

Faculté de philosophie, arts et lettres

Understanding the Use of Language
Technologies by EMI Chinese Speaking
Learners in Higher Education

Declaration of AI Use

Declaration of honour

Dissertation/Individual Final Project

Faculty of Philosophy, Arts and Letters, UCLouvain

I hereby declare that this is an original and personal work, that all referenced sources have been fully cited, regardless of their origin, and that the use of artificial intelligence tools complies with the general instructions published by UCLouvain and available at the following address:

<https://cdn.uclouvain.be/groups/cms-editors-pl/portail/reglement/Consignes-ChatGPT-version-etudiante.pdf?itok=SebXXm87> (French version)

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In light of the above, I declare on my honour that I have not committed plagiarism or any other form of fraud and that I have not used artificial intelligence tools beyond what is permitted by UCLouvain.

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Abstract

This thesis explores how Chinese-speaking learners at the University of Catholic Louvain use various language technologies in English- and French-taught courses (EMI and FMI). The target is to identify the tools they use (e.g., generative AI, machine translation, dictionaries, subtitles, MOOCs, streaming platforms) and how their use varies across course languages, disciplines, and cultural contexts. Through semi-structured interviews with 20 students from social sciences (both linguistic and non-linguistic) and technological sciences, the paper examined the tools learners use (e.g., machine translation, generative AI, transcription apps, streaming platforms), the contexts in which they integrate these tools, and how their use varies by language of instruction, academic field, and geographic context (mainland China vs. Taiwan).

Results revealed that generative AI (particularly ChatGPT) and machine translation were the most widely adopted technologies for both receptive (reading, listening) and productive (writing, speaking) tasks among the Chinese-speaking students in UCLouvain, while the use of traditional technologies such as online dictionaries declined. The findings suggested that technology choices were shaped by learners' cultural digital habits and would be adopted according to the level of self-efficacy. While these tools can enhance comprehension, engagement, and confidence, participants expressed concerns about over-reliance and ethical boundaries.

In summary, Chinese-speaking students at UCLouvain incorporate language tech extensively but strategically. They often apply critical judgments, for example, proofreading machine translations results instead of copying them. Educators should thus support students' AI literacy and clarify policies to help them use technology properly and responsibly.

Keywords: Chinese-speaking learners; English-Medium Instruction (EMI); generative AI (ChatGPT); machine translation; study technologies; AI literacy; academic integrity.

List of Abbreviations

ASR: Automatic speech recognition

DDL: Data-driven learning

EFL: English as a Foreign Language

EMI: English-Medium Instruction

ESL: English as Second Language

ESP: English-for-Specific-Purposes

FMI: French-Medium Instruction

PED: Pocket Electronic Dictionaries

SLL: Second language learning

STR: Speech-to-text recognition

TEL: Technology-Enhanced Learning

TTS: Text-to-speech

Introduction

Universities in non-English-speaking countries are rapidly introducing English (or other foreign languages) as a means of teaching courses to enhance their international influence and attract international students (Curle et al., 2020). For native Chinese-speaking students from mainland China and Taiwan, this international exchange has enriched their intercultural and academic experience, while questions about which model to choose has come up between the cognitive and modality model (Moreno et al. 1999). Cognitive refers the effectiveness of multimedia instruction increases when words and pictures are presented contiguously in time or space (Moreno et al. 1999). Learners process text, images, and narratives using channels of visual and auditory, which is referred as spatial-contiguity effect (Moreno et al. 1999). These channels have limited capacity, so if instructional design fails to account for this, it can easily lead to cognitive overload coming from a successive presentation of the animation, and compromise learning outcomes. Modality, however, specifically stresses that words should be presented as auditory narration rather than as visual on-screen text. (Moreno et al. 1999). Conclusion showed that not only that more information is likely to be held in both auditory and visual working memory rather than in just one, but also that the combination of auditory verbal materials with visual nonverbal materials may create deeper understanding.

Indeed, when a large amount of visual information (such as images and text) is present, an “auditory + visual” combination is more conducive to learning than just one. Addressing this dual challenge of the requirement of understanding both auditorily and visually, non-native English speakers tend to ask for multimedia to support their study. Based on this phenomenon, the thesis will focus on native Chinese-speaking students at UCLouvain having classes in English, exploring what various technology tools they use, what difficulties they encounter and what their strategies are. From the machine translations, transcription applications, streaming platform and Generative AI, for supporting their academic tasks like listening, speaking, reading, and writing. At the same time, discuss how these tools can be used to help them learn in a substantive way, to determine the

feasibility of this approach. The study also reveals differences in the motivations, contexts, and strategies underlying these tool use. To answer these questions, the paper is organized as follows:

Chapter 1 Literature Review, reviews the definition and evolution of EMI/FMI, and examines research findings and gaps in machine translation, online dictionaries, lecture recording, MOOCs, and generative AI across various disciplines and contexts.

Chapter 2 Data and Methodology, introduces the research questions, semi-structured interview design, participant recruitment and background, data collection and analysis process, and the thematic analysis framework.

Chapter 3 Results, based on interviews with 20 native Chinese-speaking students, details their actual use frequency, typical scenarios, and strategies for various language technologies in EMI and FMI classrooms. The influence of discipline (Technological Sciences vs. Social Sciences linguistic and non-linguistic), language of instruction, and region (mainland China vs. Taiwan) on tool selection will be also analysed.

Chapter 4 Discussion: Combining the results from Chapter 3, this part explores the advantages and potential risks of technology support (such as overreliance and ethical boundaries), as well as learners' emotions and self-efficacy. It also offers recommendations for educational, pedagogical, and policy perspectives.

Through this structure, this paper strives to depict the multidimensional landscape of study technology in higher education from both theoretical and empirical perspectives. It also aims to provide university faculty and policymakers with actionable improvement paths to better support the cross-cultural academic growth of Chinese-speaking students at UCLouvain.

Chapter 1 - Literature Review

This chapter is divided into two parts. The first part begins by discussing English Medium Instruction (EMI). This section explains the benefits of EMI, such as improving students' academic performance and English skills. It also covers the challenges EMI faces, like students encountering language barriers and insufficient resources for promoting EMI in higher education in China. Additionally, it mentions how technology helps EMI students and the current gaps in related research.

Then, the second part moves on to various technologies that support EMI learning and how they are used. These technologies include machine translation, online dictionaries, lecture recordings, Massive Open Online Courses (MOOCs), Bilibili, and Generative Artificial Intelligence (GenAI). The functions for each technology are explained and the risk will be pointed out. Finally, the chapter concludes what language and cognitive pressures for students from non-English-speaking countries EMI creates. While various technologies offer help, they also have limitations. One key gap is the lack of research on how Chinese EMI students use these technologies, especially those studying at UCLouvain. This conclusion points the way for subsequent research, which is to investigate how Chinese EMI students at UCLouvain use these technologies, analysing their technology usage patterns and practical practices.

1.1 EMI

The phenomenon of English medium instruction (EMI) is defined as the utilization of English language for teaching academic subjects of engineering, science, law, and economics in countries where English is not the first language especially in their educational institutions (Curle et al., 2020). Distinguishing from English-for-Specific-Purposes (ESP) programs, such kind of instruction serves not only as vehicles for developing communicative competencies but also to equip students with language learning and personal problem-solving strategies (Belcher, 2009). The rise of EMI is closely tied to universities' ambitions to enhance their global competitiveness,

attract international students, and increase participation in international research networks. According to Rubio-Alcalá et al. (2019), the utilization of English language as the education delivery method benefits the students' performance along with their second language proficiency, having the higher impact upon their receptive skills. The results indicate a general satisfaction among participants in such programs. For the EFL (English as Foreign Language) students, EMI is offering opportunities of higher exposure for cross-cultural perspectives as well as diverse academic discourses, that is beneficial not only for their development of intercultural competence, but also their critical thinking including the motivation and the attitude, as well as their chances of employment globally (Rubio-Alcalá et al., 2019).

Macaro et al. (2018) admit that the utilization of English as the medium for teaching and learning in the higher education (HE), basically has grown significantly in last ten years. The EMI helps in education delivery, improves the student's global job prospects, along with ensuring an improved student mobility, although it is along with some challenges such as the linguistic barriers, and difficulty in content understanding. To understand the challenges encountered by EMI students, Macaro (2019) conducted in-depth research on the teaching and class habits of teachers and students in EMI classrooms. His research illustrates that the EMI students do come prepared in a class mainly equipped with different levels of the vocabulary knowledge (i.e., breadth & depth,) and such differences are accentuated by either they are taught with medium (L2) English level in the secondary schools or not. Sufficient preparations require a proper course design for balancing content integrity with accessibility of English language. In parallel, specialized research about learner's adaptability, socio-emotional, and technological support variables in the different language environments, mainly in case of EMI/FMI program students like the Chinese international students, is required, especially based on difference of the huge cultural and linguistic background.

The findings of Dai & Wang (2024) confirm that the indirect impact of emotions on learners' academic engagement, with technology and EMI as mediators, was significant at the 95% confidence level. Almost 69% of the changes in academic engagement of learners is explained by

their interaction and emotions in use of technology along with their EMI perceptions (Dai & Wang, 2024). The results do imply the fact that both the EMI and technology-enhanced learning serve as the significant mediators in a relationship between academic engagement and emotions, indicating that technology plays the crucial role of a support mechanism in the EMI contexts, for students that are facing various linguistic challenges of EMI. (Dai & Wang, 2024). According to Xu et al. (2024), the use of ChatGPT among Chinese students had the significant positive impact upon both their foreign language self-efficacy as well as foreign language enjoyment while studying abroad.

Moreover, emotional adaptation caused from teachers appears to mediate learners' success in EMI environments. According to Macaro (2019), the EMI teachers are required to develop the awareness about student's linguistic difficulties that they experience in studies, and such an awareness must include the understanding about how their L2 vocabulary gets comprehended as well as acquired. To achieve this, teachers should also have a more specific understanding of how EMI students use multimedia, such as what technology they use, why they use it, what strategies they use, and whether there are specific guidelines for its use. The interesting point about studying Chinese native speakers at UCLouvain is that this gap may be even larger due to the particularity of the research object (Chinese-speaking students) and learning environment (Belgium, where the official language is not English), and therefore more effort may be required to understand it.

Despite the critical importance of technology in supporting EMI learners, research on how Chinese language learners use these tools is limited, considering the fact that China is still the leading source of foreign students, it signifies the consideration of gaining an understanding about use of the language technologies for the Chinese-speaking learners in the Higher Education institutions (CCG, 2024). There are findings of Zhou et al. (2022) suggest that Chinese students are utilizing Machine Translation in the nuanced and strategic ways for supporting their academic studies along with enhance their capabilities in English language learning. The students definitely don't cede the complete control in their writing to AI automated system, but they take the thoughtful and critical approach towards the combination of technological assistance and their own knowledge (Zhou et al., 2022). For getting support in their academic endeavours of personalized learning, getting real-

time feedback, and regular feedback to improve their subject understanding is critical, but should also be along with the ethical use of technology.

1.2 Technology and Usage Scenario

1.2.1 Machine Translation

Machine translation (MT) MT refers to the automatic process where texts are translated from one natural language to another with the help of computer software and applications (Sun, 2024). Looock & Léchaugnette (2021) pointed out that the quality of MT has greatly improved, and thanks to free, easy-to-use, online websites such as DeepL and Google Translate or smartphone applications, machine translation has become increasingly popular. The EFL students do make an extensive utilization of the free language learning tools that are available online for their homework assignment. Despite the advancements of neural MT, challenges remain, especially in context awareness and terminology handling. Looock & Léchaugnette (2021) found that proper usage of MT demands students to develop a competence “MT literacy”, which is defined as users’ capacity to understand how MT systems work and can be used properly. Otherwise, for those regular users of online MT but have received no specific training in professional post-editing, failed to correct errors generated by machine-translated text.

The importance of human intervention in the use of MT has also been confirmed by Läubli, Sennrich, & Volk (2018), who assumed that professional human translation is still superior to neural machine translation. Their research empirically tests the claim that the neural machine translation has the capability of achieving parity with the professional human translation about WMT (Workshop on Machine Translation) Chinese-to-English translation tasks. in their experiment, a human rater assessing adequacy and fluency, shows a stronger preference for human over machine translation when evaluating documents as compared to isolated sentences. They emphasized the necessity of shifting to document-level evaluation: as machine translation

improves, sentence-level errors are harder to detect, making document-level flaws critical for judging translation quality (Läubli, Sennrich, & Volk, 2018).

Research indicates that Chinese-speaking university students increasingly adopt MT tools (Sun, 2024), such as Google Translate, DeepL, Baidu Translate, and Youdao as integral support for both receptive (reading, listening) and productive (writing, speaking) academic tasks. The study by Sun (2024) showed that external variables, such as user characteristics, design attributes, and technology policies, have a comprehensive influence on the psychological features of Chinese university students, which in turn strongly affect their writing strategies when using machine translation (MT) in L2 academic writing. Indicating that MT shapes their writing strategies, Sun (2024) suggested training for higher education institutions and teachers of English academic writing on how to better use MT in academic writing so that students can be delivered with relevant guidance in this respect.

1.2.1.1 MT in Receptive Skills (Reading & Listening)

Reading Comprehension

Quantitative analysis revealed that undergraduate ESL (English as a Second Language) learners using machine translation (MT) tools such as Google Translate and DeepL demonstrated significantly superior performance in vocabulary retention. The research by Abimbola (2023) investigated impact of utilizing the machine translation MT about vocabulary acquisition as well as reading comprehension in ESL by learners. From approximately 60 undergraduate students that are enrolled in the ESL course being randomly assigned to the experimental group, utilized MT during the activities of language learning or the control group who didn't use MT respectively. The results of this study illustrated that the experimental group basically outperformed control group students in their vocabulary acquisition along with reading comprehension. Furthermore, the experimental group also experienced higher cognitive load, suggesting that MT is the useful

tool to ESL learners, but it must be utilized with caution as well as guidance for preventing any negative effects upon cognitive loads (Abimbola, 2023).

Link back to the study of Zhou et al. (2022) that found the students who use technology in the nuanced and strategic ways for supporting their academic studies, but how exactly can MT improve their abilities in English language learning in long term? Zhou et al. (2022) explained that Chinese-speaking students basically translate the shorter pieces of the language, for producing highly accurate outputs along with critically evaluating the output, especially when it is culturally related. During this process, the grammar and logical transition within the output will be refined by students. Therefore, students appear to regard MT as an additional strategy with which to achieve communicative success as opposed to a substitute for their own English ability. These Chinese-speaking students do appear to use MT as the additional strategy for fostering academic engagement, help with construction of positive academic emotion (Dai & Wang, 2024).

While MT can facilitate comprehension, it would also backfire when the learners lack of adequate MT literacy skills and have an over dependence will struggle to detect subtle mistranslations, which can lead to misunderstandings in complex academic arguments. Reidina & Yuliani (2020) proved that subjects had lower results when translated manually than translated used machine translation. Clearly, machine translation could help the students in translation tasks. However, dependency behaviour could influence the progress and results of translation because it still has weaknesses in machine translation, such as it doesn't have features to translate expression which can make different meaning, and it doesn't have a feature to translate the structure of the language such as grammar and syntaxes (Reidina & Yuliani, 2020). Abimbola (2023) has observed that lower-level students that depended more on MT, in comparison to their higher-level counterparts, made fewer revisions per error, leading to a less pronounced enhancement in the revised versions.

Similar questions also arise for EMI Chinese students since the usage of MT is largely embedded in student practice, both for looking up single words and for translating longer stretches of language (Zhou et al., 2022). Students confirmed that the translation happened in both directions

of CN to EN and EN to CN, and this is clearly becoming a normalised practice for Chinese speaking students, which will raise the problem of complete control of their writing to the automated system by simply writing in Chinese for translation into English, something many participants were unwilling to do (Zhou et al., 2022). Chinese students are suggested to be more critical and cautious when using MT output, not only due to the radically different social and cultural system between English and Chinese, but also because of the systematic differences between the two languages (Zhou et al., 2022).

Key factors to consider while working with MT tools are their limited perceived linguistic competence, disengagement mainly from a writing process, MT accessibility ease, MT tool's perceived effectiveness, and the peer influence, all considered as critical elements in MT usage decisions by learners (Namfah, 2024). Therefore, the study by Namfah (2024) emphasizes upon the need of guiding the MT's effective integration as the supportive tool, while discouraging its over-reliance.

Listening Comprehension

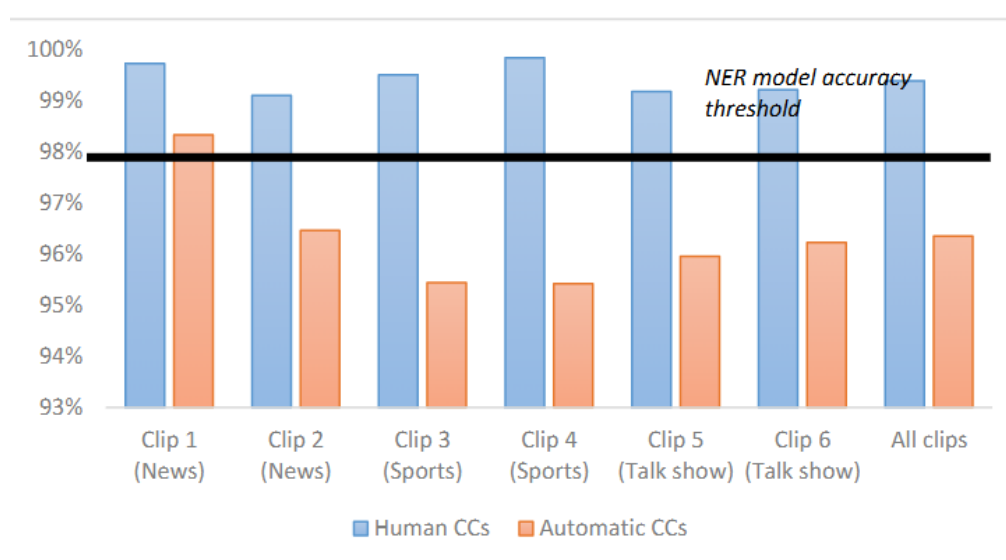
Though less extensively researched, MT plays a vital role in supporting interlingual listening comprehension via auto-captioning and transcript generation. Shadiev et al. (2020) have suggested that not all students completely comprehend content of the lecture delivered in a foreign language mainly as a primary medium of instruction, particularly in case of students with lower language ability. Therefore, providing students with texts generated by speech-to-text recognition (STR) or speech-enabled language translation (SELT) is crucial (Shadiev et al., 2020).

Shadiev et al. (2020) further contend that, to facilitate comprehension of lectures given in a foreign language, learning content should be presented in multiple modalities. This includes verbal input such as the instructor's speech and visual materials such as lecture slides. Under ideal audio conditions, automated captioning systems (e.g., YouTube, Teams) can achieve certain demand for accuracy. Like for example, according to Romero-Fresco & Fresno (2023), the closed captions do play the vital role mainly in making the live broadcasts highly accessible for a lot of viewers. When

machine translation (MT) is used to support listening comprehension, Chinese-speaking EMI students also need basic evaluative skills to judge whether the translated phrases accurately reflect the original audio in terms of both meaning and register. This level of performance supports listening to comprehension in EMI/FMI settings, provided the platform generates captions in the learner's native or academic language to aid understanding.

Figure 1 Accuracy comparison between human and automatic

closed captions across different genres



According to Romero -Fresco & Fresno (2023) captions technology is getting utilized for creating the intralingual live captions basically without any human assistance as well as broadcasters with great accuracy. It is reported that automatic captions achieved an average word accuracy of 98% across news, while less than 97% among sports, and talk-show clips, compared to 99% accuracy for human-generated captions for all kinds of domains (see Figure 1).

The high accuracy means that both automatic and human captions now co-exist on TV, but there is limited research regarding accuracy of the human live captions, and comprehensive assessments are needed about the of quality and accuracy of the automatic captions (Romero Fresco & Fresno, 2023). Human captions are still needed despite possible threat that is being posed by the automatic captioning, to reduce errors, improve quality, and accuracy of the captioned content, according to

Romero -Fresco & Fresno (2023). This also illustrates the importance of students' ability to self-check and filter the accuracy of subtitles.

Accessibility in modern classrooms is considered crucial to ensure that all the students, regardless of their backgrounds or abilities, have the equal accessibility of learning resources for fostering a highly inclusive and effective educational environment, where a mixed-mode – partly visual and partly auditory – presentation of the same information is implied rather than a single-mode (Van Gauwbergen et al., 2024). Considering the fact that students today come from increasingly diverse linguistic and cultural backgrounds, the adaptation of EMI in an educational institution requires the effective use of subtitles to reduce the language barriers (Van Gauwbergen et al., 2024).

1.2.1.2 MT in Productive Skills (Writing & Speaking)

Machine translation (MT) tools have become integral to how EMI learners approach productive skills, such as writing and speaking. Empirical studies consistently show that learners use MT not only for understanding content but also for generating drafts, revising outputs, and preparing oral presentations. The results of Jiang (2024) study revealed that the Spanish language Chinese undergraduate students, especially those that have utilized DeepL translation software, depicted its great impact upon the improvement of the richness of the vocabulary in the article generally. However, conclusion worth emphasizing is that the use of DeepL to enrich the vocabulary of articles does not have a direct and strong connection with the improvement of the user's own vocabulary (Jiang, 2024). Therefore, whether MT can bring any real benefits, such as improving users' language capabilities, remains questionable. Furthermore, since MT can introduce semantic inaccuracies, especially in specific contexts under certain domains, learners must maintain evaluative judgment to ensure the final output meet with academic expectations.

Writing

MT usage significantly enhances final writing outcomes (Namfah, 2024). The use of DeepL translation tool only for drafting the composition can significantly broaden the student's written vocabulary, basically allowing the MT to help Chinese students in their assignments in comparison

to those students that do not use MT tools (Jiang, 2024). In Jiang (2024)'s study, most participants reported that the MT tools generally had also a positive effect on their vocabulary in writing, based on the fact that they actively question the results of the translator, noting occasional inaccuracies in word choice or usage, which is a great phenomenon for language learners. Students typically questioned the suggestions offered by DeepL indeed add the interaction while language learning, instead of one-sided acceptance of information without individual thinking, which is an encouraging behaviour for language development. Likewise, the findings of Aubrey et al. (2020) study also emphasised the importance of the engagement and indicate that certain task features such as the nature and purpose of the tasks, task repetition, familiar and easier task topics led to successful engagement.

As a result, it is highly recommended that student improving the language processing capabilities of MT tools, like updating and expanding the existing training methods, which can ensure the inclusion of discipline-specific terms as well as idiomatic usages, to reduce any inappropriate, inaccurate or outdated suggestions (Jiang, 2024). It is also recommended to improve learner engagement because it is crucial in ensuring the quality of their learning experiences, and capabilities of MT tools in improving their learning (Aubrey et al., 2020). It should be noticed that, however, the long-term use of MT may lead to dependence on the application, resulting in difficulties in independent writing and even "addiction". Many students realize that this is not necessarily beneficial to their vocabulary development in the long run. As MT can provide the students with alternative vocabulary along with broadening their expressive options, it may also confine these students to the limits of a MT tool's existing database: on one hand, MT facilitate strategic and plan phase, on the other hand, it evades the drafting and reviewing process at the same time (Namfah, 2024). In the group of Thai students, they tended to compose their assignment directly into their native language, which is Thai, directly translate them into English when utilizing MT, resulting that when MT was unavailable, many participants abandoned the tasks entirely (Namfah, 2024).

Consequently, when required to write independently, those students may revert only to high-frequency, simple vocabulary. Students seem to have more options, but they are indeed trapped in a larger “cage”. In Jiang (2024)’s research, students are able to recognize these limitations on accuracy and over reliance and should use MT tools in a smarter way. To use MT more intelligently, educators can teach students to evaluate the outputs by comparing translations across tools (e.g. DeepL vs. Google Translate), identifying errors, and verifying key terms with credible sources or textbooks. Just as Looock & Léchaugnette (2021)’s study suggests, specific training, such as critical analysis of information provided by computers, is necessary for students to improve their MT literacy, in order to avoid any priming effect of the MT output.

However, it’s notable that the previous study focusses on applied-language learning or EFL contexts and not EMI settings, as since in EFL, instruction is structured around English language pedagogy, lessons on grammar rules, language drills, communicative activities, vocabulary-building strategies, etc. Although this study can be used as a reference, the differences between different discipline have not been carefully studied because linguistic learners have different levels of sensitivity to language during class, which may lead to different directions and results.

Speaking

MT is also used to help with oral communication, especially in academic and presentation contexts thanks to the functional features of pronunciation and recording (Wan & Liu, 2021). For example, students preparing oral presentations frequently draft their scripts using MT tools like DeepL or Google Translate to ensure terminological accuracy in technical language. MT tools such as Google Translate as well as DeepL, are gradually but definitely becoming the important tool in improving the student’s effectiveness in foreign language learning vocabulary accuracy by enhancing student’s vocabulary, fluency, and pronunciation through the high-quality translations, real-time feedback audio playback features, as well as alternative phrasing options, allows foreign students to improve their English-speaking skills.

Most MT platforms now include audio output features, such as text-to-speech (TTS) and automatic speech recognition (ASR) (Niño, 2025). Google Translate and DeepL offer learners pronunciation and intonation models, which they use to practice their spoken delivery. The pronunciation function of original example sentences is based on authoritative audio examples of English broadcasting (such as VOA, BBC, etc.) so that users can access authentic corpus, which will be conducive to improving their listening and speaking skills (Wan & Liu, 2021).

According to Niño (2025), the self-directed utilization of MT tools through the carefully designed activities of learning for practicing the specific set of pronunciation features, are capable of aiding the independent practice and improving the student's phonological and phonetic awareness, assisting their perception, memorization, and language confidence, offering valuable insights for EMI international students to adapt to the linguistic environment.

It's worth noting that in China, there are many MT application for both Chinese and English that customize their page settings to suit Chinese students' learning habits, such as the position of each bottom (Wan & Liu, 2021). Wan & Liu (2021)'s study of three Chinese MT systems (Youdao Dictionary, Kingsoft Powerword, and Eudic) highlighted that the Internet interpretation includes the latest and most popular online vocabulary in real time, which makes up for the shortcomings of the authoritative copyright dictionary, such as the slow update and incomplete collection of words. Particularly, Youdao Dictionary, a dictionary-related application first released by Netease Youdao Information Technology Co., Ltd. in September 2007, which is also the world's first all-around free language translation software based on search engine technology unique innovation lies in its global pronunciation function. Through experiencing different pronunciations of the same word, foreign language learning becomes more authentic and interesting. Apart from this, when the pronunciation of a certain word is not easy for users to master, or they want to know its pronunciation difference among Britain, America, Australia and so forth, they can also use this function to distinguish, adding the interaction and engagement with the users (Wan & Liu, 2021).

Another popular application, Eudic, supports multilingual translation of languages such as Chinese, English, Japanese, French, German, Italian, and others, allowing users to choose between voice translation and photo translation; while in the end, the Kingsoft Powerword, has a large English-Chinese vocabulary resource base, and has different versions of dictionaries, such as Oxford English Dictionary, Collins Advanced Learner's English-Chinese Dictionary, Longman Dictionary of Contemporary English and other authoritative English dictionaries for learners to learn and compare (Wan & Liu, 2021). Those customized designs bring Chinese users a better experience compared with the traditional printed dictionaries.

1.2.2 Online dictionaries

Online dictionaries and machine translation (MT) are often confused due to their similar functionality, which is to bridge language gaps, but they are significantly different in design and function. While MT relies more on computer algorithm, dictionaries provide various authentic definition, which improves the educational process in the foreign language learning, and its effectiveness improves with online dictionaries (Pikilnyak et al., 2021). Online dictionaries have replaced most paper dictionaries and have become the primary learning tools in assisting L2 learners in expanding their lexical repertoire. Generally, users tend to assume the definitions in E-dictionaries are reliable and barely question the validity of the descriptions provided. In fact, the accuracy of major E-dictionaries is not commonly challenged, and the formation of online dictionary corpora is rarely discussed (Wang et al., 2025). The study of dictionary use is rather limited, especially E-dictionary problems. The results of Wang et al. (2025) study showed that the misleading or incomplete definitions in online dictionaries, can cause some serious misunderstandings of the sentence, for instance, the presence of erroneous, insufficient, and incomprehensible definitions in the dictionary could adversely affect students' comprehension of words and sentences. However, studies identifying specific faults in online dictionaries and

examining whether these flaws influence learners' vocabulary development are generally lacking (Wang et al., 2025). Findings are needed to better suggest guideline of training of the e-dictionaries literacy for the users and ensuring improvements in underlying AI models utilized for building the E-dictionaries.

In EMI contexts, especially for language focused majors, online dictionaries is a tool for non-native English speakers, offering fast explanations and usage examples in real-world scenarios that support both comprehension and production. According to Pikilnyak et al. (2021) the most popular online dictionaries among students are Cambridge Dictionary, Merriam–Webster, Wordreference, Wiktionary, TheFreeDictionary, Glosbe, Dictionary.com, Collins Dictionary, Longman Dictionary, and Oxford Dictionary respectively. Chen (2010) has brought up the concept of the pocket electronic dictionaries (PEDs), which have gained a lot of popularity due to the rise in EFL learners. Although there are no significant differences between PED and PD use in comprehension, production and retention of vocabulary e-dictionaries or PEDs are more effective in providing the students with significantly faster speed and convenient accessibility compared to regular PDs respectively (Chen, 2010).

In consulting authoritative dictionaries, more frequently and carefully read for each sense is needed to find the most suitable meaning. For online dictionary, problematic definitions in dictionaries could have adverse effect on students' comprehension of source texts (Wang et al., 2025). Therefore, it is crucial to rectify all problematic definitions and provide high-quality assistance for word lookups (Wang et al., 2025). Lacking these skills can disrupt students' concentration: students may spend excessive time searching entries or misinterpret unfamiliar usage, leading to superficial understanding and decreased writing fluency.

1.2.3 Lecture Recording

The lecture recording means a process to capture the video and audio of the live lecture, adopted by universities to enable a shift from a one-size-fits-all education system towards one where students can personalise and customise their learning (Dona et al., 2017), while ensuring its

availability online to all the students on the University portal. According to Dona et al. (2017), students showed a generally positive response towards the availability of lecture recordings and there were discipline-based differences: lecturers teaching in business and social sciences preferred the lecture-recording system more than those teaching in engineering and sciences. More precisely, Dona et al. (2017) pointed out that the lecturers across the different disciplines expressed quite different perceptions about the effects of lecture-recording on their students' academic performance. 12% of sciences lecturers noticed a *major* reduction in academic performance in their class, and another 12% noticed a *slight* reduction in academic performance. In contrast, 53% of business lecturers and 55% of arts lecturers did not notice any change to their students' academic performance. The reason behind is not explained and more evidence-based research as any changes to academic performance due to lecture-recording need to be well documented, understood and the implications managed (Dona et al., 2017).

The finding studied more profoundly on the trend of engagement in subjects of engineering, business as well as social sciences. Sciences lecturers perceived the main benefit of lecture recording as the opportunity it provided students to review and revise lecture materials (Dona et al., 2017). Students appreciated the option to learn at their own pace, for example by doing required reading immediately prior to listening to the recording of a lecture hence maximising effective study time (Tarr et al. 2015). Students also appreciated being able to pause the recording whenever their attention waned and using recordings to review material in preparation for assessments (Tarr et al. 2015). It is believed that the facility of downloading the recorded lectures and being able to review them later enable students' independent study while the scheduled lectures' content could be 'flipped' and made more hands-on and interactive (Dona et al., 2017).

In addition, although concern is raised by one of the interviewed lecturers, "the presence of lecture-recording gives the perception that students can skip class and catch up", Dona et al. (2017) discovered that the existence of lecture recordings does not reduce the number of times students attend classes. The presence of lecture-recordings may not be the deciding factor in a student's decision not to go to class, as other factors may be more significant: students may miss face-to-

face lectures for a variety of pragmatic, pedagogical and personal reasons, which have little or nothing to do with whether lectures are recorded or not (Dona et al., 2017).

Leadbeater et al. (2013) are also aligned with the fact that lecture recordings are available online which are accessible to everyone and would not diminish students' determination to attend classes. Leadbeater et al. (2013) have also studied on the motivation for using lecture recording: the ability of lecture recordings to facilitate notetaking as a key advantage, especially with the group identifying their poor ability to understand, concentrate or take coherent notes as a central issue. According to them, the lecture recordings now are increasingly utilized for supplementing the lecture attendance in higher education institutions, and majority of the students utilize these recorded lecture materials, for improving their academic performance either in their future assignments, quizzes, or exams (Leadbeater et al., 2013). Despite the high rate of use, recorded lectures are not proved to have a significant impact on academic performance, either in the group as a whole or for the students who used them (Leadbeater et al., 2013). Overall, this approach seems to be beneficial but concerns still arise that the lecture recording might reduce lecture attendance since students who use recording might seem it as a backup plan and be less concentrated in class. However, there are few studies on lecture recording in EMI environment, which should be assumed as typical situation, as a large proportion of them were students with non-English speaking backgrounds.

1.2.4 Massive Open Online Courses (MOOC)

By definition, MOOCs aims to deliver effective online learning that is both open and accessible to large numbers of learners (Ferguson & Sharples, 2014). The MOOC offers learners all around the world opportunities of accessing, and breaking down distance constraints of the knowledge, like for example by providing them with ability of continuing their professional development, supplementing the conventional learning courses and opening the new areas of knowledge. However, achieving all three goals of effective, open and accessible at once has been difficult: mass-public media-based learning often lacks strong effectiveness, and producing and delivering

large-scale online education typically involves high costs (Ferguson & Sharples, 2014). The study by Ferguson & Sharples (2014) looks at implications for the pedagogy in education at the massive scale. The grounded approach that was utilized for analysing the data from 18 MOOCs run at a UK-based Future Learning platform. The identified challenges from this analysis for the learners, educators and society at large were deemed to be addressed in two ways, i.e., through a learning design as well as through the platform design (Ferguson & Sharples, 2014). For its learning design, it needs to take into account the points at which learners are likely to need support; needs to build in opportunities for asking questions, raising concerns and asking for help and needs to build in motivation for offering help to others; while for platform design, question such as *when will these resources and perspectives be solicited, and how will learners use them* should be considered. Likes, ratings, tags and analytics can help both learners and educators to sort through contributions and to locate the ones that will be helpful for their learning or teaching (Ferguson & Sharples, 2014). The potential with MOOC also relates to their accessibility, particularly in terms of age, location and disability (Ferguson & Sharples, 2014). The effective scalability mainly demands the robust platform-design and learning-design frameworks, which are mainly tailored for the diverse learner needs. Such frameworks must go beyond the basic interactions and provide peer support, mechanisms of learning, and credible user interactions, for ensuring better learning engagement of foreign students.

As many MOOCs act as the university showcases, they are designed to attract potential students. This means that a large number of MOOCs learners are adolescents, raising questions about the suitability of content and content filtering when engaging in online activities. According to Ferguson & Sharples (2014), massive participation gives learners access to support from a wide range of other learners to resources provided by those learners in the form of discussion and links, and to a range of diverse cultural perspectives.

However, MOOC's role in relation to EMI contexts has been scantily explored. Recent research is beginning to address this gap. MOOCresearch2.0: A mixed-method and multidisciplinary approach to socio-cognitive conflicts in online educational platforms (Paquot et al., 2021)

highlights the challenges of promoting MOOCs at Université Catholique de Louvain and fostering social interactions. In particular, the study conceptualises socio-cognitive conflicts (i.e., socially experienced and cognitively resolved differences in viewpoint) as powerful resources for promoting conceptual change, learning and knowledge transformation. Learning scientific meanings of contested concepts (for example “democracy” or “human rights”) often requires that learners re-examine their everyday-level understandings (Paquot et al., 2021). In online education, such interactions—which are essential for the emergence and resolution of socio-cognitive conflicts—are however limited (Paquot et al., 2021). Moreover, challenges remain in areas such as comprehending English-medium course content without visual support, or where learners have limited language confidence. The significance of students’ participation in MOOCs goes beyond mere linguistic access and relates to the social interactions generated by their need to reduce language barriers. The main objective of the MOOCresearch2.0 project is therefore to address the challenges of fostering social interactions to promote learning in MOOCs (Paquot et al., 2021).

In response to the challenges of social interactions raised by Paquot et al. (2021), the findings of Ferguson & Sharples (2014) study gave examples on how can MOOC offer the learners an opportunity of interacting to improve their ability of learning other courses that are taught in English language, which is not their first language, and continue their professional development. For instance, as for platform design, there is no need to leave educators siloed in their individual MOOCs. Forums, discussion areas and chances to meet up both online and offline would offer opportunities to extend and share practice, to share possibilities for creating or accessing resources that are not available when working at a smaller scale, and to build on success (Ferguson & Sharples, 2014). However, whether such platform-design improvement has the long-term impact on the performance of the students using MOOCs has not been discussed in detail.

1.2.5 Brief introduction of BiliBili

As the major video-sharing website in China, which hosts videos on various themes, including movies, music, technology, science, anime (Xie, 2022), BiliBili is often referred to as “B site” and

it is one of China's leading video-sharing platforms, or we could say it's the equivalent of Youtube. It should be noticed that the Chinese government has a strict mandate to preserve the country's culture, and that involves banishing access to resources and technologies it finds the contrary. YouTube, ChatGPT and MOOCs happen to fall in this category. However, people in mainland China could have the access to Youtube with VPN, which is not illegal but might be very limited to the complete functionality. That's why most Chinese people tend to be unfamiliar with common apps in western countries. Instead, they are used to the Chinese tools, like B site and Youdao.

The danmu (or danmaku in Japanese) interface originated on NicoNico, a Japanese video website, in 2006, and was later popularised in nearby East Asian countries including China (Wang, 2022). Climatic moments in the videos attract many danmu comments which can obscure the image in the video, causing a visual effect that resembles “弹幕” (danmu, which literally translates to “bullet-curtain” in Chinese; hence, this type of online commentary is known as danmu comments. Adopted by nearly all major video sites in China, the introduction of the danmu interface has substantively changed the way internet users enjoy online videos, which, over time, has morphed into a distinct cultural phenomenon in the Chinese digital sphere (Wang, 2022).

Equipped with the danmu, Bilibili platform has become a famous platform of video-sharing in China, attracting the growing number of visitors, especially due to the platform announcing its automatic translation feature that can be utilized for free, and offers the alternative solution in dealing with a language barrier by students (Xie, 2022). At the very beginning, Bilibili was a platform particularly used for anime. The development of B site can be divided into three stages. Before 2014, B site's mode of operation was more like a personal website, and it had accumulated many secondary content fans and a group of content creators by carrying Japanese anime. From 2014 to 2018, along with the official joining of Chen Rui, the chairman of B site, who transformed a savagely growing website into a formalized enterprise (KrASIA, 202).

The core culture of B site as “community first” rather than “user first”, which means that the premise of B site's growth is to ensure that the core culture of the community is diluted and

changed as little as possible. After 2018, B site launched the “Bilibili creation incentive program”, more content creators are encouraged to come to B site, and it also began to expand the commercial value. Bilibili boasts an impressive 293.6 million monthly active users as of 2022 and around 10 million videos uploaded monthly (Xie, 2022). As such a localized and important video distribution platform in China, there is surprisingly little research on its use in education, especially for Chinese students in EMI environments.

1.2.6 Generative Artificial Intelligence (GenAI)

Large language models (LLMs) like ChatGPT have revolutionized the educational landscape, transforming the way that we study (Kosmyna et al., 2025). Kosmyna et al. (2025) admit that the GenAI tools, particularly ChatGPT, demonstrate significant potential in fostering autonomous learning, enhancing student engagement, and supporting diverse learning styles through adaptive content delivery. However, their adoption gets hindered by the concerns related to plagiarism along with the AI response’s reliability (Kikuchi, 2024). Therefore, it is important to ensure technological proficiency as well as English competence while leveraging the AI tools effectively (Kikuchi, 2024).

In most of the cases, ChatGPT can have a positive impact on student learning process, as they assist with the summarizing of texts, generation of writing prompts, improving grammar, and also brainstorming the research ideas, which is believed by students too that ChatGPT can help them expand their vocabulary and enhance their grammatical structures, thereby improving their written and oral skills (Xu et al., 2024). When the Chinese students use the ChatGPT tool extensively in language learning, it is seen that their confidence and enjoyment of mastering the foreign language gets significantly improved (Xu et al., 2024). This relationship may be attributed to the diverse learning resources and personalized learning support provided by ChatGPT. The convenient and efficient learning environment created by ChatGPT enables learners to bravely and actively face language learning challenges and try to solve problems. Likewise, there is a potential that

generative AI-assisted tools could enhance learners' engagement by catering to diverse learning styles and reducing boredom through interactive and stimulating content (Dai & Wang, 2024).

Therefore, considering the higher levels of positive emotions is produced while Chinese students are using GenAI tools, which may lead to increased academic engagement through these mediated pathways. Findings have implicated that through pedagogical practices, curriculum development, and the design of technology-enhanced language instruction, GenAI tools can indeed help in overcoming the difficulties in second language learning (Dai & Wang, 2024). Consequently, the interactions with ChatGPT creates a low-pressure environment where learners can seek help without worrying about judgment or criticism, ultimately reducing learning anxiety and increasing self-confidence and proficiency (Dai & Wang, 2024). Through simulated conversations with ChatGPT, learners can practice language skills in a virtual yet real environment, creating the fun and engagement of learning.

According to Yang et al. (2024) the ChatGPT's role especially in the academic writing, however, can be framed as the "ghostwriter" i.e., someone who writes something for others, as here with ChatGPT the student demands for help and the AI tool helps them in writing their essays. Such ghostwriters that are powered by the AI advanced algorithms, can provide help in writing essays, the research reports, and even the academic dissertations. Academic dishonesty facilitated by AI remains therefore largely hidden as the AI-generated texts often can mimic human writing (Padillah, 2023). AI detection tools are suggested to be invented to catch non-original ideas and AI content, requiring the students to humanize any AI suggested prompts and making sure of the process of self-reflexion (Padillah, 2023).

At the same time, other risks have been raised on GenAI. Kosmyna et al. (2025) revealed that, the ChatGPT AI tool users struggled in accurately quoting their own work. Even though these AI tools offered them immediate convenience, the findings show their potential cognitive load (Kosmyna et al., 2025). In the four months' period the ChatGPT AI tool users did consistently underperformed at the neural, behavioural, and linguistic levels, raising a lot of concerns about

long-term educational implications of the student's reliance upon these tools, while underscore the requirement of deeper inquiry into the AI's role in learning (Kosmyna et al., 2025). While the generative AI improves confidence and productivity, it also introduces ethical ambiguity regarding authorship, plagiarism, and intellectual originality.

In conclusion, the EMI can simultaneously impose linguistic and cognitive demands on the non-native speakers, especially Chinese foreign students, who are required complex interplay between technology and learners' emotional well-being (Dai & Wang, 2024). Machine translation (MT) tools are widely used for both receptive tasks (e.g., pre-translated texts, automatically subtitled lectures) and productive tasks (e.g., drafting assignments, refining vocabulary), but their effectiveness depends heavily on learners' mastery of MT, or MT literacy, to detect slight errors caused by cultural differences (Loock & Léchauguette, 2021).

Online dictionaries can offer lexical authority but require meticulous navigation skills : findings show that the machine learning and AI technologies integration in the dictionary construction, can help students in their learning, but their dictionary proficiency has to be improved, as it has impact on their search results, production quality, and perception (Wang et al., 2025); recorded lectures offer flexible review capabilities but may reduce class participation. MOOCs broaden learning channels but also expose language and interaction barriers in EMI environments; while generative AI (e.g., ChatGPT) shows dual potential: while improving self-efficacy and writing efficiency, it also raises serious ethical concerns about academic integrity, "ghostwriting," and diminished cognitive autonomy (Yang et al., 2024). A careful navigation and declaration that GenAI is more than a tool or an assistant is needed. Through effective and ethical integration of the ChatGPT tool in the academic writing, student have various opportunities of improving their second language proficiency and learnings (Yang et al., 2024).

Effective learning with educational technologies depends not only on the tools themselves, but also on learners' technological adaptability: their ability to adjust strategies, approaches, and behaviours to interact productively with each platform or tool. Emotional resilience and self-

efficacy, which is crucial to make sure the tools are well matched to the task requirements, significantly affect academic success in EMI environments.

This research specifically targeting this largest population in the world, Chinese-speaking students, who also take large part of international students in UCLouvain, underscores the urgency of conducting targeted investigations. Based on this summary, Chapter 2 Data Methods is a short walk from the beginning of the framework. This chapter details the mixed method of study technology integration, usage situation analysis of the Chinese EMI students in UCLouvain, focus on their technique model and elementary practice.

Chapter 2 – Data & Methodology

Chapter 2 focuses on the data and methods of the study, and it follows a clear order to explain how the research was done. First, the research questions are put forward. These questions come from the gaps found in the previous literature review, and they mainly explore what language technologies Chinese students at UCLouvain use in EMI/FMI environments, how their use varies by discipline and cultural background, and what advantages, barriers, and risks students perceive.

Next, the chapter details the interview design and the background of the candidates. It explains that the study uses semi-structured interviews, describes the criteria for selecting participants (such as being native Mandarin speakers, no long-term study experience in English/French-speaking countries, etc.), shows the demographic and discipline distribution of the 20 participants through tables, and introduces the recruitment process, from distributing online questionnaires to obtaining informed consent and scheduling interviews. The pre-test of the interview questions is used to ensure the questions are clear and usable.

Then, the data collection process is explained, including the two interview formats (online via Microsoft Teams and in-person on campus), the duration of each interview (45-60 minutes), and how the interviews were recorded and transcribed (conducted in Chinese first, then translated into English and double-checked).

Finally, the chapter describes the qualitative analysis method. Student responses were first coded in Excel, categorized by discipline and technology type, and visualized with charts. The six-phase thematic analysis framework proposed by Braun & Clarke (2008) was adopted for data analysis. The data are examined from four distinct dimensions, namely: tools and their usage scenarios, language differences (French versus English), disciplinary and cultural backgrounds, and potential risks and psychological factors. The purpose of this chapter is to make the research process transparent and credible. It provides a detailed operational plan for how to answer the research questions, so that readers can understand the basis of the subsequent research results.

2.1 Research Question

China is keen on building international exchange programs, through which students and staff can go to study and exchange at their partner universities abroad (Huang, 2007). According to the thomasbeard (2024), the annual rate of outbound Chinese students grew approximately by 9.5% annually, from 2010 to 2019 and made the country the largest source of international students globally.

Despite this growth, Chinese students' study habits and adaptation to EMI remain under-researched, even though these learners often face distinct challenges. L2 students often fall short of addressing the nuanced realities and individual experiences of those in academic settings, especially as faculty and students adapt to the pervasive presence and rapid advancements of study technologies. This gap in the guidelines fails to capture how EFL writing teachers and students navigate the complex relationship between increased demands for digital literacy and the practical challenges of integrating study technologies into the classroom (Yang & Duan, 2016). The Chinese students faced linguistic challenges in the international universities, due to the differences in Mandarin and English teaching styles, and difference of Chinese and American academic culture in terms of classroom participation, and method of delivery

Chinese-speaking international students often encounter significant challenges in EMI courses due to profound structural differences between Chinese and English. Even though all students that

generally come to the foreign country for studying and already have some level of English language proficiency. However, their proficiency is not comparable to native English-Speaking or European students, and majority of the course instructors consider all students to follow the courses delivered in English in the same way.

The difference between English and Chinese remains a big challenge. In terms of expression the English language's reliance upon tense, aspects, number, and article inflections for encoding their meaning. Basically, what is difficult for Chinese students, as their language expresses such meanings through word order and function words; this often results in Chinese learners misusing verb tenses and omitting articles in their English writing.

The Mandarin language in terms of syntax, follows the structure of topic–comment sentence, which mainly differs from the English's subject–verb–object canonical order, causing difficulties for the Chinese foreign students dealing with complex English sentences with multiple clauses as the clause in Chinese grammar, is clearly recognizable as a grammatical unit (Halliday, 2016). In Chinese grammar, words do not change form to mark tense, plurality, or part of speech, so learners frequently omit English inflections like *ed* for past tense or *s* for plurals and third-person verbs, producing sentences such as “The plan (is) analysed...before get into its own business” respectively. Moreover, Chinese always precede the noun they describe, whereas English allows and often requires post-nominal modifiers and relative clauses introduced by *who*, *which*, or *that*.

Together, these differences in inflection, modifier placement, verb structure, and punctuation impose a heavy cognitive and modality load on Chinese-Speaking learners in EMI classes, making explicit instruction and revision practice on these surface features essential for their comprehension and learning implementation.

The thesis aims to explore how Chinese learners in English- and French-medium (EMI/FMI) environments at UCLouvain use language technologies to support their studies. The core of this study is not only to explore which technologies these students use most often, but also to explore why, how and how often they integrate these technologies into receptive tasks (such as class

comprehension and reading assignments) and productive tasks (including essay writing and exam preparation).

What is interesting is at what extent the learners' strategies for using such technologies in their courses. In addition, by comparing social sciences (both linguistic and non-linguistic) and technological sciences, we aim to reveal patterns in technology use across disciplines. It is also important to explore the influence of learners' cultural backgrounds, especially how Chinese students' digital habits (e.g., their reliance on platforms such as BiliBili and culturally shaped "Chinese thinking" approaches) influence their adaptation to these tools, and how these habits can be different between students from mainland China and Taiwan.

The following research questions are based on the findings from this literature review analysis, based on the use of technology and usage scenarios in EMI context in UCLouvain.

1. What types of study technologies and strategy do Chinese-speaking learners at UCLouvain use most frequently in EMI environments?
2. How does technology use vary across disciplinary areas, specifically social sciences (both linguistic and non-linguistic) and technological sciences, for Chinese-speaking EMI learners?
3. In what ways do cultural and digital habits, such as reliance on platforms like BiliBili, influence Chinese students' adaptation to language technologies, and do these patterns differ between learners from mainland China and Taiwan?
4. What perceived advantages and barriers do Chinese-speaking international students identify regarding the use of language technologies in EMI/FMI contexts, and what emerging risks do they perceive?

Nota bene: As UCLouvain offers a considerable number of French courses to international students, French-speaking subjects still exist in the sample of interviews and will be used for brief comparison and reference, but it is not the main research interest of this paper.

By answering these questions, this study hopes to uncover the advantages and barriers that Chinese-speaking international students perceive in using technology to support their academic activity, reveal any emerging risks, such as over-reliance or ethical issues surrounding AI-assisted creation and ultimately provide a reference for designing more nuanced and effective teaching strategies that are tailored to the needs of Chinese-speaking EMI learners in UCLouvain.

2.2 Interview design and candidate background

2.2.1 Semi-structured interviews

The study adopts a design that combines quantity and quality. In the first part of the study centred on semi-structured interviews, whose aim is to explore how native Mandarin Chinese speakers enrolled at UCLouvain use various language technologies when studying in French or English. Followed by a second part, interview findings are analysed and used to answer the research questions. Given the goal of describe and illustrate of authentic student practices and perceptions rather than test hypotheses, a descriptive qualitative approach was considered most appropriate. Semi-structured interviews allow for depth and flexibility by following a consistent topic guide while enabling participants to elaborate on their individual experience, balancing comparability with nuance.

2.2.2 Profile of the participants

Participants in this study were selected following several criteria to ensure a homogeneous sample of native Chinese speakers studying under a foreign-language medium:

Chinese speaking students: Native speakers of Mandarin Chinese (Putonghua), defined as having exclusively used Mandarin within family and educational settings since early childhood.

Exclude the students who:

- Had participated in French/English immersion programs (e.g., Content and Language Integrated Learning, CLIL) at primary or secondary levels;
- Studied for an extended period (e.g., one semester, full academic year) at a higher-education institution in a Francophone or Anglophone country;
- Are from bilingual (Chinese–French or Chinese–English) households who had significant exposure to the target language before higher education.

Current Enrolment: Must be enrolled at UCLouvain and be currently taking at least one non-language course taught entirely in French or English during their undergraduate or master’s program at UCLouvain.

No Learning Disabilities: Excluded were individuals with diagnosed hearing impairments, attention-deficit disorders, dyslexia, or other learning disabilities that could affect language processing or the use of technology in atypical ways.

Table 1 Demographic and language -proficiency profile of interview participants

The following table 1 below, presents the demographics and language proficiency of interview participants of this study.

Characteristic	n	%	Mean Score (1-10)
Gender			
Male	8	38%	
Female	12	62%	
Age			20.3(18 - 25)

Self - Rated English Proficiency (EMI)			
Listening	-	-	7.2
Speaking	-	-	6.8
Reading	-	-	7.5
Writing	-	-	7,0
Self - Rated French Proficiency (FMI)			
Listening	-	-	5.4
Speaking	-	-	5.0
Reading	-	-	5.7
Writing	-	-	4.8

N = 20 Chinese -native bachelor's or master's students at UCLouvain; English and French proficiency rated on a 1 = very poor to 10 = native scale.

The interview sample comprised 20 master's and undergraduate's level students (approximately 40% male, 60% female), aged 18 to 25 (M = 20.3). Disciplines mirrored our earlier grouping: 52% in non-language Social Sciences, 38% in language-focused Social Sciences, and 10% in technological sciences. All participants study primarily in English-medium courses, with self - rated English proficiency in the 6.8 - 7.5 range across the four skills which is adequate for academic

tasks when supported by technology; However, it is noticed a lower French rating (4.8–5.7), indicating greater difficulty and effort required in French-medium coursework.

These profiles in table 1 above, show that while English is generally a functional academic tool for this cohort, integrating into a fully English-speaking academic community and participating in seamless English dialogue remain challenging. French-medium courses pose additional linguistic burden, reflected in lower self-ratings.

Table 2 demonstrates the distribution of the participants from different disciplines in this study:

Table 2: Discipline distribution of the participants

The following Table 2, shows the discipline distribution of research participants.

Discipline	Number
Social sciences not focused on languages	10
Social sciences focused on languages	8
Technological sciences	2

As shown in Table 2, the participant pool for this study comprised 20 Chinese native speakers (17 from mainland China and 3 from Taiwan) who were enrolled in a variety of disciplines. For the purposes of analysis, these individuals were grouped into three broad categories: social science not focused on languages (10 participants), technological sciences (2 participants), and human sciences focused on languages (8 participants). In the first category, human sciences not focused on languages, students came from fields such as Management, Economics, EU Law, and Public Administration. In the technological sciences category were Electrical Engineering and Geographic Information Science, while those in the human sciences focused on languages included students of Français Langue Étrangère (FLE), Multilingual Communication and Linguistics.

Recruiting participants from varied academic disciplines allows us to investigate how field-specific demands might shape technology use in EMI or FMI settings. By comparing participants grouped into social sciences not focused on languages, social sciences focused on languages, and technological sciences, this study aims to explore whether use of study technologies varies in predictable ways aligned with disciplinary needs, ranging from terminology management to cross-cultural nuance.

Furthermore, including participants from both mainland China and Taiwan adds an important cultural dimension. Although both groups share a Chinese linguistic and cultural heritage, their educational systems, choice of teaching materials and study technology, and exposure to Western pedagogical practices often diverge. For instance, students from mainland Chinese universities may be exposed more often to local studying applications and platforms, while Taiwanese institutions frequently foster closer ties with Western partner programs and may use different approaches and tools when it comes to foreign language instruction. These regional differences can affect students' familiarity with study technologies. However, it should be noted that the majority of the participants are from Chinese mainland (17 Chinese mainland vs 3 Taiwan). Nevertheless, some completely consistent references and phenomena obtained in the interaction with Taiwanese participants can also be simply used as references due to the observable cultural differences.

2.2.3 Recruitment Procedure

2.2.3.1 Online Questionnaire

Potential participants were recruited through a targeted questionnaire. A comprehensive recruitment announcement, detailing the study's objectives and eligibility requirements, was distributed via a Chinese community group in WeChat in the first semester of the fall of 2024 (From September 2024 to January 2025).

The screening instrument systematically collected the following information to assess alignment with the predefined inclusion/exclusion criteria:

-
- Demographic and Academic Background: Full name, institutional email address, current degree level (Bachelor's or Master's), major field of study, academic year of enrolment, and languages of instruction for all completed and ongoing courses.
 - No prior immersion or study abroad experience in Francophone or Anglophone contexts
 - Confirmation of Mandarin Chinese (Putonghua) as the exclusive native language acquired during early childhood within familial and educational contexts.
 - Absence of participation in French- or English-medium immersion programs (e.g., CLIL) during primary or secondary education.
 - Absence of extended study periods at higher education institutions in Francophone or Anglophone countries.
 - Confirmation of a monolingual (Mandarin-only) upbringing, excluding individuals from Chinese–French or Chinese–English bilingual households with significant pre-tertiary exposure to French or English.
 - Absence of clinically diagnosed learning disabilities (e.g., dyslexia, attention-deficit disorders, hearing impairments) that could impact language processing or technology interaction.

Respondents also provided self-assessed proficiency in French and English across listening, speaking, reading, and writing (on a 1-10 Likert scale), as proficiency may impact how learners adopt and engage with technology—a variable that will be considered in the later analysis phase

2.2.3.2 Informed Consent and Scheduling

Respondents identified as eligible through the screening process received via email a standardized Participant Information Sheet and Consent Form prepared in bilingual format (Chinese/English) to ensure full comprehension. The Information Sheet explicitly outlined:

- The research purpose, specific procedures involved (including interview and potential task completion), and the estimated time commitment (~45–60 minutes).

-
- Detailed data management privacy: declaration for anonymization (e.g., assignment of participant codes, pseudonymization of transcripts), secure encrypted storage of only audio recordings and transcripts, and the scheduled destruction of raw identifiable data upon project completion.
 - Acknowledgement of minimal potential risks (e.g., minor fatigue, potential discomfort discussing language challenges) and anticipated benefits (e.g., contribution to scholarly understanding of technology-mediated language learning in EMI contexts).

Prospective participants were instructed to review these documents thoroughly. Willing individuals provided informed consent either by signing a PDF version and returning it via secure email or by digitally acknowledging consent. Only upon receipt of a valid, signed/acknowledged consent form were individuals formally enrolled as study participants. The principal researcher then contacted each consented participant directly to arrange a mutually convenient time for the subsequent 45–60 minutes semi-structured interview in person or online.

2.2.4 Process of data collection

2.2.4.1 Interview Format

Participants might choose between:

- **Online Interviews** via Microsoft Teams (if students were off campus)
- **In-Person Interviews** conducted in a reserved meeting room on campus (room booked through the university's facilities office, public shared places)

Duration: Each interview will last for 45 – 60 minutes.

Recording: All interviews were audio-recorded (and video-recorded if conducted online) using Microsoft Teams' built-in recording function or a digital voice recorder on phone for in person sessions. Automatic transcription features were activated when available to produce a first draft of the transcript. In order to facilitate the communication and to make the conversation as smooth as

possible and allow the participants to speak freely without language barriers, all interviews were conducted in Chinese, which is the native language of both the interviewer and the participants. Then the transcripts were translated in English thanks to Google Translation and were double checked by the interviewer.

2.2.4.2 Testing of the interviews

To ensure that the interview process would run smoothly and that the questions were appropriately framed, a series of simulating interviews were conducted. The test during the pre-interviews enabled the coherence, clarity, and comprehensibility of the questions and sub-question to be determined and assessed, as well as the identification of any modifications needed if obstacles to answering any question might arise.

Specifically, three native Chinese classmates from the Multilingual Communication program were recruited to participate in three test interviews, which served as part of the data collection. During these sessions, the participants' understanding of the questions and the overarching objectives of the study was observed. To pleasant surprise, the pilot interviews proceeded without significant issues: all three students demonstrated a clear comprehension of each question, grasped the research purpose, and were glad to share at length about their experiences using study technologies in an English - medium instruction (EMI) context.

Because their responses were so rich and relevant, these rehearsal interviews were decided to be incorporated as part of the dataset for analysis. Several questions that might otherwise have been biased toward the experiences of Chinese speakers in mainland China were refined with their contributions. For example, attention was reminded to be paid to the limitation of usage for Western applications such as Google and ChatGPT, which would be brand new tools for most students who are new to UCLouvain. This refinement ensures that the interview guide would be relevant to multilingual participants with different cultural and linguistic backgrounds. Taken together, these preparatory steps constituted my "testing interviews" phase. Taken together, these preparatory steps constituted the "testing interviews" phase. Through the conduction of structured

interviews with Chinese classmates, the meaningful and practical design of the interview questions was verified. This verification ensured that participants from diverse linguistic and academic backgrounds could engage with the material without confusion and that valuable responses would be elicited. The validity of the subsequent interviews was strengthened through this process, and a preliminary set of data was provided to enrich the final analysis.

2.2.5 Qualitative Study

Qualitative analysis was essential for understanding not only what technologies Chinese-speaking students used in their EMI or FMI studies, but also how and why they integrated these tools into academic tasks. All responses related to each type of technology, such as frequency, purpose, and perception, were first coded in Microsoft Excel. With the help of spreadsheets, students' responses are categorized by academic discipline and by four major types of language technology:

1. Machine Translation Tools & Online Library
2. Transcription Application (speech-to-text)
3. Streaming platform
4. Generative AI

Tables will be generated to visualize usage trends across categories, which will allow a clearer identification of patterns across disciplines, classes language (English vs. French), and regional background (Mainland China vs. Taiwan).

In addition to answering the main research questions posed before the interviews, new potential themes and concerns might come up in the qualitative analysis. A thematic analysis approach was employed to explore not only what technologies were used by participants, but also how and why they were integrated into academic tasks. This approach follows the six-phase reflexive thematic analysis framework pioneered by Braun & Clarke (2008) familiarization, coding, theme development, theme review, theme definition, and report writing. The interview data would be

analysed following the thematic approach that organized student comments under four interpretive categories, based on the thematic framework below:

1. Tools and Usage Scenarios

This dimension examines which language technologies are most frequently used by Chinese speaking students and in what learning situations they are applied in each type of language technology. It covers technologies such as audio/video recording applications, automatic captioning/transcription services, machine translation platforms, and generative AI assistants. Under this theme, the analysis focuses on the types of academic tasks targeted by each tool (e.g., class comprehension, reading assignments, writing drafts, test preparation); and the processes that students describe, whether it is single-step or multi-step, when integrating multiple technologies into a coherent learning process.

Students also clearly apply the study technologies with a subtle difference between reception-oriented uses (e.g., using subtitles, recording lectures to better understand content) and production uses (e.g., using ChatGPT to generate ideas or polish phrasing in a written assignment).

2. Language Differences: French vs. English

This dimension captures how the medium of instruction influences students' technology strategies. It focuses on differences in approach between English-medium and French-medium courses, although the samples for FMI are very limited, the common phenomena are still interesting to be discussed. Key aspects include students' reported levels of confidence in engaging directly with content in each language, their reliance on translations and direct language support tools (e.g. grammar checkers or subtitle services), and their decision-making process for choosing a specific combination of technologies when faced with linguistic challenges in either language of instruction.

3. Discipline and Cultural Background

How students' fields of study and regional cultural backgrounds may shape their preferences for and interactions with language support technologies. Disciplinary context captures contrasts

between cohorts—for example, those in technological sciences fields (e.g., engineering) who may prioritize tools for precise terminology lookup and lecture capture versus students in humanities or language focused programs who may value platforms that support textual analysis, vocabulary refinement, and discourse nuance. The cultural context component examines regional factors, such as technology ecosystems, platform accessibility, and digital literacy norms in Mainland China versus Taiwan, that could influence familiarity with Chinese versus international applications and attitudes toward user interfaces and content moderation.

4. Potential Risks and Psychological Factors

While most students appreciated the flexibility these tools enabled, interviews also revealed potential risks associated with their reliance on these learning technologies. Participants reflected on the potential downsides of technology use and its emotional impact. This spanned emotional support, such as the comfort or “feeling of safety” students reported when recording lectures for review, as well as concerns about over-reliance or ethical ambiguity (e.g., academic integrity issues related to AI-generated content).

These themes mainly aim to capture the students’ perceptions of institutional guidelines, their perceptions of acceptable boundaries for tool use, and the emotional benefits of using various technologies (e.g., reduced anxiety, increased confidence). The thematic dimensions provide an analytic structure for coding and comparing the participant responses but do not present empirical findings here; results will be detailed in Chapter 3.

Chapter 3: Results

This chapter presents the research results based on interviews with 20 Chinese-speaking students at UCLouvain. It starts with an overall overview of the language technologies these students use. The overview shows generative AI is the most commonly used tool (all 20 students use it), followed by machine translation (19 students), transcription applications (17 student), streaming platforms (15 students) and while online dictionaries are rarely used (2 students).

Next, the chapter analyses each type of technology one by one in the order of decreasing number of users. Start from generative AI, detailing which specific tools students use, how they use them in different academic tasks and differences in usage across disciplines and languages. Then it covers machine translation and online dictionaries, explaining popular tools, common usage scenarios, and differences in tool preferences between students from mainland China and Taiwan.

After that, the chapter focuses on transcription applications, introducing tools Chinese-speaking students in UCLouvain use and their main uses. Finally, the chapter explores streaming platforms, comparing usage of YouTube, MOOCs, and Bilibili, especially highlighting Bilibili's role in providing Chinese-language content to supplement class materials and ease cultural adaptation.

All these analyses aim to answer the study's research questions, laying the groundwork for the discussion of findings in Chapter 4.

3.1 Overall results

Across the 20 participants interviewed, all reported using at least one type of language technology to support their learning in English or French medium courses. However, the specific tools and methods of use varied considerably. Table 3 summarizes how many participants mentioned each type of tool during their interviews.

Table 3: Frequency of mentioned study technology

The following table 3 below, shows the frequency of mentioned tools of study technology used by the research participants.

Tools	Generative AI	MT&Online dictionary	Transcription Application	Streaming Platform
N=20	20	19	17	15

Generative AI tools such as ChatGPT, Wenxin Yiyan (ERNIE Bot), or Kimi were mentioned by all 20 participants as shown in table 3 above. Most of them used generative AI for paragraph or sentence translation purposes (e.g. from English - Chinese / French - Chinese or vice versa) for its advantages of the expansive training corpora and enhanced capacity for logical coherence and cultural context handling. GenAI tools show their stronger logical analysis capability when they encounter interpretation and translation of culturally diverse content, while they are also used for more creative tasks, such as for brainstorming essay ideas or simulating practice dialogues.

Machine Translators (e.g., Youdao Translate, Baidu Translate, DeepL, Google Translate) were mentioned by 19 out of 20 participants, making them one of the most widely adopted technologies after GenAI. These tools were used both for understanding course materials and for drafting writing assignments. Online dictionaries were mentioned very little: only 2 of 20 respondents mentioned them, making them the least used tool overall. This may be related to the fact that online dictionaries are too narrow in functionality, which may indicate that people are moving away from using standalone dictionaries and towards using integrated translation applications or multi-functional tools such as machine translation mentioned above. This shift suggests a growing preference for convenience and efficiency, as these tools offer real-time translations and additional features like pronunciation guides and usage examples, making them more versatile for users' diverse linguistic needs. The MT and the online dictionary will be discussed together due to their similar function.

17 participants who mentioned using transcription tools such as smartphone recorders. 4 students mentioned that they would use transcription software such as Lark, ITourTranslator, iFlytek Hear, which originated in China.

Streaming Platforms equipped with auto-subtitles were mentioned by 15 out of 20 participants, showing that video content plays a key role in language learning. Of these, 8 specifically referred to Bilibili, while others mentioned YouTube or MOOC platforms. Bilibili was especially popular for its bilingual subtitles (English – Chinese) and Chinese-language learning communities.

Other Tools were mentioned by 4 participants, including:

3 participants (Linguistics, Law, FLE) who used Google Search as a strategy for looking up targeted academic articles or technical terms / words for there are more detailed explanations and more choices online with the help of Google, with rich examples and online resources to help with understanding.

1 participant who mentioned using Grammarly to help check syntax but rarely used and will eventually turn to ChatGPT for help, likely due to limited access or subscription constraints.

This distribution suggests that generative AI has now become the most universally adopted tool, followed by MTs and streaming platforms. Traditional online dictionaries appear to have been replaced by more versatile tools that combine translation, definition, and usage examples. Meanwhile, recording lectures remains a practical and widely used strategy, especially when paired with later transcription or summarization.

In the remainder of the chapter, each type of the study technologies will be analysed according to the answers collected.

3.2 Generative AI

Consistent with broad trends in higher education, all the 20 participants reported using generative AI in their studies. ChatGPT emerged as the most frequently used tool. Learners employed AI for a variety of tasks, including writing and revising text, translating between Chinese, English and French, and summarizing course materials. For example, P8 (Electrical Engineering) student explained: “I let the AI help me write code...if I say I want to build something, it tells me step by step how to do it.” Five of the participants who using ChatGPT for writing support admitted “can’t live without ChatGPT and translation applications; makes life so much easier in UCLouvain.” In contrast, P3 (Linguistic) reported using ChatGPT mainly to polish language: “it helps check grammar because I always feel lack of confidence of my grammar, and I will also ask for alternative words to avoid repetitions”, which help then refine the assignment. In summary,

participants' tasks fell into categories such as drafting and editing essays or reports, generating outlines or creative ideas, translating course content, and even programming. The data table shows, for instance, use cases like translating Chinese text to French, asking for email templates, summarizing long readings, and generating formulas for mathematics, reflecting this range of academic tasks.

Table 4 GenAI tools and using context by academic discipline

The following table 4 below, presents the GenAI tools along with the use of context by academic discipline, showing the different AI tool use contexts by academic disciplines of research participants.

Tool Name	Users (n=20)	Using Context	Discipline	Origin
ChatGPT	20	Writing inspiration, proofreading, grammar checks, translation	All	US
KIMI	3	Write formal report; Making summary; Generating texts	Multilingual Communication, Law	China
Copilot	3	Ask for reference; Translate whole paragraph	Linguistic, FLE, Geographic Information Science	US
ERNIE Bot	2	Generating texts; write formal report	Public Administration	China

Claude AI	1	Generating paragraphs	International Business Management	US
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Table 4 above reveals that ChatGPT is the only GenAI tool used by every participant (n = 20), thanks to its ubiquity and versatility across all disciplines. Students turned to ChatGPT for a broad range of tasks, from writing inspiration, proofreading, grammar checking to translation, which shows its role as a general-purpose academic assistant. Its U.S. origin likely contributes to its strong performance under the English context, making it especially valuable in EMI settings where precision in academic writing and fluency in expression is paramount. Because every discipline represented in our sample, from Technological Sciences fields to Social Sciences majors, all reported using ChatGPT, it appears to have become the “go-to” GenAI resource for Chinese-speaking learners navigating both English and French coursework.

Beyond ChatGPT, KIMI and Copilot is the next most frequently mentioned tool (3 users for each). KIMI is used among students in Multilingual Communication, Management, Public Administration, and Law. These disciplines demand careful and literal handling of complex texts: whether legal documents, policy reports, or multilingual (EN/FN) materials, and KIMI’s strength in summarizing long passages and rewriting sentences aligns with those needs. Its Chinese origin may enhance its ability to handle Chinese-language inputs and outputs, providing reliable paraphrasing support for learners who first process content in Chinese before drafting in English or French.

As for Copilot which is developed by Microsoft in the U.S., was favoured by Linguistics, FLE, and Geographic Information Science students specifically for translation and asking for reference, tasks that require both linguistic nuance and domain knowledge. With both small group of users respectively, ERNIE Bot and Claude AI and could be reported as a niche tool among the

participants: both of them are used to generate text, while ERNIE Bot was used by the student from Public Administration for writing especially for formal report.

Overall, the table highlights a clear hierarchy of tool adoption: ChatGPT's universal presence; moderate uptake of China-based summarization tools like KIMI in text-intensive disciplines; and selective use of specialist platforms (Copilot, Claude AI, ERNIE Bot) where specific features, paragraph-level translation, are required. The origin of each tool could explain how both American and Chinese developments contribute distinct advantages: global tools excel in English writing and cross-language creativity, while Chinese tools offer stronger Chinese-language integration and targeted summarization for learners accustomed to China's digital ecosystem.

The following table 5 presents the frequency of different AI tools used by students in different contexts.

Table 5 Frequency of different usage

Context	Users(n=20)	Tools Uses
Asking for inspiration for school assignment	10	ChatGPT
Translating during reading academic texts	9	ChatGPT, Copilot
Making summary of the course	9	ChatGPT
Generating texts for writing assignment	8	ChatGPT, KIMI, Copilot, ERNIE Bot, Claud ai
Refining the assignment	7	ChatGPT

Explaining definitions of specific terms	6	ChatGPT
Coding	3	ChatGPT
Generating templates of emails	2	ChatGPT
Checking grammar	2	ChatGPT
Asking for reference	2	Copilot, ChatGPT
Lower plagiarism rate	1	ChatGPT

Table 5 shifts focus from the disciplinary preferences (shown in Table 4) towards specific academic contexts, basically in which the students deploy GenAI tools, show that 10 research participants generally turn towards ChatGPT AI tool while asking for inspiration for school assignment, with the help of ChatGPT. 9 students reported using the AI tools of ChatGPT and Copilot for translating during the reading of academic texts; at the same time, 9 students use ChatGPT to make summary. The next most popular uses of these AI tools were for Generating texts for writing assignment, refining the assignment and explaining definitions of specific terms. Also, only 3 students mentioned the use of ChatGPT for coding purposes. Finally, few of students mentioned that they used GenAI to “lower plagiarism rate” “generate templates of emails” “check grammar” “ask for reference”.

In all these different contexts, ChatGPT was present, making it the most popular AI tool among students.

3.2.1 Discussion

Interviews results show that generative AI tools (particularly ChatGPT) are highly prevalent among Chinese-speaking students, far surpassing other tool categories (such as online dictionaries

and video platforms). In our sample, 20 respondents reported using ChatGPT to assist with learning activities in UCLouvain. Half of the students stated that they use ChatGPT to find inspiration or polish text for “almost every writing assignment. P1 (Linguistic) student mentioned using ChatGPT to “translate entire paragraphs” while reading English articles and P4 (Management) to “summarize the key points of long articles” when reviewing for exams. P3 (Linguistics) student stated that ChatGPT helps “check grammar on writing assignments” and improve her English writing accuracy. In fact, respondents’ ChatGPT usage primarily focused on reading comprehension and writing assistance.

In terms of reading comprehension, students often use ChatGPT to simplify reading material, such as “make summary of long articles,” “Make an outline of the course,” or “Translate the whole paragraph” (from English to Chinese, French to Chinese, etc.). For example, P10 (Law) student admitted of using ChatGPT to “define professional terms” during exam review, helping understand course concepts. GenAI is also used as a productive tool. ChatGPT is used for writing starters and polishing, such as “providing writing inspiration,” “finding alternative words or terms for essays,” and “translate the whole paragraph”, according to P11 (Law).

The student also revealed that when assignments are too repetitive, she asks ChatGPT for example templates; “polish text” and check grammar during each writing exercise seem to be a main function as well. Even students in science and engineering use ChatGPT to assist with programming (such as writing code) or report writing. P8 (Electrical Engineering) student reported that using ChatGPT reduced the “plagiarism rate” on her English assignments because the AI helped with rephrasing the ideas in different ways.

Other generative AI tools have been mentioned: Copilot, for example, was used to assist with reading materials or programming. P15 (Geographic Information Science) student occasionally used Copilot to “translate entire paragraph.” According to P14 (Multilingual Communication), the AI assistant “KIMI” was used to write Chinese reports or summarize French/English materials.

Overall, it is reasonable that ChatGPT was the most popular choice due to its comprehensive functionality and leading cross-language nature.

A comparison of usage in English-language environments (EMI) and French-language environments (FMI) reveals that Chinese-speaking students' strategies for using generative AI vary slightly across different language courses: In English-taught courses, ChatGPT was primarily used to translate English materials, generate English writing ideas, and assist with programming. In French-taught courses, some students used ChatGPT directly to improve their French writing. For example, P20 FLE (French as a foreign language) student from Taiwan who take French-language classes reported using ChatGPT for nearly every French assignment to "polish writing tasks" and "organize writing inspiration." Consistent with research by Kosmyna et al. (2025), reported that generative AI can improve language performance and autonomy study. After using these tools, they expressed a greater grasp of academic material. P2 (Public Administration) student remarked, "Using ChatGPT to understand the content of the article makes me feel more confident in my studies." This aligns with the findings of Xu et al. (2024), who noted that using ChatGPT significantly improved Chinese students' foreign language learning self-efficacy and learning enjoyment. Students gained more encouragement from "dialogue" with AI, which in turn made them more willing to face language challenges.

However, some differences across disciplines are also observed: Science and engineering students tended to use generative AI more for technical tasks, such as programming and translating specialized terminology, whereas social science students primarily used it to assist with writing and translating academic texts. This is consistent with the literature describing the needs of various disciplines. While most respondents actively use ChatGPT to assist with learning, some students remain cautious about the reliability of its generated content. For example, P9 (Literature) student explicitly expressed low trust in natural language generation technology: "I don't trust current natural language generation software. Mainly, I feel its information sources are unreliable and it fabricates a lot of things when it comes to output production." This attitude suggests that respondents do not rely solely on ChatGPT but rather maintain a certain level of critical judgment.

P7 (Linguistic) also emphasized that AI tools are still used appropriately in specific scenarios, such as obtaining templates for writing or polishing articles: “For example, if I want to write an email, I’ll describe the background to ChatGPT and then have it provide a template. Alternatively, I need to interfere when I ask it to polish my article: I’ll have ChatGPT tell me all the changes I’ve made, and then manually proofread it.” This suggests that the student adopt a hybrid strategy of “technical assistance + manual review” when using AI, improving efficiency while proactively avoiding potential misleading content, which echoes with Yang et al. (2024). Observation that AI users need to develop technological proficiency and confirms again Xu et al.’s (2024) conclusion that AI’s ability to enhance language learning self-efficacy is not based on blind trust but rather on students’ active control over the learning process.

Regarding advantages and risks, interviewees perceived generative AI as providing significant benefits. All the participants praised AI for efficiency: P5 (Economy), P6 (Management), P12 (European Law) noted it can quickly digest and translate content (“it helps me understand faster”), P5 additionally appreciated having an AI as a “personal tutor” who repeats lecture material on demand. Creativity and inspiration were also valued; for instance, 10 students used ChatGPT to brainstorm email templates or speech outlines when they “didn’t feel like writing.” Language support was frequently cited: ChatGPT’s strong English polishing was contrasted with rougher Chinese output, but overall, it is helpful to improve their English writing. As emphasized by the participants, ChatGPT and translation tools are the “two that I really can’t do without.” P4 (Management) mentioned that using ChatGPT to “outline the course” during review helped with quickly grasping key points, while another economics student said that using ChatGPT gave them “greater confidence when practicing English homework.” These responses resonate with the benefits noted in the literature review that ChatGPT can improve learning satisfaction and engagement through enriched learning resources and personalized support (Dai & Wang, 2024).

However, several barriers and risks were also raised. Overreliance was a common worry: for example, P2 (Public Administration) admitted “I rely on the translator from French to Chinese too much, if I’m just reading its Chinese translation, I don’t really listen to what the teacher says in

French,” suggesting AI use can weaken language immersion. Others mentioned the tedium of correcting AI flaws: P9 (Literature) student joked that ChatGPT can be “pretty dumb” when it repeats wrong steps, requiring manual correction.

Ethical and institutional uncertainty also surfaced. Some interviewees were anxious about plagiarism or “AI-detection” tools: P19 (Public Administration) student recounted that an AI-checker flagged their group’s report as 97% AI-generated, forcing them to spend a night rephrasing it via another tool. The student even questioned whether using a translation app counts as “using AI” for graded work, reflecting confusion about acceptable use. No one reported explicit university guidance on GenAI while there is clear instruction on the page of UCLouvain, leaving learners to navigate grey areas themselves. In summary, while students appreciated AI’s convenience and assistance, they also felt tension around dependency, accuracy, and academic integrity.

Previous research has suggested that “AI ghost-writing” could lead to academic dishonesty (Yang et al., 2024). P6 (Management) indicated that students were aware of this issue: “its (writing in) Chinese is unnatural.” P5 (Economy) also showed the concerns of overreliance on ChatGPT but also gave the solution: “When programming and modelling, I would ask ChatGPT to check some key ideas and factors I have considered to see if they are correct or if there are any omissions; but I would never let ChatGPT do everything for me.” In this context, human intervention is guaranteed to avoid generating inaccurate information that AI might introduce or produce.

Some students also worried that relying on tools like ChatGPT could lead to unintentional error generation information, even though they used AI mainly for idea generation or grammar checking. Several students expressed “uncertainty” about the ethical limits of AI use: “Is it okay to let ChatGPT rewrite or that I ask them to refine my whole introduction? Where’s the bottom line of the accessible educational resource in UCLouvain?” These comments point to again the lack of awareness of UCLouvain’s institutional guidance on responsible technology use. Although UCLouvain provides clear Open Educational Resources outlining acceptable practices and ethical boundaries (Jacqmot et al., 2020), many students reported they were unaware of such guidance

existed, highlighting a gap between policy provision and effective dissemination of the access. This theme thus brings together affective, ethical, and policy-awareness dimensions to inform the development of more effective support structures in multilingual EMI/FMI contexts.

As P8 (Electrical Engineering) student stated that using ChatGPT help “reduce the rate of plagiarism”, this may indicate a greater trust in the originality of AI-generated content, but it also indirectly reflects a concern for academic standards. Overall, consistent with (Kosmyna et al., 2025), students have ambivalent attitudes toward AI: they appreciate its efficiency in handling routine tasks, but they also express concerns about the reliability and academic integrity of its answers. In our study, many respondents mentioned using AI answers as drafts or references, then verifying and refining them themselves, indicating that while they actively use technology, they are also capable to maintain a certain critical approach and have a clear navigation of GenAI usage.

3.3 Machine Translators and online dictionaries

Machine translation (MT) emerged as one of the most widely adopted technologies among our 20 participants, with 19 of them reporting regular use of MT apps. The behaviours from multiple angles will be analysed: tool popularity, usage scenarios, language-pair patterns, disciplinary variation, and regional differences to build a nuanced picture of how MT supports Chinese-speaking learners in bilingual university contexts.

Table 6 Frequency of different MT and origine

The following table 6 presents the MT tools used by the research participants, illustrating the tool’s origin and popularity among users.

Tool	Origin	Users (n = 19)	Available in China?
Google Translate	USA	13	No
DeepL	Germany	11	No

French assistant	China	5	Yes
Eudic	China	5	Yes
Youdao Translate	China	2	Yes
Baidu Translate	China	2	Yes
Reverso	France	1	Yes

The Table 6 above shows the use of western MT tools (DeepL, and Google Translate) along with the other MT tools by the research participants, illustrating the tool's origin and popularity among users. The results show that the western MT tools (DeepL, and Google Translate) accounted for most mentions. While the Chinese MT tools (Youdao, Baidu, French assistant, Eudic, Reverso) had a smaller number of mentioned but remained important because of Chinese students' habits and their reliability within the China's digital ecosystem. These tools are generally engineered for the Chinese-speaking users and explains detailed explanations in Chinese of target language (English or French) vocabulary, often enriched with illustrative examples and usage contexts.

Such translation tools, like French assistant (Language + Assistant) are basically designed as Chinese/English, and some largely used languages such as Japanese, and Korean. For the Romance languages such as French and Spanish, there is the so-called French/Spanish assistant, which is specifically designed for one target language of Chinese. They both do offer detailed explanations in Chinese, just like the English-Chinese translation tools. The reason why they choose different apps among Youdao, Eudict and iFlytek varies from student-to-student. Some MTs has more soft functions, and besides translation, they do also have functions for memorizing vocabulary, reading the electronic English books and even socializing. While there are some MT tools with the simpler interface and only just the translation functions, they also have less advertisements. The different users choose according to their needs, but users are influenced by the ranking in the app store or recommendations from their friends.

3.3.1 Usage Scenarios

The participants described three main scenarios in which they frequently use machine translation (MT) tools during the interviews, reflecting their various needs in academic, professional and daily life. First, it involves immediate queries during class, which means that the learners rely on machine translation to quickly understand the words they do not understand on the slides in class or when they encounter certain unfamiliar words while listening to the lecture, which affects their understanding. For example, in the interview of the participant P6 (Management) student, said: “I use DeepL to quickly look up new words in almost every class”, which emphasizes the role of the tool in instantly interpreting unfamiliar technical expressions in specific disciplines. The functionality of this immediacy of problem solving brought about by these “just-in-time” lookups allows students to maintain fluency in the classroom, preventing learners from missing key words due to confusion or even repetition of a word in a conversation or visualization, thus effectively supporting real-time comprehension.

However, some participants pointed out that sometimes when they heard a word that they were unsure of and that they wanted to consult the machine translator, they often become too preoccupied with determining the correct spelling of a word they heard since the word might hinder their comprehension during class, so that they can retrieve the accurate meaning through MT. This whole process might result in wasting too much time and missing out on understanding the next part of the lecture, thus affecting classroom comprehension.

Second, when it comes to comprehension reading works, participants use MT in a complementary way with personal intervention. A common practice is to put the entire paragraph into the translator for translation to grasp the overall meaning of the original text in their most familiar language. As P2 (Public Administration) explained, “When I read English articles at home, I paste the entire translation into Baidu Translate to get the gist, and then I will try to read in the original text myself.” This approach allows students to become familiar with common text structures and patterns of argumentation before they actually begin reading the original text. However, previous research

indicates that such reliance on MT may hinder development of deeper reading strategies, such as inferring meaning from context and appreciating sentence level nuance, and foster dependency on translation tools (Reidina & Yuliani, 2020). While it clearly helps with initial comprehension and can reduce understanding load when reading in a second language, some drawbacks such as reliance on MT, and the fact that they have already a whole framework and comprehension of the article before engaging with the original text, learners may miss opportunities to develop deeper reading strategies and skills, such as inferring meaning from context, or understanding the nuances of sentence structure and vocabulary choice. Frequent use of machine translation as a first step may foster a sense of dependency that makes students unwilling to effectively struggle with authentic material. Over time, this habit of relying too much on MT may obstruct them from building confidence and autonomy in academic reading.

Another interesting MT use is that some participants focus on finding alternative words or more proper and nuanced expressions with the help of MT. P20 (FLE) described using Reverso to “find different ways and synonym to express the same terms in order to avoid repetition in French,” demonstrating that how MT can assist in academic writing by suggesting more formal or precise vocabulary, provided accuracy is preserved, which can enrich the variety of vocabulary under the condition that accuracy of professional writing is assured.

Finally, machine translation tools play a crucial life in Chinese-speaking students’ daily lives and self-study outside the classroom in Louvain-la-Neuve. In everyday digital interactions, such as browsing WeChat news feeds or shopping online. Learners like P6 (Management) student noted, “I use Google Translate to translate almost every new word I see on WeChat or shopping websites every day,” demonstrating how machine translation supports incidental vocabulary acquisition. Similarly, for printed materials encountered on campus or in the community, student P19 (Public Administration) used Youdao’s photo translation feature and stated, “I use Youdao’s photo translation feature when reading paper flyers or menus,” thereby bridging the gap between paper texts and digital translation. Overall, these scenarios suggest that for Chinese-speaking students at UCLouvain, machine translation is not only a passive comprehension aid in formal instruction,

but also an active resource for writing improvement and an everyday support tool that extends learning opportunities beyond the classroom.

3.3.2 Different discipline

Table 7 Main MT and using context by academic discipline

The following table 7 below, presents the MT tools along with the context in which they are used by students based on their academic discipline.

Discipline	Main MT Tools	Usage
Economics & Management	DeepL, Google Translate, Eudic	Rapid check of technical terms
Public Administration & Law	Youdao, Baidu Translate, DeepL, Eudic	Whole paragraph translation, legal vocabulary
Linguistics & Language Education	DeepL, Linguee, Reverso, Eudic, French assistant	Comparing multiple outputs for nuance
Engineering	Google translate	Quick checkup in class

The MT tools usage in different contexts by students based on their academic discipline is shown in table 7 above. The different usage patterns basically across various disciplines illustrate the use of different MT tools. Like for example, in the field of Economics and Management, vast majority of students prefer to use DeepL, Google Translate because of their natural, and authentic outputs, along with the ability of rapidly checking the technical terms, which closely resembles the style of published articles and reports. These students mainly rely on machine translation to quickly

interpret specialized terms, as P4 (Management), P5 (Economy) pointed out that it can easily and quickly make obscure economic terms in class or literature reviews more accessible.

The students in Public Administration and Law prefer to use Youdao, Baidu Translate, DeepL, Eudic because of their needs for translation as well as legal vocabulary. Also, they provide richer contextual examples to help them understand the function of legal terms and policy terms in authentic sentences. To avoid any errors or ambiguities, one participant admitted the action of double check Baidu Translate suggestions with DeepL when they cannot make their own judgments and use Chinese annotations to verify subtler meanings. This dual-tool strategy shows their need for accuracy and consistency in their understanding of administrative and legislative texts.

Students specializing in the Linguistics and Language discipline, also show the deeper engagement with MT tools. They do routinely cycle among DeepL, Linguee, Reverso, to enter same text segment into each of these engines, and then meticulously compare the resulting translations. Their goal is not merely to grasp the general meaning, but to detect subtle nuances in register, connotation, and grammatical structure, insights that reveal how each platform's algorithms prioritize different linguistic features. Students in the Multilingual Communication, however, take a middle ground: they alternate among Eudic, DeeL, French assistant for French and English tasks, and for lookups between Chinese and target languages. They also use it for comparing the multiple outputs for nuance and this use is more conversational, like translating of social media posts, emails, or the everyday documents, ensuring this tool handles mixed instructions fluently and are fast enough for frequent, every day when they encounter new words.

For example, P3 (Linguistics) student pointed out that they observed that DeepL produces more natural phrasing but occasionally smooths over technical terms, making the translation less professional, while Eudic offers varied contextual examples that offers alternative syntactic constructions. Youdao, by contrast, may favour literal renderings that expose the underlying word by word correspondences and its multiple functionalities: detailed explanation, as P15 (Geographic

Information Science) admits that it helps with learning a new word, and photo translator. After such comparative analysis reflects their disciplinary training: as future researchers and educators, they are primed to investigate not only what study technology is chosen in the context, but how and why it is being chosen. By deconstructing these nuanced differences, they deepen their understanding of subtle linguistic difference and refine their ability in the critical use of translation technology. Finally, technological sciences or engineering students used the MT tool of Google translate occasionally for quick checkup in class like students in Economics & Management do.

Among all the MTs have been mentioned, the DeepL is most commonly used by these students. It is used to translate in academic abstracts or summarize particularly complex technical passages as an input as much as for producing or extending writing assignments as output, since as P19 (Public Administration) representative indicated, “I might use DeepL to translate directly the paragraph that I write in Chinese, but most of the time, I write in English first, then paraphrase using the translation output”. Their selective use of different MT shows a recognition that while MT can help understand specialized content within an EMI context.

3.3.3 Regional (Mainland vs. Taiwan) Differences

Participants from mainland China showed a clear preference for Chinese MT services such as Baidu Translate and Youdao Translate, primarily because these tools offered a more stable and an easier access on campus networks before they came to UCLouvain. Only when they came to Belgium, the moment that they managed to connect without VPN did they switch to services like DeepL or Google Translate. A recurrent theme brought out by the participants from mainland China was the frustration caused by VPN dependency. Ten participants reported that they tried to use DeepL or Google Translate back when they were in China, but the VPN would “sometimes fail to load” on campus WIFI, resulting an immediate fallback to Chinese alternatives. However, P15 (Geology) student reported that while Chinese MT tools generally delivered quicker access, they often produced overly literal or grammatically wrong translation result. As a result, students frequently found themselves manually editing machine output or cross-referencing with western

MT engines whenever nuance or syntactic accuracy was at stake. This trade-off between accessibility and reliability highlights a persistent tension: Chinese tools win on speed and availability before Chinese students come to Belgium, whereas western tools which is reachable when the students arrived in UCLouvain, are usually prized for their superior fluency and contextual sensitivity of their output. P19 (Public Administration) also indicated “when it comes to recognize words in verbal, probably the Chinese applications are better because that their Chinese-English specific corpus is larger and more diverse, capturing nuances better. Also, its contextual understanding seems superior, making translations more coherent and accurate, especially in complex sentences.” For translation tasks from Chinese to other languages, such as Chinese-English speech-to-text, Chinese-customized MT sometimes performs better.

In contrast, the participants from Taiwan (n=3) habitually relied on Google Translate and DeepL without hesitation, reflecting their more globalized digital habits and fewer access restrictions. This difference in tool choice between mainland China and Taiwan, even though both are situated in a Chinese-speaking context, shows how regional network policies and digital ecosystems shape learners’ first choice resources for language support.

Taken together, these findings reveal that students employ MT both as a rapid comprehension aid and, less commonly, as a drafting assistant for selecting alternative words and expression for writing assignment. Their choice of tool depends on task urgency: quick lookups in class demanding immediate results. When it comes to the requirements for writing assignments, P19 (Public Administration) student reported that for English-medium course, direct English to Chinese translation support is preferred, because this is the most intuitive way to present the translate results. Whereas French-taught courses would involve more complex multi-step translations, for instance, it was noticed that students who take classes, like P3 (Linguistic) and P20 (FLE) taught in French are more likely to use the source language or English to understand new concepts, i.e. French-French, or English-French due to the similarity of those two languages. This may be related to the study habits gained on what they are major in. International interviewed students who take classes in French (from linguistics, French teaching) have a closer relationship

and engage more with the language, so they pay more attention to language learning and are more sensitive to the small nuances when it comes to reading an article or composing one. Discipline-specific terminology further drives selective use of specialized, corpus-based MT like Reverso in legal and business contexts.

3.3.4 Online Dictionaries

In fact, while the majority participants described relying on MT for immediate comprehension, the interview data suggested that Chinese-speaking students at UCLouvain rarely use online dictionary resources. Only two students, P7 (Linguistic) and P9 (Literature) reported using standalone online dictionaries such as Wiktionary or Larousse, while the vast majority prioritized machine translation (MT) tools. This preference can be explained by several interrelated factors. Dictionaries, optimized for lookups of single words, offer rich lexical details but require examining entries individually, however a process students found inefficient when processing dense lecture materials or lengthy redaction. In contrast, MT tools translate entire text blocks instantly, aligning better with comprehension needs of most of the non-native students, whose priority is to quickly understand the content rather than language learning. The flexible translation style of machine translation is also more favoured. When reading long articles and within a limited time, machine translation can translate a whole sentence or a whole paragraph, which can better meet the needs of most students. Under time-limited EMI class environment, which means that students might would lose key information by choosing to understand the previous content that might not be important. Additionally, MT's search-engine-like interfaces (e.g., Google Translate, DeepL) proved more accessible than specialized dictionary sites requiring navigation of complex menus. Ultimately, despite dictionaries offering greater lexical precision, students overwhelmingly chose MT for its immediacy and lower cognitive demand, opting for the path of least resistance to keep pace with EMI coursework. In their case, online dictionaries are for looking up new words but rarely took the initiative to search in the library database to ask for the detail explanation or different usages of the word.

While P11 (Law) student considered dictionaries might be sufficient for simpler tasks, like seizing more precise understanding of a certain word, most of the students pivoted to MT as reading volumes or assignment complexity increased. Though P7 (Linguistic) distrusted MT's reliability compared to "authoritative" dictionaries: "I don't trust full-text translation since it's purely machine-generated. Otherwise, it depends on the context; most of the time, I only need a single word (to fully understand the sentence or paragraph). Often, I know the word but need to confirm its usage, so I rely on a dictionary". The participant explained how he used online dictionary, "I usually use a computer to take classes. I just need to jump to the browser interface and directly enter the words I don't understand." This strategy reflects a need of the participant for a deep understanding of where and how the source of the resources was obtained and ensure their reliability instead of just "grabbing" the meaning of words. This is closely related to the professional background of the participant (Linguistics). In this case, Google Dictionary and Wiktionary are seen as part of a broader online dictionary ecosystem, and participants have begun to integrate these tools into their learning habits, rather than viewing them as temporary, shallow translation substitutes

The P9 (Literature) student also pointed out that using the Larousse online French dictionary to look up words is preferred. Larousse not only provides French definitions, but also lists many synonyms, antonyms, etc., to help with a better understanding and the vocabulary extension that was not covered in class. During the interview, P9 said, "I don't really need to read the literal articles since I'm just an undergrad, so Larousse can answer all my needs for the moment". In this case, academic tasks were limited to comprehension of lectures, short readings, or structured assignments. Tools like Larousse, which provide concise definitions, synonyms, usage examples, and even grammatical tips, are considered adequate for the functional needs of everyday courses, especially in the early stages of higher education. However, P9's response ("I'm just an undergraduate") reflects an implicit belief that "deep engagement with scholarly literature is for future work," such as graduate study or dissertation preparation. This mindset suggests a view of technology use, which is that in the early stages of learning, students seek tools only to accomplish

the most basic comprehension tasks, whereas “more serious scholarly reading” or “literature collection” are viewed as tasks for advanced practice. This thinking may cause the learner to alter their later usage habits when engaging in more advanced research behaviours, such as consulting primary sources, using scholarly search terms.

This comparison reveals an important issue the extent to which a technology meets learners’ needs is closely tied to their disciplinary backgrounds and the cognitive objectives they associate with a given task. When students are trained to engage in critical language analysis, such as questioning linguistic nuances, examining grammatical structures, or tracing lexical origins, they are more likely to utilize structured resources like online dictionaries. This preference stands in contrast to reliance on machine translation (MT), which typically offers less formalized information and limited explanatory content in the target language.

This phenomenon also coincides with the view of Abimbola (2023) that students may not engage in active language learning such as vocabulary acquisition, grammar practice, and language use in context once students rely too much on fast and result-oriented tools (such as MT); but when the goal turns to language processing and deepening learning, where the autonomy is demanded when using online dictionary, students are more likely to use dictionary resources and develop metalinguistic awareness.

3.4 Transcription applications

In our EMI context, transcription applications which are equipped with automatic captioning and transcription tools quickly became indispensable speech-to-text companions for most of Chinese speaking learner, with 17 out of 20 participants reported using one or more of these tools, including recording, which demands students post auto-transcribe and dedicated transcription apps like iFlytek Hear.

Table 8 Frequency of different usage

The following table 8 below, presents the choice of different MT tools along with their usage contexts by different students.

Tool	Users	Usage
Recording function in the smartphones	12	Note-taking after class (“complete the note”, “backup plan”), revision after class
Subtitles	7	When speed the videos up, when watching Youtube videos, when the content is hard to understand, every time watching videos in Youtube.
iFlytek Hear	2	Transcribing interviews, lectures for revision
Feishu(lark)	2	Transcribe the class into text
iTourTranslator	1	Real-time transcription in class
Tencent Meeting	1	Mandatory School requirement for homework

The output in table 8 above, shows that the students utilize different MT tools depending upon the context (i.e., from the informal video learning towards formal academic settings), the underlying goals still are very similar, of closing comprehension gaps, preserving information, and managing the language as well as cognitive demands in real-time respectively. A total of 12 participants said they regularly record live lectures to “complete their notes” afterward or as a backup in case they

miss details. Four participants, P7 (Linguistic), P13 (European Business and Economics), P16 (Multilingual Communication), P18 (Multilingual Communication) mentioned that they would record the class as a backup plan because they were not confident that they could fully understand the class, so they would usually record the class content without the teacher's authorization. P16 (Multilingual Communication) explained teacher in the class will mark "critical judgment points" orally (parts where the professor discusses theoretical frameworks or case study details) in a business lecture, which might help the student export the clear and annotated transcript for group learning.

P13 (European Business and Economics) said that the recording played a psychological comfort role, "it's more of a psychological comfort, a backup for me", that is, even if they did not fully understand the class content, they would not feel too anxious for not keeping up with the class because of the backup plan of recording. However, most participants also admitted that they would most likely not listen to the class content again after class, for the reason of high time consuming to re-listen the lecture, a high investment but low return of this action. "On one hand, if you actually review the recordings, they're very useful. But sometimes you might rely on the recordings too much and end up not paying attention in class because you think you'll just listen later. But in the end, you don't listen to them because there are too many recordings. So, you end up neither paying attention in class nor reviewing the recordings." As P13 (European Business and Economics) mentioned, the absence of balance between using the recordings as an aid and assistance may eventually lead to negative consequences: due to the compensatory mentality, students do not pay attention to the class content during class and put all their hopes on after class, but they will not really listen to the playback after class. Indeed, these recordings are more like a psychological buffer than a true learning aid. They reduce the pressure in class, although the task of reviewing notes after class is most of the time missing. From a pedagogical perspective, this means that simply providing students with recordings is not enough since the recordings were not really used in most cases; instead, lecturers may need to integrate structured, time-limited review sessions or

provide summary transcripts to transform recordings from a passive comfort to an active learning resource to ensure that students can deepen their understanding and improve their notes.

Table 9 Detailed usage of the tools mentioned

The table 9 below, illustrates the detail usage of the mentioned transcription applications in previous section, with description of their function, language support, accessibility, and working.

Tool	Function	Language Support	Accessibility	Typical Working process
Recording	Capture full lecture audio for later review	English spoken lecture L2	Universal (smartphone or digital recorder)	Record → Export audio → Transcribe (manual or with any app) → Edit
iFlytek Hear	Automated speech to text EN ↔ CN in class	Chinese ↔ English	Freely downloadable in China, need to pay to unlock advanced features	Record/transcribe in app → Export Chinese transcript → Revise
iTourTranslator	Automated speech to text EN ↔ CN in class	Chinese ↔ English	Freely downloadable in China, free version	Live captioning in class → Save session transcript
Feishu(lark)	Automated speech to text EN ↔ CN in class	Chinese ↔ English	Freely downloadable in China, free version	Live captioning in-class → Save session transcript

Subtitles	Automated speechtotext EN – CN in class	Chinese ↔English, French↔ Chinese	Free	Live captioning of videos
Tencent Meeting	Automated speechtotext EN – CN in class	Chinese ↔English	Free download	to HD video and audio conferencing

There are a lot of transcription tools, but as shown in table 8 and 9 above the detail usage of the transcription applications that are preferred by Chinese-speaking students, iFlytek Hear and Lark stood out for its popularity and functionality of real-time transcribing, especially among participants from mainland China. Developed by Chinese AI company, iFlytek is a tool that offers real-time speech-to-text capabilities with the relatively high accuracy in Mandarin and satisfactory transcription results in English-to-Chinese. It includes an interface option in Chinese and post-transcription editing capabilities, allowing users to edit the transcribed content and make it more natural and smoother by themselves, making it more accessible to those who may struggle to determine the accuracy of the transcription text.

Based on these observations, iFlytek Hear’s design philosophy and technical advantages help explain its popularity among EMI students from mainland China from three aspects: first, trained on a massive Chinese corpus, its deep integration of Mandarin acoustic and language models allows its Chinese transcription accuracy.

Second, the bilingual transcription mode allows users to seamlessly switch between Mandarin and English output. In practice, students can record a course in English but choose to view the Chinese text. This “second language → first language” flow reduces immediate understanding load: instead of struggling with unfamiliar target language grammar and vocabulary, learners can first anchor meaning in their native language and then gradually reconstruct academic arguments into English or French. P10 (Law) student described this as “reading a lecture twice (in different languages) at

the same time”: as soon as the English sentence appears on the screen, the Chinese equivalent follows, allowing for instant comprehension without interrupting the learning flow.

Third, iFlytek Hear’s in-app editing and annotation capabilities further differentiate it from simple recording playback solutions. After an initial automated review, students can tap any phrase to listen to the original audio, correct misrecognized words, insert annotations, or highlight key segments. In addition, its privacy and offline capabilities resonated with students who were wary of cloud-only platforms. iFlytek Hear offers a mode that completes speech-to-text conversion entirely accessible under an offline environment, in the condition of downloading the application offline resources or recording, ensuring that it works even in internet limited environments, such as crowded auditoriums or campus basements. For EMI learners who need to balance multiple tools and platforms, flexibility of having the access of the application anytime, anywhere is as important as the accuracy of the translation, although sometimes teachers’ accent would still have an impact on the accuracy, remarked by P13 (EU Law).

When it comes to addressing difficulties in understanding accents, P3 (Linguistic) and P4 (Management) both mentioned Feishu (also known as Lark) as an effective solution. Originally designed as a video conferencing software, Feishu includes a feature called “Miaoji” (Smart Note) which is highly recognized by both. This feature can intelligently summarize meeting content and performs particularly well at handling English accents that are difficult to understand. The core advantages of Feishu’s Miaoji lie in its real-time transcription and accuracy, both of which have been fully demonstrated in P3 (Linguistic) and P4 (Management)’s practical use. Majoring in Linguistic, P3 has high requirements for smooth language communication, and his experience with the feature is quite representative. “I once used it in a conversation class with a Canadian teacher,” P3 shared. “I really couldn’t understand his accent, so a friend recommended Feishu Miaoji for real-time transcription. It not only worked well but also was free, which is really great.” It’s clear that his direct reason for choosing this feature was to solve the urgent problem of “not understanding an English accent,” and the free attribute further enhanced his recognition of the tool. P4 (Management) also agrees with the practicality of Feishu Miaoji. Her reason for using the

feature focuses more on the efficiency of information acquisition in work scenarios. “This feature can accurately transcribe what is heard,” P4 (Management) added. “It was very helpful when the teacher spoke quickly or had a strong accent.” Communication barriers caused by accents and speech speed can affect study efficiency. Feishu Miaoji’s accurate transcription function just makes up for this shortcoming, ensuring that the important content will not be missed.

Another Chinese developed tool mentioned during the interviews was iTourTranslator, which provides also real-time translation and text between Chinese and English. This app was less used, mentioned by only one participant, P12 (EU Law). It is primarily positioned as a travel tool because of its free version, low latency, and simple user interface, which are reasons why it became P12 (EU Law)’s choice for classroom transcription. P12 uses iTourTranslator in group presentations and meetings, receiving real-time text content, essentially converting EMI classroom spoken language into reliable text that can be saved for review, because “I wasn’t used to listening entirely in English, and without preparation, many technical terms were hard to understand”. Although only one participant mentioned this tool, it reflects that Chinese-speaking students may feel uncomfortable and seek help from study technology that eliminates language when they suddenly switch to English as the medium of instruction.

In summary, high-quality Mandarin modelling, bilingual output, powerful editing capabilities, and offline support together explain that iFlytek Hear, lark and iTourTranslator can help Chinese-speaking undergraduates bridge language barriers in real time, reduce comprehension anxiety, and transform fleeting classroom conversations into editable, searchable reality. iFlytek Hear combines the precise computation of artificial intelligence with user-centred design, embodying a localized technology solution that can effectively meet the personalized needs of EMI learners from mainland China at UCLouvain. Feishu Miaoji has been recognized by users from different fields is that it precisely addresses the specific pain point of “difficulty in understanding accents.”, help students easily overcome accent-related communication barriers through its free, real-time, and accurate transcription. The use of transcription tools like iTourTranslator, Feishu and iFlytek by Chinese students taking EMI courses at UCLouvain highlights broader insights: English

instruction (EMI) students embrace it when the multifunctional apps they are familiar with can more directly address specific teaching pain points.

Based on what the participants mentioned in the interviews, the first pain point is the pressure of language comprehension. Aking helps from recording function, P6 (management) student said, “The teacher usually speaks very fast, and sometimes even has an accent because the teacher is not a native English speaker. In addition, professional terms and academic expressions appear frequently”, which makes it difficult for students to keep up with the pace of the lectures. The second is the contradiction between notetaking and listening. When they focus on understanding new concepts, they often find it difficult to take complete notes in time because they are not used to taking notes in English. On the contrary, if they spend too much time taking notes, they are likely to miss the class content. The third is insufficient practice in academic reading and writing skills due to overreliance of transcription applications. In class, they need to read a lot of English literature and use precise English academic expressions in homework, and they cannot practice this aspect with transcription apps or recording lectures. Many students will find it difficult due to limited vocabulary or unfamiliar sentence patterns causing by their overlook of studying in classes. The fourth is cultural and communication differences. The interactive methods in different teaching cultures (such as asking questions, discussions, debates, etc.) are inconsistent with students’ original learning habits, which is “passive listening”, mentioned by some participants, making them lack confidence to speak out their opinion when participating in class, so they tend to ask transcription and recording for help instead of solving problems proactively in class. Only by understanding and improving teaching design and support methods based on these pain points can we truly help EMI students learn efficiently.

What is equally important is the bilingual subtitles feature, which displays both the original and translated texts, allowing learners to compare second-language wording with their native counterparts in real time and internalize structural and vocabulary differences as they arise. However, subtitles are typically used when students are watching English-language entertainment films, which are also frequently used as a means for students to learn languages.

When there were gaps in lectures that participants could not understand, several participants turned to watching videos on related topics, referencing expert lectures, conference presentations, or lecture clips. At this moment, the synchronized English (or English and Chinese) subtitles will be used to reinforce concepts introduced in class. For example, a P9 (Literature) student described watching a series of tutorials on YouTube with subtitles enabled to “catch up on what I missed in class,” ensuring that she could relearn complex graphs and examples at his own pace. As exams approached, students repurposed YouTube content and its automatic subtitles as a revision resource. They would create a playlist of key topic videos (such as business case study analyses) and then speed-watch them at 1.5x speed while reading the subtitles. This approach provided condensed multimedia summaries that supplemented their notes and paper readings, creating a “dynamic revision session” that was both engaging and efficient. However, “focusing on subtitles can slow down understanding, similar to watching a movie where reading subtitles can make you miss visual details during the lecture”, said P12 (European Law).

In addition to needs of additional course materials, participants use also YouTube subtitles for extracurricular language practice. They are keen to improve their L2 listening skills, so they seek out language videos, news clips, and even entertainment programs in English or French (always with subtitles on) to pick up on colloquial expressions, idiomatic phrases, and authentic pronunciation. P15 (Geographic Information Science) student regularly watch bilingual TED videos with dual subtitles, not only to learn the content but also to internalize the natural speech rhythms and vocabulary usage, emphasized that subtitles allowed them to “hear every word” when watching fast-paced media content without having to watch it again.

The automatic captioning feature on YouTube, relies upon the neural network-based technology of speech recognition, for transcribing the spoken audio into the time-coded text (Google, 2024). According to YouTube’s official documentation, the automatic captioning process first extracts the video’s audio track, segments it, and then applies a machine learning-trained speech recognition algorithm to convert speech into captions in supported languages (e.g., English or French). These automatically generated captions are equipped with timestamps, allowing users to

read in synchronous with playback. The strategy of faster playback speed (1.5x to 2x) together with the auditory on-going, improves efficiency without compromising comprehension. This is consistent with the dual modality learning theory (Moreno & Mayer, 1999), which suggests that dual-presentation modalities may increase working memory resources by activating both auditory and visual working memory rather than just one.

The synchronous classes on Microsoft Teams and Zoom platforms, basically provide a highly flexible utilization of transcripts with the side-by-side transcript panel along with the downloading of full transcripts, ensuring real-time transcription with automatic speech recognition (ASR) respectively, which can significantly improve the activity participation of lower-proficiency learners, but not that of higher-proficiency learners (Qiao & Yijun, 2023). However, such features are not used by our group of participants. None of the learners reported using them, for the reason that they are not aware of it or don't find it necessary. Zoom's real-time transcription feature (available even with a free account) automatically captures English spoken during meetings and displays real-time subtitles; Microsoft Teams offers similar features, including real-time subtitles and optional real-time translation for supported languages. While these features offer convenience, especially for language learners facing accent differences or noisy environments, accuracy often drops in the environments where the instructor has a strong accent, switches between English and French, or uses specific terminology, which might be the reason why it is not popular among Chinese native speakers in UCLouvain.

Participants described experiencing misidentification of terminology, misplaced punctuation, and frequent omissions during classes, which led them to question the reliability of the system. P7 (Linguistic) student noted that Teams' subtitles "didn't work well" when the speaker used English and French in the same sentence and would "disrupt me from understanding the lecture". However, P18 (Communication) student admitted that live captions could be used as a "draft", because they can pause and read the captions, copy and save large sections of text for later clarification or translation. In fact, the real-time subtitles that Teams and Zoom provide could be a preliminary understanding of what was said, helping learners mark passages that need to be reviewed with the

help of dictionaries, machine translation or peers. This can be a potential support for students' review and an emergency comprehension aid, especially when the teacher switches languages during the course or speaks faster. However, Chinese native speakers in UCLouvain often do not consider it as an aid because of their imperfection in accuracy.

Automatic subtitles and transcription tools, especially Chinese transcribing applications like iFlytek Listening, Lark and iTourTranslator, provide language support and psychological security for Chinese-speaking EMI learners. These tools not only reduce the pressure of comprehension in online classes but helps students in after-class reviewing of lecture notes and filling the comprehension gaps in the second language learning environments. These tools also improve international students' comprehension of the complex lecture materials, aiding them in second language acquisition, mainly by providing them with the text record, while allowing for flexible, and efficient studying by bridging their language barriers.

3.5 Streaming platform

Chinese-speaking students reported diverse uses of online video platforms in EMI courses. YouTube was commonly used, especially for quick clarifications and personal interest (e.g. following tutorials or news), whereas BiliBili was mentioned mainly for interest-driven learning in Chinese (often entertainment or popular culture). MOOCs and institutional lecture recordings were used primarily for course review and assignments (Dona et al., 2016). For example, P17(Management) noted "I generally don't watch general recorded lectures; I mostly watch MOOCs provided by my instructor".

The following usages scenarios are mentioned during the interviews: first, when students encountered material that they hadn't fully understood in class, they often turned to MOOCs or recorded lectures where they frequently relying on subtitles to review and reinforce key concepts. Next, they used these resources to support assignments and complete their notes by pausing MOOC videos or consulting auto-generated captions, they clarified unfamiliar terminology and filled in gaps before exams or project deadlines. Finally, beyond required coursework, nine

students pursued interest-driven learning on platforms like YouTube and BiliBili, watching supplemental lectures or cultural content to deepen their understanding in personally meaningful areas.

3.5.1 Different discipline

Linguistics/languages majors had the highest overall video usage: nearly all used YouTube and BiliBili, often for both review and cultural immersion. Economics/management majors likewise reported heavy use of YouTube for clarifying concepts and BiliBili for supplementary Chinese-language explanations. Engineering students used fewer video tools overall, relying more on instructor-provided MOOCs and recordings for exam review. Other fields (e.g. Multilingual Communication, Law) showed moderate use of all platforms.

Table 10 Platform choice by academic discipline

The table 10 illustrated below, presents the choice of streaming platforms among participants according to their academic discipline.

Discipline	Youtube	BiliBili	MOOCs
Linguistics, FLE	1	1	3
Economics/ Management	1	2	2
Engineering	1	2	1
Multilingual Communication, Law	3	3	1

According to the results presented in table 10 above, the streaming platforms choice among the research participants based on their academic discipline was mainly MOOCs especially in case of

linguistics students as compared to other students, reflecting the differing the levels of needs in supplementary knowledge. Notably, interest in video learning appeared more crucial in Social Sciences than in Technological Sciences fields. This may relate to their motivation: linguistic learners in MOOCs are often goal-oriented and seek rich resources “to prepare for the future course to make sure I won’t get lost” or simply because “I’m really interested in the subject”.

In the interviews, students remarked that enabling subtitles “helps a lot” when replaying a lecture, echoing findings that captions improve recall. P6 (Management) noted that English subtitles (vs. Chinese) can be even more effective: “I only use English subtitles, and I feel like they are better than the translated Chinese version; When I hear and see the same thing in English, it’s easier for me to understand”. Regarding the MOOCs, a lot of students did mention using the MOOCs recommended by their courses (mainly for elective topics). It also aligns well with the literature that the non-native English speakers utilize MOOCs strategically in supplementing materials: 10 students have stated that they have enrolled in the MOOCs as “supplement the class materials”, reflecting their higher intrinsic motivation.

3.5.2 BiliBili: A Tool Combining Cultural Familiarity and Language Support

8 Chinese students mentioned BiliBili as a crucial platform for supplementing materials, obtaining Chinese explanations, and easing comprehension during their EMI studies. Although BiliBili isn’t a mainstream international academic platform, its popularity among Chinese students reflects the influence of cultural familiarity and digital habits in their choice of learning technology. In the interviews, 9 students stated that when they encountered difficulties understanding classroom material, they proactively searched for relevant videos on BiliBili, particularly those in Chinese, so they could “first grasp the material before moving on to the English material.” For example, P19 (Public Administration) stated, “When I don’t understand a lesson in class, I first look for similar Chinese teaching videos on BiliBili, and then, once I understand it, I will revise the teacher’s slides.”

Table 11 Frequency of different usage

The table 11 below, basically presents the main purposes of students using the BiliBili platform.

Usage	Number of Students	Example
Supplement class content	6	“Watching videos as supplement class content in BiliBili with MOOCs or class PPT to help me understand academic concept faster.”
Interest-driven learning	2	“I came across a finance video on BiliBili that I found interesting, so I watched more of them.”
Language course	1	“I remember one of my friends once recommended a French channel in BiliBili in class. I recall noting it down because I was also eager for more learning resources outside the classroom.”

The output in table 11 above shows that majority of the students use BiliBili platform as supplement class content, followed by interest driven learning activities and language learning. Compared with YouTube and the MOOCs platform, the BiliBili platform mainly offers key resources that are aligned with the Chinese students’ language habits and teaching styles, thanks

to the Chinese content creators. This “localized content” helps them shorten the cognitive distance from exposure to content to grasp of it, especially under a context where there are rich technical terminology and abstract theories. Several students expressed a preference for “intermediated explanations” on Bilibili before transitioning to English-language course content.

Furthermore, Bilibili satisfies students’ psychological needs for ease and familiarity. In the unfamiliar EMI environment, using Bilibili can provide them with a sense of emotional comfort and cultural connection. For example, P8 (Electrical Engineer) student said, “When I’m stressed studying before exam, I check out Bilibili and I can always find similar course content; it feels like home.” This aligns with the literature’s discussion of cultural media as tools for identity regulation.

However, some students also noted that the quality of Bilibili content varies, with issues such as “lack of academic substance” and “incorrect presentation of concepts.” Consequently, they often use it together with more formal platforms like MOOCs in order to have more than just one version of explanation. As a P4 (Management) student said, “Bilibili explains things in a more accessible way, but I don’t just depend on it; I still have to follow along with the readings my teacher slides or assignments.” Bilibili’s use demonstrates Chinese students’ strategic use of streaming technology as online resources in EMI environments, leveraging their native language resources and navigating cultural identity. It’s not just a tool for language comprehension; it also reflects students’ digital dependence during their cultural transition. While this behaviour offers convenience, it can also lead to an overreliance on Chinese explanations, hindering their ability to adapt to an all-English environment.

Chapter 4 Discussion and Conclusion

Chapter 4 will be introduced in 4 steps. First, Section 4.1 analyses the technologies used by Chinese students in EMI and FMI programs, focusing on generative AI, machine translation, and streaming platforms, and comparing the differences in tool usage between the two teaching environments. Next, Section 4.2 explores the impact of different academic backgrounds on

students' tool selection and usage priorities, introducing different usage patterns among technological science and social science students. Then, Section 4.3 explains how cultural background and regional digital habits influence students' adaptation to technology, comparing the tool usage habits of students from mainland China and Taiwan, and the role of Chinese platforms such as Bilibili. Following this, Section 4.4 summarizes the advantages, obstacles, and risks students perceive these language technologies to bring, including efficiency improvements, over-reliance, and ethical issues. Finally, Section 4.5 presents the conclusions, summarizing the overall situation of Chinese students' use of language technologies, answering research questions, offering suggestions to educational institutions, and pointing out future research directions.

4.1 Technologies used in EMI/FMI

Chinese international students in UCLouvain reported using a wide range of language tools, with generative AI at the forefront. Every participant used ChatGPT or similar AI assistants for academic work. Such tools mainly were employed across various disciplines and academic tasks by students, starting from drafting their essays and reports, towards translating or even writing the code (e.g. "I let the AI help me write code... it tells me step by step how to do it," P8 (Electrical engineer) student).

Generative AI is followed in popularity by machine translation: 19 of 20 students mentioned using MT systems such as Google Translate, DeepL, or Chinese alternatives like Baidu and Youdao. Students use MT mainly as a reading aid (translating articles or slides) and, to a lesser extent, for drafting text (from Chinese to English). In contrast, traditional online dictionaries have largely been abandoned: only two students reported using them, while others prefer the faster speed of MT to look up words within context.

The streaming platforms such as MOOCs and Bilibili were next most common category with 12 students regularly using the lecture recordings or the educational videos (often with auto-subtitles), for their language learning and the concept review. Most notably, Bilibili, a Chinese video-sharing site was mentioned by 8 participants for its content in Chinese that ease comprehension. Recording

lecture or transcription application were used by 17 students, with 5 exploited automatic transcription services, preferring to creating an environment that Chinese language involve purely and taking their own notes in their preferred language.

In summary, Chinese-speaking EMI/FMI learners tend to choose multifunctional tools (GenAI, MT, Transcription Application) that offer quick, contextual assistance, echoing Zhou et al. (2022), who found that GenAI advanced Chinese students' academic ability, including reading and writing. Learners used ChatGPT to translate whole paragraphs, generate outlines, check grammar, and even write emails. All 20 participants had used such tools. For instance, P8 (Engineering) said ChatGPT helps with programming assignments, while P9 (Literature) relies on it "to polish and check grammar because I feel a lack of confidence in my grammar, and ask for alternative words to avoid repetition.", but "nothing more than this because it's obvious because it sounds like something only a native French speaker would write, so it feels like it's above my level." These insights confirm that ChatGPT functions as a versatile "academic assistant," supporting reading, writing, and idea generation across fields.

Students' use of tools differed subtly between English-medium (EMI) and French-medium (FMI) contexts. In English courses, Chinese learners often employ AI and translation from English into Chinese, using ChatGPT to paraphrase or explain English texts. For example, P2 (Public Administration) student noted that using ChatGPT "to understand the content of the article makes me feel more confident and assured in my studies". In French courses, learners were more likely to use AI with French output: P9 (Literature) student and P20 (FLE) reported using ChatGPT to "refine" their French compositions and to brainstorm ideas in French almost every assignment. This suggests that while AI serves as a comprehension bridge in EMI, it can also become a language-learning tool in FMI.

4.2 Discipline differences

Disciplinary background influenced tool choice and usage focus in some extends. For instance, students major in technological sciences reported using AI and MT for technical support: writing

code, translating specialized terminology, or processing data. P8 (Electrical Engineer) remarked that ChatGPT reduced the “plagiarism rate” in the reports by rephrasing, indicating it as a writing aid. Social science students, by contrast, emphasized AI for textual work: essay drafting, grammar polishing, and summarizing articles. Copilot was used mainly by linguistics and language majors for French–Chinese translation, whereas KIMI (a Chinese AI) was favoured by law student for long-text summaries. These findings can preliminarily prove that Chinese-speaking learners in language intensive or related fields in UCLouvain tend to use translation aids more critically, as they compare the nuance between different GenAI and have their own strategy. GenAI is more used for problem-solving tasks those in technical fields.

The different tool usage modes of the two major disciplines also reflect the different cognitive styles of students. Chinese-speaking learners in language-intensive fields need to accurately grasp the differences between languages and cultures in their study and research. Comparing the subtle differences between different GenAI tools and forming their own usage strategies is a concrete manifestation of their critical thinking. They not only use tools to complete tasks but also evaluate the tools based on their own professional needs to ensure the quality of results. Students in technical fields, on the other hand, regard GenAI as a powerful auxiliary means to solve problems. Their cognitive focus is more on whether the tool can effectively improve the efficiency of problem solving and whether it can guarantee the professional accuracy of the results. The technological tool is more like an extended “technical hand” to help them overcome technical difficulties in the learning process.

To sum up, disciplinary background determines the core demands of students in academic tasks, and these demands further guide the choice of AI and MT tools and the focus of application. Students in technological sciences take tool application as the support for problem solving and pay attention to the efficiency and professional accuracy of tools. Social science students, especially those in language and law related majors, take study technology tools as the guarantee for improving text quality, and show critical and targeted tool selection ability. For Chinese-speaking learners in UCLouvain, this differentiated tool application habit is not only a response to

disciplinary requirements but also an adaptive strategy in cross-cultural academic environments. It also provides practical enlightenment for the future development of educational AI tools, that is, tools should be developed in a more targeted way according to the characteristics of different disciplines to better play the role of technical empowerment in academic learning.

4.3 Cultural and Regional Digital Habits

Cultural background and Chinese digital ecosystems shape students' technology adaptation. Mainland Chinese students arrived in Belgium are often accustomed to Chinese platforms: before leaving China, many used Baidu or Youdao Translate (which were faster comparing to Google that needs a VPN in China) and Chinese GenAI (KIMI, ERNIE). After arrival, they gradually adopted Google, DeepL and ChatGPT. On the contrary, Taiwanese students who had no access restrictions tended to rely on global tools (Google Translate, DeepL, ChatGPT) before arrival. These contrasts reflect regional infrastructures: Mainland Chinese users need to deal with firewalls to have access of international study applications and thus turn to use application developed uniquely in China. Bilibili is a prime example: it is not particularly an academic platform, but many Chinese students use it educationally with strategies. As one student summarized: "Bilibili explains things in a more accessible way... I don't just depend on it; I still follow the slides offered by teachers". Students often watch a Chinese-language explanation on Bilibili to "first grasp the material" before tackling the English or French lecture content. This behaviour demonstrates that students integrate Chinese-language media as a transition to help them with integration and comprehension. However, students remain cautious: many noted Bilibili's varied quality, combining it with formal sources (MOOCs and lecture slides) to double-check the information in order make sure it is credible. In short, "Chinese thinking" digital habits (e.g. preferring familiar apps, relying on Chinese-language explanations) both assist and complicate EMI/FMI learning, emphasizing that educators should recognize these cultural strategies when supporting students.

By contrast, Taiwanese students have more “globalized” digital habits, being familiar with Google translate, DeepL, and remain their habits after they come to UCLouvain.

4.4 Perceived Advantages, Barriers, and Risks

Participants saw advantages in language technologies. Efficiency and comprehension gains were frequently cited: “it helps me understand faster the courses by explaining specific terms,” noted for ChatGPT usage scenario. Several likened AI to a personal tutor that explains lectures on demand. Moreover, using AI or translation tools boosted students’ confidence and motivation in studying. For example, students who regularly brainstorm with ChatGPT reported feeling less anxious about writing, hence an increased self-efficacy with ChatGPT use was observed. Machine translation and bilingual subtitles similarly made complex concepts more accessible, easing the load of learning in a foreign language (Xu et al., 2024). Creativity was another pro: many students use AI for email templates or essay outlines when they “don’t feel knowing what to write”.

However, learners also identified barriers and risks due to the overreliance. The principal concern was overreliance and its impact on class immersion. As P2 (Public Administration) student admitted, constant use of translation sometimes meant “I don’t really listen to what the teacher says in French,” indicating a passive learning effect. Correcting AI errors was also tedious when it insists on wrong solutions. Crucially, ethical and autonomy issues arose: students felt uncertain about plagiarism and acceptable use. P19 (Public Administration) recounted how an AI detector flagged their group report as “97% AI-generated,” forcing them to manually rephrase it overnight. Several respondents questioned whether using a translation app counted as “AI cheating”. The participants effectively engage in a strategy of using AI-generated drafts but always applying critical review, yet this practice lacks formal guidance. Although UCLouvain has clear regulations on the use of AI, most Chinese-speaking international students are still unaware of it, which comes from information gaps and communication omissions. On one hand, technology can enhance the learning satisfaction as well as academic engagement, while fail to address the ethical concerns, such as over-reliance which may undermine deeply the learning or academic integrity (Dai &

Wang, 2024). Like for example, previous work conducted by Yang et al. (2024) warns that the AI “ghost-writing” can facilitate dishonesty, a concern shared by some students during the interview too. The Chinese-speaking students in UCLouvain are good at using language and writing tools in a careful, strategic way (e.g., translating short passages and polishing drafts), but they feel conflicted because such tools help them work faster even though relying on them can reduce their independence or learning. This calls for structured support: educators should integrate digital literacy into EMI/FMI curricula, teaching students how to critically evaluate AI output, echoing Loock & Léchaugette (2021)’s call for AI literacy, and clarify plagiarism policies.

4.5 Conclusion

Chinese-speaking students at UCLouvain actively and strategically use different language technologies to get through their EMI and FMI studies. Generative AI tools and MT (machine translation) tools have become essential for them. Cultural platforms like Bilibili also play a unique supportive role. These technologies clearly help students understand course content better and feel more confident in their learning, which matches what earlier research on AI in language learning has found that AI can lower students’ anxiety about using a new language. However, these tools also bring some key challenges. One is the risk of students relying too much on them. Another is that students may feel confused about academic rules when using the tools. Additionally, the quality of the tools’ outputs can vary in different situations, depending on the discipline and tasks. Learning in EMI and FMI settings means finding a balance. Students need to use technology as a support tool, but they also have to keep their ability to learn actively on their own.

In summary, interviews with participating students revealed that they rated their English and French proficiency relatively high: their average scores for English listening, speaking, reading, and writing were all above 7 out of 10, while their average French proficiency score was above 5 out of 10, we could find that the answer to Research Question 1(RQ1), as results show that the Chinese-speaking students at UCLouvain frequently use personalized Chinese applications such as Youdao, Baidu, Eudic, Feishu, iFlytek Hear and Bilibili. Generative technology tools such as

ChatGPT still stay the most popular choice, helping students assist with English and French learning, primarily for summarization, translation, writing structure, and grammar checking. A particularly interesting finding is that some Chinese students in EMI contexts choose to rely on speech-to-text transcription tools, especially when their instructors' English is difficult to understand. In such cases, these tools serve as a transitional aid during the initial stage of the course. The choice of tools is largely shaped by peer recommendations from students with similar experiences. Students select different applications based on their needs, such as accuracy, cost-free access, and simplicity of interface design. To address RQ2, the findings indicate that Chinese-speaking students at UCLouvain adopt slightly different strategies for using study technologies, depending on their language settings and academic disciplines. Specifically, students in science and engineering courses tend to focus more on using these technologies for technical tasks, while those in social science courses prioritize them for text processing and pay more attention to the language nuance of the output.

There are also subtle differences in usage habits between mainland Chinese and Taiwanese students answer to RQ3, as the Taiwanese students utilize more uniformly and without exception ChatGPT, Google translate and DeepL, those global technologies, in their courses, while the students from mainland China tend towards retaining their previous habit of using different GenAIs because they did not have access to the ChatGPT tool before coming to UCLouvain. These results enrich our understanding of the concerns and anxiety among mainland Chinese students regarding potential violations of generative AI tools' usage boundaries. To answer RQ4, as findings confirm that Chinese-speaking EMI/FMI students in UCLouvain utilize generative AI tools across multidisciplinary settings that aligns with existing literature, which highlights not only the benefits of such tools for enhancing self-efficacy but also their potential drawbacks. Specifically, the dual impact of generative AI on students' learning motivation and cognitive load. Here, learning motivation refers to the intrinsic or extrinsic drive that motivates students to engage in learning activities, persist in completing tasks, and pursue academic goals (e.g., interest in knowledge acquisition or the desire to achieve good grades). Cognitive load denotes the mental

effort required for students to process information during learning. Future research should further investigate the long-term effects of these technologies on learning outcomes and explore how to improve learning efficiency while upholding academic integrity in EMI classes.

The findings basically suggest that the institutions must not ignore such practices: they must clearly communicate the support structures after informing students about their common scenarios for using AI, such as AI-use guidelines, digital literacy workshops, and culturally aware teaching strategies, so that students can properly use language technologies without compromising their learning goals or integrity. Only by proactively addressing these issues can we ensure that the study technologies can enhance rather than hinder higher-education language learning for Chinese-speaking students in UCLouvain.

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Appendices

1. Interview Template

Template of the questionnaire

Section 1: Personal and Academic Information

Full Name: _____

Institutional Email: _____

Current Degree Level:

☐ **Bachelor's**

☐ **Master's**

Major Field of Study: _____

Academic Year of Enrolment: (e.g., Year 1, Year 2) _____

Languages of Instruction for Completed Courses (List top 3):

Course 1: _____ **Language(s):** _____

Course 2: _____ **Language(s):** _____

Course 3: _____ **Language(s):** _____

Section 2: Language Background Verification

(All questions must be answered)

1. Is Mandarin Chinese (Putonghua) your ONLY native language?

☐ Yes (acquired from birth in family/educational settings)

☐ No

2. Did you participate in French/English immersion programs (e.g., CLIL) during primary/secondary school?

☐ Yes → *[Terminate screening]*

☐ No

3. Have you studied ≥ 1 semester at a university in a French/English-speaking country?

☐ Yes → *[Terminate screening]*

☐ No

4. Before university, did you grow up in a bilingual Chinese-French/Chinese-English household?

☐ Yes → *[Terminate screening]*

☐ No

5. Do you have a diagnosed learning disability (e.g., dyslexia, ADHD, hearing impairment)?

☐ Yes → *[Terminate screening]*

☐ No

Section 3: Language Proficiency Self-Assessment

Rate your skills on a scale of 1 (Very Poor) to 10 (Native-like):

Skill	French	English
-------	--------	---------

Listening	[1–10]	[1–10]
-----------	--------	--------

Skill	French	English
-------	--------	---------

Speaking	[1–10]	[1–10]
----------	--------	--------

Reading	[1–10]	[1–10]
---------	--------	--------

Writing	[1–10]	[1–10]
---------	--------	--------

Section 4: Participation Agreement

1. I confirm I have completed ≥ 1 non-language major course taught fully in French/English:

☐ Yes

☐ No $\rightarrow$ *[Terminate screening]*

2. I consent to be contacted for a 45–60 min interview if eligible:

☐ Yes

☐ No

Section 5: Scheduling Availability

Preferred Interview Times (Check all applicable):

☐ Weekday mornings (9–12 AM)

☐ Weekday afternoons (1–5 PM)

☐ Weekday evenings (6–8 PM)

☐ Weekends

2. Interview guide

A structured interview guide was developed to ensure consistent questioning while allowing flexibility for any potential follow-up questions. The guide covered four main thematic blocks:

1. Audio/Video Recordings

- **Recording during class:** Use of personal or recorded by classmates' audio/video in L2 (French/English) lectures and seminars.

Sub-question:

1. Tools used (e.g., smartphone apps, Teams recording feature, laptop software)
2. Frequency and contexts of use (e.g., regular vs. exam preparation)
3. Motivations (e.g., filling in note gaps, language comprehension, review)
4. Perceived advantages and limitations (e.g., clarity, storage, playback speed)
5. Comparison with recording practices in Mandarin-taught courses

- **Supplementary Materials:** Use of externally sourced audiovisual materials (e.g., MOOCs, podcasts, YouTube lectures) in L2.

Sub-question:

1. Sources accessed (e.g., provider platforms)
2. Frequency and reasons for use (e.g., clarification of terminology, cultural exposure)
3. Settings of use (e.g., self-study at home, group study)

- **Extension if don't use recording (Same questions in case of the absent usage for all the blocks)**

-Why?

-Have you ever tried it/thought about it?

-Do you think it could be useful?

-Do you use it in your Chinese classes?

2. Automatic Captions and Transcriptions

- **Captions during class:** Use of Teams automatic live captions or Zoom subtitles during L2 classes.

Sub-question:

1. Platforms/tools (e.g., Teams, Zoom)
2. Accuracy and reliability perceptions
3. Contribution to comprehension and note-taking
4. Comparison with manual notetaking or human-generated transcripts

- **Post-Lecture Transcription:** Use of Word's transcription feature or third-party tools to transcribe recorded lectures or study sessions.

Sub-question:

1. Frequency of transcription usage
2. Types of classes where transcription is applied
3. Influence on reviewing and studying

3. Automatic Captions and Transcriptions

- **Choice of Tools:** DeepL, Google Translate (web/mobile), Google translation, local Chinese application such as iTourTranslator and iFlytek Hear, online dictionaries.

Sub-question:

1. Preferred tool for different tasks (word lookup vs. full-text translation)
2. Frequency of machine translation in reading academic articles, textbooks, or assignment prompts
3. Situational factors (e.g., typing speed, time constraints, mobile vs. desktop)
4. Perceived quality differences between French and English outputs & inputs
5. Integration of translation with other tools (e.g., copying translated text into note-taking apps)

4. GENERATIVE AI AND OTHER ADVANCED TOOLS

- **Generative AI:** Use of ChatGPT, Gemini, Wenxin Yiyan, or other large-language-model AI for paraphrasing, summarization, or question answering.

Sub-question:

1. Use cases (e.g., drafting essay outlines, rewriting sentences to improve grammar/style, generating study questions)
 2. Task types (e.g., L2 essay writing vs. L1 research notes)
 3. Differences in trust and reliance when using AI for French vs. English tasks
 4. Perceived benefits (e.g., idea generation, language accuracy) and drawbacks (e.g., overreliance, potential inaccuracies)
- **Other Digital Tools:** Grammar checkers (e.g., Grammarly), bilingual corpora (e.g., Linguee, Reverso) and streaming platform (e.g., MOOC, Bilibili, Youtube).

Sub-question:

1. Frequency of consultation and scenarios of use (e.g., assignments, exam review)

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2. Role in vocabulary acquisition, grammar checking, and reading comprehension

2. PARTICIPANT INFORMATION SHEET

Informed consent form/formulaire de consentement éclairé

Adapter/traduire le texte ci-dessous:

PARTICIPANT INFORMATION SHEET

Study: Understanding the technologies used by second language learners in higher education.

Welcome to this project aiming to understand whether and how students use technologies such as speech recognition and/or automatic translation technologies in their learning (e.g. using captions in lecture recordings or Google Translate for texts). We want to understand students' views on the benefits and barriers of using these technologies, and the main reasons students choose to use them. Because the project partially focusses on translation, we are very interested in international students' views (e.g. those learning in English or French as a second language), but we are also interested in understanding whether, how, and why French native speakers use these technologies.

The aim of the study is to build on this understanding to develop better technologies and/or learning approaches that can support students' learning more effectively.

Interviews will take between 45min and 1h, and will be held on Teams/on campus between START DATE and END DATE. The Teams sessions will be recorded, automatically transcribed (and translated into English if they take part in Chinese), analysed for trends by the research team, and erased once the transcriptions have been checked for accuracy.

PARTICIPANT CONSENT FORM

Thank you for your interest in taking part in the research project titled "**Understanding the technologies used by second language learners in higher education**". Please read this form carefully after you have read the Participant Information Sheet above.

1.	I confirm that I have read and understood the Participant Information Sheet above regarding this project.
2.	I understand that my participation is voluntary and that I can withdraw from the project at any time, without having to give a reason and without any consequences, up until one week after this interview; after this time, my data will be anonymised and I will no longer be able to withdraw.
3.	I consent to taking part in an interview for this research project.
4.	I consent to my interview being audio and video recorded.
5.	I understand that the recording of my interview will be transcribed by the research team and erased once the transcriptions have been checked for accuracy.
6.	I understand that the transcript of my interview, in which all identifying information has been removed, will be analysed by the research team to identify trends in responses and the findings will be published in a report.
7.	I understand that confidentiality and anonymity will be maintained throughout the project and it will not be possible to identify me in any of the research outputs. Only the research team will have access to the recordings and transcripts.
8.	I understand and agree that my anonymised words may be quoted in any research outputs resulting from this project.

Project lead

Prof. Marie-Aude Lefer

Pauline de Grave

____MAL____

____DD/MM/YY____

Name of project lead

Signature (Initials)

**Date of producing this
questionnaire**

For further information, please contact:

Prof. Marie-Aude Lefer

marie-aude.lefer@uclouvain.be

Please answer Yes if you agree with the statements provided above and you give your informed consent to participate in this project, or No if you have changed your mind and no longer want to be part of the project.

3. Transcripts of the Interviews (Mandarin versions and English translations)

[Interviews](#) in Mandarin available online

[Interviews transcription](#) in English translations available online

4. [Analysis of the interviews](#) available online