received training to upload them onto the online platform. Finally, simplified student registration ensured easy access to this new learning environment.

- **Fig.3.** Home interface of Technical English student in UCE



Source: prepared by researchers

As we see, the interface of the student as a user is including the studied modules including Dashboard and the Home page.

To show how this platform managed, the user account creation goes through few steps. In the final using, the student profile contains all his details in information including personal information, grades, calendar...etc.

The student profile interface contains personal information, courses details, Miscellaneous, Reports and login activities. The student receives all notifications about the new added courses, tasks and summative which is well organized and easy to use (see the **Appendix 01**).

In the teacher interface, the teacher adds courses, correct summative and follow the students' activities on the platform and forums in each section (see the **Appendix 02**).

7.2 Distance Continuous Education: With a network of 54 centers spanning Algeria, the University of Continuous Education stands out as a key partner and a driving force in continuing education (UFC, 2022).

Table 1: Studied fields in university of continuing education

	Fields	Sub Fields
Distance Academic Training	Economic Sciences, Commercial and Management Sciences	Bachelor of: Accounting and Finance. Master of: Accounting, Organizational Management, Master of: Public Administration
	The humanities and social sciences	Bachelor of: Media and Communication Master of: Print and Electronic Journalism
	Business Law	Bachelor of: Law Master of: Business Law
	Literature and Foreign Languages	Bachelor of: Technical English
Distance Training	Ministries Companies	Ministry of: Finance, Interior and Local Communities, Presidency of the Republic, Ministry of Justice, Higher education, municipalities. Companies: SAIDAL, National Foundation for Rural Engineering, SONATRACH, Higher National Journalism School. General Directorate of Prisons.

Source: (UFC, 2022), by researchers

For the administration staff, the university created an Innovative and dynamic digital-based system, that control all the digitization strategy in a digital transformation office with 10 members. In addition, the university is equipped with a developed datacentre matched with ISO quality certificate in 27th December, 2023.

In these accessible electronic sources, the university has all capabilities to adopt the AI in their activities especially when the e-platform complete and needed some of additional options. It can control the student activities and correct the summative with personalized content.

But in the other hand, there are some barriers that face the university to adopt the AI in the e-platform. There is a lack of teacher training and teaching how to exploit the platform and how to add relevant content. Also, the platform lack from the confidential and privacy information of the student and the teacher. Another important issue is that the user cannot retrieve the password, this problem affected the privacy and the confidentiality of the user.

8. Conclusion

We discussed the challenges and risks associated with AI in ODL, including privacy concerns, over-reliance on technology and potential biases within AI algorithms. We highlighting also, the specific challenges the university of continuing Education faces in

implementing AI in ODL. These challenges include faculty training needs, content development considerations and data privacy regulations.

Finally, we proposed strategies to avoid these challenges and ensuring ethical implementation of AI in ODL environments. These strategies mainly are: government initiatives, collaboration with international institutions, focusing on open-source AI tools and data privacy awareness campaigns. We emphasize the need for careful planning and context-specific solutions to exploit the potential of AI for improving the learning experience at the University of Continuing Education in Algeria.

- Recommendations

- The university should provide faculty training on how to use AI technologies effectively in ODL.
- The university should develop content guidelines for AI-based learning materials.
- The university should implement robust data privacy measures to protect student and faculty information.
- The university should collaborate with other institutions and universities to share best practices for implementing AI in ODL.
- We recommend also, the need to adopt on-line exams instead of reorganize the compensatory examinations because it takes time and effort. And the use of AI tools to avoid cheating it will be the good option to strength the ODL in the university

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10. Appendices

1.1. Appendix 01: Main interfaces of the user: STUDENT

Fig.1. Student profile interface

The screenshot displays a student profile interface with two main columns. The left column, titled 'User details', includes fields for Email address (with an 'Edit profile' link), Country (Algeria), City/town (Alger), Timezone (Africa/Algiers), Matricule (221 701 10), Nom_F, Prenom_F, Date_N, Centre (مركز الحلة), Spécialité (الآداب و اللغات الأجنبية), and Groupe. Below this is a 'Privacy and policies' section with a link to 'Data retention summary'. The right column, titled 'Course details', lists 'Course profiles' such as 'Comprehension and written expression 4', 'Comprehension and oral expression 4', 'Grammar of the language of study 4', 'Introduction to linguistics 3', 'Literature of the language of study 2', 'Culture(s)/Civilisation(s)de la langue 4', 'University work techniques 4', 'Introduction to translation 2', 'Foreign language 4 (économique - French)', and 'Information and communication techniques 1'. A 'View more' link is at the bottom of this list. Below the course details are sections for 'Miscellaneous' (with links to 'Forum posts', 'Forum discussions', and 'Learning plans'), 'Reports' (with links to 'Browser sessions' and 'Grades overview'), and 'Login activity' (showing 'First access to site' on Saturday, 24 February 2024, and 'Last access to site' on Friday, 26 April 2024). At the bottom right, there is a 'Mobile app' section with a 'QR code for mobile app access' and a 'View QR code' button.

Fig.2. Courses interface

The screenshot shows a web browser window with the URL 'https://licence-ang-tech.ufr.dz/44/my/courses.php'. The page title is 'My courses' and the subtitle is 'Course overview'. There are filters for 'All', 'Search', 'Sort by course name', and 'Card'. The main content area displays a grid of course cards. Each card has a colored header, a title in English and Arabic, and a progress bar. The first card is 'Comprehension and oral expression 4' (100% complete). The second card is 'Comprehension and written expression 4' (100% complete). The third card is 'Culture(s)/Civilisation(s)de la langue 4' (88% complete). Below these are three more cards with different patterns and colors, but they are not fully visible.



Grade	13.00 / 20.00
Graded on	Tuesday, 23 April 2024, 4:05 PM
Graded by	الأستاذ

1.2. Appendix 01: Main interfaces of the user: TEACHER

Fig.1. Teacher profile interface

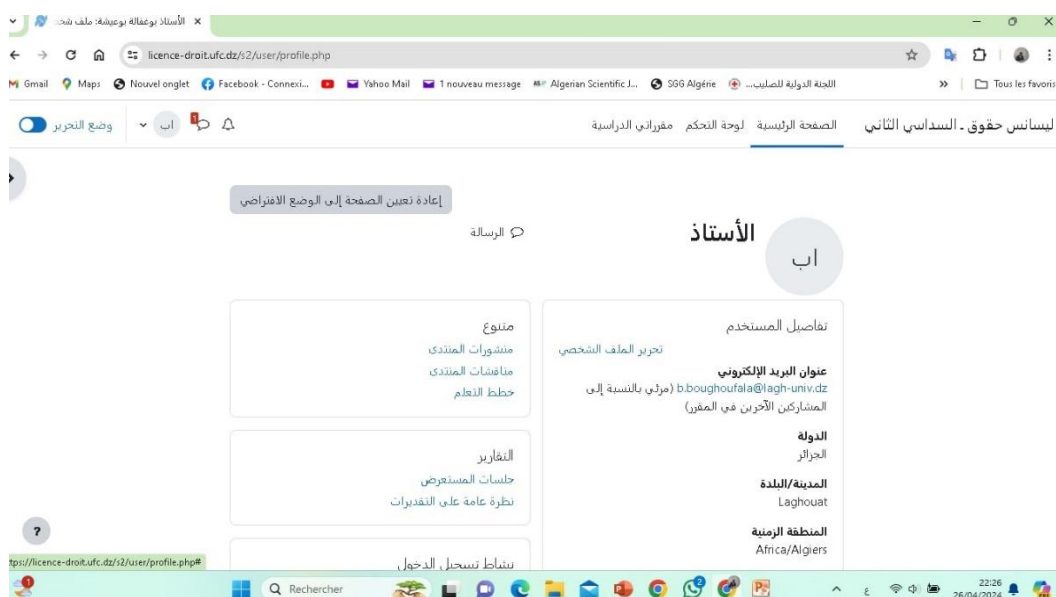


Fig.2. Courses interface

