Can AI Replace Teacher Collaboration in EMI? Exploring Hybrid Roles

Ouafa Ouarniki[1]
SIGMA Laboratory, Oran1
[1]Ziane Achour University of Djelfa (Algeria),
ouafa.ouarniki@univ-djelfa.dz
https://orcid.org/0009-0001-6485-7973

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Abstract:
The rapid spread of Artificial Intelligence (AI) in education has raised concerns about its capacity to replace human collaboration. Accordingly, this study investigates its role in English as a Medium of Instruction (EMI) courses at Algerian universities, asking whether AI can substitute cooperation between subject-matter and language instructors. Through a mixed-methods approach that combined questionnaires, ten semi-structured interviews, and a pilot of AI-assisted lesson planning, the findings indicate that AI is effective for structured tasks such as scaffolding and sequencing; however, it lacks the contextual and pedagogical judgment of teachers. Consequently, participants favored a hybrid model in which AI complements rather than replaces professional collaboration. In conclusion, the study highlights implications for EMI policy, teacher training, and course design.

Keywords: EMI; Artificial Intelligence; Teacher Collaboration; Hybrid Model; Course Design.

Corresponding author: Ouafa Ouarniki,**e-mail**: ouafa.ouarniki@univ-djelfa.dz

1. INTRODUCTION

The use of Artificial Intelligence (AI) within the higher learning system has transformed the conventional ways of teaching and learning, especially where content pedagogy and language pedagogy overlap. The use of English as a Medium of Instruction (EMI) is increasingly being adopted in Algerian universities as a means of meeting global research demands, in addition to enhancing students' English language proficiency. Such a shift has assigned greater significance to close collaboration between the language teachers and the subject-matter teachers, a setup that can offer content expertise and language teaching simultaneously.

With its potential, education through and with AI is controversial. For all the things one can do with AI software in course planning, scaffolding resources, and planning tools, one worries about whether it can match the subtle judgment, cultural attune, and responsiveness of instructors. This concern rings especially realistic in EMI courses, where it is most critical that content and language professionals collaborate to facilitate student success. Current research promises AI to be utilized in a way to aid teachers in workload management and data-based feedback but not eliminate the need for the human interpretative role (Chen et al., 2021; Molenaar&Knoop-van Campen, 2020).

Given this progress, it is critical to investigate whether AI can effectively substitute traditional teacher collaboration or whether it is better positioned as a supportive tool within a hybrid framework. This study explores AI-based planning attitudes, experiences, and pedagogic uses among EMI teachers in Algeria. In applying survey data, qualitative interviews, and pilot analysis, the study aims to provide a comprehensive picture of the potential and limitations of AI.

The current research is informed by the subsequent objectives, research questions, and hypotheses, as follows:

1.1 Objectives

1. To explore instructors' attitudes towards AI as a collaborative tool in EMI course design.

2.To determine the utility of AI in facilitating lesson planning, language support, and content coverage.

3. To determine challenges and potential linked to AI integration in EMI collaboration.

4. To give recommendations for the adoption of a hybrid AI-human model in EMI environments.

1.2 Research Questions

1. How do subject and language teachers perceive the role of AI in EMI course collaboration?

2. What are the advantages and limitations of AI in supporting EMI lesson planning?

3.Can AI replace human collaboration between subject and language teachers in EMI courses?

4. What are the strategies that can be implemented to assist in reaping the maximum benefits of AI without undermining teacher agency?

1.3 Research Hypotheses

H1: AI is considered as a supporting tool and not a substitute for human collaboration.

H2: AI is efficient in repetitive and standardized tasks but is less efficient in tasks that demand flexibility and pedagogical judgment.

H3: A hybrid AI-human model is considered the best model for EMI course design.

2. Literature Review

2.1 AI in Education

Artificial Intelligence has been increasingly applied in academic environments as content arrangement tools, lesson design tools, and student performance analysis tools (Luckin et al., 2016; Holmes et al., 2019). Examples include AI resources from automated grading to adaptive learning systems, prediction analytics, and content scaffolding, which can assist educators in developing effective, well-organized lessons. Hence, AI minimizes redundant workload, and educators can have additional time in active pedagogical activities with student-led and formative feedback that are critical in deep learning.

AI is not without limitations despite such benefits. Scholars highlight that AI lacks contextual and cultural awareness to meet different needs of learners (Chen et al., 2021; Molenaar&Knoop-van Campen, 2020). Particularly, AI cannot automatically respond to classroom interaction or interpret nuances of student behavior, which are indispensable in environments where subject matter and language acquisition are integrated. Accordingly, while AI can provide consistency and efficiency, its usage must be well regulated to avoid reliance that will compromise instructional quality.

With respect to these factors, literature across the board recommends that AI is used as an adjunct tool and never replace human teachers. By taking over systematic, routine tasks, AI releases teachers for more thoughtful and context-specific decision making in teaching. This is particularly true in English-Medium Instruction (EMI) classes, where instructors have to juggle language and subject matter knowledge in a classroom that requires pedagogical skill and ongoing feedback among teachers.

2.2 Teachers' Collaboration in EMI Classes

Effective co-teaching among subject-matter and language instructors is mostly believed to be the major predictor of success among EMI students (Dearden, 2014; Ouarniki, 2023). The instructors can work together to plan to reconcile content and language objectives, create combined learning activities, and provide feedback on discipline knowledge and language skills. Through this, students are provided with extended instructional sequences, strong scaffolding, and situationally enriched representations that support awareness and interest.

However, among teachers there are some real issues, such as time being scarce, pedagogic belief being inconsistent, and little training in multi-discipline planning (Coleman, 2018). Furthermore, the organizational task of merging numerous instructors' timetables and learning plans can negate a lot and frequent cooperation. These are the reasons for the need for efficient tools and techniques so that basic collaboration may be enabled without compromising teaching quality.

AI has been seen as a possible candidate to aid EMI collaboration in this role. By freeing teachers from administrative and bureaucratic tasks, AI can help lift the coordination burden and highlight areas for human action, e.g., context adaptation of content or accommodating special learner needs. Human collaboration is therefore the foundation, while AI offers the potential to improve efficiency and pedagogical suitability in EMI courses.

2.3 AI-Assisted Collaboration in EMI

There have been studies on the potential for AI to facilitate collaboration among teachers in EMI and have established that AI can automate lesson planning and content design (Holmes et al., 2019; Zhang & Chen, 2022). For example, AI can suggest appropriate vocabulary, generate exercises, and deliver formatted lesson plans, thus reducing preparation work on the teachers' side significantly. Pilot studies also indicate that AI optimizes planning efficiency,

particularly where multiple instructors need to be dealt with, to offer consistency across courses and modules.

AI application in EMI collaboration is, however, limited by the inability of AI to interpretively conclude, accommodate situational demands of classrooms, or take cultural and disciplinary sensitivities into account (Baker &Inventado, 2014). Therefore, while AI can assist in developing instructional content, it cannot replace professional judgment, adaptability, and interactive collaboration provided by human teachers. For that matter, AI lacks contextual and relational knowledge to allow for true pedagogical decision-making.

Therefore, the literature reflects that AI should be incorporated as a co-planner who supports and does not replace human knowledge in EMI contexts. By having AI-constructed scaffolds integrated with teacher clarification, the teachers are encouraged to marry the effectiveness of AI without losing the contextual appropriateness, adaptive teaching, and student-centeredness. Such integration permits a balance under which technology supports and does not reduce the teacher's role in EMI.

2.4 Hybrid Models: Combining AI with Human Intelligence

Hybrid human-AI models have been viewed as a viable option for technology integration in educational practice (Molenaar&Knoop-van Campen, 2021; Hu et al., 2021). With hybrid designs, AI does structure, repetitive, and data-intensive work, while leaving interpretation, contextualization, and engaging the learner to the human teacher. This labor division facilitates enhanced teaching efficiency without compromising pedagogical quality or teacher control.

Hybrid models in EMI teaching have the advantage of balancing the economy of AI with the sense-making, collaborative efforts of subject-matter and language teachers. Hybrid models allow teachers to address the most crucial aspects of learning, such as students' response to misconceptions, content restructuring for cultural requirements, and

providing integrative feedback on subject matter and language. Therefore, hybrid models can preserve the integrity of EMI teaching while taking technological assistance.

Furthermore, hybrid models are consistent with constructivist and sociocultural theories of human mediation in learning (Vygotsky, 1978). By not substituting AI as a tool but keeping it supplementary, these models maintain the teacher's scaffolding, co-construction of knowledge, and creation of productive interaction. Therefore, human-AI hybrid models are an appropriate and theory-guided solution for maximizing collaboration and efficiency in EMI scenarios.

3. Methodology

3.1 Research Design

A mixed-methods approach was adopted to explore the potential capacity of artificial intelligence to support or even replace collaboration among subject-matters and language teachers in EMI classrooms. The design allowed the study to leverage the strength of both quantitative and qualitative methods, hence having more information regarding teachers' attitudes, experiences, and the actuality of AI utilization. Specifically, the study utilized quantitative surveys to capture overall attitudes of teachers towards AI, semi-structured interviews to determine greater insight into their experiences and expectations, and a pilot trial of lesson planning using AI to cross-check AI-generated lesson plans against lesson plans generated through collaborative work of teachers. Triangulation across the methods ensured validity and reliability in the findings, and enabled examination in-depth of perceptions and real-world action.

3.2 Participants

The research involved ten purposively sampled teachers from various Algerian universities for pedagogical backgrounds and disciplinary views to be weighted similarly. The participants consisted of five subject-matter teachers teaching Business, Computer Science, and

Engineering, and five language teachers teaching English for Academic Purposes (EAP). These teachers possessed 1 to 15 years of EMI teaching experience and brought a wide variety of perspectives to the potential for collaboration using AI. Selection criteria were based on existing experience in EMI teaching and readiness to adopt AI-supported lesson planning, thereby enabling participants to offer pragmatic and informed insights. Demographic information, including teaching experience, subject discipline, and previous exposure to AI tools, was gathered to place responses in context.

3.3 Data Collection

The data were collected through three convergent methods to determine perceptions and actual uses of AI for EMI collaboration.

3.3.1Quantitative Survey

A Likert scale-based survey was employed to obtain teachers' view concerning the utility, constraining factors, and replaceability of human collaboration with AI. Through this, the research team managed to capture attitude trends and determine consensus or disagreement of views among the respondents.

3.3.2 Semi-Structured Interviews

The ten teachers were interviewed, questioning them on their experience with EMI teaching and anticipation of AI-mediated collaboration. Interviews led participants to present evidence-based examples and straightforward claims for challenges and opportunities, supplementing the quantitative data.

3.3.3 AI-aided Pilot Study

EMI lessons were carefully created employing AI tools, including ChatGPT, and then contrasted with lessons developed in collaboration by language and subject-matter teachers. Contrast was done in terms of content coverage, language scaffolding, adaptability, and quality of

pedagogy, with particular focus on providing concrete evidence of the potential of AI in real-life teaching environments.

3.4 Data Analysis

Quantitative survey data were analyzed using descriptive statistics, including means, frequencies, and percentages, to provide an overview of instructors' perceptions and to identify trends regarding AI's supportive role and perceived limitations.
Qualitative interview data were analyzed thematically. The answers are coded and grouped into four main themes:

- Perceptions of AI's importance
- Benefits of AI-assisted collaboration
- Limitations of AI
- The need for hybrid approaches

These issues were further narrowed down to subtopics in order to establish finer differentiations among subject-matter and language teachers'experiences.
Finally, output from the AI-assisted pilot study were scored using a 5-point rubric assessing content coverage, language scaffolding, adaptability, and pedagogical quality.

4. Findings

The results are given in three main sections:

- Teachers' attitudes towards AI collaboration in EMI,

- The success of AI at substituting or assisting cooperation, and

- AI implementation opportunities and challenges.

Qualitative and survey data are given along with pilot lesson plan outcomes via AI assistance.

4.1 Teachers' Attitudes towards AI use in EMI Collaboration

4.1.1 Survey Findings

Findings of the survey indicate that teachers view AI potential as a collaborative tool but fear it might replace human collaboration. Both survey data and qualitative insights are presented, alongside results from AI-assisted pilot lesson planning.

4.1 Instructors' Perceptions of AI in EMI Collaboration

4.1.1 Survey Results

Survey results indicate that instructors recognize AI's potential as a supportive tool but remain cautious about its ability to replace human collaboration.

Table 1. Instructors' Perceptions of AI in EMI Collaboration

Statement	StronglyAgree (%)	Agree (%)	Neutral (%)	Disagree (%)	StronglyDisagree (%)	Mean
AI can support syllabus planning	40	50	10	0	0	4.3
AI can replace collaborative discussions	10	20	20	30	20	2.7
AI helps with language scaffolding	35	45	15	5	0	4.1
AI improves efficiency of lesson planning	50	40	10	0	0	4.4
Humanoversighti snecessary	60	30	10	0	0	4.5

These findings demonstrate that teachers value AI for lesson planning and scaffolding while rejecting it. These results suggest that teachers

embrace AI for lesson planning and scaffolding but spurn its power to wholly substitute collaborative discourse.

4.1.2 Qualitative Findings

Individual interviews with all 10 teachers (T1–T10) showed deeper insight into the first theme:

Perceptions of AI's Role:

T1 (Subject-Matter): "AI might suggest lesson framework ideas and language tasks, but it cannot substitute professional discussion."

T2 (Language): "It is devoid of the human touch for student needs; it is not capable of sensing a student struggling. "Its ability to fully replace collaborative discussions.

T3 (Subject-Matter): "AI can assist with routine planning but is not nuanced by direct interaction with students."

T4 (Language): "AI can give out outlines but not predict questions students will ask in debate."

T5 (Language): "Personal corrections a language instructor makes cannot be programmed, particularly where phrasing and pronunciation are involved."

These findings define AI as useful but insufficient for relational and interpretive aspects of collaboration. Notably, both language and subject teachers clarified that AI works optimally as a planning collaborator but not as an autonomous collaborator.

4.2 The Effectiveness of AI in Augmenting or Substituting Collaboration

4.2.1 AI vs Human-Collaborated Lessons

The pilot study compared AI-created lessons and human-collaborated lessons along the lines of content coverage, language scaffolding, adaptability, and pedagogical quality.

Table 2. AI-Collaborated vs. Human Lesson Plans

Criterion	AI-Generated Plan (Score/5)	Human-Collaborated Plan (Score/5)
Content Coverage	4.2	4.5
Language Scaffolding	4.0	4.6
Adaptability	3.5	4.7
Pedagogical Quality	3.8	4.8

AI guided limited activities such as content coverage and minimal caffolding but was unable to learn and adapt pedagogical subtleties. For instance, AI lessons gave glossaries and suggested discussion questions but did not include culture-enriched examples located within human-interacted lessons.

4.2.2 Qualitative Insights into AI Utility

Strengths:

T3 (Language): "Making plans and suggesting key vocabulary saves time, allowing us to focus on interactive activities."

T6 (Subject-Matter): "AI knows where we catch students, so we can better prepare."

T8 (Language): "AI lesson plans are a starting point; we modify them together to students' needs."

T9 (Topic-Matter): "AI development of a first lesson plan accelerates our learning goals discussions."

Limitations:

T1: "AI can't read local instances; advice is generic."

T2: "It cannot respond to unplanned questions or misconceptions by students."

T4: "It is not culturally sensitive for proper examples or case studies."

T7: "The AI suggestions occasionally fall short of subtlety of disciplinary language nuance that plague students."

These findings confirm that AI enables cooperation in timely and well-structured activities but cannot replace human responsiveness, flexibility, and judgment to classroom dynamics.

4.3 AI Integration Challenges and Opportunities

4.3.1 Challenges

* Context limits awareness: T7 wrote, "AI can suggest lesson sequences but is unaware of institutional or cultural context."

* Quality input dependence: T9 explained, "AI output depends on what we input; bad data can result in inappropriate suggestions."

* Agency and ethical issues: T10 cautioned, "Too much reliance could take away teachers' agency in pedagogically significant decisions."

4.3.2 Possibilities

* Scaffolding and efficient planning: T5 explained, "AI saves hours of planning time; we can concentrate on engagement strategies."

*Lesson coordination: T6 supplemented, "It makes all lessons coincide with learning objectives."

*Data-driven understanding: T8 wrote, "AI analyzes patterns in student performance to inform lesson adjustments."

4.3.3 Preference for Hybrid Model

All of the interviewees identified the hybrid model as the best:

T3: "AI does formal tasks; teachers tailor lessons for applicability and interest."

T1: "The hybrid approach achieves efficiency with minimal compromise in pedagogic quality."

T10: "AI is a co-planner, not a co-teacher; it frees collaboration instead of substituting it."

This contract emphasizes the point that AI must be implemented as an assistant, rather than one to replace but assist human decision-making.

The research conclusions reveal that teachers tend to view AI as support assistant that aids lesson planning and scaffolding of content but cannot substitute the rich interaction between language and subject-matter teachers. In effect, AI excels at repetitive and well-structured tasks like scaffolding of language and content coverage but stumbles on pedagogical subtlety, situational acumen, and adaptability, which continue to be the exclusive domain of human teachers. Granted, these limitations in perspective and integration of AI have benefits that are expansive in scope, such as improved efficiency in lesson planning, homogeneity of course, and access to evidence-based expertise available for the purpose of informing pedagogical decision-making. These, however, need to be utilized wisely so as not to

compromise pedagogical quality and teacher autonomy. In particular, the respondents underscored the fact that the best strategy is a hybrid blend of AI and whereby AI possesses structured repetition activities and human instructors possess interpretive, adaptive, and relational functions. This collaborative model fits hybrid EMI pedagogy literature in providing combined interplay of technology and human cognition towards providing high-standard context-based instruction (Chen et al., 2021; Holmes et al., 2019).

5. Discussion

The current paper investigated whether AI could substitute or supplement subject and language teacher cooperation in Algerian university EMI classes. It was found that although AI enhances efficiency and brings discipline to lesson planning, it cannot substitute real human collaboration, especially when context sensitivity, adaptability, and teaching expertise are required. By triangulating pilot AI-aided lesson analysis, qualitative interviews, and survey results, several critical lessons emerged regarding the role of AI in EMI teaching.

5.1 Attitudes towards AI and Collaboration

Survey and interview results consistently indicated that teachers perceive AI as an additional supportive tool rather than a replacement for collaboration. Teachers valued AI in organizing lesson plans, suggesting vocabulary, and providing initial scaffolding toward language incorporation. Nevertheless, human judgment remained essential for interpreting student engagement, responding to classroom dynamics, and illustrating subject-matter concepts. For instance, T4 explained that AI cannot predict student questions or sustain interactive dialogue, whereas T2 stressed that it lacks sensitivity to learning difficulties and cannot adapt feedback in real time. Overall, these attitudes confirm that teachers appreciate AI's formatting strengths but reject its inability to replace relational and interpretive pedagogy. Teacher backgrounds also influenced perceptions: subject-matter instructors emphasized productivity gains in content

preparation, while language teachers stressed the importance of pedagogical interpretation, highlighting the need for a mechanism where AI assists content and language goals without diminishing teacher agency.

5.2 AI Efficiency in Planning EMI Courses

A comparison of human-coauthored and AI-authored lessons revealed that AI performs best in structured, repetitive tasks such as content coverage, word choice, and minimal scaffolding. Although AI-generated lessons provided a useful starting platform, quality, flexibility, and cultural sensitivity were added only through human input. Teachers T1, T5, and T7 confirmed that while AI supports day planning, it cannot adapt to impromptu classroom dynamics, reflecting the constraints already identified in the findings. Conversely, responses by AI were considered helpful for assessment: T3 and T6 noted that AI can identify weaknesses in lesson design, which allows for more calibrated specificity. Taken together, these findings reinforce the view that AI is most effective when augmenting, not replacing, human judgment in pedagogically sensitive EMI contexts.

5.3 Challenges and Opportunities

The integration of AI was found to bring both opportunities and challenges. On the one hand, teachers identified cultural and contextual limitations, dependence on input quality, and ethical concerns as significant threats. On the other hand, they acknowledged benefits such as greater efficiency in lesson planning, enhanced course consistency, and data-driven decision-making for interactive instruction. By reducing administrative burdens, AI allows teachers to dedicate more time to interactive, student-centered activities, thereby supporting a blended approach that improves pedagogical quality while preserving teacher agency. Furthermore, these results underscore the importance of thoughtful application so that AI's strengths are maximized while its weaknesses are carefully addressed.

5.4 Teaching and Teacher Collaboration Implications of EMI

The research clearly demonstrates that a human–AI hybrid model represents the most appropriate approach for EMI. Routine tasks such as lesson planning and vocabulary preparation can be delegated to AI, while interpretive, contextual, and interactive decisions must remain under teacher control. Such a balance enhances collaboration between subject-matter and language teachers, producing value-rich and contextually relevant lessons. In addition, findings highlight the importance of teacher professional development in digital literacy, AI tools, and blended instructional practices. Aligned with constructivist and sociocultural perspectives, the research confirms that AI may function as a thinking tool providing structure and insights, but human instructors remain central to meaning-making, personalization, and instructional adaptation.

5.5 Integration with Literature

Findings were also consistent with the broader body of research on AI in education. As Chen et al. (2021) and Holmes et al. (2019) affirm, AI is best conceived as a scaffolding tool rather than a replacement for teacher judgment. Similarly, Molenaar & Knoop-van Campen (2020) advocate hybrid models, whose relevance is confirmed in the Algerian EMI context. Finally, Luckin et al. (2016) also stress that AI's intended role is to complement by handling programmed tasks, while human teachers remain responsible for adaptive, interpretive, and relational work. In sum, the present debate confirms that AI is best positioned as a co-planner that strengthens teacher engagement and supports data-driven decisions, without supplanting professional judgment.

6. Recommendations

As per the discussion and findings, some recommendations are made for EMI institutions, teachers, and policymakers for the integration of AI in EMI course planning and collaboration:

* AI can be employed as a co-planner where routine work such as outlines of lesson plans, suggestions for vocabulary, and scaffolding for the first time are accomplished by it.
* Training programs for AI tools, digital literacy, and blended instructional strategies should be offered to subject-matters and language teachers.
* Joint AI-supported lesson planning and co-designing of EMI materials must be done through workshops.
* Teachers must review and edit AI-generated content to add examples, case studies, and discipline-specific context based on local culture.
* Societal norms and regulations must be created to avoid excessive use of AI and maintain teachers' pedagogical control.
* Reflective practice should be nurtured to allow teachers to assess the efficacy of AI-created resources and institute necessary adjustments.
* Student performance trends need to be analyzed by AI to determine the areas that need more scaffolding.
* AI-generated insights should be fed into shared platforms of teacher debate to streamline lesson planning and pedagogic practice.

7. Conclusion

The potential of AI to serve as an auxiliary or alternative to collaboration between subject-matter and language teachers in EMI courses at Algerian universities was examined in this study. To begin with, the findings indicate that AI is particularly effective for structured and mechanized tasks such as content coverage, word choice, and initial scaffolding. Therefore, a hybrid approach, combining AI’s efficiency with the expertise of human specialists, was identified as the most viable solution, as it ensures lessons remain contextually relevant, pedagogically sound, and student-centered.

However, limitations such as AI’s restricted cultural awareness, reliance on input quality, and ethical concerns were acknowledged. At the same time, opportunities for enhanced efficiency, consistency, and data-driven insights were also highlighted. Above all, AI should be regarded as a co-planner rather than a co-teacher, with its deployment

carefully calibrated to support teacher judgment, foster interaction, and improve EMI course design and delivery.

In sum, these findings carry significant implications for policy, teacher education, and course development in EMI, underscoring the need for prudent and strategic integration of AI in higher education.

8. Study Limitations

Although helpful, several limitations were found:

* The sample setting and population were restricted because only ten teachers from certain Algerian universities participated, and hence generalizability is inadequate.

* AI tools alone, i.e., ChatGPT, were used, and results may vary when using other tools.

* Only EMI business, engineering, computer science, and EAP courses were used, which may not have been generalized to other disciplines.

* AI planning of lessons was pilot tested for a brief time, in contrast to the longitudinal measure of students' attainment.

These are limitations to be remembered when interpreting the results and their transfer to more general application.

9. Future Research

Several directions for future studies are proposed:

* More large-scale studies in different universities and general EMI fields should be conducted to improve generalizability.
* Comparative efficacy of different AI tools in EMI lesson planning and scaffolding should be compared.
* Student perceptions regarding AI-aided EMI lessons should be analyzed to determine its impact on engagement, comprehension, and satisfaction.

* There should be standards for the ethical and culturally sound use of AI to provide assurance that AI complements human talent in EMI settings.

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