e·Chinese Plus: An Open-Access Online Platform for Spanish-Speaking Learners of Chinese
(e·Chinese Plus：面向西班牙语学习者的中文练习在线开放平台)

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Abstract: In an era in which digital transformation is reshaping the landscape of language learning, innovative and inclusive approaches are becoming crucial. This paper presents e·Chinese Plus, an initiative of a team of lecturers from the Universitat Autònoma de Barcelona (UAB). e·Chinese Plus is a comprehensive, Moodle-based, open-access platform for enhancing the acquisition of Chinese as a foreign language (CFL) specifically addressed to Spanish-speaking learners. The paper outlines the platform's pedagogical rationale and describes the methodological principles guiding the design and development of its activities, as well as its distinctive features and potential use as a complement to formal instruction. It further examines how generative artificial intelligence (GenAI) has been selectively integrated into the design of specific activity types, while emphasizing the central role of teaching experience in addressing the needs of Spanish-speaking learners, particularly through activity design and in-task feedback. Finally, the paper discusses future development plans and ongoing challenges, highlighting the potential of this initiative to inspire other CFL teachers interested in creating similar digital learning resources.

摘要： 在数字化转型重塑语言学习格局的背景下，兼具创新与包容的教学方法尤显关键。本文介绍了巴塞罗那自治大学（Universitat Autònoma de Barcelona）教师团队开发的 e·Chinese Plus 综合开源学习平台项目。该项目基于 Moodle 系统，面向西班牙语为母语的中文学习者，旨在提升他们的中文习得效果。本文阐述了平台的教学理念、练习设计与开发的方法论原则，展示了其特色功能及作为课堂补充工具的应用潜力，并探讨了生成式人工智能（GenAI）在特定练习活动设计中的针对性整合，同时强调了教学经验在回应西班牙语母语学习者需求中的核心作用，尤其是在练习设计与任务内反馈方面。最后，本文概述了平台的未来发展规划与持续建设所面临的挑战，以期为有意开发类似中文数字化学习资源的对外汉语教师提供参考借鉴。

Keywords: Chinese as a foreign language; technology-enhanced language learning; generative artificial intelligence; open education resources

关键词: 对外汉语，技术增强语言学习，生成式人工智能, 开放教育资源

1. Introduction

This paper introduces e·Chinese Plus[1] (Casas-Tost et al., 2024-26), a Moodle-based, open-access platform offering interactive digital activities with automated correction and feedback. The platform provides a wide range of activities to develop both receptive and productive language skills and is specifically designed to meet the needs of Spanish-speaking learners of Chinese as a foreign language (CFL). This targeting is most evident in pronunciation, grammar, and translation activities, and, specifically, in the detailed feedback, as explained in this article. More broadly, it seeks to democratize access to high-quality online CFL resources and expand opportunities for active learning, primarily targeting Spanish speakers while remaining accessible to Chinese-language learners worldwide, including those from less-resourced language communities. By promoting inclusive access to language learning resources, the platform aims to empower learners from diverse backgrounds, regardless of their instructors' digital literacy levels—an approach that aligns with the principles of the Universal Design for Learning framework (CAST, 2024), which advocates flexible educational environments that accommodate individual learning.

The development of the platform coincided with the proliferation of generative artificial intelligence (GenAI), which has been integrated into the design of many of the activities. This paper aims to present the platform, its rationale, its specificities—especially considering its main target users—and its potential application as a supplement to formal teaching. Special emphasis is placed on the methodology used to create the activities and the role of GenAI in their design, to offer an example of how to effectively incorporate GenAI into CFL instruction—particularly relevant at a time when language education is actively exploring GenAI-enhanced tools and methods (see Casas-Tost et al., under review, on the specific case of CFL).

2. The Rationale for e·Chinese Plus

According to official figures, "[a]s of May 2023, more than 180 countries have conducted Chinese-language teaching programs, and 81 countries have incorporated the language into their national education system" (Xinhua, 2024). This global interest in the study of Chinese is also evident in Spain, where the number of HSK exam candidates has increased significantly, placing the country among the top five in Europe in recent years (Chen et al., 2021). This trend has been accompanied by a notable rise in the availability of digital resources for learning Chinese.

[1] c.f. https://dtieao.uab.cat/gelea2lt/echineseplus/

While this expansion may appear encouraging, it is well established that not all digital resources are of equal quality, nor do they adapt equally well to different teaching approaches or learning styles. In the specific context of open educational resources (OER) for CFL, Zhang (2022) emphasizes the importance of understanding which resources improve specific language skills, how learners engage with them, and how teachers can integrate preferred materials into curricula to optimize learning outcomes. In this regard, Zhang (2022: 28) also stresses the need to be aware of what resources are currently available and to have quality criteria for assessing their usefulness.

To address this need, in 2021, a team of language teachers and researchers from the Universitat Autònoma de Barcelona (UAB) created e·Chinese Tools (Rovira-Esteva et al., 2021–2026), an open-access database of digital resources for learning Chinese, which now contains over 450 resources. This previous project allowed us to conduct a prospective analysis of the kind of digital resources currently available. A preliminary analysis of the database's content (see Rovira-Esteva et al., 2022) revealed, on the one hand, that vocabulary is the most frequently addressed skill—in fact, it is particularly prominent on Instagram, as Rovira-Esteva & Vargas-Urpí (2024) note— while listening, cultural knowledge, and graphemic skills also feature heavily. On the other hand, writing remains underrepresented due to the difficulty of providing automated correction.

This analysis also identified several shortcomings among the current available resources: first, a limited number of resources tailored to Spanish-speaking learners, who remain underrepresented in the global Chinese language education arena, where English is still the predominant language of instruction. Second, we also noted an imbalance between receptive and productive skills, with a greater focus on the former. In fact, while multimodality is well-featured (most digital resources offer video content), only around 20% involve active practice, mainly via apps, revealing a shortage of opportunities to develop more productive skills. This pattern is further confirmed by studies on digital resources for specific skills, such as Casas-Tost's (2026) analysis of tools for pronunciation practice or Gay-Punzano & Vargas-Urpí (2025) about cultural competence. Third, this preliminary analysis also revealed reduced accessibility because many of the highest-quality resources are not free.

The predominance of learning apps as a means of delivering active practice also entails certain limitations. Wang (2024) analyzed four widely used applications (Duolingo, LingoDeer, SuperChinese, and HelloChinese) and observed that their fixed learning paths align well with microlearning principles and the needs of self-directed learners, but offer limited flexibility for students who wish to use them to complement formal instruction. Moreover, in light of ongoing debates on smartphone addiction, particularly among young people, and its potential impact on learning (see, for example, the meta-analysis by Sunday et al., 2021), the exclusive availability of some learning resources via mobile devices may itself be considered a drawback. Finally, most language-learning apps rely on a "freemium" model, which restricts free access to only part of the available content and functionalities, thereby preventing learners from fully benefiting from the app's pedagogical affordances.

Other studies of the application of digital resources in the teaching and learning of CFL have focused on their effectiveness or on the analysis of specific tools. For example,

regarding character learning, Mason & Zhang (2017), based on a survey of 140 CFL learners, observed that nearly all (94%) used at least one mobile app to support their character learning. Pleco was the most relied-on app, even though not all its features were equally used. Sun (2022) demonstrated that the use of Wordwall in teaching Chinese characters at the YCT1 level significantly improved students' character recognition and comprehension and had a positive effect on learner motivation. Ma (2024) studied Quizlet's impact on 60 CFL students, finding significant gains in listening, speaking, and reading skills but not in writing, aligning with previous research; and that, importantly, Quizlet enhances student engagement through self-paced and tailored practice. Finally, Gay-Punzano & Vargas-Urpí (2025) examined how digital resources address cultural and intercultural competences and noted biases, recurring topics, and a mostly passive approach.

Previous studies have been valuable not only in confirming the affordances and strengths of existing digital tools, but also in identifying their limitations, which informed the development of our new digital resource. In this context, the main rationale for creating e·Chinese Plus was to design a platform that specifically addresses the needs of Spanish-speaking learners. This includes, for example, activities targeting linguistic features that are particularly challenging for this group, as well as feedback grounded in contrastive linguistics to enhance pedagogical relevance. In addition, the platform was conceived as fully open-access and designed to allow learners to select activities that best suit their individual learning needs, deliberately avoiding fixed or predetermined learning paths. Its design as a platform rather than a mobile app allows it to be used across multiple devices. The following sections describe the platform in greater detail.

3. e·Chinese Plus Features

e·Chinese Plus is a Moodle-based, open-access platform that provides activities for practicing CFL. Teachers and students who are familiar with Moodle environments will therefore recognize the types of activities it offers. As already mentioned, the platform is not conceived as a course but as a bank of exercises that can supplement formal learning undertaken through regular courses or informal learning for self-directed learners. Activities are structured into four Moodle courses corresponding to proficiency levels according to the Common European Framework of Reference for Languages (CEFR), ranging from basic (A1) to Intermediate (B2), as B2 is typically the highest level of Chinese taught at universities in Spain and, in general, at other institutions. Learners first enroll in the course or courses that match their level or learning needs (see Figure 1).

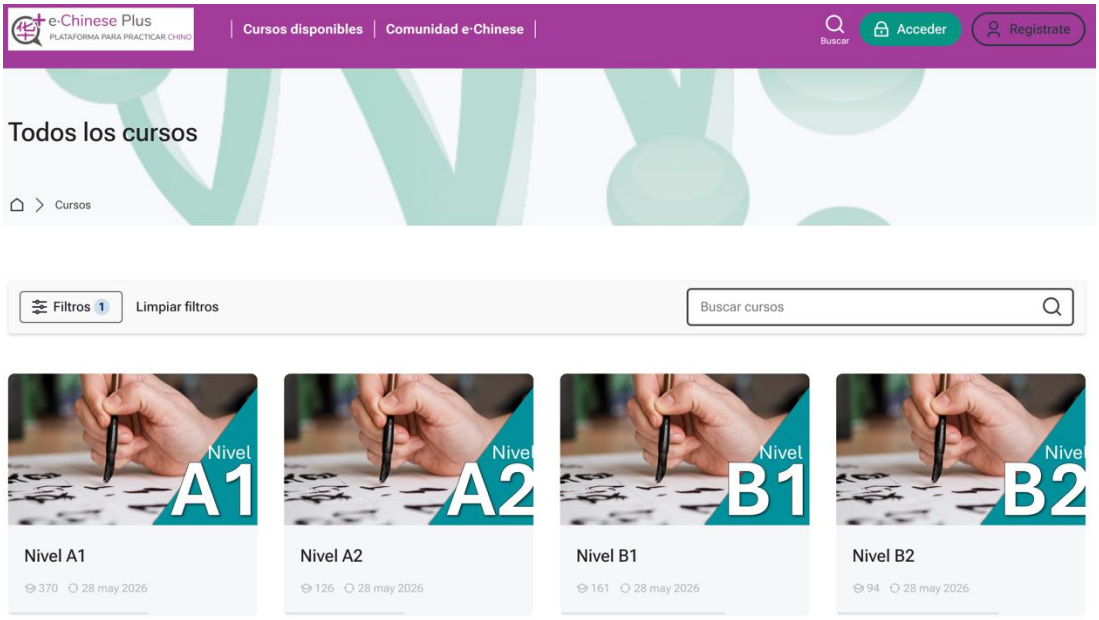

Figure 1 Screenshot of the platform

Within each course, they can then use two filters to select activities: language skill and topic (see Figure 2). Students can complete any activity as many times as they wish, in whatever order they prefer, and track their progress in each skill. This structure allows learners to focus on the level most relevant to them while retaining the flexibility to choose activities based on their immediate pedagogical needs.

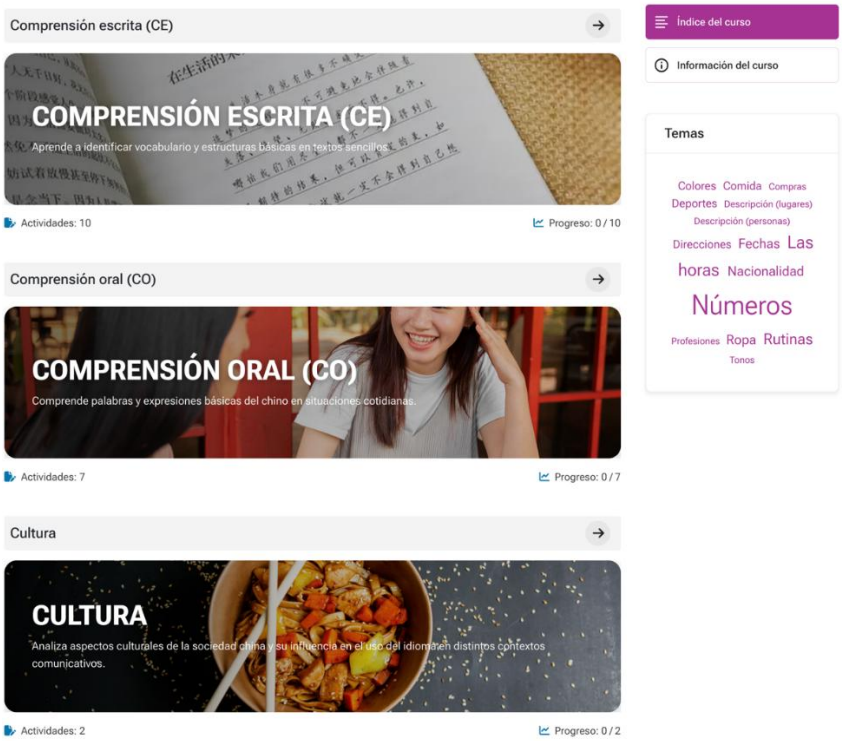

Figure 2 Screenshot of the skill and topic filters

The skill filter covers a wide range of areas, including reading, listening, speaking, vocabulary, grammar, pronunciation, translation, cultural awareness, and knowledge of Chinese characters. Thus, the platform goes beyond the four traditional language skills to offer exercises that target areas particularly relevant to Chinese language learners. Some, such as character writing and the use of the pinyin transcription system to practice pronunciation, are unique to the Chinese writing system and require specific attention. Many activities, such as translation, pronunciation, grammar and culture-focused tasks, explicitly take into account contrastive aspects between Chinese and Spanish (e.g. how to translate Chinese gender indeterminacy into a gender-marked language such as Spanish). In response to user feedback, a new tag for sequenced activities has recently been introduced to create short learning paths composed of several activities that, taken together, integrate diverse skills around a single topic.

Rather than a technical limitation, this design choice reflects a deliberate prioritization of usability and pedagogical relevance. Although many activities naturally integrate multiple skills (e.g., listening, reading, speaking, and vocabulary), assigning one principal tag facilitates more precise filtering and enables users to quickly identify activities that best match their immediate learning needs. To this end, the project team—comprising seven Chinese language teachers and researchers—engaged in thorough discussion to determine and prioritize the most appropriate tags, with the aim of enhancing both the usability of the platform and the practical usefulness of each activity for its intended users.

The topic filter allows activities to be grouped according to theme. The list of topics is open-ended and includes family, food, nationalities, sports, etc. This tag is optional, as not all activities can be meaningfully assigned a topic (e.g. pronunciation or character-writing activities). When choosing one of them, the platform offers multiple activities revolving around the same topic. For example, the topic *color* includes four activities. At level A1, there is a vocabulary activity in which students must select the words that do not correspond to a given color, making it ideal for visually oriented learners (Figure 3), and a speaking activity in which learners name clothing items, state their color, and supply the appropriate measure word (Figure 4), combining visual and auditory modes. At level A2, one activity requires students to listen to descriptions of combinations of two colors and identify the resulting color (Figure 5, while another asks them to read the names of two colors and say the resulting color aloud (Figure 6), thus engaging both read/write and auditory learning preferences. These variations support differentiated instruction and multimodal learning, while also adapting to both teaching and learning needs.

Figure 3. Example of vocabulary activity (reading)

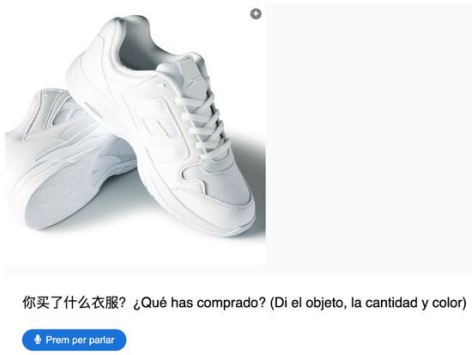

Figure 4. Example of vocabulary activity (speaking)

Figure 5 Example of vocabulary activity (reading + speaking)

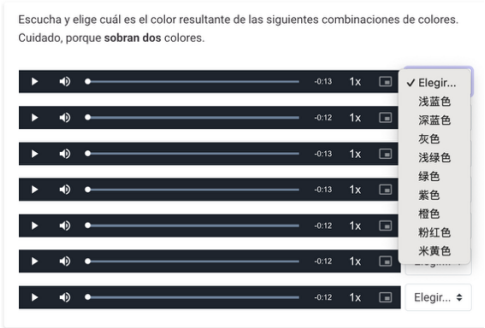

Figure 6 Example of vocabulary activity (listening + reading)

In addition, each level includes two forums: a student forum, where learners enrolled in the same course can interact with one another, and a dedicated forum through which they can contact the platform creators. Beyond the level-specific courses, the platform also includes a general community space with several forums where all members, regardless of their proficiency level, can exchange ideas, share information about scholarships and learning opportunities, ask questions, and contribute resources of potential interest to the wider e·Chinese Plus community.

3.1. Workflow and methodology for the design of activities

The creation of the activities follows a standardized workflow designed to ensure pedagogical consistency, technical reliability, and overall quality control across the platform. First, a team member creates an activity. Next, it is peer-reviewed by at least two fellow teachers, who provide feedback on all aspects of it (content, level, in-activity feedback, and technical considerations) using a spreadsheet. The activity is then revised, based on the reviewers' feedback, by its creator, who subsequently publishes it on the platform. A student with a B2 proficiency level pilots the activity and provides further feedback, which is used to finetune it, if necessary. If the two reviewers are unsure about anything, a third team member reviews the activity. Any disagreements are discussed at the team's periodic meetings. The role of the project manager has organically grown from

creating activities and handling the technical aspects of the platform to include reviewing all activities to ensure consistency in their format and overall quality.

In addition to more traditional computer-assisted language learning technologies, the team has used GenAI systems when creating activities. Following Tolstykh & Oshchepkova's (2024) classification, GenAI has been applied in four main areas, each with specific advantages and constraints:

1. Text generation. We have used GenAI systems such as ChatGPT 4.0 or above to generate, correct, and modify or refine texts for reading and listening comprehension activities. This accelerates the drafting process and provides varied linguistic input. However, the generated texts sometimes contain inaccuracies or unsuitable constructions or vocabulary, so all outputs are systematically reviewed, edited and approved by native-speaking team members, in keeping with Tolstykh & Oshchepkova (2024).
2. Image generation. Many of the images used in vocabulary, listening and speaking activities have been generated using the Dall·E AI system (integrated into ChatGPT 4.0 and above). This system has proven useful for certain images (e.g. pieces of clothing in Figure 4), but adds more details than required in some cases, and produces images unsuitable for the purpose of the exercises in others (e.g. exercises in which students have to describe locations). These inconsistencies often made images unsuitable without substantial human intervention. For this reason, image creation has relied on a hybrid approach that combines GenAI output with the work of a professional illustrator to ensure accuracy, clarity and pedagogical adequacy.

3. Text-to-speech production. Synthetic voices allow us to quickly produce audio materials. We create a text or use a GenAI system to create a text, which is then proofread and corrected by native Chinese team members before being entered into a text-to-speech tool (e.g. TTS Maker)[2] to create an audio file with synthetic voices. This process is practically identical to that described in Tolstykh & Oshchepkova (2024: 12). Still, human recordings remain preferable for pronunciation-based tasks, where accuracy, prosody and speed are critical.
4. Oral speech analysis. H5P's "Speak the Words" feature uses the Annyang speech-recognition engine to convert learner speech into text and match it against predefined answers, a process that requires extensive teacher input to anticipate multiple correct variants. This enables a degree of automated evaluation, but the system's accuracy varies depending on accent, prosody and speed—limitations particularly relevant for CFL learners. Since Annyang is a general-purpose Automatic Speech Recognition (ASR) system not trained on Mandarin spoken by second-language learners, its baseline performance is uneven. Consequently, no activities requiring fine-grained tone discrimination for very short words have been created, as the system is not sufficiently reliable for such tasks. ASR-based activities are, therefore, treated as guided practice rather than as high-stakes assessment.

[2] c.f., https://ttsmaker.com/

Although GenAI can, in theory, produce entire activities (texts, questions and distractors), our experience—and recent research—show that this approach is pedagogically insufficient. Automatically generated questions frequently rely on superficial lexical overlap rather than deeper comprehension (Casas-Tost et al., under review; Thornburn, 2024). In CFL contexts, GenAI-paraphrased questions may also introduce vocabulary beyond students' level. Despite experimenting with enhanced prompting and chain-of-thought techniques (Sánchez-Gijón & Palenzuela-Badiola, 2023), this method rarely saved time and often produced materials misaligned with course objectives. For this reason, GenAI is being used as a support tool that provides drafts which teachers then refine, restructure or replace, depending on pedagogical goals, rather than as an autonomous activity generator. This hybrid model maintains teacher control over difficulty, linguistic accuracy, and CFL-specific sequencing.

GenAI is therefore used strategically where it adds value (e.g., drafting, audio, visual assets) and avoided where it may compromise pedagogical accuracy, such as in grammar explanations or productive-skills tasks requiring nuanced evaluation. This human-in-the-loop approach maximizes GenAI's effectiveness while mitigating its current limitations. The result is that most of the platform's activities have been fully created by members of the research team, while 24% have involved GenAI input for the creation of text, audio or images. Furthermore, all in-activity feedback has been prepared by team members. Our experience shows that GenAI's grammar explanations are not always accurate or relevant. Furthermore, our knowledge of mistakes frequently made by Spanish-speaking learners of Chinese, as well as the small body of research analyzing this topic (e.g. Liu, 2019 and Wang, 2025) has been crucial to providing tailored feedback in many exercises (e.g. pronunciation, grammar, translation, etc.).

3.2. Technical aspects of activities

Activities are built using either H5P or Moodle questionnaires. Formats include multiple choice, drag-and-drop, true/false questions, matching tasks, memory games, image selection, image pairing, gap-filling, paragraph sorting, short-answer writing and speaking prompts. In designing the platform, we have intentionally diversified both the formats and the types of input used in order to move beyond the most traditional exercise types (although these are also included, as they are still very useful). Our aim has been to create multimodal activities that respond to the needs of different learner profiles and make practice more challenging and engaging, as shown in Figures 3 to 6.

All activities must provide automated correction and feedback, and due to technical constraints, fully open-ended tasks (e.g., free description or extended writing) are not feasible. This is particularly challenging for speaking and writing tasks, where teachers must anticipate and encode all acceptable correct answers. For instance, the writing activity "One day in Xiao Ming's life" requires multiple formulations of "Xiao Ming eats alone" to be listed as correct, such as:[3]

[3] The full stop at the end of each sentence is omitted because we identified issues with punctuation in H5P open-ended responses. The activity's instructions warn students not to use full stops.

- 小明一个人吃早饭
- 小明一个人吃
- 他一个人吃早饭
- 一个人吃
- 小明一个人吃早餐
- 他一个人吃早餐
- 一个人吃早餐

Speaking activities face similar constraints, as Annyang—the speech recognition engine used by H5P—matches learner utterances to predefined acceptable answers. As with writing tasks, teachers must anticipate and enter a comprehensive list of correct variations in advance. This is reflected in Figure 7, taken from an activity in which students have to say the time shown on the clock; answers that the system has interpreted as incorrect are displayed in red, while all the possible correct answers entered by the teacher appear in green.

Figure 7 Example of a speaking activity and its feedback

The technical limitations involved—particularly the dependence on predefined answers in open-ended tasks—significantly constrain the quantity and complexity of the speaking and writing activities available on the platform. Consequently, the overall number of these activities is markedly lower than that of other types of tasks that are not subject to the same restrictions.

3.3. Feedback provided in the activities

Since the platform is designed to foster learner autonomy and the corrections and feedback the activities provide are automated, it is essential that the feedback be of very high quality. Accordingly, in addition to indicating whether or not answers are correct, detailed written feedback in Spanish is provided when they are incorrect. This feedback aims to explain, as clearly as possible, why an answer is incorrect or, through hints, to

guide students towards the correct response. The latter approach can be seen in Figure 8, where the learner is asked if they missed an aspirated sound in any of a word's syllables.

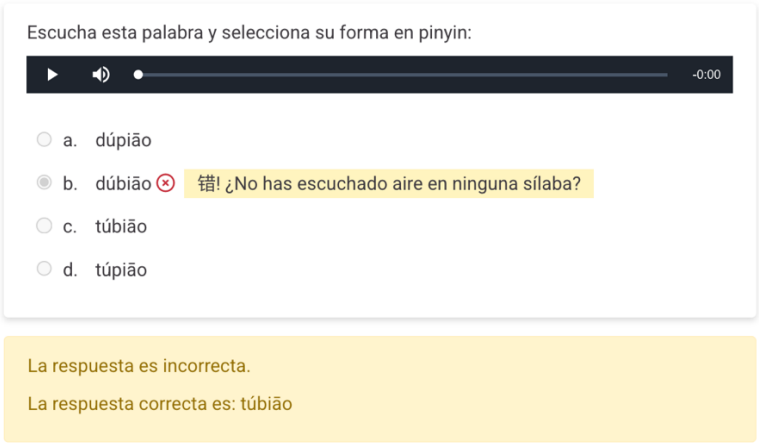

Figure 8 Example of feedback in a pronunciation activity

Feedback is also crucial in grammar activities, where offering clear explanations or relevant examples helps students understand language rules and patterns, correct their mistakes, and reinforce their learning. For instance, as shown in Figure 9, the feedback clarifies which particle should be used and the reason why.

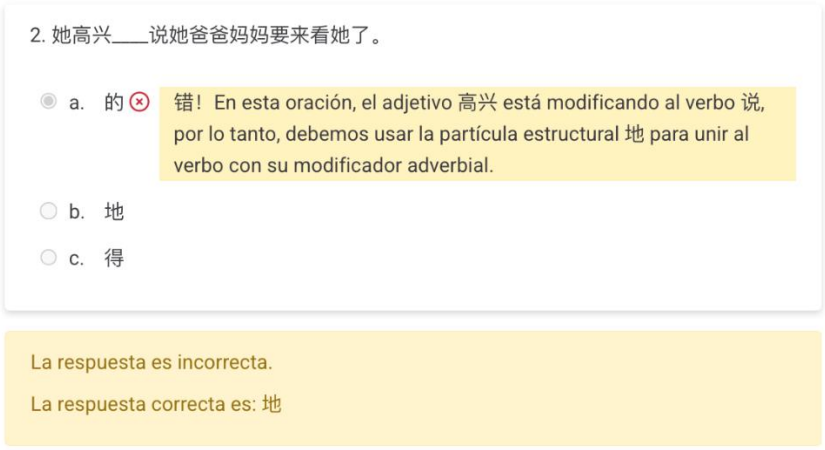

Figure 9 Example of feedback in a grammar activity

Translations into Spanish and detailed grammar explanations are also used in the feedback for certain complex activities. For instance, in the example of Figure 10, students need to place words in the correct order to form complete sentences in which interrogative words are used with an absolute meaning. The feedback provides the translation of the intended sentence into Spanish and emphasizes that "什么时候" does not mean "when" in this case, but "always", due to its combination with the adverb "都". In addition, the feedback draws learners' attention to the prototypical sentence structure associated with this construction.

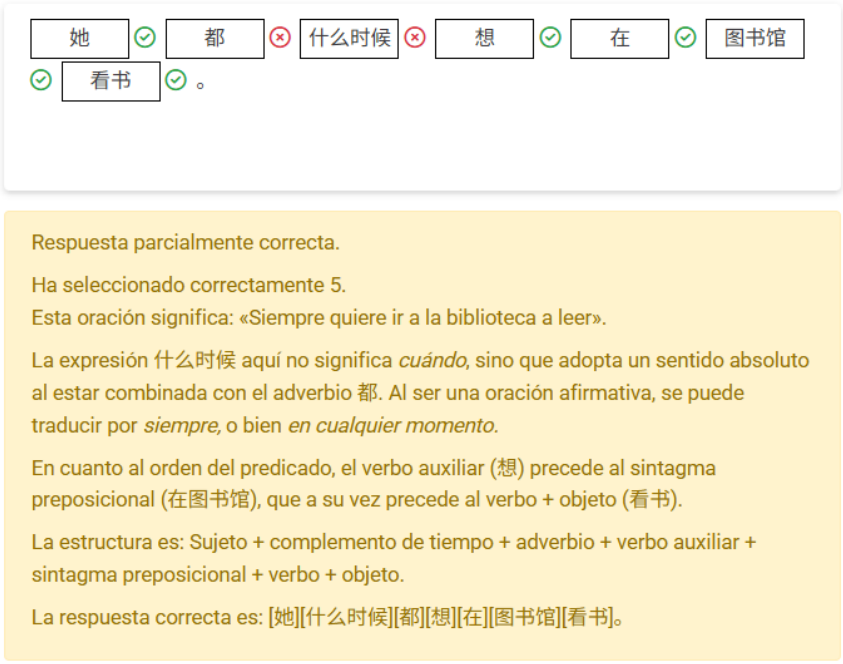

Figure 10 Example of detailed feedback in a B1 grammar activity

From a technical perspective, activities created with H5P tend to be more visual and interactive, but the tool does not support highly elaborated, individualized feedback. Moodle questionnaires (for example, multiple-choice or true/false formats) are therefore preferred when detailed, explanatory feedback is required. In cases where detailed feedback cannot be provided due to the nature and format of the activity (e.g. matching exercises in listening tasks), alternative options are implemented (e.g. providing an audio transcript).

4. Activities currently available on e·Chinese Plus

e·Chinese Plus is an ongoing project that is frequently updated. At the time of writing (February 2026), it offers approximately 170 activities covering four levels and ten skills, including seven sequenced activities, and has more than 525 registered users.

Figure 11 shows a breakdown of the platform's activities by level. Just over half the activities belong to levels A1 and A2. Level A1 has the highest number of activities, accounting for 38% of the total, while level B2 has the lowest, representing only 16%. This slight imbalance somewhat reflects the distribution of students by level, as well as the fact that the team's members teach more lower-level classes than intermediate ones. Over time, however, the goal is to offer a greater balance of activities across levels.

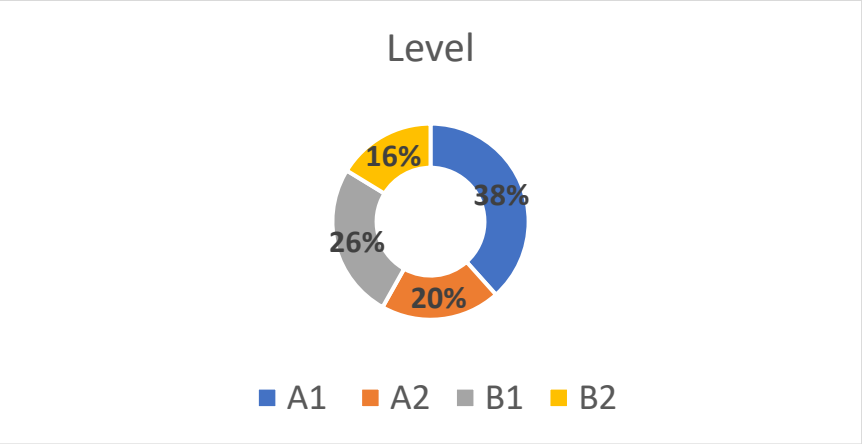

Figure 11. Activities by level

Figure 12 illustrates the distribution of activities by skill. Reading and vocabulary are the skills with the highest number of activities (30), followed by listening (22), and grammar (21). In contrast, there are fewer activities that focus on skills like translation (7), speaking and writing (6 each, making them the least represented skills at the moment). There are currently only seven sequenced activities, as this is a newly created category.

This distribution highlights a clear emphasis on receptive skills, such as reading and listening, along with vocabulary and grammar, which are foundational for language acquisition and well suited to closed interactive activities with feedback. In contrast, productive skills, such as writing and speaking, feature less prominently. This is partly due to the greater difficulty entailed in designing closed activities that automatically provide corrections and meaningful feedback for productive skills, owing to the technical limitations of current formats. We are working to address this imbalance by creating more activities for developing productive skills. Pronunciation, characters, and culture—skills particularly relevant to Chinese—fall in the middle of the distribution and are developed through activities that approach them from multiple perspectives.

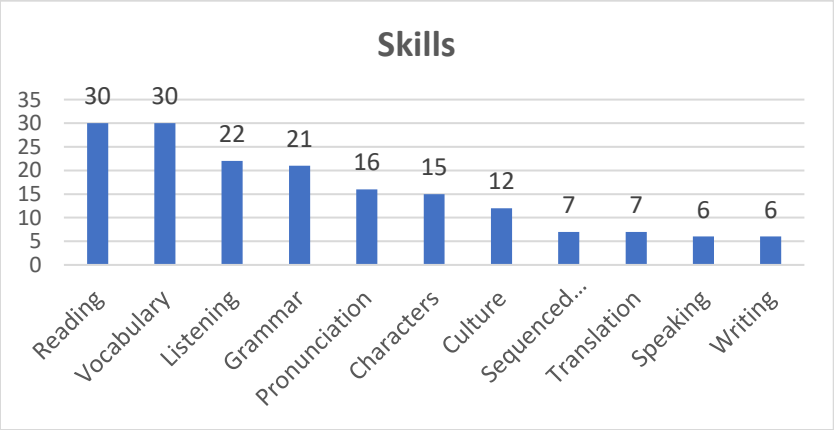

Figure 12. Activities by language skill

There is a noticeable correlation between proficiency level and the types of skills targeted in the activities, as can be seen in Figure 13. In general, receptive and form-focused skills are more evenly distributed across levels, while productive skills tend to be clustered at the beginner levels. More specifically, productive skills, such as speaking and writing, are primarily concentrated at level A1, where it is easier to anticipate all possible correct responses. As learners' range of vocabulary and grammatical structures grows, accounting for all possibilities becomes increasingly challenging.

Nonetheless, we are addressing the current imbalance with the aim of achieving a more even distribution of activities across levels and skills, taking the specific pedagogical needs of each proficiency level into account at all times. For instance, pronunciation and character writing are especially important at the beginner levels and require focused practice in the early stages. However, these skills remain relevant at higher levels, where they can be approached through different types of activities that suit learners' evolving needs and abilities. Accordingly, we have also developed activities targeting pronunciation and character writing for more advanced learners, such as those at levels B1 and B2. For example, the platform currently has two B2 level activities for the skills in question: one involving a tongue twister (for pronunciation) and another posing a riddle about writing characters.

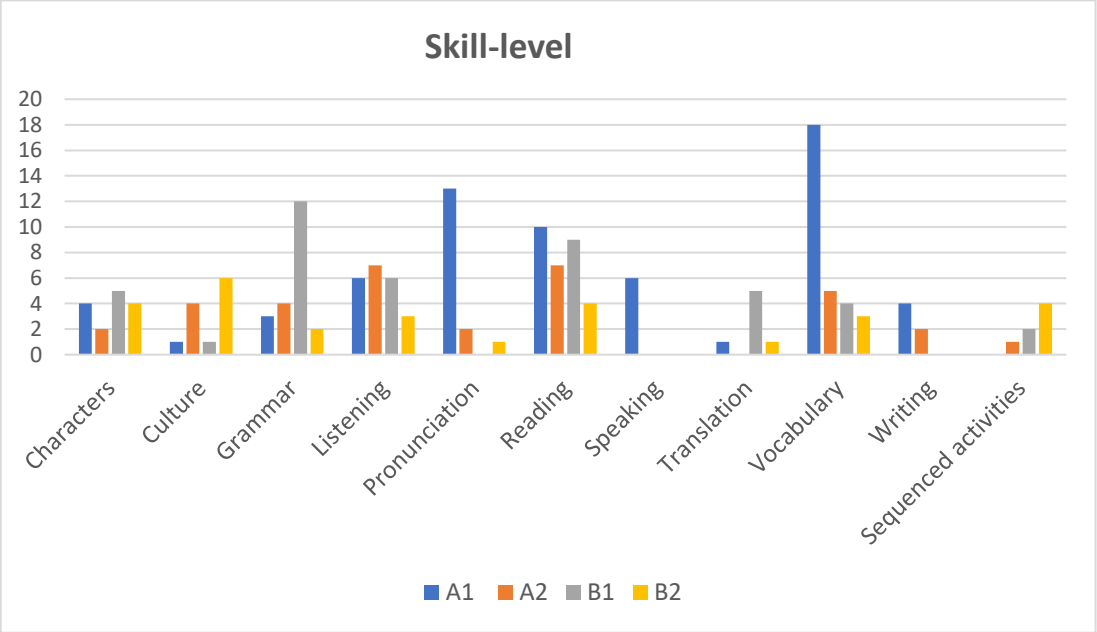

Figure 13 Activities by language skill and proficiency level

Finally, as regards learning styles, it should come as no surprise that 95% of the activities include text, requiring students to either read or write. However, it is worth noting that 60% of the activities combine two or even three different input types. Thus, the majority of the activities can be considered multimodal, catering for a broader range of learning preferences.

5. Potential applications of the platform

e·Chinese Plus is primarily intended for students who wish to supplement their regular Chinese classes, but it can also be seamlessly integrated into classroom-based instruction. After completing a simple, free registration process, learners gain full access to all activities on the platform and may complete them in any order, as many times as they wish. This flexibility allows students to incorporate practice into their daily routines and to focus on the skills, topics or activity types that best match their current needs.

The platform interface is in Spanish, and activity instructions are also provided in Spanish; in intermediate-level activities, instructions are additionally offered in Chinese. Feedback is available exclusively in Spanish and is particularly rich in grammar and receptive pronunciation activities, where learners are asked to discriminate between similar sounds. In these cases, feedback goes beyond indicating whether an answer is correct or incorrect, often pointing to specific segments or features that may have caused difficulty. By contrast, feedback in other activities, such as speaking, is less detailed, as the system can only display the target answers and the words interpreted by the ASR engine.

In addition to individual student use, teachers can incorporate e·Chinese Plus into their courses by recommending or assigning specific activities to be completed in class or as homework, either to reinforce material covered in lessons or to provide targeted extra practice on particular skills or topics. For example, if a teacher is working at the A1 level (beginner level) and students are learning how to tell the time in Chinese, four activities can be recommended as homework tasks: a vocabulary drag-and-drop exercise (Figure 14); a reading comprehension activity in which students sequence a story based on a video (Figure 15); a listening exercise requiring students to select the correct time based on audio input (Figure 16); and an oral production activity in which students state the time according to visual prompts (Figure 17). Together, these activities illustrate the platform's multimodal approach and its attention to different learning styles, as input is provided through a variety of formats—including images of analogue and digital clocks, video, audio, and written text—and learners engage with diverse task types.

Figure 14 Vocabulary exercise to practice telling the time

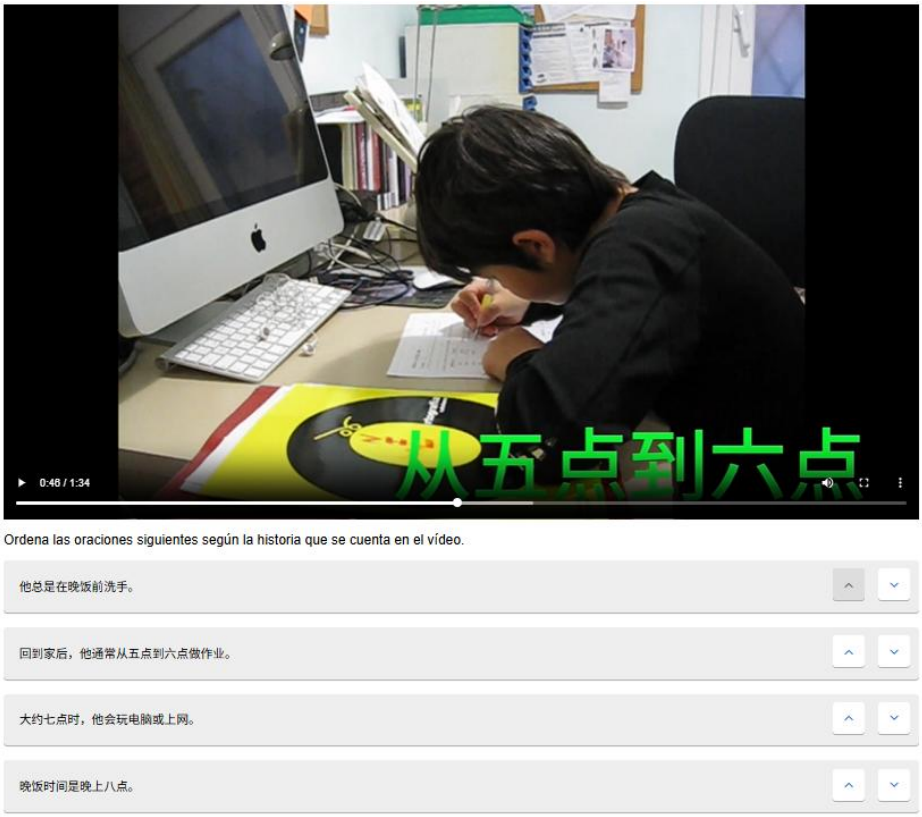

Figure 15 Reading comprehension activity to practice telling the time

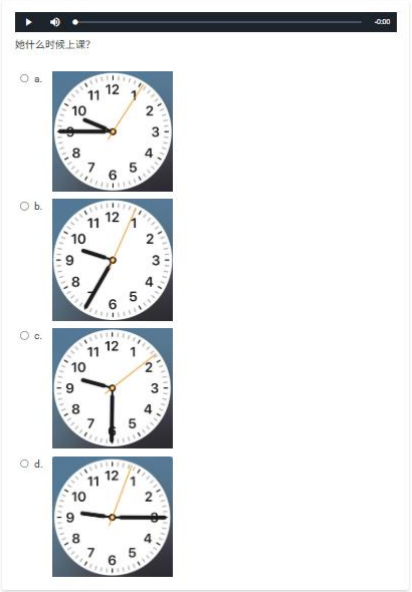

Figure 16. Listening to practice telling the time

Figure 17. Oral expression activity to say the time

Finally, the platform may also serve as a source of inspiration for teachers who wish to design their own activities using Moodle-based environments. In particular, activities aimed at developing cultural competence remain relatively scarce in existing resources, which tend to adopt a more passive approach (Gay-Punzano & Vargas-Urpí, 2025). By contrast, e·Chinese Plus increasingly incorporates tasks that promote active engagement and allow learners to apply their skills. Figure 18 illustrates an example of a culture-focused activity in which students are required to recognize hand gestures used to represent numbers in Chinese.

Figure 18 Example of a culture activity

Taken together, these design choices align closely with the principles of Universal Design for Learning, particularly in their emphasis on providing multiple means of representation, engagement, and expression. By offering varied input modalities, flexible task types, and non-linear learning paths, the platform seeks to accommodate diverse learner profiles and preferences while supporting learner autonomy. In this way, e·Chinese Plus not only addresses identified pedagogical gaps in existing digital resources but also adopts an inclusive design framework that facilitates access and meaningful learning for Spanish-speaking students, while simultaneously offering a valuable repository of pedagogical ideas for CFL teachers.

6. Conclusions and future directions

e·Chinese Plus addresses a critical need in the landscape of Chinese language learning for Spanish-speaking students. The project has created a wide range of engaging activities that accommodate individual learning differences, aligning with the Universal Design for Learning framework and differentiated instruction, and incorporating new technologies such as GenAI. Our ongoing review of existing digital resources, together with a cyclical evaluation of the platform's own strengths and weaknesses—particularly with regard to underrepresented activity types or skills—enables us to continuously refine the platform while responding to identified pedagogical needs.

The platform is designed to supplement formal instruction and, thanks to its multimodal, multiformat approach, to better adapt to students' learning styles. In the specific context of CFL, Zhang (2022) emphasizes the role of open educational resources (OER) as valuable complements to formal instruction, stressing the importance of knowing which tools enhance specific skills, how learners use them, and how teachers can integrate them into curricula. These considerations have informed the development of e·Chinese Plus. Furthermore, since the activities do not require teacher supervision, students can easily integrate them into their routines, completing them as often as they wish. This flexibility supports self-paced learning and targeted practice, as also observed by Ma (2024) in her study on the advantages of Quizlet.

e·Chinese Plus overcomes a limitation of many CFL apps, that of providing only fixed learning paths in which students cannot repeat activities or freely select the type of exercises they need, as pointed out by Wang (2024). The platform's clear classification of activities by proficiency level, skill, and topic enhances its user-friendliness and adaptability to learners' evolving needs. Studies such as the review by Lyu & Qi (2020: 158) have identified a gap between in-class and out-of-class learning as a major issue in technology integration for CFL. However, e·Chinese Plus addresses this by offering a structure and filtering system that enables teachers to create and select complementary tasks and students to independently select activities appropriate to each stage of their learning process.

Our current aim is to create more activities to fill current gaps in skills, topics, and levels and achieve a more balanced distribution across levels and skills. Additionally, we want to explore creating more sequenced activities that serve as learning paths, with multiple activities centered on a single topic. We believe such paths will guide students through activities thoughtfully organized around sound pedagogical principles, while also allowing many of the individual activities within these learning paths to be used independently, depending on learners' needs and learning contexts. Future work will also focus on collecting feedback from learners and instructors, and gathering longitudinal data to better assess content quality, user experience and learning effectiveness, which are common indicators to assess digital resources (Zhang et al., 2025). We also aim to explore new GenAI-supported functionalities—particularly for productive skills—once they become reliably compatible with Moodle's pedagogical and technical constraints. At the time of writing, the integration of AI into Moodle is primarily achieved through plugins that support text and image generation and text summarization. However, future developments may make it possible to incorporate AI-based correction tools designed to provide feedback on production activities. In such cases, thorough prior testing will be essential to ensure that the feedback is pedagogically appropriate and does not automatically suggest corrections or alternatives that exceed learners' proficiency levels.

Finally, our experience confirms that GenAI integration has expanded our professional competencies and enhanced our digital literacy as teachers, echoing the insights of Tolstykh & Oshchepkova (2024). GenAI has enabled us to design activities that go beyond traditional formats, such as filling in gaps or answering multiple-choice questions. However, the activities currently available on e·Chinese Plus are not as personalized, flexible, or interactive as those generated by GenAI chatbots, a limitation

that is particularly relevant in the case of productive skills, which remain the most underrepresented on the platform. At the same time, the limitations of GenAI have reconfirmed the ongoing importance of the human factor in the teaching and learning process.

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