

Appendix C: ALLE competences for CAIL

AI literacy code	Focused code	Definition	Applied Linguistics & Language Education (ALLE) competencies that may facilitate transfer
Critical thinking	CT01	Signals the use of critical thinking to engage with technology, data, etc.	In ALLE, students are trained to recognise biases and understand the role of language-driven data in the production and dissemination of knowledge. Students are aware that knowledge in ALLE is constructed through a variety of different paradigms, including qualitative, quantitative and mixed methods approaches. We can draw parallels between these competencies and the need for critical approaches towards AI. Such an explicit comparison can facilitate transfer.
Ethical awareness	EA01	Signals thinking about sources of information and the responsibility to reflect on sources	In ALLE, we help our students to recognise the role that sources play in reporting research and knowledge generation. They come to understand that identifying sources in ALLE is key to offering context on how knowledge is generated. We can draw on this competence to ensure that the development of responsible professional habits involves reflexivity on the quality and appropriateness of the sources (or lack of sources) in AI output.
	EA02	Signals engagement with the notions of quality and reliability with regards to data and AI outputs.	To what extent does AI use credible sources? In ALLE, students recognise that sources such as research papers, encyclopaedia entries, books or podcasts are likely to play different roles in ALLE research and knowledge generation. Assessing that the quality, the validity and reliability of linguistic research is mediated by the nature of the research methodology (corpus-based, experimental, ethnographic, etc.) and the publishing format where it is published. We can draw on this knowledge to facilitate transfer from ALLE to critical AI literacies.

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	EA03	Signals reflection on the risk of AI for human knowledge production and how human knowledge is generated	To what extent can AI replace human cognition and knowledge? In ALLE, students become aware that the information generated with the aid of AI cannot just be copied and pasted somewhere else. Using content generated by AI tools is an unethical use that does not support the range of cognitive skills involved in producing for example an essay or putting together a critical literature review. Critical thinking, linguistic analysis, communication and language education-related cognitive skills are essential to develop responsible work habits, professional integrity and lifelong learning skills. These competencies can be highlighted to students to foster critical AI literacies. In ALLE, we often endeavour to make students aware that information and outputs are shaped by cultural norms. Taking this knowledge in line with developments in AI, we can encourage students to reflect the role of LLMs in training AI and shaping their outputs and draw attention to specific tools, such as ChatGPT, to increase ALLE students' awareness about the relationships between AI and register in particular and epistemologies in ALLE more generally. To what extent can AI replace agency? ALLE students are often trained to be aware that academic outputs must reflect agency, their growing expertise, and a critical awareness of linguistic issues. Drawing on this knowledge, we can encourage reflections on the nature of texts generated with the aid of AI, highlighting how they do not necessarily contribute to their growth as a student in ALLE. We can note that relying on AI for the generation of text can only negatively impact how the students conceptualise how knowledge is constructed in applied linguistics and language education.
	EA04	Signals AI as not equating to humans	
	EA05	Signals human dependence on AI	

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Practical application	EA06	Signals potentially unethical use of AI	As we make our ALLE students aware of the negative impact of unethical decisions on linguistic research, we can also make them aware that unethical uses of AI can damage their growth as a student in ALLE and can potentially risk their individual and professional development in the field. Any gaps in knowledge can be addressed through a contextualisation of AI as both an process and an industry and we can draw on the likes of critical discourse studies to encourage reflections on neoliberal and capitalistic facets of AI, the relationship between AI and the environment, and the impact of AI on different people, globally.
	PA01	Signals use of technology to solve problems	Some GenAI tools are certainly useful in ALLE. Is the student aware of how they can help them solve problems? If so, is the student aware of the procedure in place to report ethical uses of AI in their work? Using AI for problem solving complements the students' efforts to identify linguistic, literary, and cultural challenges and analyse them critically. They should engage with these technologies with the same criticality with which they approach any language analysis tool.
	PA02	Signals engagement with notions like parameters/variables in analysis	Who defines the variables and parameters in ALLE research? This same question should apply to AI use in ALLE. If students understand how linguistic data is collected, analysed, and interpreted across different methodologies in ALLE can they say the same of AI tools. For example, corpus linguistics uses large datasets to study patterns in language use and experimental methodology seeks to investigate cognitive or psycholinguistic aspects of language learning. The student should access this reflexivity and critical engage with the use of AI tools when completing tasks.

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	PA03	Signals use of AI for support functions e.g., references	Some GenAI tools are certainly useful in ALLE. However, together with skills in citation and referencing, students need to develop skills to locate and evaluate the references provided by or with the aid of AI tools. These are foundational academic skills that underpin quality control in academic work. We should encourage a student-centred, not AI-centred, approach that draws on this knowledge and ensures critical engagement with AI tools.
	PA04	Signals use of AI for analytical purposes	How are analyses done by GenAI tools? The generation of knowledge in ALLE is often interdisciplinary. Students require skills from linguistics, education, sociology, and digital humanities. Students and educators must navigate therefore quantitative and qualitative research methods, critical discourse analysis, corpus tools, and pedagogical frameworks while remaining ethically and technologically aware. Drawing on this knowledge base, the student can critically evaluate AI-generated linguistic data, particularly in language assessment, language learning, language analysis, automated translation, and chatbot-based learning. This allows for direct knowledge transfer in the use of AI.
	PA05	Signals use of AI to carry out tasks/jobs	In ALLE, it is essential that students gain familiarity with how relevant corpora, text analysis software, and digital humanities tools perform tasks and support their research and practice agenda. GenAI tools can be successfully incorporated into a wider toolkit to support students in carrying out certain tasks. Assessing the quality of the output from AI is, however, essential. Evaluating results and introducing iteration in developing quality prompts is also essential. We can draw parallels between similar processes in linguistic analysis to foster a critical use of AI.

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Technical understanding	TU01	Signals the need for cleaning and preparing data	Some GenAI tools are certainly useful in ALLE. However, the student needs a basic understanding of computational thinking skills to be able to interpret how AI tools can facilitate data-handling. As students in ALLE are often aware of basic principles behind Natural Language Processing, text mining, algorithmic thinking, data analysis and visualization, we can draw on the affordances and challenges of these approaches to foster critical AI literacies.
	TU02	Signals a form of data literacy about understanding what data is being used	When it comes to AI, transparency in how language data is used and produced is key. Tools like ChatGPT and the like use large neural networks trained on vast amounts of text. They are not humans so they don't really "think" but they predict words based on patterns they have "learned". However, the generation of knowledge in ALLE is often interdisciplinary. Students require skills from linguistics, education, sociology, and digital humanities. Students and educators must navigate therefore quantitative and qualitative research methods, critical discourse analysis, corpus tools, and pedagogical frameworks while remaining ethically and technologically aware. We must make students aware of the affordances of their own thinking and the advantages of leading with human cognition.
	TU03	Signals a lack of knowledge of how LLMS work	While students may have varied knowledge of LLMs, their knowledge of language, issues of representation, challenges of data collection and developing sampling frames is growing. Likewise, the value of transparency, replicability, and reproducibility is also developing in ALLE. Drawing on these values, we can foster critical reflection in learners to pose questions about LLMs, identify gaps in their knowledge, and unpack their role in and impact on research processes. We can transfer their growing methodological expertise to address these concerns.