Introduction

The changes taking place in today's world are not without influence on the shape of education, and the content taught at various educational stages. In particular, the tendency to change and adapt to a new reality can be observed in the example of a specialised foreign language.

This publication aims to answer the question about the latest trends in Language for Specific Purposes (LSP) teaching. It is worth pointing out several factors that have a particular impact on the shape of specialised language classes in today's reality, namely globalisation and the mobility associated with it, the international nature of cooperation in the labour market, the automation of professional processes, or the impact of artificial intelligence (AI) on functioning in the modern labour market. All of the factors mentioned above influence the current shape of the language.

Another important aspect influencing the way specialised language teaching is taking shape is the introduction of various new forms of teaching and learning, such as e-learning, blended learning and the proliferation of various types of platforms enabling greater learner autonomy. These forms of learning are becoming more and more prevalent in the professional environment, where employees wishing to improve their language skills are given access to a specific platform or MOOC. The gradual move away from face-to-face meetings in the professional environment not only saves time and money, but also provides greater opportunities for cooperation with partners from other countries. The widespread use of AIin many industries is not without its impact on how the professional world operates as well. The large-scale use of chatbots makes it possible to automate many processes, and analyse them more thoroughly. With changes in the labour market, learner expectations are transforming, which in turn necessitates the development of new competences among language teachers of specialised languages, such as the continuous monitoring of learner progress, the adaptation of curricula to the needs and abilities of learners and the necessity to develop digital competences. In the face of specialisation and increasing technology, the individual approach to the learner, and therefore the preparation and delivery of a course in such a way that no learner feels excluded, plays an increasingly important role.

This book was written in response to the question of what trends can be observed in the teaching of specialised languages and how these trends reflect the changes taking place around us. The first nine chapters constitute the theoretical framework, which provides a sub-set of the description of the survey. The next two chapters are a description of the methodology and the results of the statistical analysis. The work ends with an applied section, with proposals for using the obtained results in practice.

The first chapter concentrates on content creation using AI. First the generation of teaching and learning materials is thematised and in the second part the AI enhanced tools in designing LSP teaching materials are presented. The second chapter offers an overview of this important aspect of language teaching, the challenges associated with teacher feedback, which are complex and multifaceted, followed by a review of literature involving perceptions regarding the new participant in this process, namely AI, and ending with specific aspects about feedback in LSP and the level of involvement from AI. In the third chapter, the focus will be on the level of skill development, demonstrating how an AI-enhanced learning approach can support LSP learning. In the first part of the chapter, the possible fields of AI implementation in foreign language learning and teaching will be highlighted, the next part thematises reflections on its applications and utility for the LSP field. In the final part, practical examples will be offered, together with a discussion of the potential benefits and limitations of the use of specific tools. The fourth chapter is dedicated to the way AI can be used for data analysis in LSP teaching and learning. The focus of the first part of the chapter is on the definition of AI enhanced data analysis in the general language teaching context, the next part is dedicated to a description of the benefits and challenges of AI enhanced data analysis in the LSP context, and finally practical examples are discussed. The following, fifth chapter, discusses certain technical, pedagogical and ethical issues that may cause concern at the moment, as well as question or hinder the smooth application of AI in education. Some of these concerns will have already been highlighted in the previous sections, and will be resumed here in an attempt to draw conclusions about the value of this technology, as it exists currently, especially for the field of LSP. Chapter six focuses on the new perspectives for online LSP teaching and learning in a post-pandemic world, with the main focus on the integration of recent technologies into online learning and teaching, as well as changing perceptions regarding remote learning among learners and teachers. While the previous chapter presents some of these models, chapter seven focuses especially on the challenges and opportunities related to online learning options specific to the LSP context. The chapter discusses the main types of online learning offer advantageous features that can be easily adapted to LSP contexts. In chapter eight, the definition of the most relevant models of well-being together with their application in the educational area, or more specifically into the LSP field, will be discussed. Dealing with the challenges of education today requires the constant development of competences such as flexibility and critical thinking. As people are more sensitive to issues of well-being nowadays,

there is more focus and more interest in addressing such concerns, for both students and teachers, therefore this chapter will approach this topic with an in-depth analysis. Chapter nine concentrates on discussing soft skills, intercultural communication and interdisciplinarity in modern LSP teaching and learning, shedding light on the recent tendencies in this area. In the tenth chapter, the research design together with the basic information about the research, social and scientific context are described. The chapter follows the analysis of the conducted research (Chapter 11) and discussion of the research questions (Chapter 12). The book is intended for a wide audience, including researchers interested in the subject, practising teachers, and future LSP teachers. The book touches on only a few of the most important current issues, which are constantly changing and certainly require further research. Its purpose is to offer a perspective on these issues as they are currently used in the LSP learning context.

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Authors

1. AI Content Generation for Language Teaching

The field of language teaching has been energised around the idea of endless content creation by means of AI tools ever since ChatGPT was launched in late 2022 (Marr, 2023). However, even if ChatGPT was not the first type of AI, nor was it the first type of chatbot, it was, when launched, a much more user-friendly interface that could reach millions of users in a manner that they found easy to adopt because it proposed a type of interaction with a robot like never before (Menon & Shilpa, 2023). Conversations became more fluid and used natural language, inducing the idea that there is an organic entity behind the screen, and not just very complex lines of code.

Users seem to be constantly inundated with confusing talk of AI and its many branches, therefore, before discussing their implications for language teaching, it is important to first clarify the basic concepts and understand how the tools that both teachers and students use actually work. The following is a summary of information regarding AI concepts, hierarchy and real-world applications retrieved from a query conducted with the chatbot Claude by Anthropic in January 2025.

Claude explained that the three core AI approaches are 1) **Machine Learning** (statistical/learning-based), 2) **Symbolic Reasoning** (logic/rule-based) (with two branches: Symbolic Logic and Knowledge Representation) and 3) **Hybrid Systems** (combining both approaches) and specified that the key insight here is that modern AI systems often combine these approaches: **Traditional symbolic logic** provides formal reasoning capabilities; **Knowledge graphs** provide structured representation of facts and relationships; **Machine learning** provides statistical pattern recognition and generalisation; **Hybrid approaches** try to achieve the best of both worlds, using structured knowledge to enhance learning systems and vice versa. When asked to provide real-world examples for these concepts for a better understanding of how such processes work in our daily life, Claude offered these representative illustrations:

– spam email detection, credit card fraud detection, customer segmentation (grouping customers with similar shopping patterns without predefined categories), Netflix's movie recommendation clusters, face ID on smartphones and Tesla's self-driving capabilities are all examples of **machine learning**.

- medical diagnosis systems ("If patient has symptoms A AND B, BUT NOT C, THEN consider condition X"), tax preparation software, digital circuit design and smart home automation ("IF time is after sunset AND motion is detected THEN turn on lights") are all examples of **symbolic logic**.
- Google's Knowledge Panel (when you search "Ronald Reagan," it shows structured information about relationships – spouse, children, political roles), LinkedIn's professional network (representing connections between people, companies, and skills), BBC's sports coverage (organising athletes, teams, and competitions: e. g., "LeBron James" – "plays for" – "Lakers") and Wikipedia's Wikidata (storing facts like "Paris" – "is capital of" – "France") are all examples of **knowledge graphs**.
- Modern chatbots that combine rule-based responses with learned patterns, Facebook's content moderation (using both explicit rules and ML to identify inappropriate content), Amazon's product recommendations (combining product relationships with user behaviour), drug discovery (predicting new drug interactions based on molecular structure relationships) are all examples of **hybrid systems**.

These technologies work together in familiar applications. A Google search, for example, uses Knowledge Graphs (for displaying information boxes), Machine Learning (for ranking results), Symbolic Logic (for query understanding rules) and Hybrid Systems (for combining all these approaches). Similarly, assistants such as Apple's Siri use Machine Learning (for speech recognition), Knowledge Graphs (for understanding relationships between entities), Symbolic Logic (for handling specific command patterns) and Hybrid Systems (for natural language understanding).

Generative AI and Large Language Models (LLM), are the main AI categories used in teaching activity after the AI revolution triggered by the launch of ChatGPT in 2022. Claude explained further. Generative AI intersects with multiple categories mentioned previously, primarily using hybrid approaches. Thus, it integrates **1. Machine Learning Components** (uses deep learning and transformer architectures and learns patterns from vast amounts of training data: e. g. GPT-4 learning language patterns from text data), **2. Knowledge Components** (incorporates knowledge graphs for factual accuracy and uses structured knowledge for better context understanding: e. g. Claude using semantic understanding to maintain factual consistency) and **3. Hybrid Capabilities** (combines statistical learning with symbolic reasoning and integrates multiple types of knowledge representation: e. g. GitHub Copilot combining code understanding with generative capabilities). In this way, generative AI can create text, image and code. The key insight, Claude concludes, is that modern generative AI is not just one technology, but rather a synthesis of multiple AI approaches: it uses **machine learning** for pattern recognition and generation, it incorporates **knowledge graphs** for fac-

tual grounding, it applies **symbolic logic** for reasoning and it uses **hybrid approaches** to combine these capabilities effectively.

Thus, LLMs are part of the broader category of Generative AI or, as Claude puts it, LLMs are like specialised tools within the larger Generative AI toolbox. For more clarity regarding the relationship between LLMs and chatbots, the actual end-product that teachers interact with, the latter are not themselves the language models but applications of the underlying technology. For example, GPT-4 is the LLM that powers ChatGPT and ChatGPT is the chat interface/product built on top of GPT-4. Claude explains that the relationship is similar to a car engine (LLM) vs. the complete car (chatbot). The chatbots also add several layers on top of the base LLM such as conversation management, safety guardrails, user interface, memory handling, additional features (web browsing, image analysis, etc.), and specific training for chat interactions. Given all these clarifications, we can now better understand how we interact with chatbots, what they are as part of the general AI concept and what we can expect from them.

1.1 New Generation of Language Teaching Materials

The current research emphasises the crucial role of the teacher by reinforcing the idea of teacher uniqueness, because AI is seen only as a tool and as support needed to diminish workloads (Yang, 2022; Bouchhioua, 2024; Dehghani & Mashhadi, 2024; Rukiati et al., 2023), and not as a replacement. Given the issues that current AI chatbots are plagued by the teacher's role is seen as evolving, they conduct quality control and verify the information, while their input helps students better judge the output of artificial intelligence tools (Yang, 2022; Zhu et al., 2023). To this end, teachers must undergo training themselves in order to be able to guide their students, free themselves of time-consuming tasks and make the most of these very useful tools (Bonner et al., 2023; Cooper, 2023). Various studies have indicated that teachers today are not properly trained, nor do they have up-to-date knowledge of AI functions (Alharbi, 2024), which explains the low level of integration of AI tools among teachers (Monib et al., 2025). This suggests a gap between perceived potential and actual implementation, possibly due to concerns about accuracy, ethical considerations, or lack of training. Current research also sees teachers as irreplaceable, due to aspects involving cultural sensitivity with context-specific nuances and ethical dimensions (Dong et al., 2024; Hess & Kunz, 2024; Irzawati et al., 2024).

The main use that teachers in general and language teachers in particular can extract from their interaction with chatbots is generation, modification and adaptation of teaching materials, and anything else related to the teaching act, such as lesson planning and course development (Mosaiyebzadeh et al., 2023; Zheng et al., 2024; Zaiarna et al., 2024), as well as assessment work. One of the main advantages discussed in

current research is the capacity for personalisation and adaptation of teaching materials. Creating versatile teaching materials by means of AI, which can be both engaging and interactive, will help teachers tailor them to better fit students' individual needs (Choudhury et al. 2024; Dong et al., 2024; Olszak & Krajka, 2024).

Using AI to generate teaching material also ensures its rich variety, as it can create anything, from text to video, audio and image, which offers a wide variety of possibilities encompassing various aspects of language teaching (Zaiarna et al., 2024). Also, LLMs can be applied to "highlight important phrases, generate summaries and translations, provide explanations of grammar and vocabulary, suggest grammatical or style improvements and assist in conversation practice" (Olszak & Krajka, 2024, p. 93). AI helps teachers boost their creativity and trigger inspiration: "Teachers employ these technologies to brainstorm, summarize ideas, gather information, generate inspiration, and design engaging courses, ultimately improving their teaching methods" (Chan & Tsi, 2023, p. 11).

AI can help teachers considerably in regard to a particularly important aspect of teaching, namely assessment, by both generating specific materials and doing part of the assessment activity itself, especially those time-consuming actions such as checking formal aspects and correcting grammar or punctuation errors (Ahmed et al., 2023; Krajka & Olszak, 2024; Klimova et al., 2024). This will leave more time for teachers to concentrate on feedback regarding style and content.

The current criticism is that most research on this topic does not provide practical examples. Thus, while some research revealed a significant gap in how teaching materials were described in AI-based studies, noting that "Most studies that have researched AI in ELT did not elaborate on what teaching material for learning driven by AI they used." (Sharadgah & Sa'di, 2022, p. 351), other studies suggest that while there is significant potential for AI in teaching material generation, this aspect remains underexplored in current academic discourse (Fütterer et al., 2023). This lack of detailed documentation suggests a need for more systematic approaches to AI implementation in material development. Institutional support and clear guidelines for appropriate use are also necessary for a successful implementation of AI tools to a wider extent in education (Wecks et al., 2024).

1.2 AI and Content Creation for LSP

The application of AI tools in LSP has not been heavily researched so far, and only a few studies have approached the topic. These studies generally involve research on chatbots, ChatGPT in particular, and mostly agree on certain issues. The primary application they speak of is the generation of a wide variety of LSP teaching materials (Zaiarna et al., 2024) including content related to Business English by means of Bing Chat: "e-tivities included: (a) search for content related to the Business English course

[…] and checking the accuracy of collected information with the Google search engine; (b) learning about phrasal verbs […], including their definition and examples; (c) correcting sentences in English […]; (d) creating multiple-choice questions for practice; (e) learning about the typical conversation structure on an example of a telephone dialogue etc." (Kovačić & Bubaš, 2023, p. 17). AI tools have been determined to be particularly useful for LSP course development with unit planning and structure (Kostikova, et al., 2024; Zaiarna et al., 2024) and domain-specific content creation as well as customised vocabulary and grammar practice (Ahmed et al., 2023) or generation of word lists specific to niche domains where terminology can be used as the starting point of targeted activities involving specialised vocabulary and development of reading, writing or listening skills (Chirobocea-Tudor, 2024).

Other concerns are similar to those highlighted by the studies discussed in the previous section. They emphasise the need for quality control, meaning the materials generated by AI must be checked and proofread by humans for inaccuracies or other problems (Zaiarna et al., 2024; Kostikova, et al., 2024) – avoiding in this way concerns of academic integrity, the need for implementation guidelines (Zaiarna et al., 2024) as well as interdisciplinary requirements such as "collaborative curriculum construction and teaching resource development" (Tang, 2023, p. 11), and teacher training (Ahmed et al., 2023). The lack of training may explain the low levels of AI integration in the teaching activity discovered by at least one study (Zaiarna et al., 2024), in spite of the high levels of enthusiasm and satisfaction with using this technology, both from teachers and students (Zaiarna et al., 2024). The studies also advocate a balanced approach and integration with traditional methods, without replacing human teachers or treating the intersection between professional knowledge and English knowledge disproportionately (Tang, 2023), as well as integration with authentic materials, meaning offering students a combination of AI-generated content and authentic sources for a balanced perspective.

Regarding the problem highlighted by all research in terms of the possible mistakes chatbots are prone to, which includes inaccurate, biased, culturally insensitive or fabricated information, this happens because of how the chatbots were trained. Once again asking Claude directly (in January 2025), it gave the following response:

We're [LLMs] trained through a process called supervised learning on vast amounts of text data. The training involves predicting what words should come next given a sequence of previous words. This helps us learn patterns in language and knowledge from the training data.

It also continued to explain why they may make mistakes and this longer explanation is summarised as follows. First of all, their training on a vast amount of text data involves predicting what words should come next given a previous sequence of words, which helps them learn patterns in language and knowledge from the training data. Thus, they may make mistakes because their responses are fundamentally probabilistic, there is a pattern matching limitation (meaning sometimes they match patterns

from their training data that look similar but are not quite right for the current context, which can lead to responses that miss subtle nuances or make incorrect connections) and lastly they have no true understanding (while they can process language very effectively, they do not have genuine understanding or consciousness). Claude further explains the challenges posed to chatbots by natural language:

> Language is incredibly complex and often ambiguous. Humans rely on shared context, world knowledge, and common sense to resolve ambiguities. While we can work with language effectively in many cases, we sometimes struggle with implied context that isn't explicitly stated, complex pronouns and references, sarcasm and humor that requires cultural context, novel phrasings we haven't encountered in training, and logical relationships that require genuine causal understanding.

This rather large but illuminating explanation enhances the understanding of LLMs, but also offers something positive in terms of LSP teaching. Many specialised domains that LSP deals with are rooted in facts, unambiguous vocabulary and abstract concepts, therefore, misunderstandings, inaccuracies and other such issues characteristic of chatbot output may be less of a concern than in other domains.

Some of the most useful AI tools in language teaching, with application in LSP, are:

- *Google Text-to-Speech, Resemble AI, Murf AI, Synthesys, Podcastle, Descript, Audioburst* and *Audyo* for converting written text into natural-sounding audio. In this way, various types of specialised texts (that can or cannot also be generated by AI tools) can be transformed into audio files and used for listening activities.
- *Grammarly, ProWritingAid*, or *Ginger* are grammar, vocabulary and spelling checkers which can be used and thus assist in improving writing skills.
- *Google Translate, DeepL*, and *Microsoft Translator* can be used to translate text or look up vocabulary. However, it is not advisable for students to use them all the time, or for specialised terminology because quite often such translation applications are not efficient in the LSP domain and will offer erroneous solutions that are not context-appropriate. At best, students should be advised to recheck in a specialised dictionary or a domain-appropriate context and not rely wholly on these tools.
- *Synthesia, Lumen5*, and *Content Samurai* can be used to generate videos by converting text into video content (animations and voice-over if needed).
- *OpenArt, DALL-E, Canva, Midjourney* and others can be used to generate images.
- More complex platforms such as *Twee* can create entire lessons, texts, videos, various options of text comprehension activities, grammar and vocabulary activities, listening, writing and speaking activities.