

Harnessing Artificial Intelligence to Empower ESP Teachers in Algeria: Addressing Training Gaps and Resource Constraints.

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Abstract:

This study aims to explore the potential of harnessing Artificial Intelligence (AI) tools to support ESP teachers in Algerian institutions, particularly in contexts where formal training and institutional support are lacking. Drawing on relevant theoretical frameworks and data collected through document analysis. The study examines the key stages of ESP course design and demonstrates how AI can assist educators at each step. The findings suggest that AI has the potential to become an indispensable ally in modern ESP course development, especially in low-resource environments where traditional evaluation methods are difficult to implement.

Key words: ESP, AI (Artificial Intelligent), Education, Algeria, Instructional Challenges.

ملخص:

تهدف هذه الدراسة إلى استكشاف إمكانية تسخير أدوات الذكاء الاصطناعي لدعم مدرسي اللغة الإنجليزية لأغراض خاصة (ESP) في المؤسسات الجزائرية، ولا سيما في السياقات التي تفتقر إلى التدريب الرسمي والدعم المؤسسي. وبالاعتماد على الأطر النظرية ذات الصلة والبيانات التي جمعت من خلال تحليل الوثائق، تتناول الدراسة المراحل الأساسية لتصميم مقرر ESP وتوضح كيف يمكن للذكاء الاصطناعي أن يساعد المدرسين في كل خطوة من هذه المراحل. وتشير النتائج إلى أن الذكاء الاصطناعي يمكن أن يصبح شريكاً لا غنى عنه في تطوير مقررات ESP الحديثة، خصوصاً في البيئات ذات الموارد المحدودة التي يصعب فيها تطبيق أساليب التقييم التقليدية.

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1. Introduction

In recent years, artificial intelligence (AI) has become increasingly connected to nearly every field worldwide. It has frequently been adopted as an alternative approach to addressing complex challenges and bridging gaps, owing to the extensive potential it offers. In the realm of education, numerous scholars and specialists dedicated to developing and enhancing teaching and learning have also explored the potential of AI to foster and support educational practices.

In Algeria, the demand for teaching English for Specific Purposes (ESP) has grown considerably, particularly following the recent shift in language education policy from French to English. This transition has placed significant emphasis on how the process will unfold and has heightened expectations for ESP teachers to fulfill their roles effectively. However, these expectations often exceed the available resources and support, making it nearly impossible for teachers to meet them fully. The integration of AI, therefore, can be introduced as a facilitator to address key challenges, support ESP practitioners in their professional journey, and equip them with the necessary tools to carry out their work more effectively.

Research question: How can artificial intelligence assist ESP teachers in Algeria in overcoming training deficiencies and syllabus design challenges?

Hypothesis: AI tools will enable ESP teachers to carry out the stages of ESP course more efficiently, saving significant time compared to traditional methods.

2. Needs Analysis

Needs Analysis is a systematic process of gathering and analyzing data from learners to understand their needs in order to design an appropriate course. According to **Brown J.D (1995)** it is “a systematic collection and analysis of all relevant information necessary to define and validate defensible curriculum purposes that satisfy the language learning requirements of the students within the context of the institutions that will house the program.”

ESP teachers often find themselves overwhelmed by the heavy responsibilities placed upon them, especially in contexts where institutional support is lacking and no pre-established course design exists. This lack of structure shifts the burden of planning, material development, and content delivery entirely onto the teachers' shoulders. At the same time, they are expected to deliver highly specialized content within strict time constraints. Therefore, one of the key elements for success lies in identifying and adopting innovative solutions that can effectively support ESP teachers in fulfilling these demanding expectations. In this regard, Artificial Intelligence (AI) can be effectively harnessed to conduct Needs Analysis by automating data collection, processing large information, and identifying patterns in learners' preferences, and goals in a very short time of period. AI-powered tools such as **(Newton)**, **(Learning Locker)** can track learner behavior, performance, engagement. Additionally, platforms such as **(SurveyMonkey)** can engage learners interactively to gather information about their wants and learning preferences, making the analysis more personalized, efficient, and data-driven. Also, Platforms like **(Edmodo)**, **(Moodle)**, or **(Cambridge Write & Improve)** provide AI-generated diagnostic assessment which automatically scores tests and pinpoints gaps.

3. Syllabus design

Syllabus design is the systematic process of planning and organizing the content and structure of a course in alignment with the specific needs, goals, and context of the learners. As **Brown J.D (1995)** stated: "A syllabus is the specification of the content of course and the order in which it is to be taught." It involves translating the outcomes of a needs analysis into a coherent instructional plan that outlines the course objectives, the selection and sequencing of relevant topics, and the integration of appropriate teaching methodologies and learning materials. A well-designed syllabus also considers the time allocation for each component, assessment strategies, and the progression of learning throughout the course. In essence, syllabus design acts as a

roadmap that guides both instructors and learners, ensuring that the educational experience is purposeful, structured, and goal-oriented.

So how AI Tools can fit to Support ESP teachers to design an effective syllabus in the absence of an ESP curriculum? AI tools can play a vital role in this phase by assisting teachers in multiple dimensions of syllabus construction:

3.1. Translating Needs into Learning Objectives

This phase focuses on translating the data gathered from the needs analysis to specific and practical objectives of the course. AI tools such as **(ChatGPT)** can process those data such as learners' professional role, their language tasks (writing reports, giving presentations, etc.) and the skills needed (reading technical manuals, speaking to clients, etc.), then translating those data into clear learning objectives.

3.2. Topic Selection and Sequencing

AI can help choose and generate relevant content and logically organize them based on complexity or usage frequency based on learners' specific professional or academic needs. As it can provide job description, professional document (medical form, engineering manuals, real world communication tasks, etc.) for example; For nursing students, AI might process hospital protocols, training manuals, or nursing textbooks and output a logical progression like: "Taking patient history - Giving medication instructions - Writing case notes - Handling emergency situations." **(ChatGPT)**. This reflects a realistic, task-based sequence aligned with professional workflow. At the same time, matching content to learners' proficiency levels through an evaluation it can adapt the content to ensure the selected topics are pitched at the right level of complexity, helping learners progress through the syllabus.

3.3. Time Allocation and Pacing

As mentioned before ESP teacher in Algeria are not given enough time to establish a fully designed ESP program. Therefore, AI can help ESP teachers allocate

time for each unit or module, based on the total available hours, topic difficulty, and learning objectives. AI Tools can generate weekly lesson distribution, also indicate estimated time per activity, and flag where more intensive input is needed. For example: A teacher has a 30-hour ESP course for nursing students with 6 modules. Using **(ChatGPT)**, they input: “Plan time distribution for 6 units: patient history, medication instructions, medical writing, emergencies, ethics, and discharge procedures.”

The AI responds:

- Patient history – 5 hours
- Medication instructions – 6 hours
- Medical writing – 4 hours
- Emergencies – 6 hours
- Ethics – 3 hours
- Discharge procedures – 6 hours

This structure can be further adjusted using learner feedback. **(ChatGPT.com)**

3.4. Formatting and Document Structuring

AI tools such as **(ChatGPT)** can turn raw contents and topics into an established units or modules, while generating learning objectives which are specific and measurable, along with asserting assessment indicators with objectives ensuring consistency and clarity throughout the document using **(Grammarly)** for example.

AI tools empower ESP teachers to design high-quality, needs-based syllabi even in the absence of formal institutional programs. By supporting objective formulation, topic selection, content grading, methodological alignment, and time distribution, AI bridges the gap between raw needs analysis data and a coherent, teachable syllabus.

Rather than replacing pedagogical expertise, AI acts as a co-designer, helping teachers work faster, smarter, and more effectively.

4. Materials Selection/Development

At its simple definition, materials selection is the process of selecting, adapting the appropriate materials based on the specific needs of learners in a certain academic or vocational field while reflecting real use of language in the target situation. According to **Graves (2000)**: “material selection is a component of the broader course design process, where resources are aligned with goals and available tools”.

And here what AI can do for ESP teachers to process this step. Using AI platforms like **(ChatGPT)**, **(DeepSeek)**, **(Claude AI)**, it can generate content through needs-aware, by simply typing what field of study or profession, it can provide specific dialogues, reading texts, or tasks (medical, engineering etc.). In addition, it can adjust the level of the complexity to match learners’ proficiency level, or adapt the format of a content to match learners’ learning preferences, for example; turning a report into a role play, while maintaining technical accuracy. It also has the ability to extract technical vocabulary and definitions by scanning relevant documents, texts which can be useful. AI-powered tools such as **TTS (text-to-speech)** generate audio scripts, dialogues, interactive lessons from simple texts. And finally, AI can provide assessment tools for instant feedback on learner’s performance such as **LMS (Learning management system)** platforms.

5. Methodology

Methodology in ESP context is the process of aligning the appropriate teaching approaches, techniques with the specific genre and learners’ needs and preferences. Thus, it shouldn’t be fixed but flexible. As **Hutchinson and Waters (1987)** stated that: “Methodology in ESP must be flexible and selected according to the purpose of the course and the characteristics of the learners.” Which means it must be adjusted to

nature of the target discipline or profession, learners' needs, the language skills required (e.g., writing skills for reports, speaking skills for communication, presentations).

In light of an absence formal program AI, can help ESP teachers create professional task-based content without deep subject expertise. Also, it can generate individual practices for students outside classroom hours.

AI-driven platforms such as **(Duolingo, ELSA)**, or **(ChatGPT)** can support personalized learning paths by identifying learners' strengths and weaknesses, offering tailored exercises and feedback. AI enables task-based simulations such as mock interviews, customer service dialogs, or negotiations using roleplay bots and virtual agents for example a virtual patient in a medical English course. Additionally, AI chatbots like **(ChatGPT)** can act as conversational partners, providing learners with professional dialogues practice while receiving immediate corrections on register, politeness, or grammar ideal for fields like hospitality or law. Through multimodal content generation, AI can transform complex professional materials into simplified readings, audio versions, or visuals, enhancing accessibility for varied learning styles. In group settings, role-play and peer collaboration can be facilitated through AI simulations (clients, engineers, customs officers), promoting real-life collaborative language use. For teachers, especially those with limited ESP training, AI-assisted lesson planning tools can design entire sessions aligned with task-based and skills-integrated methodologies for example, generating activities for teaching report writing in environmental science. During classroom activities, AI supports continuous assessment, providing real-time micro-feedback on grammar, coherence, as learners perform tasks. Finally, integration of **(VR/AR)** and **(AI)** creates immersive professional environments such as a virtual airport for aviation English allowing learners to engage with language authentically, in context, and in alignment with modern ESP methodology.

6. Evaluation

Evaluation is an essential component of ESP course design. It must be aligned with learners' needs and course objectives, focusing on how well learners can use language in real-life, job-related contexts which means emphasizing performance over mere knowledge. As **Dudley-Evans and St John (1998)** point out, "Evaluation must be linked to the original needs analysis and the course objectives." Effective evaluation should therefore reflect learners' achievements, the usefulness of the materials, and the teacher's performance. And here how AI can support Evaluation in several aspects;

- Instant feedback, AI tools for placement tests such as **Duolingo English Test (DET)**, **Write & Improve (Cambridge English)**, **Grammarly** helps educators personalize teaching strategies, learning content, and materials.
- Simulation-based testing, AI platforms like **(ChatGPT)**, **(Claude AI)** can generate interactive scenarios like job interviews and provide assessment based on learners' performance.
- Evaluating communicative skills, AI tools such **(Yoodli)**, **(Orai)** assess fluency, pronunciation, and accuracy in professional speaking contexts, it identifies errors, and offers personalized exercises and drills to improve weak areas.
- Progress Status, AI dashboards like in **(LMS systems)** monitor learners' performance throughout time, identify errors, and provide focused practice.

AI offers substantial assistance to ESP teachers. It enables educators to develop specialized assessments and evaluation criteria that are unique to the professional domain's requirements. Furthermore, AI allows for objective and scalable evaluation, making it simpler to handle large groups of learners successfully. This technique is especially useful for non-native English-speaking teachers because it allows them to fairly assess tasks that are closely related to specialized professional language usage.

7. Conclusion

In light of Algeria's transition from French to English, the demand for effective ESP instruction has grown rapidly, placing increasing pressure on teachers to meet high expectations despite limited institutional support. This imbalance highlights a critical need for innovative solutions. The integration of AI offers a promising avenue to address these challenges by providing ESP practitioners with practical tools, tailored support, and access to resources that can enhance both teaching and learning outcomes. By embracing AI, the educational system can better equip teachers to navigate this linguistic shift and fulfill their roles with greater confidence and efficiency.

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