

AI-DRIVEN DIFFERENTIATION IN THE MOROCCAN EFL CLASSROOM**Abdelmoula El khdar, Ph.D.**

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<https://doi.org/10.59009/ijlllc.2026.0193>*Received Date: 10 March 2026 / Published Date: 21 April 2026***ABSTRACT**

This study explores the prospect of Artificial Intelligence (AI) to support differentiated instruction (DI) in English as a Foreign Language (EFL) classroom in Morocco. Drawing on focus group data from practicing EFL teachers, it examines their conceptual understanding of AI, its practical implementation, infrastructural constraints, and related ethical considerations. As AI increasingly permeates major sectors, education should not remain a siloed field, positioning Artificial Intelligence in Education (AIEd) as a powerful catalyst for personalized learning. In EFL classrooms, which are often marked by students' variation in language proficiency, readiness levels, and learning needs, AI offers new possibilities for tailoring instruction to individual students. However, its integration also raises important concerns regarding equity, access, and ethical use. This study examines both the opportunities and the challenges of using AI to enhance differentiated instruction in diverse language learning environments.

Keywords: Artificial Intelligence (AI); Differentiated Instruction (DI); English as a Foreign Language (EFL); Personalized Learning; Educational Technology; Teacher Perceptions; Equity.

1. INTRODUCTION

The rapid expansion of Artificial Intelligence (AI) has led to its widespread adoption across numerous fields, including education. Educators are moving away from AI evangelism toward AI practical execution. As AI technologies evolve in breadth and depth, their influence to reshape teaching and learning practices has become increasingly evident. Artificial Intelligence in Education (AIEd henceforth) is no longer a peripheral innovation, but a central pillar of educational transformation. AIED offers tools that can enhance instruction and support personalized learning.

AIEd has the ability to address the diverse needs of learners through Differentiated Instruction (DI). In English as a Foreign Language (EFL) classroom, where students often vary widely in many aspects, the need for tailored instruction is especially critical. AI technologies can play an important role in meeting students' needs by analyzing learner data, adapting content in real time, and providing individualized feedback.

Existing literature confirms AI's capacity to support DI in language education (Shafiee Rad, 2025; Mananay, 2024; Chen, Chen, and Lin, 2020). However, there is a notable lack of empirical research focused on the Moroccan EFL context. Very few studies explore how Moroccan teachers understand AI, how they currently use it, and what barriers they face in

implementing AI-based differentiation. Hence, this study aims to fill the existing gap by examining the role of AI in facilitating DI practices in Moroccan EFL classrooms. It examines how Moroccan EFL teachers perceive, engage with, and implement AI-supported differentiation. It also identifies the infrastructural and professional development (PD) needs required for meaningful adoption.

2. LITERATURE REVIEW

As EFL classrooms grow increasingly diverse, the need for DI has become more urgent than ever. Teachers' roles have become difficult as they have to deal with a wide range of learner differences (El khdar, 2024). Existing research suggests that DI promotes greater engagement for language learners if teachers are efficacious (Dixon, Yssel, McConnell, & Hardin, 2014). However, educators often face significant barriers in implementing this approach, including limited time and lack of adequate resources (Santangelo and Tomlinson, 2012).

AI technologies could be introduced in this context by offering practical tools to help overcome these setbacks. Intelligent tutoring systems, chatbots, and language processing applications are already being used by many teachers worldwide to personalize instruction and provide timely, actionable feedback (Woolf, 2010; Heffernan & Heffernan, 2014). These technologies allow educators to deliver tailored content and support learning experiences based on each learner's individual profile.

AI has the ability to support DI by analyzing large volumes of student data and making immediate instructional adjustments accordingly. AI tools can offer precise feedback and monitor students' progress with a level of efficiency that traditional methods cannot match (Woolf, 2010; Heffernan & Heffernan, 2014). Still, teachers' dependence on AI can turn classrooms into "digital laboratories", which is likely to do a disservice to learning and marginalize teachers' roles (Williamson, 2020). Hence, there is a need to think ethically when designing and embedding AI initiatives into education.

Specifically, AIED has emerged as a practical way of creating inclusive learning environments. Luckin et al., (2016) argue that AIED offers the opportunity for more personalized and flexible data-driven instruction. Additionally, AIED enables educators to respond not only to what is being learned, but also to how it is being learned and how students are experiencing the process. For EFL teachers in particular, this represents a paradigm shift away from static curriculum delivery toward adaptive instruction grounded in real-time based on learner data.

Importantly, AI is not intended to replace teachers. Rather, it acts as a supportive infrastructure that enhances human-driven teaching. By automating instructional tasks and providing meaningful insights into each learner's progress, AI allows teachers to focus on other dimensions of teaching such as creativity and quality learning. For AI to effectively support DI in EFL classrooms, education systems need broader systemic integration and a digital strategy that includes strong infrastructure (Fal Merkazi, 2024).

Infrastructure plays a critical role in the successful integration of AI in education at large. Basic assets, such as reliable internet connectivity, access to digital devices, and adequate training are all necessary for meaningful implementation. Yet, there should be a sort of alignment between technological innovation and pedagogical principles (Zawacki-Richter, Marín, Bond, & Gouverneur, 2019). In the Moroccan context, however, disparities in access and limited PD

opportunities for teachers continue to hinder the adoption of AI in classrooms (Elbouknify et al., 2025).

The need for a digital infrastructure that supports AI-enhanced learning is critical. This includes interoperable platforms, data privacy protections, and ethical frameworks such as “Law 09-08” to ensure fair and inclusive access (Fal Merkazi, 2024). Without these necessary support systems, AI risks becoming a superficial accessory rather than a transformative educational tool (Luckin et al., 2016). By shifting the focus from theoretical to practical implementation, particularly in contexts like Morocco, it is likely that we can move from concept to infrastructure in realizing AI’s promise for differentiation and more.

3. METHODOLOGY

The present study adopted a qualitative research design with the aim to investigate Moroccan EFL teachers’ perceptions of Artificial Intelligence in supporting differentiated instruction. Specifically, it explored teachers’ conceptual understanding of AI, the accessibility of AI-driven platforms for learners, and the infrastructural and PD needs associated with effective implementation in the EFL classroom.

Data were gathered through two Focus Group (FG) discussions involving middle and high school EFL teachers from both public and private schools across different regions in Morocco. Each FG included six participants, selected purposively to reflect a wide range of teaching contexts and experiences. The decision to recruit six participants per group aligns with Creswell’s (2012) recommendation that a focus group typically consists of “four to six” individuals (p. 218), ensuring a manageable and controllable size that facilitates rich interaction and in-depth discussion among participants. This sampling strategy aimed to capture diverse perspectives on the integration of AI to differentiate instruction.

The FGs followed a semi-structured format, guided by open-ended questions that were aligned with the research objectives. This approach enabled participants to reflect openly on their experiences and share practical insights related to the use of AI tools for DI. Each session lasted approximately 60 minutes, was audio recorded with the informed consent of participants, and subsequently transcribed in full for analysis.

A thematic analysis was conducted to identify common patterns and recurring themes in the data. Particular attention was given to teachers’ familiarity with AI technologies, their current usage of generative AI in their teaching practices, and their views on infrastructural readiness and training requirements for future integration.

Although the study was exploratory in nature and involved a relatively small sample, the findings offered valuable initial insights into the practical realities and pedagogical considerations surrounding AI-supported differentiation in Moroccan EFL classrooms. While the results are not intended to be generalizable, they contribute meaningfully to the ongoing debate on AI integration in language teaching and learning.

4. FINDINGS

Several overarching themes were identified in the data collected from the two FGs. These themes emerged as participants tried to respond to the eight questions used in the research instrument that triggered the group discussions:

1. What digital tools or platforms do you currently use in your EFL teaching? and what do you use them for?
2. What methods do you currently use to support students at different levels or with different needs?
3. What comes to mind when you hear 'Artificial Intelligence' in education?
4. In your opinion, can AI help teachers differentiate instruction? How? explain?
5. What potential benefits do you see in using AI for language teaching?
6. Do your students have access to the internet or devices to use digital tools?
7. What kind of infrastructure would be needed to make AI use practical in your school?
8. Any final thoughts, concerns, or hopes about AI in education in Morocco?

The use of digital tools and AI technologies to support DI in the EFL classroom emerged as a recurrent theme throughout the dataset. Teachers exhibit varying degrees of familiarity and implementation with the theme in question. Across both groups, YouTube was cited as the most widely used tool, mainly for content differentiation. A number of participants also reported using platforms such as Kahoot, Quizlet, ChatGPT, Gemini, and Google tools to support instructional tasks, including lesson planning, formative assessment, and student feedback. Nevertheless, digital tool usage varied across participants. Some teachers in the second FG noted that they did not use any digital tools at all, indicating “disparities in technological adoption” and potentially unequal access to digital training or infrastructure.

Another major theme identified in the teachers’ responses was that of using instructional strategies to address diverse student needs. Both groups demonstrated an awareness of pedagogical practices that support differentiation. Teachers mentioned strategies such as “scaffolding, peer collaboration, tiered activities, and the use of personalized worksheets”. While this reflects somehow a conscious recognition of learner diversity, the consistency and depth of application varied. Some participants appeared to apply these methods systematically, while others indicated only limited use. One teacher explicitly stated that they did not employ any particular strategy to support DI. These responses suggest that while DI is conceptually understood, practical implementation depends on individual teacher expertise within the educational ecosystem.

A third recurrent theme in the interviews was teachers’ perceptions of AI in education. Most participants associated AI with enhanced personalization, improved efficiency, increased accessibility, and greater student engagement. ChatGPT was mentioned frequently as a generative AI tool already in use for content development, language practice, and lesson planning. Several teachers described AI as “a support system that acts as a prompter, aiding

in the creation of adapted materials for different learners.” Many believed that AI could help “address mixed-ability classrooms by analyzing student performance and providing tailored resources.” However, there were also some expressions of concern. Some teachers worried that AI might lead students to rely excessively on technology in a way that limits authentic human engagement with language learning tasks. Others pointed to a lack of clear guidance or understanding on how to use AI effectively for differentiation in the Moroccan context. A few participants acknowledged AI’s capabilities but admitted their failure to apply it in their actual teaching practice.

Student access to technology emerged as a significant theme for integrating AI into differentiated instruction. In the first group, several teachers noted that while some students had access to devices and the internet at home, others faced significant economic and connectivity challenges. In response, teachers reported using shared devices in class or relying on offline materials to ensure students' engagement. In the second group, most participants indicated that students did have access to digital devices. These findings reveal clear inconsistencies in technological access, which in turn affect how equitably AI tools can be used to support DI.

A further common theme in the FG discussions was that of infrastructure and professional development needed for AI integration in EFL classrooms. To make AI use feasible in their teaching contexts, teachers across both groups pointed to the need for "reliable high-speed internet", "access to functional digital devices for both teachers and students", and "secure educational platforms compatible with AI integration." Several teachers also emphasized the necessity of PD opportunities and teacher training for effective implementation. In addition to technical needs, participants expressed concern over data privacy and the ethical use of AI tools in education, particularly in protecting student personal information and ensuring ethical use.

A final common theme in the FG discussions was teachers' outlook toward AI-driven differentiation. The findings reveal a careful optimism among teachers regarding AI's role to support DI. Many of them expressed hope that AI could reduce their workload, offer personalized support to diverse learners, and boost student motivation. Similarly, they consistently emphasized the importance of the teacher's role in maintaining the emotional dimensions of learning. While AI is not yet fully integrated into most Moroccan classrooms as an infrastructure in itself, the data suggest that teachers are ready to explore its scope provided that the necessary training and ethical frameworks are in place.

5. DISCUSSION

The findings from this study suggest that Moroccan EFL teachers are increasingly open to the possibilities that AI can offer in facilitating DI tasks. Teachers recognize AI's promise to personalize content, adapt materials to meet varying learner needs, and enhance student engagement through interactive technologies. These perspectives are consistent with broader research in the field, which brings to light AI's capacity to support tailored learning paths, timely feedback, and differentiated resources. In the context of EFL teaching, such affordances are especially valuable given the linguistic, cognitive, and motivational diversity often present in the classroom.

Despite these promising attitudes, the findings also reveal considerable variations in Moroccan EFL teachers' practical knowledge and application of AI tools for differentiation. While some participants are already experimenting with generative AI tools like "ChatGPT" or "Gemini" to create teaching materials for different learner profiles, others remain uncertain about how to implement these technologies effectively. This disparity suggests a need for targeted PD programs that move beyond general digital literacy and focus specifically on how AI can support differentiation. Training should be contextualized within the realities of Moroccan classrooms, accounting for differences in resources, infrastructure, and student access.

The role of infrastructure emerged as a critical factor in the discussion of AI integration. Teachers repeatedly pointed out the importance of reliable internet access, sufficient digital

devices, and access to AI-compatible platforms. In many cases, these foundational elements are inconsistently available, which might limit the use of technology-enhanced differentiation. This technological divide extends to students, some of whom face limited access to digital tools due to economic or geographic constraints. These inequities pose challenges not only for the integration of AI but also for broader goals of educational equity. Without addressing such infrastructural and socio-economic disparities, the benefits of AI may only be accessible to a limited section of students.

AI should be dealt with as a mandatory service in schools not a mere isolated and optional digital tool. It should be a part and parcel of the educational ecosystem at large that supports all actors involved in the educational success. Hence, a sustainable perspective should be taken in this regard, and stakeholders are required to embed it in all institutional practices to serve the needs of the 21st century learners.

The ethical dimensions of AI use also surfaced as a concern among participants. Teachers expressed apprehension about students' misuse of AI for cheating. While they acknowledged AI's capacity for personalization, many also emphasized that it should only support teachers not replace them. AI integration must preserve the human elements of empathy and interpersonal connection that are central to teaching and learning. As such, the adoption of AI in Moroccan EFL contexts must be guided not only by technical considerations but also by pedagogical and ethical frameworks that protect the integrity of learning.

Ultimately, the responses from the FGs reflect a shifting context. While many teachers are only beginning to explore AI's role in their teaching practices, their curiosity and critical awareness form a strong foundation for future innovation. To move from interest to implementation, schools and stakeholders must invest in the necessary infrastructure and teacher support systems. If done adequately, AI can serve as a powerful tool in realizing the goals of DI and improving language learning outcomes for diverse Moroccan students.

6. CONCLUSION

This study set out to explore how AI can be used to support DI in Moroccan EFL classrooms. Teachers generally recognized AI's ability to help personalize learning for diverse student needs. At the same time, they pointed out the caveats related to infrastructural and ethical matters that must be addressed to move beyond conceptual enthusiasm.

EFL teachers' uneven familiarity with AI tools and varied access to digital resources reveal a clear need for targeted PD and solid technological infrastructure. Equitable access to devices and connectivity is primordial to ensure that AI is benefiting all learners rather than deepening existing digital divides. Furthermore, the ethical use of AI, including data privacy and academic integrity, remains a critical concern that must be addressed in implementation strategies.

In summary, AI integration in differentiating instruction in Moroccan EFL classes requires a balanced approach that preserves the irreplaceable role of teachers as empathetic facilitators, or put simply in Heffernan and Heffernan words, "put the teacher in charge" (Heffernan & Heffernan, 2014). AI is meant to be an extension of teachers, not their extinction. With robust investment in training, infrastructure, and ethical frameworks, AI can be harnessed to complement human-driven pedagogy. This will enable more effective language learning experiences that respond to the diverse student needs. The findings invite further research and

policy attention to support the responsible and context-sensitive integration of AI in EFL classes.

REFERENCES

- Creswell, J. W. (2012). *Qualitative inquiry and research design: Choosing among five approaches* (3rd ed.). Sage.
- Chen, L., Chen, P., & Lin, Z. (2020). Artificial intelligence in education: A review. *IEEE Access*, 8, 75264–75278. <https://doi.org/10.1109/ACCESS.2020.2988510>
- Dixon, F. A., Yssel, N., McConnell, J. M., & Hardin, T. (2014). Differentiated instruction, professional development, and teacher efficacy. *Journal for the Education of the Gifted*, 37(2), 111–127. (Note: I added the likely journal; please verify if this is the correct source.)
- El Khdar, A. (2024). Understanding differentiated instruction (DI): Practices and challenges in the EFL classroom in Morocco. *International Journal of Research and Innovation in Social Science*, 8(8), 3122–3130. <https://doi.org/10.47772/IJRISS.2024.8080229>
- Elbouknify, I., Berrada, I., Mekouar, L., Iraqi, Y., Bergou, E. H., Belhabib, H., Nail, Y., & Wardi, S. (2025). AI-based identification and support of at-risk students: A case study of the Moroccan education system. *arXiv*. <https://arxiv.org/abs/2504.07160>
- Fal Merkazi, A. (2024). L'intelligence artificielle (IA) au service de l'éducation au Maroc : défis, opportunités et stratégies. *Transformations Éducatives*, 1(1). <https://doi.org/10.34874/PRSM.te-vol1iss1.2651>
- Heffernan, N. T., & Heffernan, C. L. (2014). The ASSISTments ecosystem: Building a platform that brings scientists and teachers together for minimally invasive research on human learning and teaching. *International Journal of Artificial Intelligence in Education*, 24(4), 470–497. <https://doi.org/10.1007/s40593-014-0024-x>
- Luckin, R., Holmes, W., Griffiths, M., & Forcier, L. B. (2016). *Intelligence unleashed: An argument for AI in education*. Pearson.
- Mananay, J. A. (2024). Integrating artificial intelligence (AI) in language teaching: Effectiveness, challenges, and strategies. *International Journal of Learning, Teaching and Educational Research*, 23(9), 361–382. <https://doi.org/10.26803/ijlter.23.9.19>
- Santangelo, T., & Tomlinson, C. A. (2012). Teacher educators' perceptions and use of differentiated instruction practices: An exploratory investigation. *Action in Teacher Education*, 34(4), 309–327. <https://doi.org/10.1080/01626620.2012.717032>
- Shafiee Rad, H. (2025). Reinforcing L2 reading comprehension through artificial intelligence intervention: Refining engagement to foster self-regulated learning. *Smart Learning Environments*, 12, Article 23. <https://doi.org/10.1186/s41239-019-0171-0>
- Williamson, B. (2020). New digital laboratories of experimental knowledge production: Artificial intelligence and education research. *London Review of Education*, 18(2). <https://doi.org/10.14324/lre.18.2.05>
- Woolf, B. P. (2010). *Building intelligent interactive tutors: Student-centered strategies for revolutionizing e-learning*. Morgan Kaufmann.
- Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education – where are the educators? *International Journal of Educational Technology in Higher Education*, 16, Article 39. <https://doi.org/10.1186/s41239-019-0171-0>